



Government of the Commonwealth of Dominica

Peace

Planet

Prosperity

Dominica Climate Resilience and Recovery Plan 2020-2030

Partnership

People

“Building the World’s First Climate Resilient Country: Our Collective Responsibility”

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ACRONYMS AND ABBREVIATIONS

CARDI	Caribbean Agricultural Research and Development Institute
CARICOM	The Caribbean Community Secretariat
CARPHA	The Caribbean Public Health Agency
CCCCC	The Caribbean Community Climate Change Centre
CCRIF	Caribbean Catastrophe Risk Insurance Facility
CDB	The Caribbean Development Bank
CDEMA	Caribbean Disaster Emergency Management Agency
CERMES	Centre for Resource Management and Environment Studies of the UWI
CIMH	The Caribbean Institute of Meteorology and Hydrology
CDEMA	Caribbean Disaster Emergency Management Agency
CPA	Country Poverty Assessment
CREAD	Climate Resilience Execution Agency for Dominica
CRFM	Caribbean Regional Fisheries Mechanism
DAIC	Dominica Association of Industry and Commerce
DEXIA	Dominica Export Import Agency
DEOSC	Dominica Essential Oils and Spices Cooperative
DFID	Department for International Development of the United Kingdom
DGDC	Dominica Geothermal Development Corporation
DMA	Dominica Manufacturer's Association
DOMLEC	Dominica Electricity Services Ltd
DOWASCO	Dominica Water and Sewerage Corporation
DRR	Disaster Risk Reduction
DSC	Dominica State College
EWS	Early Warning System
FAO	The Food and Agriculture Organization of the United Nations
GCF	Green Climate Fund
GDP	Gross Domestic Product
GEF	Global Environment Facility
GIS	Geographic Information System
GOCD	Government of the Commonwealth of Dominica
IADB	The Inter-American Development Bank
IDA	Investment Dominica Authority
IICA	Inter-American Institute for Cooperation on Agriculture
IMF	International Monetary Fund
IPCC	Intergovernmental Panel on Climate Change

IWRM	Integrated Water Resources Management
LGA	Local Government Authority
MoBGEANFS	Ministry of Blue and Green Economy, Agriculture and National Food Security
MoEAPRSDTB	Ministry of Economic Affairs, Planning, Resilience, Sustainable Development, Telecommunications and Broadcasting
MoEHRPVTNE	Ministry of Education, Human Resource Planning, Vocational Training and National Excellence
MoERMKU	Ministry of the Environment, Rural Modernisation and Kalinago Upliftment
MoFI	Ministry of Finance and Investment
MoFAIBDR	Ministry of Foreign Affairs, International Business and Diaspora Relations
MoGPSRCESJEA	Ministry of Governance, Public Service Reform, Citizen Empowerment, Social Justice and Ecclesiastical Affairs
MoHUD	Ministry of Housing and Urban Development
MoHWNHI	Ministry of Health, Wellness and New Health Investment
MoNSHA	Ministry of National Security and Home Affairs
MoPWDE	Ministry of Public Works and The Digital Economy
MoSCCD	Ministry of Sports, Culture and Community Development
MoTCEIBED	Ministry of Trade, Commerce, Entrepreneurship, Innovation, Business and Export Development
MoTITMI	Ministry of Tourism, International Transport, and Maritime Initiatives
MoYDEYRGASSDD	Ministry of Youth Development and Empowerment, Youth at Risk, Gender Affairs, Seniors' Security, and Dominicans With Disabilities
MSME	Micro, small and medium-sized enterprises
NDFD	National Development Fund of Dominica
NEPO-S/C	National Emergency Planning Organization - Sub Committee
NGO	Non-Governmental Organization
NRDS	National Resilience Development Strategy
NRW	Non-Revenue Water
ODM	Office of Disaster Management
OECS	The Organisation of Eastern Caribbean States
PDNA	Post-Disaster Needs Assessment
REDD+	Reducing Emissions from Deforestation and Forest Degradation
SDG	Sustainable Development Goals
SIDS	Small Island Developing States
UN	United Nations
UNDP	The United Nations Development Program
UNEP-CEP	United Nations Environment: Caribbean Environment Program
UNICEF	United Nations Children's Fund
UNISDR	United Nations Office for Disaster Risk Reduction

FOREWORD



At the United Nations General Assembly four days after the passage of Hurricane Maria on September 18th, 2017 and at every opportunity presented thereafter, I have pledged my Government's commitment to rebuild Dominica as the world's first climate resilient nation. As a small island developing state, we have weathered many environmental disasters and economic shocks but none as devastating as Hurricane Maria.

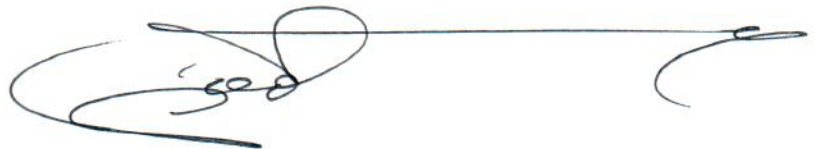
Realizing that the resolve to rebuild must be fuelled by a *strategy*, a *plan*, and the requisite *resources*, my Government has spared no effort to turn our vision into action. In June 2018 we crafted and endorsed the National Resilience Development Strategy (NRDS) – Dominica 2030. In December 2018, Parliament unanimously passed the Climate Resilience Act, a ground-breaking legislation that established the Climate Resilience Execution Agency for Dominica (CREAD). To fully operationalize the NRDS, the **Dominica Climate Resilience and Recovery Plan** (CRRP) is now published. The CRRP sets forth targets, defines initiatives that will take us from where we are at the beginning of 2020 to where we intend to be by 2030, and outlines is required to achieve our objectives in terms of financial resources, and strategic and operational partnerships.

I cannot stress enough that the task of building a Climate Resilient Dominica must be all inclusive! As such, it is my sincere hope that as the private sector, civil society and academia develop their own organizational plans for the coming years, due care and attention will be paid to the CRRP as the overall national development planning framework. I also encourage our educational institutions to dutifully examine the provisions of both the NRDS and the CRRP for the purpose of guiding students into careers and professions which respond to the areas of greatest national need. This way, we will ensure that we have the human capital to forge successfully ahead. As Prime Minister,

Minister for Finance, and Minister for Resilience, I am not only setting the strategic direction, but will also be mobilizing the resources necessary to execute the CRRP. I will also be paying close attention to monitoring progress against critical milestones and ensuring that we regularly review and refine our steps on this journey where needed, as individual initiatives are delivered, and relevant lessons gleaned.

I wish to thank the Climate Resilience Execution Agency for Dominica, the Ministry of Economic Affairs, Planning, Resilience, Sustainable Development, Telecommunications and Broadcasting, and the Secretary to the Cabinet for their tremendous efforts in crafting this document, and consultant Dr. James Fletcher for his contribution to the first draft. The Commonwealth of Dominica now has a clear plan for achieving our resilience vision that is both aspirational and implementable.

Accordingly, I encourage all stakeholders—Dominican, regional and international—to carefully review the CRRP and align their strategies, activities and funding commitments to help us implement this truly innovative resilience roadmap.



Prime Minister, Honourable Roosevelt Skerrit

Roseau, April 2020

ACKNOWLEDGEMENTS

Dominica's Climate Resilience and Recovery Plan (CRRP) was developed by the Government of the Commonwealth of Dominica, under the leadership of the Climate Resilience Execution Agency for Dominica (CREAD), which is mandated under the Climate Resilience Act 2018, in consultation with the CREAD Policy Board—chaired by the Honourable Prime Minister Dr. Roosevelt Skerrit—to prepare a Dominica Climate Resilience and Recovery Plan, promote the development of Dominica as a climate resilient nation, and to execute projects within the Dominica Climate Resilience and Recovery Plan, and support Government Ministries to enable them to implement climate-resilient policies and priority recovery projects, inter alia.

The CRRP was jointly produced through the collaboration of CREAD's Chief Executive Officer, Dr. Pepukaye Bardouille and Chief Operating Officer, Mr. Colin Scaife, and Permanent Secretary Ms. Gloria Joseph, Acting Chief Development Planner Dr. Kyra Paul, and Resilience Planning and Development Consultant, Mr. Samuel Carrette, of the Ministry of Economic Affairs, Planning, Resilience, Sustainable Development, Telecommunications and Broadcasting. Dr. James Fletcher contributed valuable input in the early stages of the CRRP's development.

Direction and guidance on the document was provided by members of the CREAD Supervisory Committee, chaired by Mr. Stefan Kossoff and comprising Mr. Richard Carter of the United Kingdom's Department for International Development (DfID), Mr. Benoit-Pierre Laramée of the Government of Canada, Mr. Bogdan Stefanescu of the European Union (EU), Mr. Ugo Blanco of the United Nations Development Programme (UNDP), Ms. Rosamund Edwards, Financial Secretary and Ambassador Steve Ferrol, Secretary to the Cabinet of the Government of the Commonwealth of Dominica (GoCD), and Mr. Kenny Green of the Dominica Association of Industry and Commerce (DAIC). Former Minister of Foreign and CARICOM Affairs, Ms. Francine Baron, was integral to making the case for a CRRP and in leading the transition of CREAD from concept to reality.

The Government of Dominica is grateful to the many stakeholders who have informed the design of initiatives under the CRRP's six results areas of Strong Communities, Robust Economy, Well-planned and Durable Infrastructure, Strengthened Institutional Systems, Enhanced Collective Consciousness, Protected and Sustainably Leveraged Natural and Other Unique Assets—notably Dr. Lennox Honychurch, who contributed valuable knowledge on the country's historical development journey and Mr. Gregor Nassief, whose thoughtful feedback helped to refine several of the CRRP targets. On-going exchange and partnership between each segment of Dominica's society will be critical to delivering on this Plan going forward. In this regard, the support of the Government of Canada to the final stakeholder consultation process is greatly appreciated.

Finally, CREAD is proud of the exceptional work of its Team in the conceptualization, development and costing of the CRRP initiatives, and of their commitment to true partnership with line ministries in its execution, be this in a lead or supporting role. An extra special thanks to Thematic Leads Mr. Glen Laville (Capital Projects), Ms. Karen Mahy (Communications), Mr. Mohamed Ramzi (Strategy) and Dr. Emily Wilkinson (Knowledge) for going the extra mile.

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EXECUTIVE SUMMARY

The Commonwealth of Dominica has articulated a bold and unparalleled vision to become the world's first Climate Resilient nation.

Hurricane Maria made landfall on the southwest coast of the Commonwealth of Dominica at 9:35 p.m. on September 18th, 2017 as a Category 5 storm, with sustained wind speeds of 220 mph and higher gusts.

The hurricane force resulted in intense sea surges, torrential downpours, overflowing raging rivers, and unprecedented high winds across the island. Around 80% of the population (65,000 people) was directly affected, 65 people perished, more than 90% of homes were damaged or destroyed and 90% of crops and livestock were lost. Power and water supplies were disrupted for months, and telecommunications systems in some areas took over one year to restore. The impact of this near total devastation was estimated at XCD3.54 billion (US\$1.3 billion), amounting to 226% of gross domestic product (GDP)ⁱ, making Maria the worst disaster that the world has seen in terms of percentage of GDP in damages and losses.

Five days after our island was decimated, on September 23rd, 2017, Prime Minister Roosevelt Skerrit addressed the 72nd United Nations General Assembly and declared Dominica an “international humanitarian emergency”. In his impassioned speech, he also vowed to rebuild Dominica as the first Climate Resilient Nation. The Prime Minister’s exact words were:

“I come to you straight from the front line of the war on climate change. With physical and emotional difficulty, I have left my bleeding nation to be with you here today because these are the moments for which the United Nations exists.”

“We as a country and as a region did not start this war against nature! We did not provoke it! The war has come to us...There is no more time for conversation! There is little time left for action. While the big countries talk, the small island nations suffer. We need action....and we need it NOW! We in the Caribbean do not produce greenhouse gases or sulphate aerosols. We do not pollute or overfish our oceans. We have made no contribution to global warming that can move the needle. But yet, we are among the main victims...on the frontline!”

“...To deny climate change is to procrastinate while the earth sinks; it is to deny a truth we have just lived! It is to mock thousands of my compatriots who in a few hours without a roof over their heads will watch the night descend on Dominica in fear of sudden mudslides...and what the next hurricane may bring.”

Fundamentally, the vision of building a Climate Resilient Dominica is about significantly reducing the impact of, and time to recover from, climatic and other natural shocks, as well as boosting the overall socioeconomic development trajectory of the country.

In response to the destruction of Maria, in 2018, Dominica released a climate resilience policy framework to guide its recovery journey in the form of the National Resilience Development Strategy 2030 (NRDS). The NRDS articulates the overall policy framework of the Government and outlines 43 resilience goals aimed at ensuring that development is people-centred.

The NRDS stipulates that, at the highest level, the Climate Resilience and Recovery Plan (CRRP) should reflect **three pillars** of resilience, namely: (1) Climate Resilient Systems, (2) Prudent Disaster Risk Management Systems, and (3) Effective Disaster Response and Recovery.

Pillar 1, Climate Resilient Systems, covers a wide range of systems and processes that must have the capacity for adjusting to, and absorbing the impacts of, climate change—for instance, a robust financial system that is able to support other core elements of resilience.

Pillar 2, Prudent Disaster Risk Management, focuses on minimizing and managing, as best we can, the risks associated with climate-related disasters. This involves the development of a strong evidence base for decision-making.

Pillar 3, Effective Disaster Risk Response and Recovery, speaks to the post-disaster phase, minimizing disaster impacts and reducing the pain and the period of recovery.

The CRRP expands these three pillars into **six results areas** for a climate-resilient Dominica, namely:

1. **Strong Communities**, which have the capacity to absorb stress or destructive forces through resistance or adaptation; the capacity to manage or maintain certain basic functions and structures during disastrous events; and the capacity to recover or ‘bounce back’. Strong Communities focuses on key elements such as adequate access to shelter, food, water, power, telecommunications and other basic services, social cohesion, disaster preparedness and responsiveness.
2. **Robust Economy**, which has ability to limit the magnitude of immediate production losses for a given amount of asset losses and the ability to reconstruct and recover quickly. Robust Economy focuses on key elements such as access to skills, access to finance, diversification of revenue streams, and risk transfer.
3. **Well-planned and Durable Infrastructure** ensures that critical physical infrastructure can absorb shocks or can fail safely. A resilient infrastructure system has redundancy, duplicating critical components allowing for back up or continuity. The key elements of focus include roads and bridges, utilities (power, water, communications), houses and shelters, schools, health facilities, ports and airports, and coasts and riverbanks.
4. **Enhanced Collective Consciousness** speaks to mind-sets and behaviours (spiritual, theological and culturally inclusive) that underpin respect, dignity and peace among all citizens, ensuring that no one is excluded or left behind. The key elements of focus include valuing national resilience and respect for people and environment.
5. **Strengthened Institutional Systems** is defined as the ability to effectively and efficiently deliver on Government’s comprehensive socio-economic development mandate, and to continue to operate during and in the aftermath of a disaster. The key elements of focus are data and decision-making protocols, policies, strategies, procedures, skills and resilience-linked budget-setting and performance management.
6. **Protected and Sustainably Leveraged Natural and Other Unique Assets** reflects staying true to Dominica’s Nature Island “brand” by valuing the unique assets of the country, maintaining a pristine environment, and carefully monetizing them to support the resilience agenda. It focuses on geological resources, fresh water, marine environment, lands and forests, as well as conceptually recognizing the value of Dominica’s culture, history and knowledge of resilience gained through recent events.

Based on these six (6) results areas, the Government of Dominica is committed to achieving **20 Climate Resilience Targets by 2030**

1. Zero (0) fatalities from extreme weather events
2. Communities able to operate independently for 15 days post extreme weather event
3. 90% of housing stock built or retrofitted to resilient building codes
4. Individuals able to revert to basic living standards within four (4) days
5. 100% resettlement of individuals living in physically vulnerable locations
6. Less than 5% of gross domestic product (GDP) in losses related to an extreme weather event
7. Less than 50% agriculture and fisheries losses as a percentage of total losses

8. 100% functioning of critical Government and emergency services during and after an extreme climatic event
9. Seaports and airports functioning within one week of an extreme weather event
10. Sustained, sustainable and inclusive growth of minimum 5% achieved
11. 100% primary roads and bridges open within 3 days of an extreme weather event
12. 60% of the population with access to water and sanitation within 7 days of an extreme weather event
13. 90% of the population with access to power within 3 days of a climatic event
14. No more than 5% of schools and healthcare facilities severely damaged or destroyed by an extreme weather event
15. 100% of telecommunications restored within three (3) months of an extreme weather event
16. 100% of national budgeting, policies in place and enforced, and Government performance measurement framework informed by resilience targets
17. 90% of the population able to identify the pillars of resilience and at least one measure undertaken by the Government, with specific focus on respect for people, planet and property; and law and order maintained following significant disasters
18. 60% of agricultural land cultivated organically, supporting environmental protection and the sustainable development agenda
19. 50% increase healthy coral reef coverage to support increased fish stocks, and protect coastlines and the eco-tourism industry
20. Becoming carbon neutral through 100% domestic renewable energy production, and an increase of protected forest areas to 67% of Dominica's land mass

These targets will be realized through about fifty planned and on-going initiatives that are closely aligned to the six results areas. **Of these, ten (10) critical high-impact climate resilience initiatives** will be delivered as a matter of immediate priority, namely:

1. **Enhanced Social Safety-net Initiative** – A resilient nation supports vulnerable members of society to reduce the impacts of climatic and other disasters. This initiative will put into place a data driven, computerized welfare system, with strengthened delivery team, so that all vulnerable citizens receive the appropriate interventions. Delivered by end 2022.
2. **Community Emergency Readiness Initiative** – Based on the experience of Hurricane Maria, some communities were cut off from central emergency responders, and unable to cope with their most basic needs, resulting in physical and mental stress that could have been avoided. This initiative will develop Community Disaster Management Committees, Disaster Management Plans for all communities, and the requisite equipment and supplies, including food, water and backup power to ensure 15 days' autonomy before hurricane season each year. Delivered by end 2022.
3. **Resilient Housing Scheme** – To transform the structural reliability of the nation's housing to extreme weather and relocate those currently located in physically vulnerable locations. This programme will significantly transform the sector and allow the Government to meet its target of 90% of housing stock to be resilient by 2030, through a combination of the construction of 5,000 new resilient homes for vulnerable citizens, updated building standards and fiscal incentives to assist homeowners to ensure that their homes are structurally resilient to a major storm event. Delivered by end 2023.
4. **Koudmen Domnik** – Individual and community self-help and cooperation are an essential part of being resilient. An active volunteer movement through which each Dominican participates to the best of their ability to uplift all citizens, Koudmen Domnik will coordinate volunteer led projects, with an emphasis on youth involvement and the inclusion of marginalized groups, across the country. Delivered by 2022.
5. **Resilient Dominica Physical Plan** – A comprehensive plan that addresses all infrastructure—utilities, ports, roads, bridges, drainage, housing, schools, health centres,

shelters, coastal, rivers and landslide risks—as well as the standards required to achieve resilience targets, must be prepared so that a structured approach to creating a resilient country can be implemented. This will result in a comprehensive capital works program to 2030 and beyond, facilitating the mobilization of financing for resilience. It will incorporate a modern information and communication technology (ICT) Network to offer reliable and resilient service amid a disaster. Plan delivered by mid-2021. Resilient infrastructure programme delivered by 2030.

6. **Innovative Insurance Solutions** – Private property was insufficiently insured in the wake of Maria hindering reconstruction of homes and commercial property within reasonable timeframes, which has impacted the nation’s ability to recover from the event. Public infrastructure and utilities were also un- or underinsured. This initiative will work to identify innovative affordable, appropriate options to reduce the protection gap and undertake public education on the importance of insurance. Delivered by end 2020.
7. **Dominica as a Global Centre for Agriculture Resilience** will transform the country into a model for best practice regionally and internationally, working across the value chain from farmers to end-users, with a dynamic Ministry of Blue and Green Economy, Agriculture and National Food Security as a key part of the sector’s engine. This initiative will develop a scientific, and practical, approach to reducing the vulnerability of farmers and fisherfolks through the adoption of resilient practices, as well as the introduction of resilient crops and infrastructure. Delivered by 2030.
8. **Revised Public Sector Investment Programme (PSIP) Allocation Methodology and Enhanced Public Sector Performance Management Framework** – In order to achieve the Government’s resilience vision, sectoral policies, strategies and budgets—notable the Public Sector Investment Programme (PSIP)—must be synchronized to Dominica’s climate resilience targets specified in the CRRP, along with globally-recognized Sustainable Development Goals (SDGs). This will require adjustments to the budget-setting process and criteria, to include the definition and weighting of resilience- and SDG-related indicators. It will also focus on putting into place efficient and effective organizational structures and operating procedures to enable delivery on resilience agenda. A public service where there is a culture of continuous improvement will be developed; public officers will better understand how they can and should contribute to strategic objectives and their performance will be measured so as to incentivize such outputs and outcomes. Delivered by June 2020.
9. **Centre of Excellence for Data in Resilience Decision-making** will establish a dedicated geographical information systems (GIS) unit within the Ministry of Economic Affairs, Planning, Resilience, Sustainable Development, Telecommunications and Broadcasting, centralize the gathering of data (GIS and beyond), and institutionalize a data-driven approach to all key planning decisions. This unit will be critical to the finalization and implementation of the Resilient Dominica Physical Plan, including activities related to land management, hazard mapping, and infrastructure planning. Delivered by 2022.
10. **ResilienSEA Triple Bottom Line Blue Economy Investment Fund** seeks to support the development of viable and sustainable businesses based on or linked to Dominica’s rich marine environment. It will tap private and social sector investment, steering it towards commercial or quasi-commercial ventures that support the overall climate resilience ambitions of the Government. Managed by a dedicated, objective and credible Investment Committee with experience in high-impact investing in the blue economy, it will provide social, environmental and financial returns (that is, a triple bottom line) to meet the expectations of a range of investors. It will be complemented by a technical assistance fund to support the development or expansion of innovative business in the sector. Fund raised and management in place by mid-2021. Fund operational through 2026.

These priority interventions, together with the additional forty or so resilience initiatives outlined in Chapter IV of this document, will contribute to the achievement of the 20 resilience targets over an anticipated implementation period of 2020 to 2030.

It is estimated that **the cost to Dominica of becoming Climate Resilient by 2030 is XCD 8.2-9.8 billion, of which the Commonwealth of Dominica has already invested close to XCD 1.7 billion on critical infrastructure and other projects since Hurricane Maria.**

Hence, the remaining financing gap is estimated at about XCD 7-8 billion. Based on current Government capital expenditures, and assuming steady revenues and expenditures, the expected financing gap to deliver the Climate Resilience and Recovery Plan to 2030 is therefore XCD 2.5-3.5 billion, equivalent to approximately US\$90-130 million annually.



Figure 1: Example of the devastation caused by Hurricane Maria



Figure 2: Resilient homes developed by the Government in Bellevue Chopin



INTRODUCTION

Dominica’s Climate Resilience and Recovery Plan (CRRP) is an accompanying document to the National Resilience Development Strategy (NRDS). The CRRP operationalizes the NRDS providing an outline that will guide the preparation of sector strategies and plans. Succinctly, the objective of the Climate Resilience and Recovery Plan is to translate Dominica’s vision to “build the first climate resilient nation in the world” into a concrete set of actions.

It elaborates the objectives and strategies in the NRDS into specific initiatives and activities that will involve implementing and donor agencies, stakeholders in the public and private sectors and the population at large. The NRDS specifies forty-three (43) targets that must be achieved if Dominica is to become the first climate resilient nation in the world.

The CRRP converts these forty-three objectives into twenty (20) specific climate resilience targets framed within six (6) major results areas derived from the three (3) pillars of the NRDS.

The CRRP defines key initiatives to be undertaken to achieve the twenty targets. In recognizing financial resource constraints, inadequate human resource capacity, and urgency, the CRRP prioritizes ten (10) high impact initiatives based on degree of contribution to achieving the country’s vision and the cost of delivery.

The central position of the CRRP is that Dominica has no choice but to pursue its vision to build the first climate resilient country in the world. Business-as-usual is simply not an option for securing the country’s future and the continued well-being of its people.

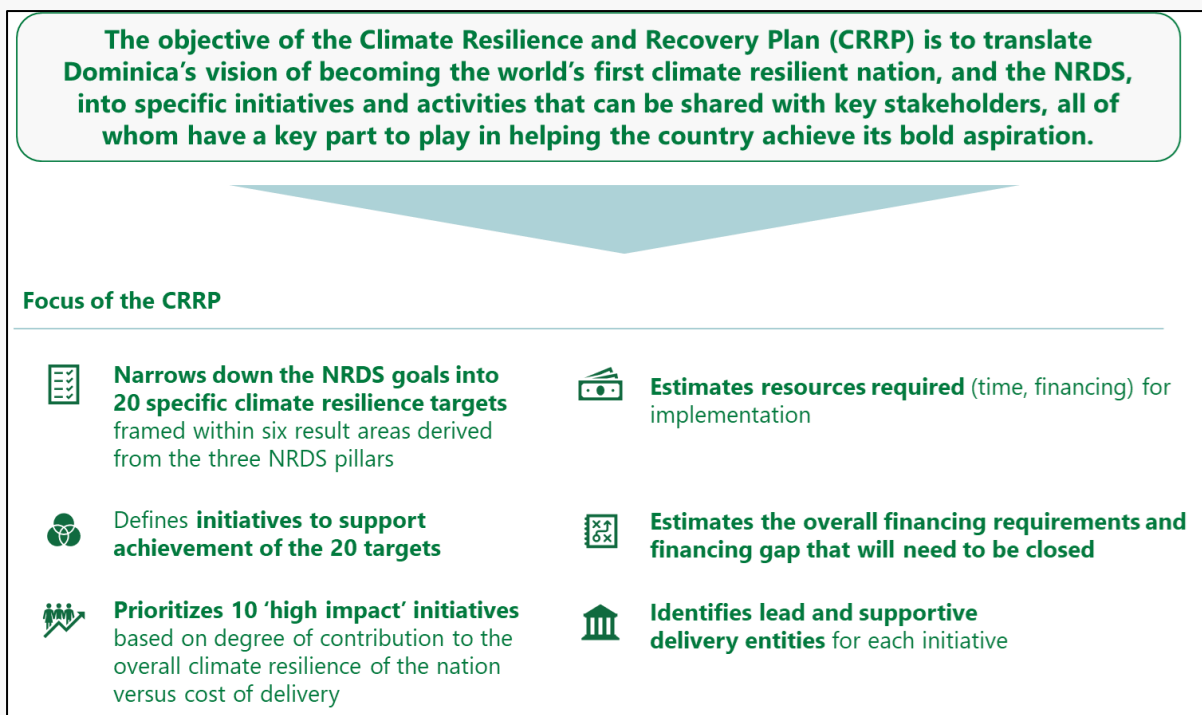


Figure 3: Objective and focus of the CRRP



I. BACKGROUND & CONTEXT

COUNTRY OVERVIEW

The Commonwealth of Dominica is one of the Windward Islands in the Eastern Caribbean, lying between Guadeloupe to the north and Martinique to the south.

Dense forest and woodland cover 59% of the land area, with subtropical vegetation and orchids in the valleys. Tree ferns are indigenous to the island. Arable and cropped land extends to some 32% of the total land area. The island has a fertile volcanic soil.

46km in length, with a coastline of 148km, its land mass spans 750 sq. km. The country's population is 71,293 and its main towns are Roseau (capital, pop. 14,725 in 2011), Portsmouth (4,167), Canefield (3,324), Marigot (2,411), Salisbury (2,147), Berekua (2,134), Mahaut (2,113), St Joseph (1,746), Wesley (1,362) and Castle Bruce (1,087).

Dominica is the only place in the Eastern Caribbean that's still home to a sizeable population of indigenous Kalinago people, who have lived on the island since the 13th century.



Figure 4: Geographical Location of Dominica

Known as the Nature Isle of the Caribbean, Dominica attracts eco-adventurers to its 365 rivers, Boiling Lake, Champagne Reef, rainforests, sulphurous hot springs, superb diving sites and the Caribbean's first long-distance hiking trail, the Waitukubuli National Trail.

GLOBAL AND REGIONAL INDICATORS & IMPACTS OF CLIMATE CHANGE

Data indicates that global temperatures are rising, with significant impacts for extreme climatic eventsⁱⁱ:

- A mean warming in both **air and ocean surface temperatures** in excess of 0.5°C over the latter half of the last century to present
- Increases in **average daytime (night-time) temperatures** of approximately 0.19°C decade⁻¹ (0.28°C decade⁻¹) since 1960
- Small but statistically significant increases in **annual total precipitation, daily intensity of rainfall, maximum number of consecutive dry days, and heavy rainfall events** esp. during the period 1986–2010
- An increase in the occurrence of **extreme climatic events** including droughts and more intense hurricanes
- **Rising sea levels** at a rate of 1.7–1.9 mm per annum

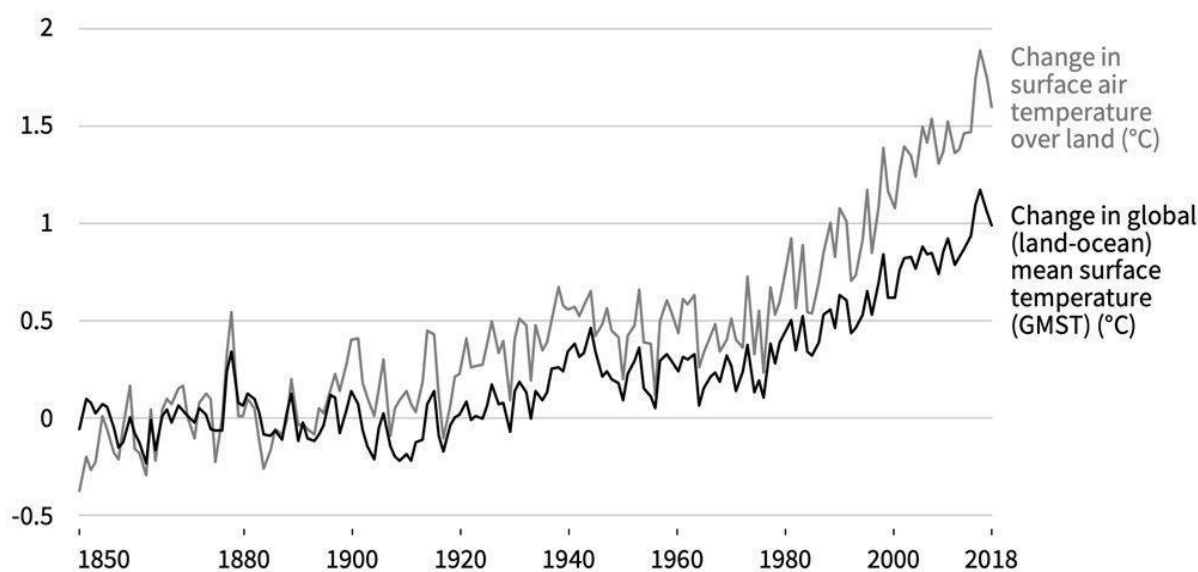


Figure 5: Change in Temperature from 1850 to 2018, Source: IPCC Land Report (2019)

Evolution of land surface air temperature (grey line) and global mean surface temperature (black line) over the period of instrumental observations. Land temperatures are taken as an average of the Berkeley, CRUTEM4, GHCNv4 and GISTEMP datasets, expressed as departures from global average in 1850-1900. Global temperatures are taken as an average of the HadCRUT4, NOAA Global Temp, GISTEMP and Cowtan & Way datasets.

There has been an increase in both the frequency and potency of tropical storms and hurricanes in the Atlantic since the turn of the millenniumⁱⁱⁱ.

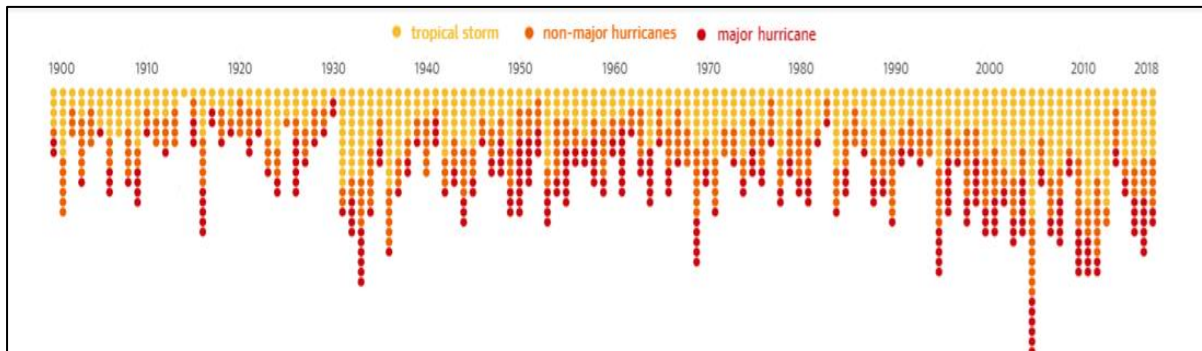


Figure 6: Frequency of climatic events, 1900 to 2008

The Accumulated Cyclone Energy Index (“ACE”), used by meteorologists to determine the **strength, frequency** and **duration** of storms, indicates that the Atlantic Ocean is amid its worst stretch on record. Powerful hurricanes will continue to manifest, and action must be taken to **build resilience** and **stem their impact**.

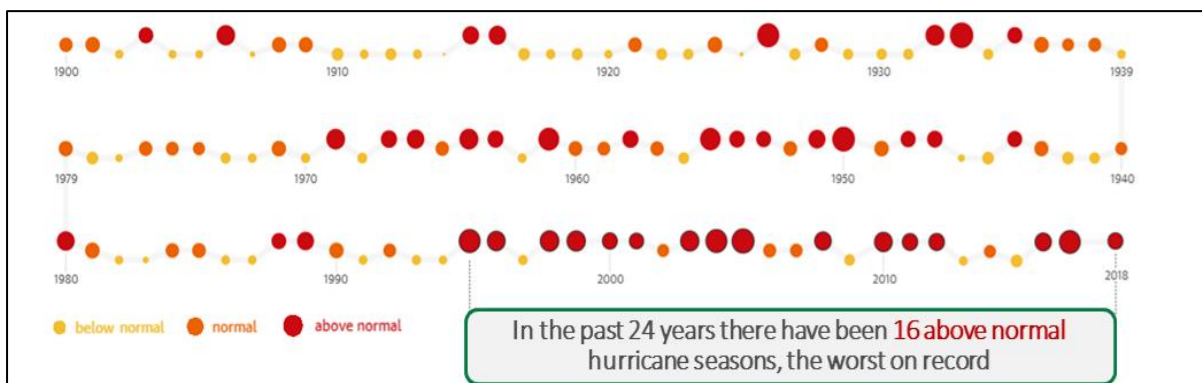


Figure 7: Pattern of hurricane intensity, 1900 to 2018

The Caribbean Region is already experiencing the effects of climate change, and this is only expected to worsen.

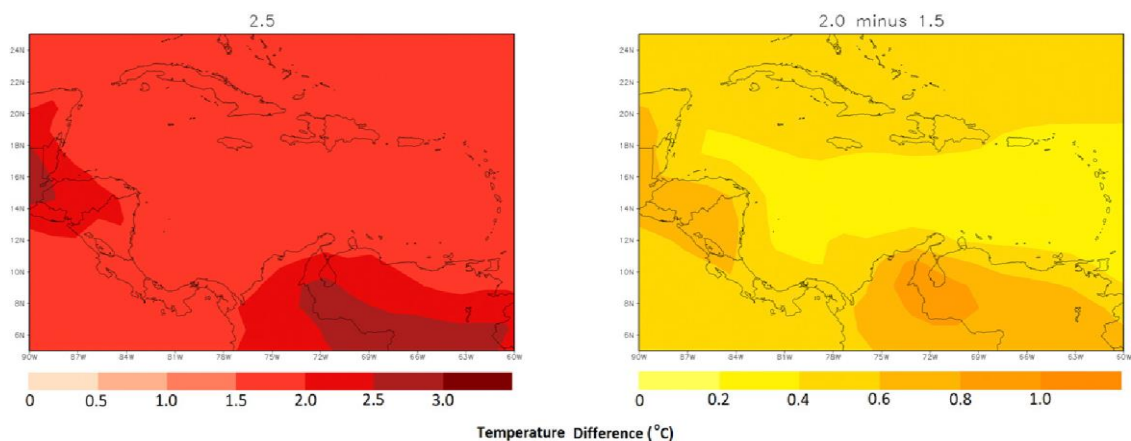


Figure 8: Projected temperature increases in Caribbean region under global 2.5 degree and 1.5-2.0 degree warming

- The Caribbean Region is projected to be 1.0° to 3.5°C **warmer** with 95% of all days and nights considered “hot” i.e., exceeding the 90th percentile of current temperatures;
- **Annual rainfall** totals are projected to decrease by up to 30% with the most pronounced drying during the Caribbean wet season from May to October;
- **Tropical cyclone related rainfall** rates may increase by 20%–30% near the storm’s centre and 10% at radii of 200 km or larger;
- Maximum **hurricane wind speeds** are projected to increase by 2%–11%
- **Mean sea level** rise is projected to be up to 1.4 meter.

Even compared to Caribbean neighbours, based on several indices, Dominica’s vulnerability is classified as high.

The International Monetary Fund (IMF) ranked Dominica as the country that suffered the worst natural disasters between 1980 and 2017 (Hurricane Maria) based on sustained damage, estimated at 226% of gross domestic product^{iv}. The Patkins and Mazzi Composite Index ranks Dominica as the fourth most vulnerable Caribbean country, behind only Antigua and Barbuda, the Bahamas and Belize. Similarly, Briguglio and Galea rank Dominica’s vulnerability as moderate compared to the other Caribbean countries.

Country	Patkins & Mazzi	Briguglio & Galea	
		EVIAR	EVIAR
	CVI		EVI
Antigua and Barbuda	11.246	NA	NA
Bahamas	10.433	NA	NA
Belize	6.652	0.588	0.762
Dominica	8.122	0.588	0.754
Dominican Republic	4.858	NA	NA
Grenada	7.848	0.645	0.777
Guyana	7.953	0.605	0.793
Haiti	4.474	NA	NA
Jamaica	7.484	0.706	0.820
St. Kitts and Nevis	6.362	0.685	0.756
Saint Lucia	7.449	0.765	0.833
St. Vincent & the Grenadines	6.563	0.647	0.790
Suriname	4.921	0.724	0.844
Trinidad and Tobago	5.264	0.408	0.651

Figure 9: Dominica's climatic vulnerability according to various indices

The data used to construct this variable was based on economic damage relative to GDP for the period from 1980 to 2011, which was prior to the passage of both Tropical Storm Erika and Hurricane Maria. It is certain that the impacts of these two devastating events would dramatically worsen Dominica’s vulnerability profile.

CLIMATIC SHOCKS IN DOMINICA

The impact of climatic shocks on Dominica over the past four decades has been significant on several dimensions:

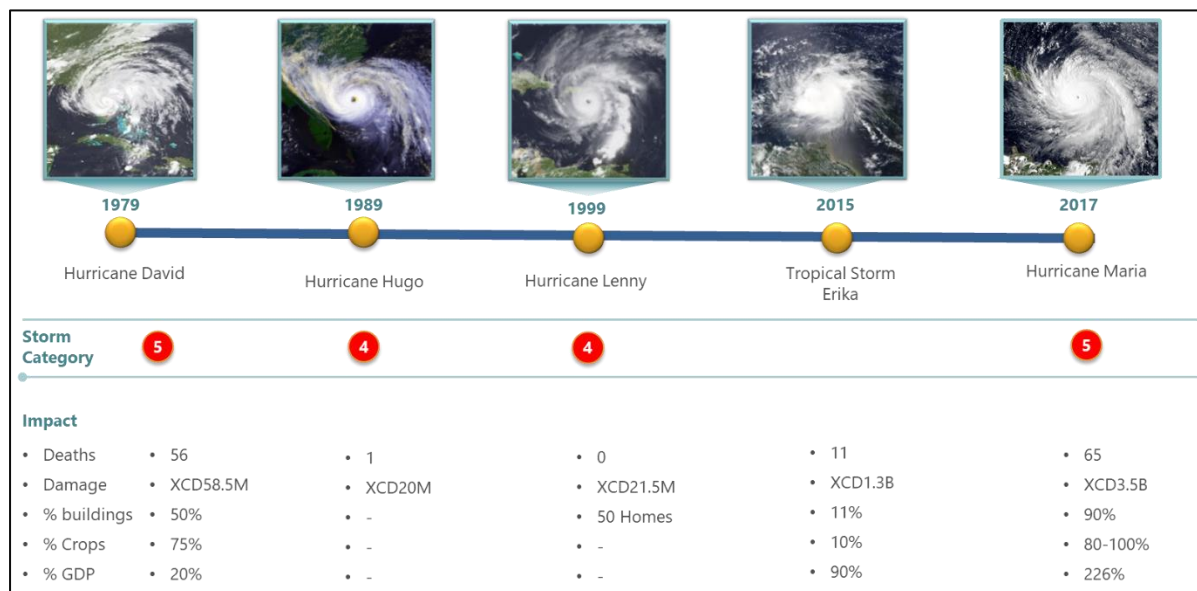


Figure 10: Impact of climatic shocks in Dominica, 1979 to 2017

There is a clear impact, and visible correlation between the incidence of climate events and Dominica's economic growth, as depicted in the figure on growth in GDP at constant prices.

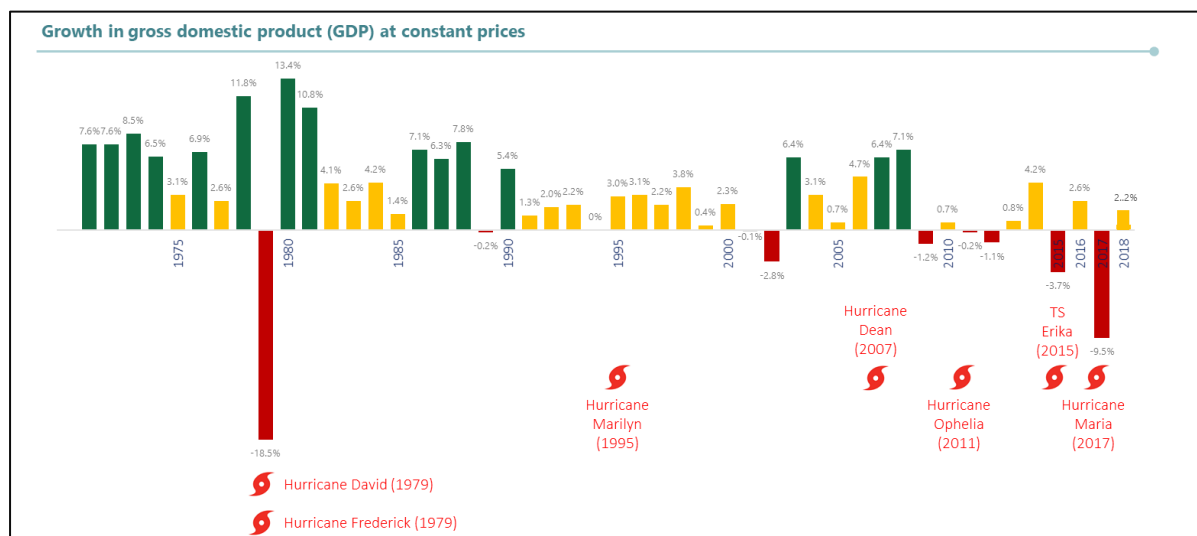


Figure 11: Impact of climatic events in Dominica in terms of GDP growth

Dominica faces multiple threats, not just from hurricanes and other climate-related events, but also volcanic activity, earthquakes and tsunamis:

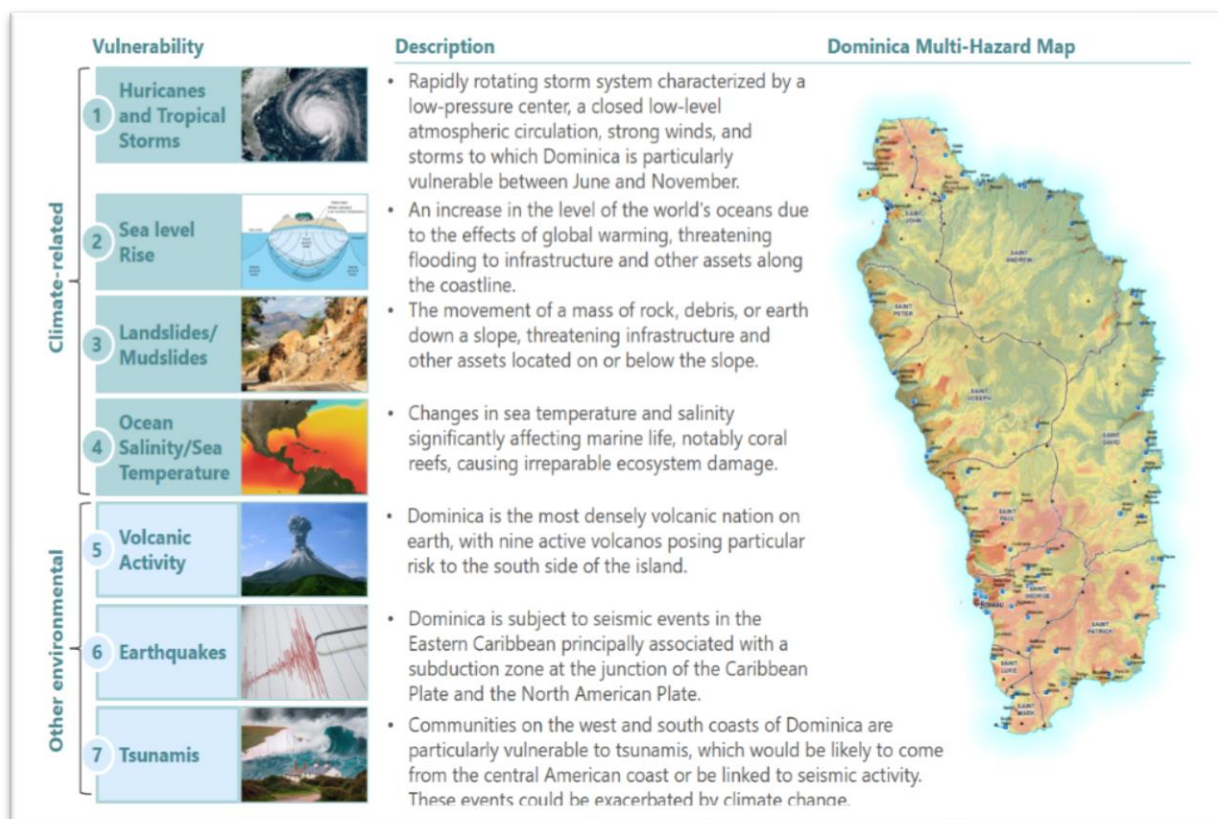


Figure 12: Broader environmental vulnerabilities in Dominica

COST OF CLIMATE CHANGE INACTION IN DOMINICA

The cost of no action to reduce climate vulnerability at the national level would be loss and damage equivalent to 77% of GDP by 2100. The cost of taking no concerted action to address the impacts of climate change for Dominica would be loss and damage equivalent to: 6.3% of GDP by 2025, 34.3% of GDP by 2050, 54.4% of GDP by 2075 and 77.3% of GDP by 2100. This is significantly higher than the average projected cost in the Caribbean (see *Figure 13*).

The impact of Hurricane Maria highlighted this vulnerability, demonstrating that there is no alternative but to become climate resilience.

At 9:35 p.m. on September 18th, 2017, Hurricane Maria made landfall on the southwest coast of the Commonwealth of Dominica as a Category 5 hurricane, with 220 mph wind speed and higher gusts. Intense storm surges, torrential downpours, overflowing rivers, and unprecedented high winds across the island left dozens of people dead.

The impacts on infrastructure and housing, the economy, livelihoods, basic services and society were severe - no sector was left unaffected by Hurricane Maria (see *Figure 14*).

Country	2025	2050	2075	2100
Anguilla	10.4	20.7	31.1	41.4
Antigua & Barbuda	12.2	25.8	41.0	58.4
Aruba	5.0	10.1	15.1	20.1
Bahamas	6.6	13.9	22.2	31.7
Barbados	6.9	13.9	20.8	27.7
British Virgin Islands	4.5	9.0	13.5	18.1
Cayman Islands	8.8	20.1	34.7	53.4
Cuba	6.1	12.5	19.4	26.8
Dominica	16.3	34.3	54.4	77.3
Dominican Republic	9.7	19.6	29.8	40.3
Grenada	21.3	46.2	75.8	111.5
Guadeloupe	2.3	4.6	7.0	9.5
Haiti	30.5	61.2	92.1	123.2
Jamaica	13.9	27.9	42.3	56.9
Martinique	1.9	3.8	5.9	8.1
Montserrat	10.2	21.7	34.6	49.5
Netherlands Antilles	7.7	16.1	25.5	36.0
Puerto Rico	1.4	2.8	4.4	6.0
Saint Kitts & Nevis	16.0	35.5	59.5	89.3
Saint Lucia	12.1	24.3	36.6	49.1
Saint Vincent & the Grenadines	11.8	23.6	35.4	47.2
Trinidad & Tobago	4.0	8.0	12.0	16.0
Turks & Caicos	19.0	37.9	56.9	75.9
U.S. Virgin Islands	6.7	14.2	22.6	32.4
Total Caribbean	5.0%	10.3%	15.9%	21.7%

Figure 13: Cost to the wider Caribbean of global inaction on climate change^v










-  **Water/Sanitation:** 43 out of 44 water systems destroyed
-  **Shelter:** 90% of structures damaged; 62% of houses heavily damaged, of which 15% destroyed
-  **Power:** 90% of population lacked access to electricity for over 4 months
-  **Roads/Bridges:** 1-2m of floodwater; debris deposits of 1-4m in riverbeds, 6+ bridges severely damaged
-  **Emergency Services:** 5 of 11 police stations & 4 of 8 fire and ambulance stations severely damaged
-  **Food:** 24,000 people became severely or borderline food insecure, according to WFP
-  **Livestock:** Country-wide losses included cattle (45% lost), pigs (65%), small ruminants(50%), broiler chickens (90%), layers (90%), rabbits (50%), and beehives (25%)

Figure 14: Impact of Hurricane Maria on Dominica

OUR BOLD VISION: A CLIMATE RESILIENT DOMINICA BY 2030

Dominica's bold vision to become the first Climate Resilient Country has captured international attention and has garnered the support of a range of development partners to catalyse this critical journey.

This climate resilience vision for Dominica required a new development framework to augment the Growth and Social Protection Strategy and the National Resilience Development Strategy 2030. Effort was also made to integrate the resilience agenda into sector strategic plans, and to align capital projects to the resilience vision during the budget process.



Figure 15: Examples of global press coverage of Dominica's resilience vision

The change also necessitated the strengthening of public service institutions. Consequently, the Climate Resilience Executing Agency of Dominica (CREAD) was created. Finally, the Climate Resilience Act, a first of its kind globally, was developed and passed unanimously by Parliament in December 2018 to improve the legislative framework to deliver on the vision.

KEY ELEMENTS OF THE CLIMATE RESILIENCE ACT

1. To promote the swift and cost-effective recovery of Dominica from climate-related disasters.
2. To ensure that any physical and other infrastructure damaged or destroyed during a climate related disaster is reconstructed or restored to a state that is better than its state before the occurrence of that disaster.

3. To ensure that Dominica will be more resilient to natural hazards and better able to respond to climate-related disasters.
4. To assist the public and private sectors and civil society to be better equipped to manage and recover from climate-related disasters.
5. To ensure the climate resilience of the physical and other infrastructure of Dominica.
6. To coordinate recovery action following a climate related disaster, including the construction, reconstruction or restoration of physical or other infrastructure and the execution of projects aimed at building national climate resilience.
7. To prioritize and accelerate projects and, where necessary, to ensure that projects are properly sequenced.
8. To avoid duplicity and maximize economies of scale.
9. To identify and reduce critical gaps in funding.
10. To support Government Ministries to enable them to implement climate resilient policies and priority recovery projects.

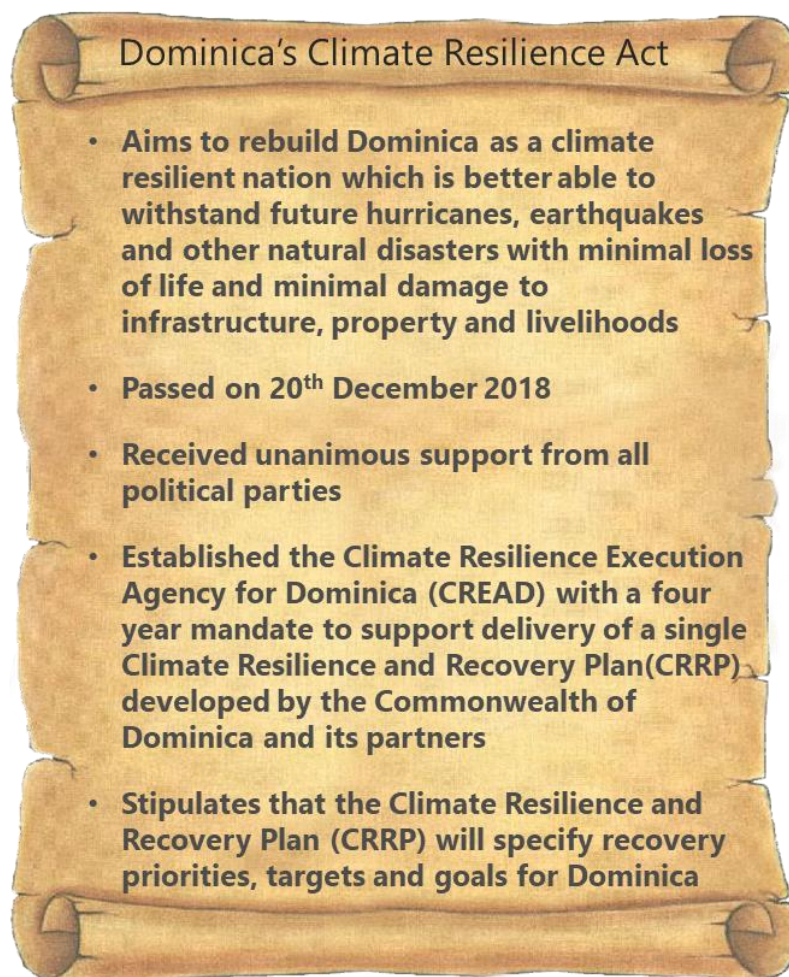


Figure 16: Dominica's Climate Resilience Act



II. DEVELOPING A COMPREHENSIVE CLIMATE RESILIENCE AND RECOVERY PLAN (CRRP)

OBJECTIVE OF THE CLIMATE RESILIENCE AND RECOVERY PLAN

In 2018, the Government of the Commonwealth of Dominica released its National Resilience Development Strategy 2030. The National Resilience Development Strategy articulates the high-level policy approach of the Government in its pursuit of a development agenda that will allow for:

- a) the achievement of the 2030 Development Agenda (seventeen Sustainable Development Goals);
- b) transformation of Dominica into the first climate-resilient country in the world; and
- c) development that is visionary and people-centred.

The main objective of the CRRP is to translate Dominica’s vision of becoming the world’s first climate resilient nation into specific activities that can be shared with key stakeholders, all of whom have a critical part to play in helping the country achieve its bold aspiration

SCOPE OF THE CRRP

The Dominica Climate Resilience and Recovery Plan defines how critical elements of the NRDS will be operationalized. The CRRP articulates:

- i. Specific impact targets of a “Climate Resilient Dominica”;
- ii. Initiatives aimed at supporting achievement of targets;
- iii. Lead and supportive delivery entities for each initiative;
- iv. Estimated resources (time, financing) for implementation;
- v. Top Ten initiatives based on degree of impact (contribution to the overall climate resilience of the nation) versus cost; and,
- vi. Estimates of the overall financing requirements and financing gap that will need to be closed.

AUDIENCE FOR THE CRRP

The intended audience for the CRRP is broad and includes policy makers, public service, private sector, social sectors, regional and international development partners and potential investors. The plan is aimed primarily at those involved in strategy, programme and project delivery in the short to long term, including donors, developers and implementers, and therefore significance is given to the purpose of the plan and the different contexts in which climate resilience needs to be mainstreamed.

Audience	Relevance of the CRRP
Public Service	Provides the guiding framework for how Dominica will achieve climate resilience. The CRRP should therefore serve as the reference document for the development of ministry strategic plans, and sectoral policies and regulations.
Private Sector	Provides information on public investment areas. Once completed, the physical plan, which is integral to the resilience agenda, shows designated land use and standards for construction that makes for a resilient country.
Social Sectors	Provides organizations that serve the community and vulnerable groups with information that should help them to be more actively involved in the climate resilience agenda, by better understanding areas of priority for Government and therefore opportunities for engagement in line with their own priorities.
Regional and International Development partners	Provides details of Dominica’s climate resilience priorities, allowing better alignment with partners’ interests and mandates, and identifies critical areas where Dominica will require support, including in funding the agenda.
Investors (Financial, Social Impact)	Provides an overview of priority sectors where investment opportunities already exist or will likely emerge going forward.

Table 1: Audience for the CRRP

STAKEHOLDER CONSULTATIONS

As part of the process and recognizing that this transformation will impact the population of Dominica for many years to come, a wide cross-section of stakeholders was consulted in the process of developing and finalizing the CRRP (see Annex 1).

The overall **objectives** of stakeholder engagement were to:

- promote an all-inclusive agenda
- represent the perspectives of diverse individuals who might be affected by process or might affect its outcomes
- ensure all actors can engage on an even footing, and different perspectives are given equal weight
- enable effective and meaningful participation and inter-disciplinary collaboration (between experts and non-experts alike)
- provide physical space for face-to-face deliberation and trust-building

APPROACH TO DEVELOPING THE CRRP

The CRRP has been developed through an extensive review and consultation process, reflecting on lessons from recent disasters and building on the priorities of Government.



Figure 17: How CRRP initiatives were generated

Once all relevant initiatives –ongoing or planned- were identified, a prioritisation exercise took place to select those that would contribute most to the first three results areas (Strong Communities, a Robust Economy, and Well-planned and Durable Infrastructure) and that had critical pre-conditions in place for delivery. Estimated resource needs were considered for each.

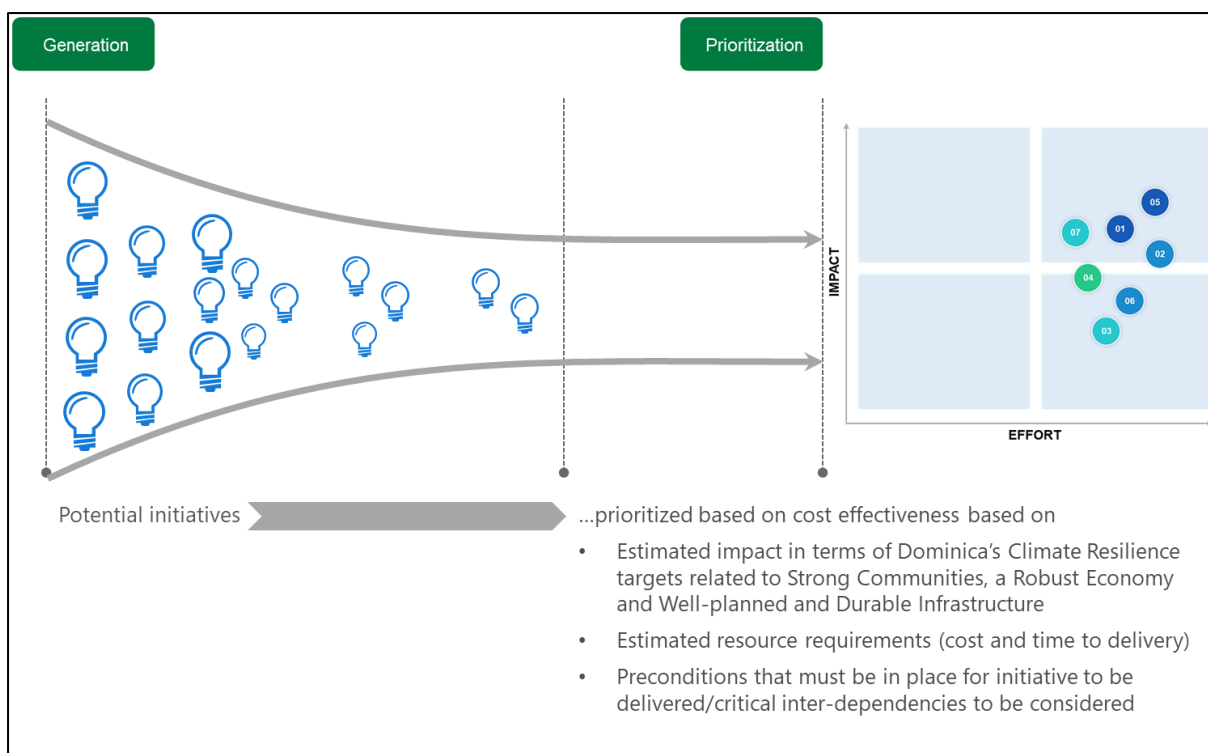


Figure 18: How CRRP initiatives were prioritized

INCLUSION OF GENDER & VULNERABLE GROUPS

The CRRP promotes gender equality and inclusion. Gender integration is an approach to ensuring social identities and norms are considered in planned actions, policies and programs in all areas and at all levels.

This approach recognizes the need to take social and economic differences between men and women into account to ensure that proposed policies and programs have intended and fair results for women and men, boys and girls.

Government also recognizes that delivery systems must be attuned to the challenges and obstacles faced by vulnerable, as well as, disadvantaged groups and take special measures to protect these.

A human rights-based approach to social protection requires that special attention be given to those persons who belong to the most disadvantaged and marginalized groups in society. This entails guaranteeing non-discriminatory treatment as well as adopting proactive measures to enable those suffering from structural discrimination to enjoy their rights.

Projects developed under the CRRP will promote “gender equality” meaning that women, men, girls and boys enjoy the same human rights status, have equal opportunities, equal access and control over resources and equal participation in decision making. Delivery entities will apply the principles of equality to project design and operation.

KEY STRATEGIC DEVELOPMENT FRAMEWORKS

There are several national and international strategic development frameworks of relevance to Dominica’s Climate Resilience and Recovery Plan. Ensuring close alignment between the CRRP and core concepts and aspiration outlined in these documents is critical. The CRRP therefore reflects the most salient aspects of these frameworks, including the Low Carbon Climate Resilience Development Strategy (LCCRDS), while focusing on clearly defining priority initiatives aimed at addressing the specific vision of Dominica to achieve climate resilience.

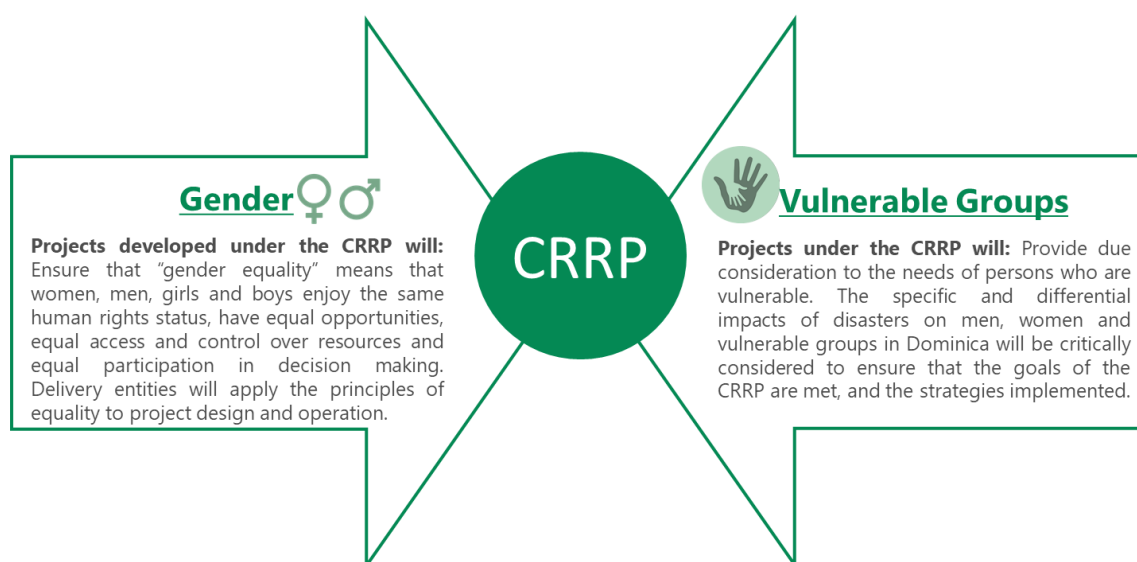


Figure 19: Mainstreaming gender and vulnerability considerations in CRRP initiatives

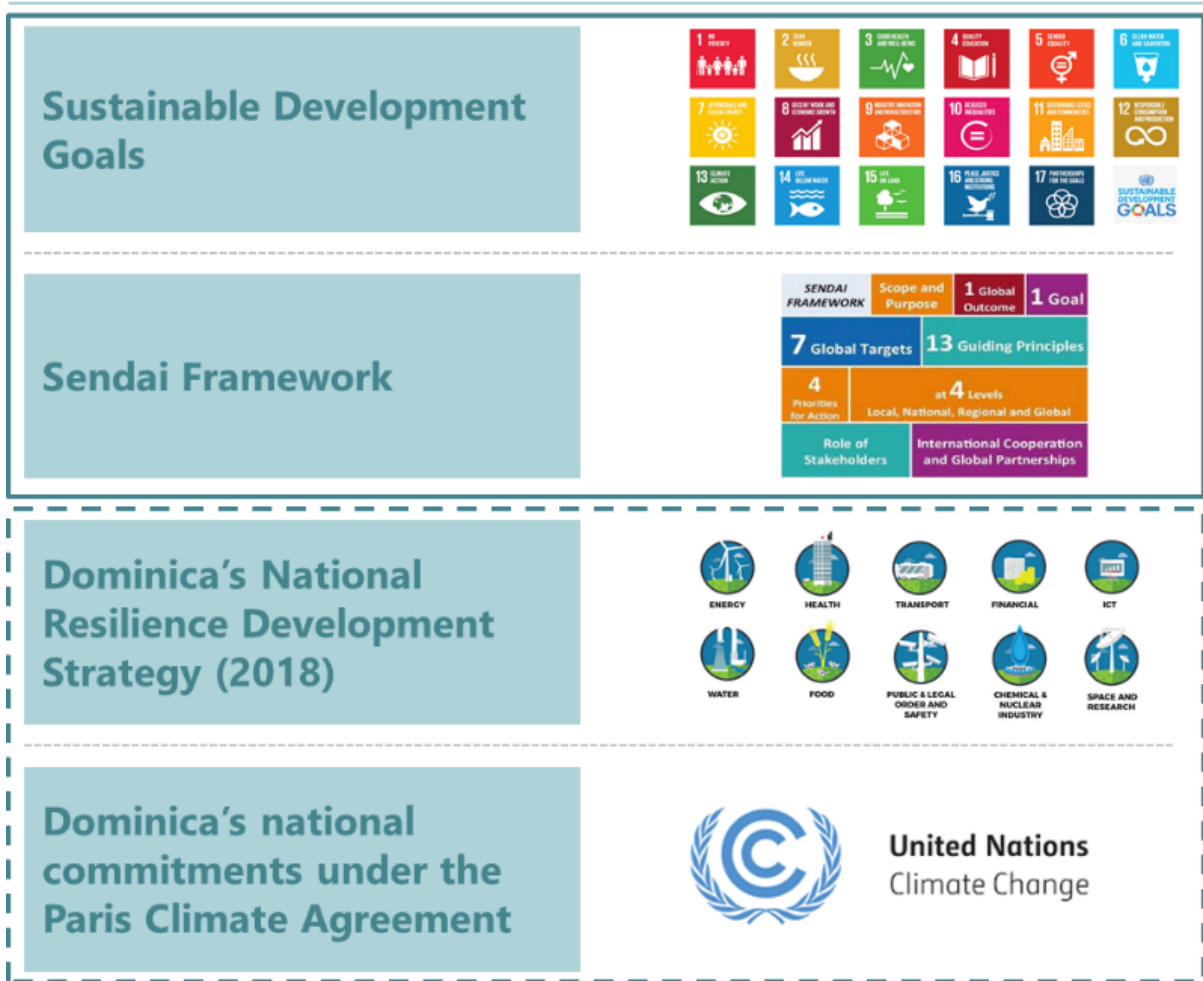


Figure 20: Key development frameworks relevant to the CRRP

TYING THINGS TOGETHER

Some of Dominica's international commitments are particularly relevant for building resilience and are closely aligned with the six results areas of the CRRP.

Sustainable Development Goals (SDGs)

Resilience outcome	SDG Icons																	SFDRR ¹				
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	1	2	3	4	
1 Strong communities	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓				✓
2 Robust economy	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓
3 Well-planned and durable infrastructure				✓															✓	✓	✓	✓
4 Strengthened institutional systems	✓																		✓			
5 Enhanced Collective Consciousness	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			
6 Protected and sustainably leveraged natural and other unique assets	✓												✓	✓	✓	✓				✓		

1 Sendai Framework for Disaster Risk Reduction: 1) Understanding disaster risk; 2) strengthening disaster risk governance to manage risk; 3) investing in disaster risk reduction for resilience; 4) Enhancing disaster preparedness for effective response and to "Build Back Better" in recovery, rehabilitation and reconstruction

Figure 21: Dominica's commitment to the SDGs, and how the CRRP links to these and to the SFDRR



III. FROM VISION TO TARGETS

DEFINING RESILIENCE

“Resilience” means different things to different people as captured in a few perspectives of Dominicans:

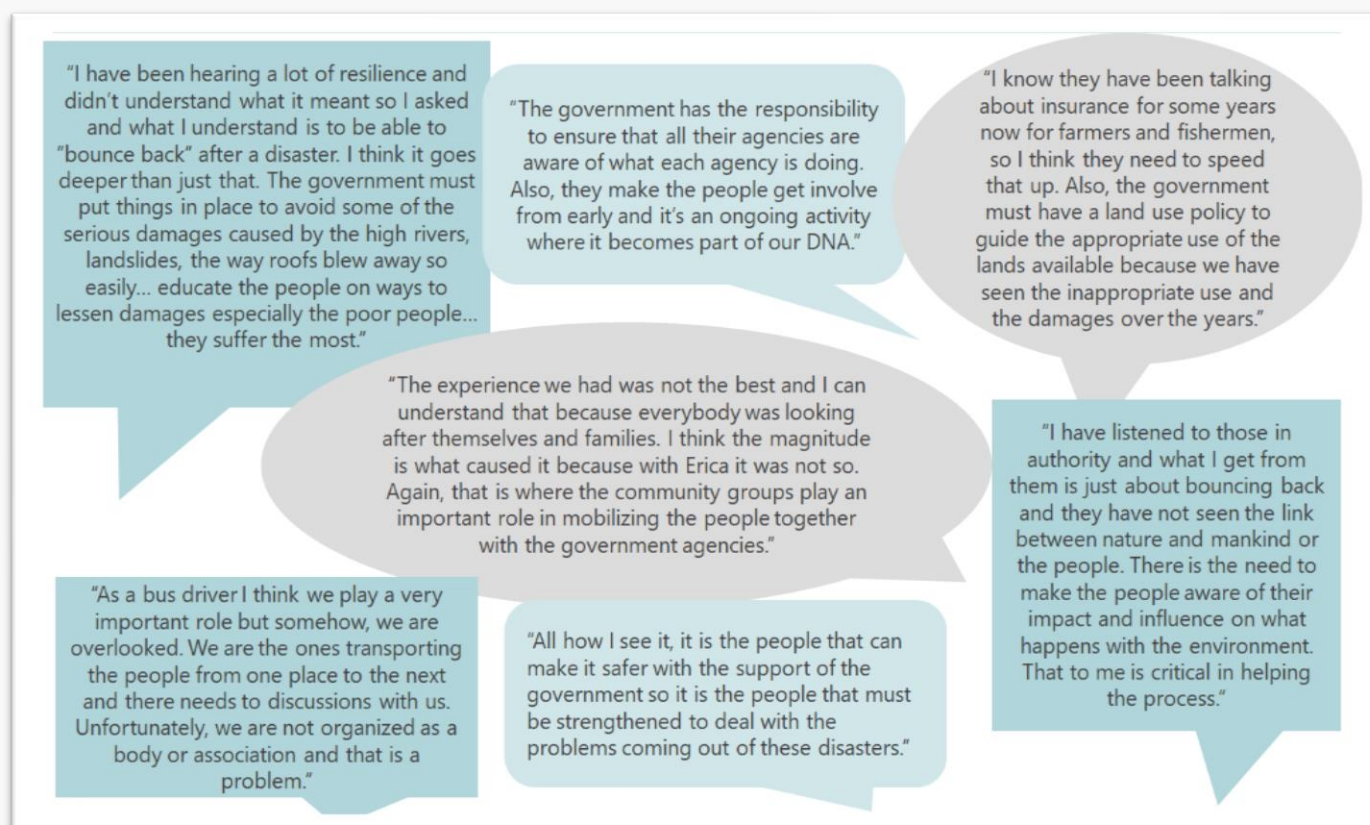


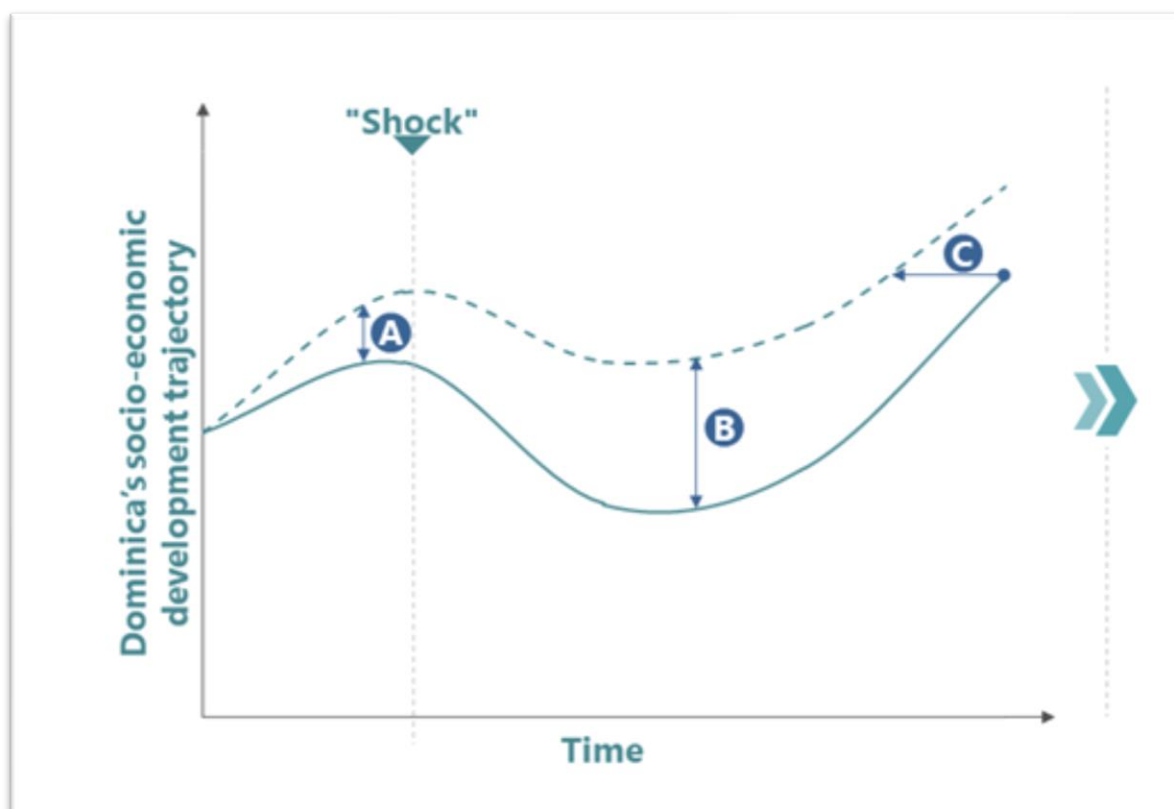
Figure 22: Perspectives on resilience vary greatly depending on who you ask...

RESULTS OF A CLIMATE RESILIENT DOMINICA

The Government of the Commonwealth of Dominica's overall goal of a "Climate Resilient Dominica" will require significantly reducing the impact of, and time to recover from climatic and other natural shocks, as well as boosting the overall socioeconomic development trajectory of the country.

----- "Resilient Dominica" socio-economic development trajectory

____ "Business as usual" socio-economic development trajectory



- A "Climate Resilient Dominica" will have**
- A stronger overall socio-economic development trajectory;**
 - B reduced impact from climatic and other environmental shocks; and**
 - C reduced time to recover from climatic and other environmental shocks**

Figure 23: Defining a Climate-resilient Dominica

PILLARS OF A RESILIENT DOMINICA

The NRDS stipulates that, at the highest level, the CRRP should reflect three pillars of resilience, namely: Climate- Resilient Systems, Prudent Disaster Risk Management Systems, and Effective Disaster Response and Recovery.

An explanation of each of the pillars as outlined in the NRDS is provided.

Pillar 1: Climate-Resilient Systems

This covers a wide range of systems and processes that must have the capacity for adjusting to, and absorbing the impacts of, climate change—including a robust and responsive financial system that will be able to support other core elements of climate resilience.

As such, the CRRP focuses on climate-proofing economic assets such as roads, bridges, housing, schools, ports, health facilities and other economic infrastructure. These are the assets that usually suffer the greatest damage during storms and hurricanes and place the largest financial burden on Government during the period of post-disaster reconstruction.

The resilience programme is extended to our food security systems, water and sanitation systems, energy systems, communications systems, health service delivery systems, education systems, and all other social delivery systems.

The plan is to inculcate resilience at the household, community and national levels. This pillar is in line with the promotion of Dominica as ‘The Nature Isle.’ Our natural resources are the foundation of who we are and what we do. They provide the substrate on which all social and economic development is built. It is imperative therefore, that all measures to protect our natural environment and ecosystems and to properly manage our forests, watersheds, and marine spaces are considered.

Pillar 2: Prudent Disaster Risk Management

The second pillar focuses on minimizing and managing, as best we can, the risks associated with climate-related disasters. This involves the development of a strong evidence base for decision-making.

To allow us to better plan for and manage the damage caused by extreme weather events, we also focus on improving the structure of our disaster management systems and strengthening the planning process through relevant protocols and enactment of appropriate legislation.

Prudent disaster risk management entails the construction of more resilient emergency shelters. Such shelters are powered by independent and renewable energy sources, with adequate storage, that can operate independently of the grid. They will have enough water storage capacity to supply potable water during the period when national water services are temporarily disrupted, and they will be suitably equipped and resourced.

This component of the CRRP also includes establishing or strengthening established procedures to evacuate people from disaster-prone areas when lives will be at risk from a pending weather event to minimize the loss of life and disruption of livelihoods.

Pillar 3: Effective Disaster Response and Recovery

The third pillar speaks to the post-disaster phase, minimizing disaster impacts, reducing the pain and the period of recovery and building back better.

This entails putting in place better, more efficient systems for search and rescue, relief coordination, restoration of road networks and port services, clean up and sanitation, and the preservation of law and order; and requires efficient networks for ensuring there is a reliable supply of food, water and medical services where needed, and cooperation between telecommunications service providers to allow sharing of their network to facilitate communication and dissemination of vital information.

It will involve developing robust business continuity measures for both the public and the private sectors, so that essential operations may be resumed as quickly as possible. It means establishing systems that facilitate the speedy restoration of livelihoods, particularly in the agriculture, fisheries and tourism sectors. This necessitates having more effective and efficient procedures to accurately assess damage and loss and to identify resources that must be mobilized. Most importantly, it necessitates levels of community, district and national coordination and cooperation that surpass anything we have achieved in the past.

DOMINICA'S CLIMATE RESILIENCE TARGETS

The CRRP expands the NRDS' three pillars into six results areas for a Climate Resilient Dominica. The Climate Resilient Systems pillar is interpreted as adapting social and economic systems and protecting ecosystems to make them more resilient to shocks and stressors over the long-term.

This will result in a **robust economy** to be able to recover quickly from shocks; **well-functioning institutional systems** that deliver services efficiently and effectively; and **well-protected and sustainably leveraged natural and other unique assets**. Prudent Disaster Risk Management requires an understanding of inherent vulnerabilities and instituting measures to prevent and reduce existing disaster risks that will result in **well-planned durable infrastructure** built in accordance with approved standards.

The final pillar, Effective Disaster Response and Recovery, focuses on planning and implementation of measures in support of a quick response and equitable, sustainable recovery. The expected outcome will be **strong communities** that are now prepared for and able to withstand shocks, and a **population that is "conscious"** and values resilience.

Strong communities, a robust economy and well-planned and durable infrastructure are the main basis for the development of the CRRP. However, achieving and sustaining these results over many decades will require the need to 'hardwire' resilience by enhancing collective consciousness, protecting and sustainably leveraging our natural and other unique assets, and strengthening institutional systems.

The CRRP's six results areas collectively contribute to the vision of being an example for the world on sustainable development and climate resilience.

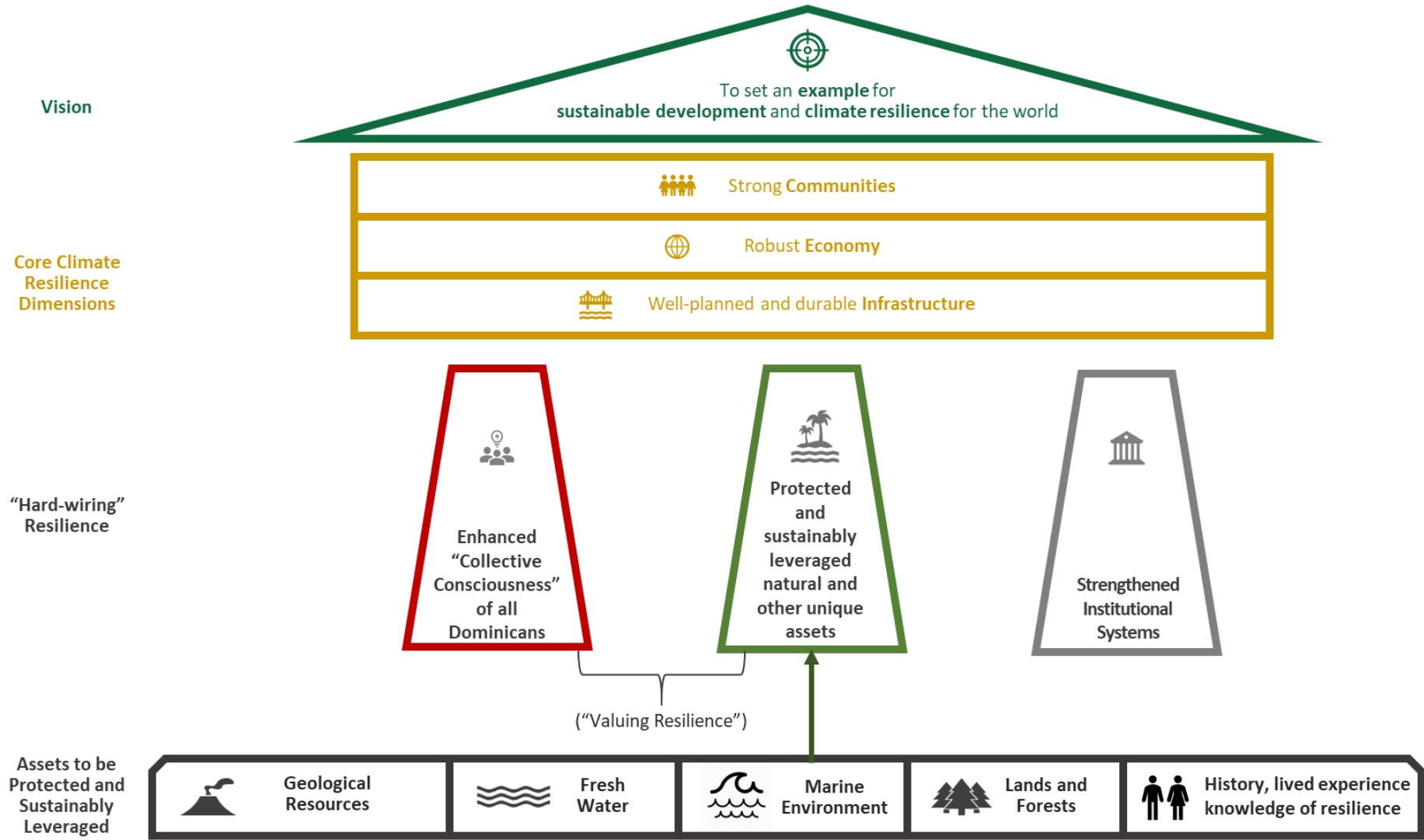


Figure 24: A framework for Dominica's Climate Resilience Six Result Areas

Dominica is committed to 20 Climate Resilience Targets that are directly linked to the six results areas and will be delivered through key initiatives (explained in Chapter IV). These targets relate to the outcomes of reducing the impact of climatic and other natural shocks; reducing the time to recover from disasters; and boosting overall socioeconomic growth.

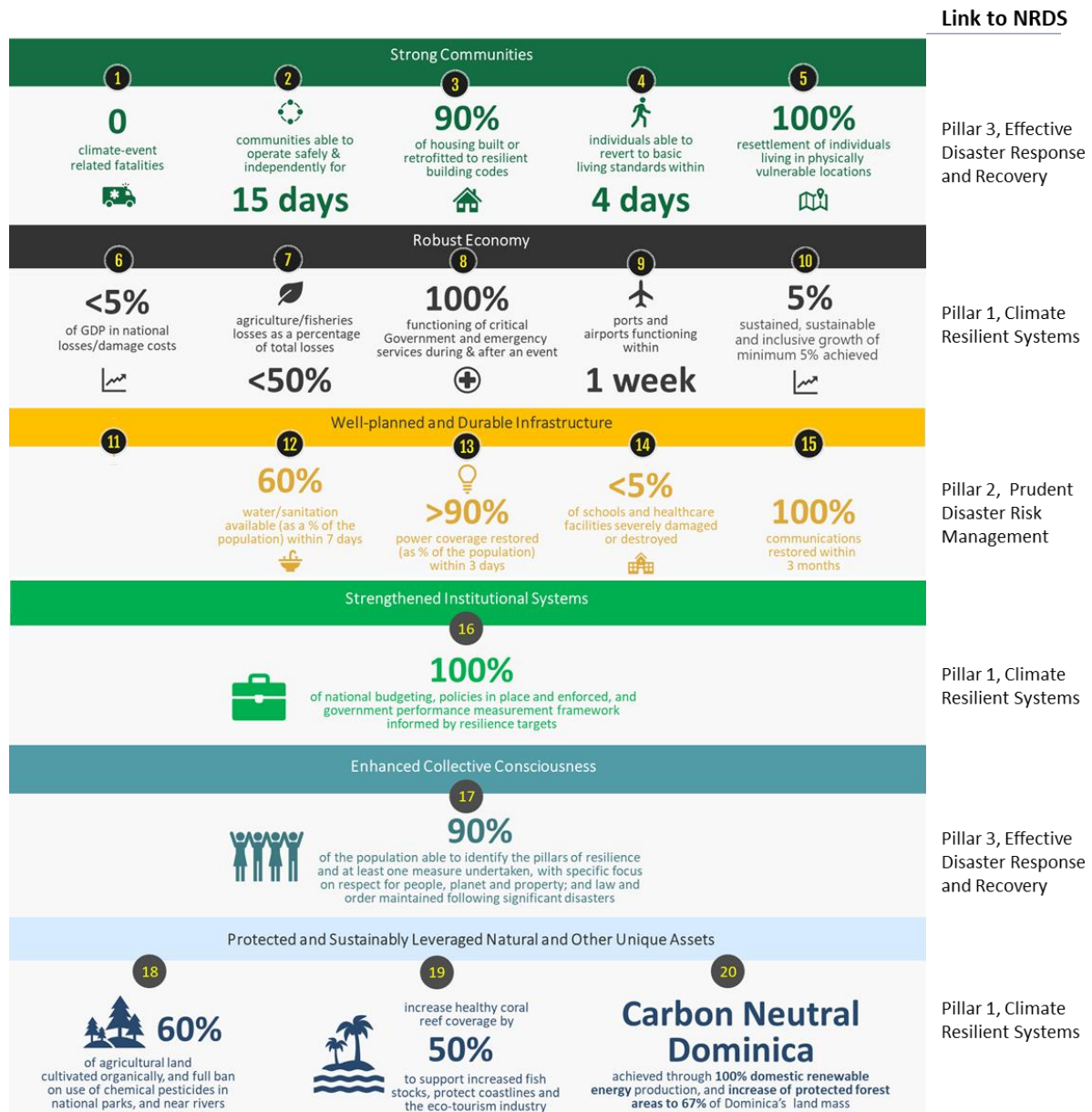


Figure 25: Dominica's Twenty Climate Resilience Targets



IV: OVERVIEW OF CLIMATE RESILIENCE AND RECOVERY INITIATIVES

This chapter provides the planning framework for the specific actions that will contribute to Dominica achieving its climate resilience vision. The plan adopts a whole-of-government programmatic approach and scale-up on-going interventions in the public sector to ensure systematic climate change adaptation, risk reduction and resilience building across key sectors, focusing on low hanging fruits and the most vulnerable populations.

ONGOING CLIMATE RESILIENCE INITIATIVES

The Government already has several critical initiatives that support the Climate Resilience agenda underway. Major investments in all sectors of the economy are underway to restore normal life and livelihoods following Tropical Storm Erika and Hurricane Maria. These investments are critical to achieving the resilience vision and contribute to the sustainable development of Dominica. Alongside on-going investments are several high-impact resilience initiatives, which will continue to be delivered in parallel to the initiatives outlined in this CRRP document, including:

- **Housing Revolution Initiative** – *construction of houses in safe locations, using high quality material and appropriate technologies, and built to resilience standards;*
- **Renewable energy solutions** - *encourages shifting to domestic renewable energy sources to reduce dependence on fuel imports, as a climate change mitigation mechanism (by cutting carbon emissions), including the construction of Geothermal Domestic Plant to supply electricity;*
- **Construction of SMART schools and health centres** - *design, renovate or reconstruct schools and health centre structures to provide an optimal environment and make them longer-lasting and self-sustaining in order to achieve a healthier and higher performing population;*
- **Establishment of regional disaster emergency centres** – *multipurpose buildings that provide emergency shelter for men and women, children, elderly and persons with disabilities, and bulk storage of basic emergency supplies to allow remote communities to effectively respond to emergencies and disasters on their own;*
- **Upgrading and expansion of road network** – *making transportation infrastructure more resilient to future shocks involves revising designs to consider the changing frequency of climatic events and using materials that are more resistant to the effects of landslides, rock falls, and floods;*
- **Restoration of waterways** – *river dredging activities to minimize flood risks and preserve aquatic ecosystems;*
- **Ban on single use plastics** – *notably following a disaster, the proliferation of plastic waste, especially when the waste collection system is overwhelmed, causes significant damage to the environment, clogs sewerage systems and small waterways, increasing the risk of flooding in certain areas, as well as damages the marine environment with long-term effects;*

- **Developing a more resilient agriculture sector** – *focusing on selecting resilient crops and farming practices, and on rebuilding the livelihoods of farmers and fisherfolk by providing inputs and tools, as well as reconstructing farm buildings and fish storage facilities;*
- **Waste management** – *collection, compression and disposal of hazardous and dangerous waste, particularly metals from vehicles and appliances that were discarded and/or poorly disposed of following Hurricane Maria; and,*
- **Slope stabilization** – *measures to reduce erosion through the application of grey and green technologies such as the construction of retaining walls and tree planting.*

The remainder of this chapter presents an overview of the key resilience initiatives that the Government will implement in the immediate to long-term across the six results areas, starting with a presentation of the results framework that will be used to measure the performance of the Government of Dominica in implementing the CRRP. The following tables describe a set of goals and targets to be achieved by 2030 for Dominica to be climate resilient, as well intermediate outcomes (by 2025) and some outputs or activities needed to achieve those outcomes (by 2021/2022). Further information on indicators will be provided in a Performance Measurement Framework for the CRRP, including baseline information, which is currently missing for some goals (i.e. it is not clear what the starting point is in 2020). The Centre of Excellence for Data in Resilience Decision-making will play a critical role in managing data and tracking progress across the CRRP from 2020-2030.

CRRP RESULTS FRAMEWORK

Strong communities				
Goal	2030 Target	Intermediate outcomes (2025)	Output milestones (2021/22)	Initiatives
Reduce the humanitarian impact of disasters	Zero climate-event related fatalities	<ul style="list-style-type: none"> • Community health service functional within 1-2 hours of a major event – 80% by 2025 [100% by 2030] • Reduced number of schools used as LT shelter < 10% by 2025 [<5% 2030] • Vulnerable people receiving social protection post disaster – 100% by 2025 • Community Disaster Committees equipped with a communicated DMP and all resources ahead of hurricane season – 50% by 2025 [100% by 2030] • Emergency shelters well equipped and food and water supply for 15 days in place – 50% by 2025 [100% by 2030] • Functioning and effective village councils – 50% by 2025 [100% by 2030] • >60% of houses comply with building regulations 	<ul style="list-style-type: none"> • Updated national curriculum (with DRR and civics) – Delivered to 20,000 children by 2022 • Advocacy and public awareness plan on resilience – Complete by 2021 • Train teachers in DRR and emergency readiness– Complete by 2022 • Community disaster preparedness plans – 100% complete by 2022 • Assessment of CERI in 100% communities – Complete by 2021 • Assessment of 50% housing compliance with building regulations – complete by 2021 	<ul style="list-style-type: none"> i. Community Emergency Readiness Initiative – Building Communities that are equipped mentally and physically for disasters and extreme weather events ii. Modern Village Council Initiative – Building capacity at the Community level in order to form a community management structure to build resilience iii. Shelters covered under National Shelter Plan Community Food Stores Initiatives – Ensuring Communities have a food bank ahead of hurricane season iv. Responsible Land Stewardship Initiative – Resilient land use programme at the community level v. Enhanced Social Safety Net Initiative – A welfare system that works for the most vulnerable, will build base resilience vi. Each One Reach One – Youth Resilience Initiative building day to day resilience and capacity vii. 100% Smart Health Centers Initiative viii. 100% Smart Schools Initiative ix. Resilient Housing Initiative – To transform the structural reliability of the nations housing to extreme weather x. Development and implementation of Resilient Dominica Physical Plan (see Well-Planned and Durable Infrastructure)
Improve capacity of communities to recovery quickly	Communities able to operate safely & independently for 15 days			
	Individuals able to revert to basic living standards within 4 days			
Reduce the vulnerability and exposure of people and property to future shocks	90% of housing built or retrofitted to resilient building codes			
	100% resettlement of individuals living in physically vulnerable locations			

Figure 26: Link between Strong Communities Targets and Initiatives

Robust economy

Goal	2030 Target	Intermediate outcomes (2025)	Output milestones (2021/22)	Initiatives
Reduce economic losses from disasters	<5% of GDP in national losses/damage costs	<ul style="list-style-type: none"> • Increase % crops grown using resilient practices ('climate smart') - >30% by 2025 [>50% by 2030] • Increase agricultural exports – 60% by 2025 [100% by 2030] • Reduce food import dependence ratio - <50% by 2025 [<40% by 2030] 	<ul style="list-style-type: none"> • Number of registered hotels' rooms certified – 100% by 2021 • % of registered businesses with continuity plans– 50% by 2021 [100% by 2030] • % of government entities with continuity plans in place – 100% by 2021 • Risk profiles for agricultural sector, and assessment of resilience of crops and livestock complete by 2021 • Assessment of agricultural exports complete by 2021 	<ol style="list-style-type: none"> i. Dominica as Global Centre for Agricultural Resilience Initiative ii. Responsible Land Stewardship Initiative iii. Rehabilitation of Essential Oils Sector iv. Venture Capital Fund for Women in Agriculture v. Support for Resilient Tourism vi. Development of high value export sector vii. Development of knowledge and technology sector viii. MSME Capability Development & Support ix. Crowd Funding Platform for MSMEs x. Unlocking local financing xi. Innovative Approach to Strengthen Insurance Solutions xii. Government Operational Continuity Plan, including comprehensive National Disaster Management Plan, to cover maintaining law and order and ensuring national security in the event of a disaster xiii. Airports and Ports Operational Continuity Plans with appropriate resourcing
	<50% agriculture/ fisheries losses as a percentage of total losses			
Enhance government capacity to respond and quickly recover economic infrastructure	100% functioning of critical GoCD and emergency services during & after an event	<ul style="list-style-type: none"> • Limit increase in non-performing loans after disaster – <7% by 2025 [5% 2030] • Limit decrease in GDP 1 year after disaster - ↓<25% by 2025 [↓<5% by 2030] • Time post event until cruise ships return - <20 days by 2025 [<7 days by 2030] • Time post event until overnight tourist numbers return to pre-event levels- <6 months by 2025 [<3 months by 2030] • Time until critical trade infrastructure functioning at pre-event levels - <3 months by 2025 [<1 month by 2030] • Limit reduction in private sector activity post disaster – to <15% by 2025 [<10 by 2030] 		
	Ports and airports functioning within 1 week			
Reduce the vulnerability of the economy to future shocks	Sustained, sustainable and inclusive growth of minimum 5% achieved			

Figure 27: Link between Robust Economy Targets and Initiatives

Well-planned and durable infrastructure

Goal	2030 Target	Intermediate outcomes (2025)	Output milestones (2021/22)	Initiatives
Reduce damage to infrastructure	<5% of schools and healthcare facilities severely damaged or destroyed	<ul style="list-style-type: none"> Percentage of public infrastructure that meets resilient standards – 25% by 2025 [75% by 2030] Time post event until 100% primary roads and bridges open - <7 days by 2025 Time post event until water and sanitation available to 60% of population - <10 days by 2025 Time post event until power coverage restored to 90% of population - <7 days by 2025 Time post event until 100% main hospital and major clinics operational - < 7 days by 2025 Time post event until ALL communications channels restored to 100% population - <5 months by 2025 	<ul style="list-style-type: none"> Complete Resilient Dominica Physical Plan by 2021 Full infrastructure assessment complete by 2021 Digital Elevation Model, Hydrological Survey, Flood Risk Mapping and Land Slide Mapping by 2021 Resilient infrastructure standards produced and approved by 2021 Centre of Excellence for Data established and GIS Unit driving investment and planning decisions by 2021 	<p>A Resilient Dominica Physical Plan (RDPP) will be produced, to include:</p> <ul style="list-style-type: none"> Infrastructure Risk/Condition Assessment Report Hydrological Survey & Flood/Landslide Risk Mitigation Plan Standards for Resilient Infrastructure & Housing Sector Master Plans (utilities, ports, roads/bridges/drainage, schools, health centers, shelters, coastal, rivers, housing) Asset Maintenance & Continuity Plan Investment /Funding / Prioritization Strategy Roseau and Portsmouth Urbanization Plans <p>A National Disaster Management Plan will be produced, to include:</p> <ul style="list-style-type: none"> National Shelter Strategy (see Strong Communities section) Community Disaster Risk Management and Climate Adaptation Plan (see Strong Communities) Community training and Awareness (see Strong Communities) <p>A Centre of Excellence for Data</p>
Improve speed of rehabilitation and restoration of services after disaster	100% primary roads and bridges open within 3 days			
	60% water/sanitation available (as a % of the population) within 7 days			
	>90% power coverage restored (as % of the population) within 3 days			
	100% communications restored within 3 months			

Figure 28: Link between Well-planned and Durable Infrastructure Targets and Initiatives

Strengthened institutional systems

Goal	2030 Target	Intermediate outcomes (2025)	Output milestones (2021/22)	Initiatives
<p>Resilience integrated into development and investment planning, supported by legislation, policies and regulations and enforcement mechanisms. An enhance ability to respond to and recover from shocks</p>	<p>100% of the national budgeting, policies in place and enforced, and government performance management framework informed by resilience targets</p>	<ul style="list-style-type: none"> • Enforcement of all building codes, resilient infrastructure, agriculture and tourism standards – 70% by 2025 [100% by 2030] • 50% of national budget aligned to CRRP by 2025 	<ul style="list-style-type: none"> • Physical plan drives all infrastructure projects and land use decisions – 100% by 2021 • All relevant policies and regulations aligned to CRRP – 100% by 2021 • Ministry strategic plans delivered on time and on budget and aligned to CRRP – 90% by 2021 [100% by 2030] • All government entities capture and use relevant data as basis for strategic planning and decision-making – 100% by 2021 • All government entities structured and staffed with resources to deliver their climate resilience missions – 90% by 2021 [100% by 2030] • ODM staffed to CDEMA recommendations by 2021 • Annual whole-of-government disaster response simulation carried out once a year from 2020 	<ol style="list-style-type: none"> i. Updating existing policies and develop new policies and regulations ii. Enhancing Budget-setting and Public Sector Performance Management Framework iii. Updating Government Continuity Plan iv. Centre of Excellence for Data in Resilience Decision-making (see Well Planned and Durable Infrastructure) v. Enhanced Disaster Risk Management Agency vi. Government continuity plans (see Robust Economy section) vii. Completing the Resilient Dominica Physical Plan viii. Developing a Digitalized Land Management System

Figure 29: Link between Strengthened Institutional Systems Targets and Initiatives

Enhanced collective consciousness				
Goal	2030 Target	Intermediate outcomes (2025)	Output milestones (2021/22)	Initiatives
Enhanced community cohesion where every citizen is engaged in the journey to resilience, working together towards shared vision and goals.	90% of the population able to identify the pillars of resilience and at least one measure undertaken, with specific focus on respect for people, planet and property; and law and order maintained following significant disasters	<ul style="list-style-type: none"> • % population directly involved in climate resilience initiatives – 15% by 2025 (half of which are women) • % population who have attended town hall meetings on community resilience – 70% by 2025 (half of which are women) • 30% of community DMCs with 1 State College volunteer 	<ul style="list-style-type: none"> • 4 Respect for All Initiative campaigns implemented by 2021 • Complete public awareness campaign on resilience pillars and CRRP by 2021 	<p>The following initiatives have been designed to develop the National Collective Consciousness:-</p> <ol style="list-style-type: none"> Community Emergency Readiness Initiative (see Strong Communities) Respect for All Initiative Koudmen Domnik National Volunteer Initiative

Figure 30: Link between Enhanced Collective Consciousness Targets and Initiatives

Protected and Sustainably Leveraged Natural and Other Unique Assets

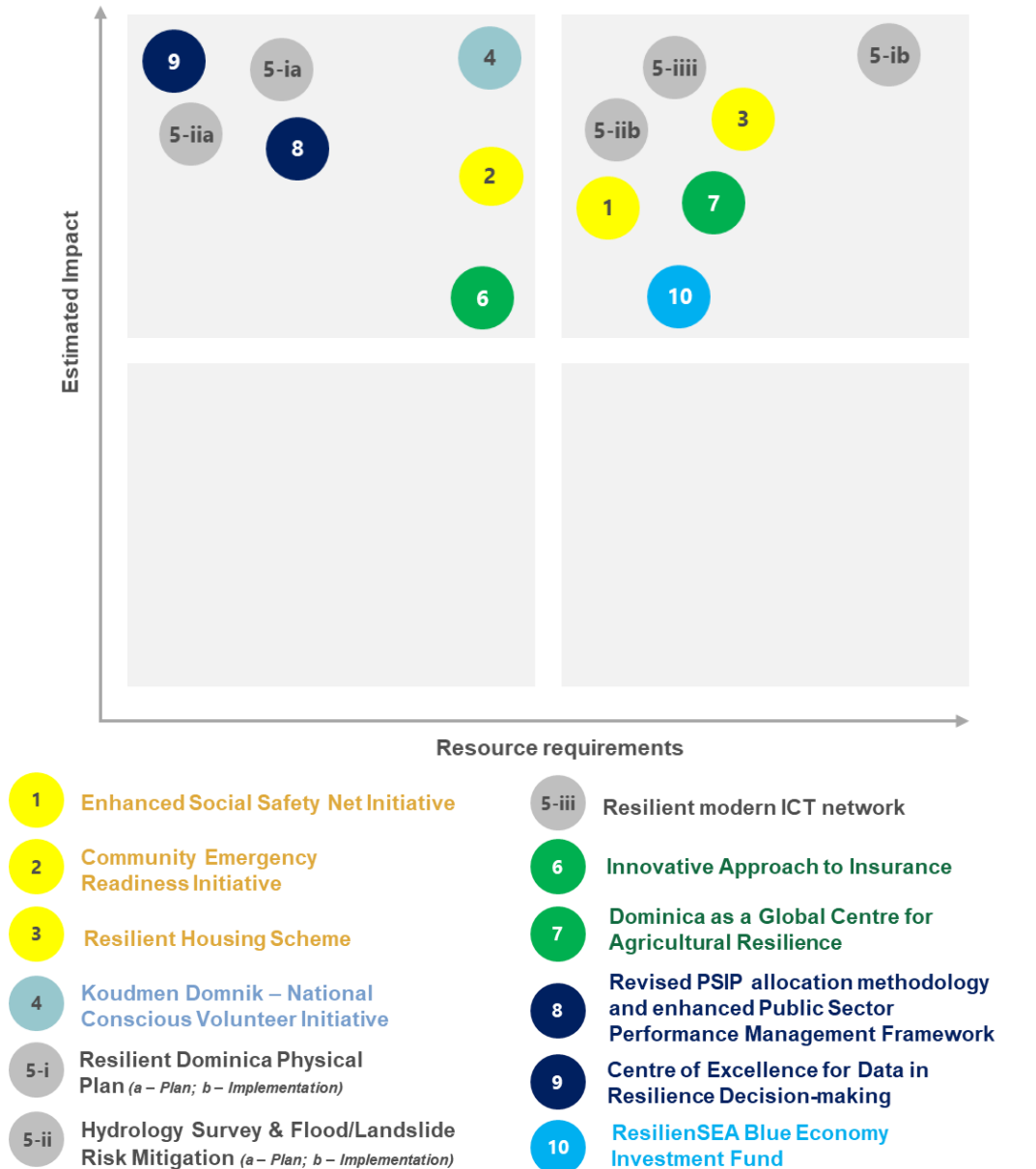
Goal	2030 Target	Intermediate outcomes (2025)	Output milestones (2021/22)	Initiatives
<p>Reduce risk through more sustainable farming and fishing practices, leveraging income from –and boosting the protective function of- blue and green infrastructure and reducing reliance on fossil fuel imports</p>	<p>60% of agricultural land cultivated organically, and full ban on use of chemical pesticides in national parks, and near rivers</p>	<ul style="list-style-type: none"> • Agricultural land cultivated organically – 40% by 2025 • Increased healthy coral reef cover (compared to 2020 baseline) – 25% by 2025 • Domestic renewable energy production – 50% total by 2025 • Protected forest areas – 65% by 2025 • Reduction in landfill waste – 50% by 2025 (compared by 2020 baseline) 	<ul style="list-style-type: none"> • Forestry and ecosystem audit complete by 2021 • Marine audit complete by 2021 • System for measuring health of reef established by 2021 • System for monitoring protected areas established by 2021 • Assessment of solid waste management complete by 2021 • Blue economy investment raised – XCM50m by 2022 • Green Bond raised – XCM10m by 2022 	<ul style="list-style-type: none"> i. “ResilienSEA” Blue Economy Investment Fund ii. Geothermal Export to neighboring islands iii. Debt for Nature Swap iv. Forestry/Ecosystem Audit and Protection Plans v. National Tree Planting Initiative- 1 Million Trees vi. Marine Audit and Management Plans vii. Mangrove Stabilization viii. Waste Management and Recycling Initiative ix. Post Disaster Waste Management Plan x. Public Communication Campaign on Littering xi. Renewable energy initiatives across public sector infrastructure and private sector xii. Museum/Knowledge Centre to document history of resilience, from the Kalinago to Slavery to Modern Today xiii. Immersive 4-dimensional Hurricane Experience to tangibly capture the impact of Maria xiv. Capture, codify and share lessons from Dominica’s journey (“Resilience in a Box”)
	<p>Increase healthy coral reef coverage by 50% to support increased fish stocks, protect coastlines and the eco-tourism industry</p>			
	<p>Carbon Neutral achieved through 100% domestic renewable energy production, and increase of protected forest areas to 67% of Dominica’s land mass</p>			

Figure 31: Link between Protected and Sustainably Leveraged Natural and Other Unique Assets

Top Ten Climate Resilience Initiatives

Ten (10) climate resilience initiatives will be delivered as a matter of priority. These will contribute considerably to the achievement of the 20 Climate Resilience targets.

The list of the ten core initiatives matched with their position on an impact-resource matrix is provided below. A full slate of suggested solutions to implement to achieve the climate resilience mandate was informed by discussions with stakeholders. Each solution was subsequently assessed for effort, resource requirements and impact, and was plotted on the impact-resource matrix, divided into four quadrants. The image below depicts the ten initiatives which fell into the upper quadrants and will provide the highest impact, and greatest return on investments.



Legend

- Natural Assets
- Institutional
- Community
- Economy
- Infrastructure

Figure 32: Top Ten Climate Resilience Initiatives

Initiative	Description	Lead Agency	Est. Cost
1. Enhanced Social Safety Net Initiative	A resilient nation supports vulnerable members of society to reduce the impacts of climatic and other disasters. This initiative would put into place a data driven, computerized welfare system, with strengthened delivery team, so that all vulnerable citizens receive the appropriate interventions. Delivered by end 2022.	Ministries of Economic Affairs, Planning, Resilience, Sustainable Development, Telecommunications and Broadcasting, and of Health, Wellness & New Health Investment	Capital costs: XCD 14-15M, Annual costs: XCD2M
2. Community Emergency Readiness Initiative	Based on the experience of Hurricane Maria, some communities were cut off from central emergency responders, and unable to cope with their most basic needs, resulting in physical and mental stress that could have been avoided. This initiative will develop Community Disaster Management Committees, a Plan and equipment/supplies, including food/water for 15 days in place to ahead of hurricane season each year. Delivered by end 2022.	Ministry of Sports, Culture and Community Development, Office of Disaster Management, Local Government Authority, Climate Resilience Execution Agency for Dominica	XCD11M
3. Resilient Housing Scheme	To reduce low-income populations currently living in vulnerable locations and/or in homes that would be unlikely to withstand future climatic events, either relocate the population or repair/retrofit homes to make them resilient. Delivered by end 2025. <ul style="list-style-type: none"> • Mapping of households and vulnerable residential areas • Development of new settlements and retrofitting of homes • Plan for the relocation of the vulnerable residents • Repair and retrofitting of homes for vulnerable residents • Development of a scheme to provide subsidized home insurance for low-income families • Low-interest loans for the retrofitting of homes and the construction of safe rooms for vulnerable people 	Ministry of Housing and Urban Development, Physical Planning, CREAD	XCD2.1B
4. Koudmen Dominik – National Volunteer Initiative	Individual and community self-help and cooperation is an essential part of being resilient. An active volunteer movement through which each Dominican participates to the best of their ability to uplift all citizens. Koudmen Dominik will coordinate volunteer led projects, with emphasis on youth involvement and inclusion of marginalized groups across the country. Delivered by 2022.	Ministry of Education, Human Resource Planning, Vocational Training and National Excellence, Dominica State College, Village Councils and Faith based Organizations	XCD2.5M

Figure 33: Overview of Top Ten CRRP Initiatives (1/3)

Initiative	Description	Lead Agency	Est. Cost
5-i. Resilient Dominica Physical Plan	A comprehensive plan that addresses all infrastructure—utilities, ports, roads, bridges, drainage, housing, schools, health centers, shelters, coastal, rivers and landslide risks; as well as the standards required to achieve resilience targets must be prepared so that a structured approach to creating a resilient country can be implemented. This will also allow sourcing of funds to finance this vision. Plan delivered by mid-2021. Full resilient Dominica infrastructure delivered by 2030.	CREAD collaborating with MoEAIPRSDTB and MoPWDE (DOMLEC and DOWASCO)	XCD33.65M to prepare plan; XCD100M annually to implement until 2030
5-ii. Hydrology Survey & Flood/Landside Risk Mitigation Plan	A hydrological survey will identify the main drivers of adverse hydrological events, threats both to watersheds and water supplies, and threats posed by human and climatic activities. It will provide a data-driven and evidence-based foundation for mitigating risks; improved environmental, economic, and social protections, and critical information towards water resource management in general. The risk mitigation plan will detail activities/actions/procedures. Delivered by end Q3 2020.	CREAD collaborating with MoEAIPRSDTB, MoERMKU and MoPWDE (DOWASCO)	XCD3.55M
5-iii. Resilient modern ICT network	Development of information and communications technology system that enables government continuity through combination of underground and overground fibre, VSAT and multiple data centres for redundancy, back-up power and cloud-based storage. Installation of community-level local area networks across the island. Deliver by end 2021.	Ministry of Public Works and the Digital Economy	XCD100M
6. Innovative Approach to Insurance	Private property was insufficiently insured in the wake of Maria hindering reconstruction of homes/commercial property within reasonable timeframes, which has impacted the nation's ability to recover. This initiative will work to identify innovative Insurance Solutions and undertake public education on the importance of insurance. Delivered by end 2020.	Ministry of Finance and Investment, CREAD	XCD500,000
7. Dominica as a Global Centre for Resilience in Agriculture	Reducing the impact of climate change on the agriculture and fisheries sectors is critical given losses suffered as a result of Maria, and the growing threats of extreme weather events in the future. This initiative will develop a scientific, and practical, approach to reducing the vulnerability of farmers and fisherfolks through adoption of resilient practices, as well as the introduction of resilient crops and infrastructure. Delivered by 2030.	Ministry of Blue and Green Economy, Agriculture and National Food Security, Ministries of Economic Affairs, Planning, Resilience, Sustainable Development, Telecommunications and Broadcasting, CREAD	XCD200-500M

Figure 34: Overview of Top Ten CRRP Initiatives (2/3)

Initiative	Description	Lead Agency	Est. Cost
8. Revised PSIP allocation process and enhanced Public Sector Performance Management Framework	In order to achieve the Government's resilience vision, sectoral policies, strategies and budgets must be synchronized to specific aspirations identified in the CRRP. In particular, the Public Sector Investment Programme (PSIP) must be tightly aligned with the CRRP, reflecting initiatives to deliver on resilience targets. This will require adjustments to the budget-setting process and criteria, to include definition and weighting of resilience-related indicators. It will also focus on putting in efficient and effective operating systems and procedures to enable delivery on resilience agenda more broadly. A public service where there is a culture of continuous improvement in services and building back better of infrastructure will be developed, and public officers will better understand how they can and should contribute to strategic objectives and focus on delivery success by the implementation of a performance management framework. Delivered by June 2020.	Ministry of Economic Affairs, Planning, Resilience, Sustainable Development, Telecommunications and Broadcasting, Ministry of Finance and Investment, Ministry of Governance, Public Service Reform, Citizen Empowerment, Social Justice and Ecclesiastical Affairs, with support from CREAD	XCD500,000
9. Centre of Excellent in Data for Resilience Decision-making	This initiative seeks to establish a dedicated geographical information systems (GIS) unit within the Ministry of Planning, and to institutionalize a data-driven approach to investment and planning decisions. This unit is critical to the finalizing and implementation of the Resilient Dominica Physical Plan, including activities related to land management, hazard mapping, and infrastructure planning. Delivered by 2022.	Ministry of Economic Affairs, Planning, Resilience, Sustainable Development, Telecommunications and Broadcasting, and Ministry of Finance and Investment, supported by CREAD	XCD6.75M
10. "ResilienSEA" Blue Economy Investment Fund	The Blue Economy Investment Fund seeks to leverage private sector investment while, concurrently, steering it towards initiatives which are key to support the overall climate resilience ambitions of the Government of the Commonwealth of Dominica. Delivered by end 2020.	Ministry of Blue and Green Economy, Agriculture and National Food Security, supported by CREAD	XCD5.5M

Figure 35: Overview of Top Ten CRRP Initiatives (3/3)



V. IMPLEMENTING THE CRRP – COST, TIME TO DELIVERY, LEAD & SUPPORTING ENTITIES

This chapter presents a comprehensive account of the climate resilience and recovery initiatives introduced in the last chapter. It consolidates all the suggested climate change actions into one framework, providing clarification on the connectivity of the broader plan to the ten strategic priority initiatives. It is expected that other identified interventions will be integrated in sector strategic plans.

Section 1: Strong Communities Initiatives

1. Each One Reach One – Youth Resilience Initiative

Concept

Each One Reach One (EORO) is an out-of-school program to provide primary school children with the opportunity to enhance their creativity, physical fitness, confidence, and self-esteem thereby increasing resilience. Community partnership and youth volunteerism is an essential component of the EORO program to ensure community involvement and sustainability of program. EORO is being piloted in 3 communities: Newtown, Soufriere, and the Kalinago Territory with the goal of expanding to all primary schools in Dominica.

Rationale

- Children and youth are agents of change and are essential to building strong communities
- Peer mentorship can help build interconnectedness in communities
- Volunteering helps people use their skills & talents towards community development

Key Delivery Entities

- Ministry of Youth Development and Empowerment, Youth at Risk, Gender Affairs, Seniors' Security, and Dominicans With Disabilities
- National Youth Council of Dominica
- Ministry of Education, Human Resource Planning, Vocational Training and National Excellence
- Community organizations (NGOs, youth groups)
- Each One Reach One initially piloted by CREAD

Impact	Resources Requirements
<p>Communities: High</p> <p>Economy: Low</p> <p>Infrastructure: None</p> <p>Institutional systems: None</p> <p>Collective Consciousness: High</p> <p>Natural and other Unique Assets: Low</p>	<p>Cost: XCD 11 million</p> <p>Time to Delivery: Program supported for 2 years, thereafter self-funded/self-sustaining model in place</p> <p>XCD 180,000 per school per year</p> <p>3-school pilot currently underway and fully funded (XCD 745,000)</p> <p>Time to delivery:</p> <p>All primary schools reached by 2025</p>
Outcomes	
<ul style="list-style-type: none"> • More resilient Dominican children • Strengthened peer mentorship among children and youth • Community engagement, cohesion and partnerships strengthened 	

2. Responsible Land Stewardship Initiative

Concept

Engage grassroots youth, women and at-risk populations in securing equal access to the use of and control over land and land-related decisions. Build community knowledge on land use decisions; including how to plan construction with due regard to environmental concerns such as landslides or avoiding flood prone areas. Engage men and women in soil restoration practices, stewarding of natural biodiversity, shoring of ravine and waterways, prevention of landslides, ensuring that vulnerable and at-risk populations are especially targeted.

Rationale

- Improved land management, particularly in fragile and protected areas.
- Improved food security and livelihoods through better access to land for agricultural purposes in rural areas.

Key Delivery Entities

- Ministry of Housing and Urban Development
- Ministry of Economic Affairs, Planning, Resilience, Sustainable Development, Telecommunications and Broadcasting
- Collaborating Agencies: Ministry of Blue and Green Economy, Agriculture and National Food Security, Women’s Bureau, Kalinago Village Councils.

Impact	Resources Requirements
Communities: High Economy: Medium Infrastructure: None Institutional systems: Low Collective Consciousness: High Natural and other Unique Assets: High	Funding requirements: XCD 250,000 Time to delivery: 2021
Outcomes	
<ul style="list-style-type: none"> • Communities strengthened and resilient • Strengthened assets and resources base of community residents • Improved land management in communities 	

3. Kalinago Territory Development Strategy

Concept

The Kalinago Territory has long suffered from high unemployment and poverty. According to the 2009 Country Poverty Assessment Report 2009 nearly 50% were poor, and (2011 Census) unemployment in age groups, varied from 20% (age 25-29) to 55% (age 15-19). *“Hurricane Maria offset further social and environmental impacts on an already vulnerable population”*.

A climate and gender sensitive Kalinago Territory Development Plan must be developed that includes capacity building for the community and the Council, and a community engagement strategy. There also needs to be training in climate resilient and disaster risk reduction measures, along with establishment of sustainable and climate resilient agricultural practices.

Mainstreaming of gender and environmental issues must be incorporated with poverty reduction and unemployment specific targets. The latter often results in the reduction of underlying social challenges that can adversely affect communities.

Additionally, the challenge of access to financing must be resolved through establishment of a Kalinago development Fund specifically designed to consider the communal land ownership. This will allow entrepreneurial activities and provide commercial opportunities for Kalinago.

Greater partnerships are also required with other indigenous people to exchange ideas, and build capacity based on common challenges.

Rationale

- Access to finance and capacity building is required to spur economic development
- Gender mainstreaming is required to ensure full engagement of all community members in Kalinago Territory development
- Climate resilient practices in agriculture required to reduce vulnerability

Key Delivery Entities

- Ministry of the Environment, Rural Modernisation and Kalinago Upliftment
- Kalinago Council

Impact	Resources Requirements
<p>Communities: High</p> <p>Economy: High</p> <p>Infrastructure: Low (<i>see RDPP</i>)</p> <p>Institutional systems: None</p> <p>Collective Consciousness: Low</p> <p>Natural and other Unique Assets: High</p>	<p>Costs:</p> <ul style="list-style-type: none"> • Fund XCD 10 million • Shelters XCD 15 million • Capacity Building XCD 3 million + XCD 1 million annually for 10yrs • Agriculture XCD 7 million <p>Time to delivery: Q4-2030</p> <p><i>Note: Deliverables will be realized during the 10-year planning period in addition to those shown above.</i></p>
Outcomes	
<ul style="list-style-type: none"> • Preparation (by Q1-2020) and implementation of a 10-year Kalinago Territory Development Plan • Unemployment reduced to 30% by 2025, and 15% by 2030 • Establishment of a Kalinago Development Fund with disbursements of XCD 3 million by 2025 and XCD 10 million by 2030 • Number of resilient houses increased by 150 in by 2025, and 300 by 2030 • Emergency shelter capacity increased by 200 in 2022 and by 500 in 2030 • 40% of Kalinago farmers applying climate resilient agricultural practices by 2025 	

4. Community Emergency Readiness Initiative

Concept

Making communities safe and self-reliant during an emergency and in the ensuing period thereafter is critical to ensuring resilience at the community level. This initiative will seek to form Disaster Management Committees in each community, undertake physical vulnerability assessments of communities, develop a comprehensive Community Disaster Management Plan, and provide all necessary infrastructure, supplies and equipment required for the community to manage without outside support or utilities for a period of 15 days.

Rationale

- Based on the experience from Hurricane Maria, some communities were cut off from central emergency responders, and unable to cope with their most basic needs, resulting in physical and mental stress that could have been avoided had they been better prepared.

Key Delivery Entities

- Office of Disaster Management
- Local Government Authority
- National Emergency Planning Organization sub-committees
- CREAD

Impact	Resources Requirements
<p>Communities: High</p> <p>Economy: Low</p> <p>Infrastructure: Medium</p> <p>Institutional systems: Medium</p> <p>Collective Consciousness: High</p> <p>Natural and other Unique Assets: Low</p>	<p>Funding requirements: XCD 11 million</p> <ul style="list-style-type: none"> • Capital costs (equipment for all communities): XCD 9.5-10 million • Ende Domnik smartphone app for early warning, monitoring critical needs post event and education on resilience: XCD 1-1.5 million <p>Time to delivery: 2025</p> <ul style="list-style-type: none"> • Smartphone app: by end 2020
Outcomes	
<ul style="list-style-type: none"> • Functioning Disaster Committees in all communities fully equipped with • Emergency shelter well equipped with secured supplies—including water storage, power and communications backup, first aid and emergency equipment-for 15 days in all communities 	

5. Modern Village Council Initiative

Concept

This initiative aims to provide support to the village/town councils and other community-based organizations in the form of capacity building and resource mobilization to enhance the resilience capabilities of all the communities within their jurisdiction.

Rationale

- Dominica has a long history of a strong Local Government System. In the past, Village/Town Councils have provided leadership and served as first responders
- Over the last fifteen years, there has been a decline in the performance of these structures resulting in the lack of confidence by the residents

Key Delivery Entities

- Ministry of Sports, Culture and Community Development
- Local Government Authority
- CREAD

Impact	Resources Requirements
Communities: High Economy: Low Infrastructure: None Institutional systems: Medium Collective Consciousness: Medium Natural and other Unique Assets: Low	Funding requirements: <ul style="list-style-type: none"> • XCD 100,000 for initial consultations and training • Financial support for infrastructure and equipment (local council office, computers, etc.) to be determined Time to delivery: <ul style="list-style-type: none"> • All Villages/Towns reached by 2022
Outcomes	
<ul style="list-style-type: none"> • All village/town councils trained in financial management, project management and disaster management to deliver the services for which they are responsible in an efficient, transparent and responsive manner. 	

6. Enhanced Social Safety Net Initiative

Concept

Enhance the delivery of social services, with the goal of reaching the most vulnerable with adequate welfare assistance.

Develop a comprehensive beneficiary registry that provides detailed information on all citizens who qualify for support.

Strengthen overall Dominican social safety net systems to provide more targeted support to vulnerable persons, with a strong focus on preventative programs and those that seek to break the cycle of inter-generational poverty.

Consider the introduction of conditional cash transfer programs where cash payments are linked to resilience building activities by the beneficiaries.

Rationale

A resilient nation must care for the most vulnerable members of society to reduce the impacts of climatic and other environmental shocks.

There is currently limited data in Dominica on vulnerable populations and social safety nets in place to meet their needs.

Key Delivery Entities

- Ministry of Economic Affairs, Planning, Resilience, Sustainable Development, Telecommunications and Broadcasting
- Ministry of Health, Wellness and New Health Investment
- CREAD
- Village Councils

Impact	Resources Requirements
Communities: High Economy: Low Infrastructure: None Institutional systems: Medium Collective Consciousness: High Natural and other Unique Assets: Low	Funding requirements <ul style="list-style-type: none"> • Capital costs: XCD 14-15 million to cover modernized and strengthened delivery and coordination systems, including unique identifiers • Annual costs: XCD 2 million to cover expansion of current social safety nets (school feeding, public assistance) Time to delivery: 2022 <ul style="list-style-type: none"> • Enhanced system fully operational
Outcomes	
<ul style="list-style-type: none"> • Better targeted and more effective social protection systems with minimal errors of inclusion and exclusion • More effective and efficient service delivery by social service agencies 	

7. Resilient Housing Scheme

Concept

To reduce low-income populations currently living in vulnerable locations and/or in homes that would be unlikely to withstand future climatic events, either relocate the population or repair/retrofit homes to make them resilient.

- Mapping of communities
- Plan for the relocation of the vulnerable residents
- Repair and retrofitting of homes for vulnerable residents
- Development of a scheme to provide subsidized home insurance for low-income families
- Construction of 5,000 new resilient homes for vulnerable populations
- Low-interest loans for the retrofitting of homes and the construction of safe rooms for vulnerable people

Rationale

A significant portion of Dominicans live in homes that are not safe, let alone likely to withstand any major climatic events in the future. Yet, this population is the least able to improve their living conditions and requires support to do so.

Key Delivery Entities

- Ministry of Housing and Urban Development
- Ministry of Economic Affairs, Planning, Resilience, Sustainable Development, Telecommunications and Broadcasting / Physical Planning
- CREAD

Impact	Resources Requirements
Communities: High Economy: Medium Infrastructure: High Institutional systems: None Collective Consciousness: None Natural and other Unique Assets: None	Total funding: XCD 2.1 billion, of which XCD 1 billion already invested in new homes for vulnerable populations Time to delivery: 2030
Outcomes	
<ul style="list-style-type: none"> • Infrastructure durability and resilience increased; • Communities strengthened and resilient; • Economic & social impact from natural disasters reduced. 	

8. Resilient Dominica Physical Development Plan *(detailed under Infrastructure section)*

9. National Shelter Plan *(detailed under Infrastructure section)*

10. Smart Health Centres Initiative *(detailed under Infrastructure section)*

11. Smart Schools Initiative *(detailed under Infrastructure section)*

Section 2: Robust Economy Initiatives

1. Global Centre for Agricultural Resilience

Concept

Dominica as a Global Centre for Agricultural Resilience, necessitates an appropriate policy and legislative framework and would also require the following:

- Improve capacity for Data and Information Management, and Risk Profiles for Main Hazards affecting the Agriculture Sector
- Increase expertise in agro-meteorology
- Adoption of more resilient crops and livestock
- Develop both Agriculture and Fisheries Disaster Risk Management Plans
- Develop a Hurricane Preparedness Response Plan
- Evaluate the effectiveness of selected water management, soil conservation and improvement technologies/practices in improving hazard risk reduction and agricultural productivity. Develop and implement a strategy for wide adoption and replication of proven best practices
- Establish a contingency fund for responding to emergency situations
- Explore options for hurricane insurance for fishing/farming communities in collaboration with appropriate support agencies and financial institutions
- Geo-locate fish aggregating devices to help in locating them
- Develop protocols for the safe shelter of fishing boats during a storm and educate fishers on safe practices before and during a storm

Rationale

- Reduction of the impact of climate change on the economies of the agriculture and fisheries economies is critical given the extensive losses suffered as a result of Hurricane Maria, and growing threats of extreme weather events in the future

Key Deliver Entities

- Ministry of Blue and Green Economy, Agriculture and National Food Security
- Supported by CREAD and Ministry of Economic Affairs, Planning, Resilience, Sustainable Development, Telecommunications and Broadcasting

Impact	Resources Requirements
<p>Communities: High</p> <p>Economy: High</p> <p>Infrastructure: High</p> <p>Institutional systems: Medium</p> <p>Collective Consciousness: Medium</p> <p>Natural and other Unique Assets: High</p>	<p>Total funding: XCD 200 – 500 million</p> <p>Time to delivery: 2030</p>
Outcomes	
<ul style="list-style-type: none"> • Significant reduction in loss of livelihoods and physical assets in the sectors • Accurate identification of the risks confronting the agriculture and fisheries sectors • Development and incentivisation of resilient agriculture and fishing practices • Innovative and culturally appropriate risk transfer instrument to assist farmers and fishers recover from the impacts of extreme weather events 	

2. Support for Resilient Tourism

Concept

Building resilience in the tourism sector requires:

- Development of a comprehensive Climate Resilient Sustainable Tourism Policy and Action Plan
- Reviewing and updating Climate Resilient Standards for certified tourism establishments, based on appropriate international best practice
- Ensuring that tourism establishments have disaster management plans and trained staff to deal with visitors in an emergency
- Ensuring that a database of tourists on island during a disaster is immediately available for the Ministry of Tourism, International Transport, and Maritime Initiatives
- Document and develop the key requirements of cruise ships returning to Dominica post Hurricane Maria, to act as roadmap to early recovery of the tourism sector

Rationale

- Tourism is a major contributor to employment and will be growing substantially over the next five years, so protecting this sector of the economy and minimizing downtime disruption will be critical.

Key Delivery Entities

- Ministry of Tourism, International Transport, and Maritime Initiatives
- DHTA
- ODM

Impact	Resources Requirements
Communities: Low Economy: High Infrastructure: None Institutional systems: None Collective Consciousness: Low Natural and other Unique Assets: Low	Total funding: <ul style="list-style-type: none"> • XCD 100,000 to cover updating of standards and trainings to development resilience plans • Capital costs: To be determined upon completion of assessments by certification agency Time to delivery: 2030
Outcomes	
<ul style="list-style-type: none"> • A Tourism sector that is more resilient to extreme weather events and able to rebound more quickly after an event. • Improved safety of visitors during a disaster and better management of the evacuation process post disaster 	

3. Rehabilitation of the Essential Oils Sector

Concept

Prior to Tropical Storm Erika, Dominica had by some accounts near 80% of global market share of bay oil production. Additionally, the industry has suffered several setbacks including guava rust disease in 2007, Erika in 2015, and the passage of Hurricane Maria in 2017.

Dominica must act aggressively now to preserve and possibly gain back market share. This initiative focuses on attracting investment to the sector, facilitating the diversification into other products, and addressing key operational and structural challenges to rehabilitate parts of the value chain that have been affected by recent climatic disasters and make them resilient to future events

Rationale

- 'Essential oils' is a key sector in Dominica that has suffered from lack of resiliency
- Cross ministry organization is necessary to ensure the survival of this sector
- Private sector investment as well as strong operational capacities could help to rehabilitate the sector and increase its market share

Key Delivery Entities

CREAD working closely with:

- DEOSC
- DEXIA
- Ministry of Sports, Culture and Community Development
- Ministry of Blue and Green Economy, Agriculture and National Food Security
- Private investors

Impact	Resources Requirements
<p>Communities: High</p> <p>Economy: Medium</p> <p>Infrastructure: Low</p> <p>Institutional systems: Low</p> <p>Collective Consciousness: Low</p> <p>Natural and other Unique Assets: Medium</p>	<p>Capital costs: XCD 3-7 million to upgrade existing traditional boil oil processing facilities, and introduce new state-of-the-art distillery for greater value add locally</p> <p>Time to delivery: 2022</p>
Outcomes	
<ul style="list-style-type: none"> • Increase in land under cultivation for bay trees as well as trees for other essential oils • Increased distilling capacity for artisanal and central distilling • Increased output of bay oil and diversification into other essential oils • Increased activity in terms of cultivation of bay oil, and value-added products derived from essential oils 	

4. Development of High-value Export Sector

Concept

Incubate and leverage a “Made by Nature in Dominica” brand through three pillars of high-value agriculture-based products:

Food: Develop and support artisanal farming techniques to produce high-value food ingredients such as coffee, cocoa, spices, and fruits & vegetables for domestic use and export.

Nutraceuticals: Develop and support production of nutraceutical feedstocks and products to access the large and growing global demand for natural remedies

Natural Beauty Products: Develop and support small suppliers and producers of natural cosmetics and other beauty products for local hospitality, retail sale, and export

Rationale

Increasing the profitability from agricultural practices and retaining processing value on island to the benefit of Dominicans

Key Delivery Entities

- DEXIA
- Invest Dominica Authority
- Ministry of Blue and Green Economy, Agriculture and National Food Security
- Dominica Manufacturer’s Association
- CREAD

Impact	Resources Requirements
<p>Communities: None</p> <p>Economy: High</p> <p>Infrastructure: None</p> <p>Institutional systems: Low</p> <p>Collective Consciousness: Low</p> <p>Natural and other Unique Assets: Medium</p>	<p>Capital costs: XCD 10-15 million to develop shared processing and packaging facility, including quality testing which would be developed through a public-private partnership and be used by businesses on a fee-for-service basis</p> <p>Time to delivery: 2021</p>
Outcomes	
<ul style="list-style-type: none"> • Increased profitability for farmers • Increased resilience in revenue streams from long term purchase commitments from a full value chain approach 	

5. Development of the Knowledge and Technology Sectors

Concept

Technology should represent a growing portion of Dominica’s GDP over the coming years, since this brings high value jobs to Dominica, in an industry that is growing in demand and is highly climate resilient.

While current job opportunities in Dominica in the tech sector are limited, there are organizations focused on developing the tech sector, and the state college has set this as an area of priority

Other ministries have as their priority establishing the “innovation economy” as a high priority over the coming years.

Rationale

- Jobs in technology are highly resilient to climate change
- These jobs are high-value, attracting a range of other types of employment
- These jobs represent a way of capturing and maintain human capital in Dominica – especially young people

Key Delivery Entities

- CREAD
- Ministry of Education, Human Resource Planning, Vocational Training and National Excellence
- Dominica State College
- Dominica Association of Industry and Commerce
- Invest Dominica Authority

Impact	Resources Requirements
<p>Communities: None</p> <p>Economy: Low</p> <p>Infrastructure: None</p> <p>Institutional systems: None</p> <p>Collective Consciousness: Low</p> <p>Natural and other Unique Assets: Low</p>	<p>Capital costs: XCD 1-2 million to develop several knowledge and technology-related offerings to be further financed by the private sector</p> <p>Time to delivery: 2022</p>
Outcomes	
<ul style="list-style-type: none"> • In support of the diversification of the economy, output from the technology should increase measurably as a percentage of GDP, achieved in conjunction with a range of other initiatives – particularly niche tourism, and the development of frontier sectors • By 2025, technology should be the fastest growing segment of the economy 	

6. Unlocking Local Financing: Concessional and Commercial Debt

Concept

Businesses frequently struggle with submitting complete and accurately validated loan applications. There are several ways in which the challenges that business face can be addressed, including by facilitating Funding Fora through which small but high potential businesses are assisted in preparing high quality loan applications. After a period in assisting businesses, hold regular fora whereby banks and other lending institutions can review applications from businesses and interview borrowers. Once loans are disbursed, work with businesses to ensure that they can make the best use of funds and repay loans.

Rationale

Businesses with access to capital are essential for a resilient economy. Banks with stable balance sheets are also essential for a resilient and stable economy. This is part of our objective to break the cycle of bad debt resulting from recurring disasters.

Key Delivery Entities

- CREAD with help from:
- Commercial Banks
- Credit Unions
- AID Bank
- National Development Foundation of Dominica
- Business associations (e.g., Dominica Manufacturers Association)
- Ministry of Trade, Commerce, Entrepreneurship, Innovation, Business and Export Development

Impact	Resources Requirements
<p>Communities: None</p> <p>Economy: High</p> <p>Infrastructure: None</p> <p>Institutional systems: None</p> <p>Collective Consciousness: Low</p> <p>Natural and other Unique Assets: None</p>	<p>Costs: XCD 100,000 annually to develop business plans and facilitate funding</p> <p>Time to delivery: 2022</p>
Outcomes	
<ul style="list-style-type: none"> • Increased number of businesses that can access commercially available loans • Reduced portfolio of non-performing loans with banks • Reduction in bad debt that gets repeatedly carried forward after each climate event • Increased capacity with businesses in applying for loans • Increased repayment rates 	

7. Unlocking Local Financing: Innovation Award

Concept

To host a “shark tank” like event that is open to the public, in order to attract young entrepreneurs and innovators who need funding. This initiative will allow businesses to pitch their ideas to a panel of experts and local business people, in pursuit of Innovation Award funding. The goal is to identify promising young entrepreneurs and provide them with capital to start a business or help a business grow. The award will be followed with technical support to help make sure that the business grows and has the necessary assistance.

Rationale

- Young entrepreneurs are the future of Dominica
- Without young business people, there can't be a resilient economy
- Young people starting businesses have the hardest time attracting capital
- Support innovation

Key Delivery Entities

CREAD, with help of:

- Ministry of Trade, Commerce, Entrepreneurship, Innovation, Business and Export Development
- Business leaders to act as judges
- Potentially other funders to provide awards

Impact	Resources Requirements
<p>Communities: None</p> <p>Economy: Low</p> <p>Infrastructure: None</p> <p>Institutional systems: None</p> <p>Collective Consciousness: Low</p> <p>Natural and other Unique Assets: Low</p>	<p>Costs: XCD 500,000</p> <p>Time to delivery: 2022</p>
Outcomes	
<ul style="list-style-type: none"> • This is seen as setting up an annual event to support the development of small businesses so that they can grow • The goal is to foster an environment of entrepreneurship and risk taking on the part of young people • By 2030 the goal is to see a range of businesses across a variety of sectors that were started by young innovators who were identified through this program 	

8. Crowdfunding Platform for MSMEs

Concept

Globally, several high-impact crowd funding platforms exist to raise zero/low-interest capital from social and double bottom-line retail investors seeking to make a difference in people’s lives. These platforms provide loans to a network of field partners which, in turn, on-lend to small businesses in need of capital.

This would provide a much-needed additional source of financing for businesses, especially for young entrepreneurs. A field partner would need to be established in Dominica to identify and conduct due diligence on potential recipient MSMEs. Examples of relevant platforms include Kiva and Kickstarter.

Rationale

- For businesses to thrive they must have access to a range of options for capital.
- For young people to start businesses and commit to the future of their country, they must have access to start-up capital.
- Bringing in outside money is essential to a resilient economy.

Key Delivery Entities

CREAD working to identify and establish Dominica as a target country for crowdfunding and receive funding through a “field partner organization”, with support from:

- Ministry of Finance and Investment
- Ministry of Trade, Commerce, Entrepreneurship, Innovation, Business and Export Development

Impact	Resources Requirements
<p>Communities: None</p> <p>Economy: Low</p> <p>Infrastructure: None</p> <p>Institutional systems: None</p> <p>Collective Consciousness: Low</p> <p>Natural and other Unique Assets: Low</p>	<p>Costs: XCD 100,000 to establish infrastructure with field partner organization, thereafter XCD 100,000 annually for due diligence of target MSMEs</p> <p>Time to delivery: 2020</p>
Outcomes	
<ul style="list-style-type: none"> • Small businesses in Dominica and young entrepreneurs have access to low interest loans through the platform • Fully independent field partner organization up and running with strong performance history of businesses getting loans, and repaying those loans • Dominica seen as source of innovation in specific sectors, and championing specific underserved communities 	

9. Venture Capital Investment in Women in Agriculture

Concept

There are several high-impact venture capital investment opportunities. One example, LadyAgri, is the bridge between the investment-financing and donor communities, advanced ag-tech companies and services providers, and women agri-entrepreneurs in ACP countries. LadyAgri sees Dominica as strategic opportunities about acting as a partner in Dominica.

Rationale

Successfully serving the financial market while contributing to economic development, environmental sustainability and improving livelihoods. Shining the spotlight on women who are champions of their community, and social entrepreneurs who contribute to a positive 'rising tide' approach creating jobs and up-skilling of women in their supply chain.

Key Delivery Entities

CREAD, with support from:

- Lady Agri
- Global Environment Facility Small Grants Programme/United Nations Development Programme
- Cooperatives
- Ministry of Blue and Green Economy, Agriculture and National Food Security
- Local Government Authority
- Ministry of Trade, Commerce, Entrepreneurship, Innovation, Business and Export Development

Impact	Resources Requirements
Communities: Low Economy: Medium Infrastructure: None Institutional systems: None Collective Consciousness: Medium Natural and other Unique Assets: Medium	Costs: XCD 1.2 million to establish infrastructure with LadyAgri and two-year operating costs Time to delivery: 2020
Outcomes	
<ul style="list-style-type: none"> • Focusing on trade & capacity building for market access • Bringing investment to women led agri-supply chains • Providing blended and meso-financing • Engaging the private sector • Facilitating public-private partnerships towards climate smart agri-supply chains 	

10. Innovative Approach to Insurance

Concept

- Undertake an extensive public education and awareness program on the importance of adequate insurance coverage.
- Facilitate a dialogue between insurance companies and credit unions/cooperatives to explore the development and introduction of affordable home insurance instruments that are targeted at low-income households.
- Leverage latest thinking in the insurance sector, including use of 'blockchain' and other technologies to increase Dominicans access to appropriate, affordable products.

Rationale

Private property proved to be insufficiently insured in the wake of Hurricane Maria hindering the ability of individuals to rebuild homes and commercial properties within reasonable durations, which has impacted quality of life and the economy in terms of businesses having to close.

Key Delivery Entities

CREAD, working closely with:

- Financial Services Unit
- Insurance companies
- Banks and Cooperatives
- Ministry of Housing and Urban Development

Impact	Resources Requirements
Communities: High Economy: High Infrastructure: Medium Institutional systems: Medium Collective Consciousness: Medium Natural and other Unique Assets: Low	Costs: XCD 500,000 Time to delivery: 2020
Outcomes	
<ul style="list-style-type: none"> • New and innovative products have been brought into the market to help close the gap and bring down premiums • At least a 50 percent increase in the number of private buildings that have insurance coverage 	

11. Developing the MSME Sector

Concept

Across the value chain, MSMEs in Dominica struggle to thrive due to a lack of basic skills (from accounting to customer service).

There is need to increase the contribution of MSMEs to Dominica's socio-economic growth and resilience, businesses must be helped to grow, achieve a higher level of operational effectiveness, achieve compliance to standards and enhance chances of business continuity in the case of a future disaster.

This initiative will work with businesses to provide technical assistance, financial advice, business management and other related guidance, the overall performance of the sector will be enhanced, increasing revenues and profitability, as well as access to finance and markets.

Rationale

- MSME makes up the largest portion of businesses in Dominica
- Providing the necessary support will ultimately have a huge impact on the economy
- MSMEs add significantly towards employment output in Dominica

Key Delivery Entities

- CREAD working in close collaboration with
- Entrepreneurs
- Ministry of Trade, Commerce, Entrepreneurship, Innovation, Business and Export Development
- Other organizations that supports entrepreneurship in Dominica

Impact	Resources Requirements
<p>Communities: Low</p> <p>Economy: High</p> <p>Infrastructure: None</p> <p>Institutional systems: None</p> <p>Collective Consciousness: Medium</p> <p>Natural and other Unique Assets: Low</p>	<p>Costs: XCD 1 million</p> <p>Time to delivery: 2022</p>
Outcomes	
<ul style="list-style-type: none"> • Businesses will mature from cottage to commercial industries • Businesses will be registered and fully compliant with regulatory and legislative requirements • Businesses will prepare their books, accounts and financial reports according to generally acceptable standards • MSMEs will have a business continuity plan; to protect all critical business functions and infrastructures 	

12. Ports & Airports within Resilient Dominica Physical Plan *(detailed under Infrastructure Section)*

13. Government Continuity Planning *(detailed under Strengthening Institutions Section)*

Section 3: Well-Planned and Durable Infrastructure Initiatives

1. Resilient Modern ICT Network

Concept

The development of a resilient Modern ICT Network is critical to transform the economic and social landscape of Dominica. This initiative seeks to improve the telecommunications infrastructure by building a fibre optic network, enhancing digital services, and advancing digital e-government services.

This will be achieved through the installation of underground fibre, overhead fibre, and microwave-type technology (air-fibre) and the installation of satellite technology to facilitate business continuity; establishment of high tech data centres and upgrade of e-government services for storage and security of government data and records; deployment of Camera Surveillance System (CCTV) in key locations for traffic monitoring and management, and crime management; upgrade of the Government Wide Area Network (GWAN); institution of tele-medicine services with advanced communication equipment; and installation of public Wi-Fi at key tourism sites.

Rationale

The effects of Hurricane Maria resulted in widespread failure of telecommunication networks, which had a great impact on the Dominican society and greatly hindered timely information gathering.

Collectively, this had a significant and staggered impact on recovery efforts. Coming out of that experience is the need to ensure that telecommunication networks infrastructure is modern and resilient against disasters and capable of driving Dominica next frontier in economic diversification and development.

Key Delivery Entities

- Ministry of Public Works and The Digital Economy
- Ministry of Economic Affairs, Planning, Resilience, Sustainable Development, Telecommunications and Broadcasting
- Digicel
- Flow
- Dominica State College

Impact	Resources Requirements
<p>Communities: Medium</p> <p>Economy: High</p> <p>Infrastructure: High</p> <p>Institutional systems: High</p> <p>Collective Consciousness: None</p> <p>Natural and other Unique Assets: None</p>	<p>Costs: XCD 10 million</p> <p>Time to delivery: 2025</p>
Outcomes	
<ul style="list-style-type: none"> • Dominica will become the leader in resilient digital services in the region. 	

2. Resilient Dominica Physical Development Plan

Concept

Dominica has set the goal to be the first climate resilient nation in the world. In order to achieve this, physical infrastructure must be able to withstand and/or recover quickly from natural disasters.

A comprehensive plan that addresses all infrastructure, and the standards required to achieve that resilience must be prepared so that a structured approach to creating a resilient country can be implemented. This will also allow sourcing of funds to finance this vision.

The plan will address utilities, ports, roads/bridges/drainage, housing, schools, health centres, shelters, coastal, rivers. It will emphasize asset maintenance and consider the life cycle cost of the investments. The legislative framework required to institutionalize the RDPP will be established and special redevelopment plans prepared for Roseau and Portsmouth.

Rationale

- Reduce the damage caused by natural disasters to all infrastructure in the country
- Improve continuity of basic services
- Provide a comprehensive and data-driven capital works programme to 2030

Key Delivery Entities

- CREAD
- Ministry of Public Works and The Digital Economy
- Ministry of Economic Affairs, Planning, Resilience, Sustainable Development, Telecommunications and Broadcasting

Impact	Resources Requirements
<p>Communities: High</p> <p>Economy: High</p> <p>Infrastructure: High</p> <p>Institutional systems: Medium</p> <p>Collective Consciousness: Low</p> <p>Natural and other Unique Assets: Medium</p>	<p>Costs:</p> <ul style="list-style-type: none"> • XCD 34.65 million to prepare RDPP; • XCD 100 million annually to implement RDPP <p>Time to delivery:</p> <ul style="list-style-type: none"> • RDPP Q2-2021 • Implementation Q4-2040
Outcomes	
<ul style="list-style-type: none"> • Infrastructure durability and resilience increased • Communities strengthened and resilient • Economic & social impact from natural disasters reduced 	

2. a Resilient Dominica Physical Plan: Infrastructure Risk/Condition Assessment

Concept

Resilient Dominica Physical Plan: A comprehensive plan that addresses the condition of physical infrastructure, the risks/hazards that threaten its intended use, the standards required to achieve that resilience, and the scope/cost/time required to achieve resilience. Provides a structured approach and road map to creating a resilient country and identifies potential funding sources to finance this vision.

Infrastructure Risk/Condition Assessment: The priority of creating a physical plan is to assess the condition of existing infrastructure, and the risks/hazards that threaten that infrastructure. This assessment will look at factors such as age, current performance, expected useful life remaining, and external/internal factors that pose a risk to that remaining operational life.

Internal factors could be present operational parameters and existing maintenance practices, and how these impacts the ability to meet, and availability for its intended use.

DOWASCO is presently preparing a water Supply Sector Strategic Development Plan (WSSDP) which, will address various aspects of this. Government is also preparing an Electricity Sector Master Plan.

Rationale

Determine infrastructure condition and the risks/hazards that impact its ability to meet its intended use.

Key Delivery Entities

- CREAD
- All Ministries
- All utilities

Impact	Resources Requirements
<p>Communities: Medium</p> <p>Economy: High</p> <p>Infrastructure: High</p> <p>Institutional systems: Medium</p> <p>Collective Consciousness: Low</p> <p>Natural and other Unique Assets: Medium</p>	<p>Costs: XCD 2.7 million</p> <p>Time to delivery: Q3-2020</p>
Outcomes	
<ul style="list-style-type: none"> • Condition assessment to determine present status and inform scale of improvements required to achieve resilience • Risk assessment to determine hazards (natural & human) to infrastructure performance and resilience 	

2. b Resilient Dominica Physical Plan: Hydrological Survey & Flood/Landslide Risk Mitigation Plan

Concept

Resilient Dominica Physical Plan: A comprehensive plan that addresses the condition of physical infrastructure, the risks/hazards that threaten its intended use, the standards required to achieve that resilience, and the scope/cost/time required to achieve resilience. Provides a structured approach and road map to creating a resilient country and identifies potential funding sources to finance this vision.

Hydrological Survey & Flood/Landslide Risk Mitigation Plan

This survey is a mandatory precursor to the preparation of a Flood Mitigation Plan. During Erika and Maria, flooding had a significant impact on infrastructure, and housing damage, and economic losses. It is a fact, that hydrologic events which often (but do not always) include flooding and landslides, frequently influence livelihoods and the continuity of basic services.

A hydrological survey will identify the main drivers of adverse hydrological events, threats both to watersheds and water supplies, and threats posed by human and climatic activities. It will provide a more informed, data-driven and evidence-based, foundation for; mitigating risks; improved environmental, economic, and social protections, and; critical information towards water resource management in general.

The risk mitigation plan will detail activities, actions, procedures, protocols and policies required to mitigate the frequency and impacts of flood/landslide events.

Rationale

- Determine hydrological risks and threats to socio-economic and infrastructure resilience.
- Determine how human and climatic activities impact the hydrological cycle.

Key Delivery Entities

- CREAD
- Ministry of Economic Affairs, Planning, Resilience, Sustainable Development, Telecommunications and Broadcasting
- Ministry of National Security and Home Affairs/Office of Disaster Management/MET Office
- Ministry of Blue and Green Economy, Agriculture and National Food Security
- DOWASCO

Impact	Resources Requirements
Communities: High Economy: High Infrastructure: High Institutional systems: Medium Collective Consciousness: Low Natural and other Unique Assets: Medium	Costs: XCD 3.55 million Time to delivery: Q3-2020
Outcomes	
<ul style="list-style-type: none"> • Improved understanding of hydrological cycle, risks, and threats caused by climatic and human activities • Plan to reduce frequency and impact of adverse events caused by hydrological activity 	

2.c Resilient Dominica Physical Plan: Standards for Resilient Infrastructure & Housing

Concept

Resilient Dominica Physical Plan: A comprehensive plan that addresses the condition of physical infrastructure, the risks/hazards that threaten its intended use, the standards required to achieve that resilience, and the scope/cost/time required to achieve resilience. Provides a structured approach and road map to creating a resilient country and identifies potential funding sources to finance this vision.

Standards for Resilient Infrastructure & Housing

In order to determine what investments are required following the risk/condition assessment, and the hydrological survey, the required ‘performance’ of infrastructure in a resilient nation must be determined. This includes not only setting standards for what climatic and other natural hazards the infrastructure must be **built to withstand**, but also ensuring appropriate redundancy, spares, equipment & methods, are in place for **expedited recovery & restoration** of services.

The first is intended to mitigate damages while the second minimizes economic losses by allowing commerce & livelihoods to resume normalcy as quickly as possible.

This will be an iterative process as the cost/benefits of hardening infrastructure to withstand events and mitigate damages, must constantly be weighed against the cost/benefits of rapid recovery.

Rationale

Determine reasonable standards for resilience looking at the cost/benefit of the two main measures of resilience: the ability to withstand events and the ability to rapidly recover from events.

Key Delivery Entities

- CREAD
- Ministry of Economic Affairs, Planning, Resilience, Sustainable Development, Telecommunications and Broadcasting
- Ministry of Public Works and The Digital Economy
- Ministry of Housing and Urban Development
- Utilities
- Regulatory authorities

Impact	Resources Requirements
Communities: High Economy: High Infrastructure: High Institutional systems: Medium Collective Consciousness: Medium Natural and other Unique Assets: Low	Costs: XCD 0.55 million Time to delivery: Q3-2020
Outcomes	
<ul style="list-style-type: none"> • Resilience standards that guide ability of infrastructure to withstand and/or recover quickly, from climatic & other natural disasters and, general performance criteria & service levels. 	

2. d Resilient Dominica Physical Plan: Sector Master Plans (housing, utilities, ports, roads/bridges/drainage, schools, health centres, shelters, coastal)

Concept

Resilient Dominica Physical Plan: A comprehensive plan that addresses the condition of physical infrastructure, the risks/hazards that threaten its intended use, the standards required to achieve that resilience, and the scope/cost/time required to achieve resilience. Provides a structured approach and road map to creating a resilient country and identifies potential funding sources to finance this vision.

Sector Master Plans

Based on the condition assessments, and the standards developed, each sector will require a Master Plan to layout the scope of work required, and the cost/schedule for achieving resilience. A review of existing plans will be required in addition to present activities such as the WSSSDP (DOWASCO) and the Electricity Master Plan (Tractabel/AFD/DOMLEC).

The Master Plans must be sufficiently detailed to allow Government and the participating Ministries/sectors, to create annual investments plans and to prioritise and schedule specific works on an annual basis. It must in all cases, mainstream gender and environmental considerations.

These plans will address the entire catalogue of needs both at the national and community level and will be subject to annual reviews if priorities, methods, technologies etc. have changed.

Rationale

Create road map to resilience in each sector based on risk/condition assessment, and standards and performance criteria developed.

Key Delivery Entities

- CREAD
- Ministry of Economic Affairs, Planning, Resilience, Sustainable Development, Telecommunications and Broadcasting
- Ministry of Public Works and The Digital Economy
- Ministry of Housing and Urban Development
- All relevant line Ministries
- Utility companies

Impact	Resources Requirements
Communities: High Economy: High Infrastructure: High Institutional systems: Medium Collective Consciousness: Low Natural and other Unique Assets: Low	Costs: XCD 21.60 million Time to delivery: Q1-2021 <i>Note: The water and electricity sectors are in the process of preparing plans. Roads/bridges have a previous sector plan that requires updating with a focus on resilience. Plans for various sectors will therefore be completed during the period up to Q1-2021.</i>
Outcomes	
<ul style="list-style-type: none"> • Master Plans to guide each sector to resilience as part of national vision Schedule of prioritized implementation 	

2. e Resilient Dominica Physical Plan: Asset Maintenance & Continuity Plan

Concept

Resilient Dominica Physical Plan: A comprehensive plan that addresses the condition of physical infrastructure, the risks/hazards that threaten its intended use, the standards required to achieve that resilience, and the scope/cost/time required to achieve resilience. Provides a structured approach and road map to creating a resilient country and identifies potential funding sources to finance this vision.

Asset Maintenance & Continuity

This component would typically be addressed in a Master Plan as it is relevant to analyzing life cycle costs and making economic decisions as to what options are feasible.

However, this is also the first aspect of infrastructure that is discarded or ignored, and which typically results in shortened asset life, catastrophic failures, and the inability of assets to carry out their intended service. It is therefore critical that this be separated from a typical Master Infrastructure (Investment) Plan.

This plan will inform what preventative maintenance activities are required and also what resources are required to achieve these requirements. The consequences of inaction will also be identified in addition to their economic impact and effect on the continuity of service to the public.

Continuity of service is also critical, and the plan will address the requirements for spares, equipment, skills, etc to meet the performance criteria set for the particular asset.

Rationale

- Ensure proper O&M of resilient assets
- Reduce probability of failures and mitigate reduction in asset performance
- Extend asset life and improve service reliability

Key Delivery Entities

- CREAD
- Ministry of Economic Affairs, Planning, Resilience, Sustainable Development, Telecommunications and Broadcasting
- Ministry of Public Works and The Digital Economy
- Ministry of Blue and Green Economy, Agriculture and National Food Security
- All relevant line Ministries
- DOWASCO

Impact	Resources Requirements
Communities: High Economy: High Infrastructure: High Institutional systems: Medium Collective Consciousness: Low Natural and other Unique Assets: Low	Costs: XCD 2.70 million Time to delivery: Q1-2021
Outcomes	
<ul style="list-style-type: none"> • Preventive maintenance plan for all major infrastructure assets including resource requirements, estimated costs of compliance and of non-compliance • Continuity of service plan outlining how each sector satisfies quality and reliability performance criteria. 	

2. f Resilient Dominica Physical Plan: Legislative & Institutional Plan/Funding & Prioritization Strategy

Concept

Resilient Dominica Physical Plan: A comprehensive plan that addresses the condition of physical infrastructure, the risks/hazards that threaten its intended use, the standards required to achieve that resilience, and the scope/cost/time required to achieve resilience. Provides a structured approach and road map to creating a resilient country and identifies potential funding sources to finance this vision.

Legislative & Institutional Plan / Funding & Prioritization Strategy

A proper legislative and institutional framework must be established in order to ensure that the RDPP enshrined in law. Barring this, the RDPP will become an innocuous document to be used as seen fit, rather than a road map to resilience.

Mechanisms must be in place to allow annual reviews as it relates to changing priorities, methods, technologies, etc. However, significant changes should require approval by the legislative branch of Government.

Similarly, the RDPP must be institutionalized to ensure the necessary capacity (physical, human, financial) is always available to implement the RDPP efficiently and effectively, and to ensure the intended results are being achieved.

A funding & prioritization strategy for each sector must also be developed as part of the RDPP to ensure legislation & institutional arrangements address all aspects of implementation to mitigate impediments to implementation.

Rationale

- Enshrine RDPP in legislation to ensure its success
- Institutionalize the RDPP to ensure its efficient implementation

Key Delivery Entities

- CREAD
- Ministry of Economic Affairs, Planning, Resilience, Sustainable Development, Telecommunications and Broadcasting
- Ministry of Public Works and The Digital Economy
- Ministry of Housing and Urban Development
- All relevant line Ministries

Impact	Resources Requirements
Communities: High Economy: High Infrastructure: High Institutional systems: High Collective Consciousness: Low Natural and other Unique Assets: Low	Costs: XCD 0.55 million Time to delivery: <ul style="list-style-type: none"> • Funding/Prioritisation Q1-2021 • Legislation/institutional Q2-2021

Outcomes
<ul style="list-style-type: none"> • Legislation drafted, approved and passed in Parliament • Required institutional resources and facilities are allocated to implement the RDPP • Master Plans prioritized and funding sources determined

2. g Resilient Dominica Physical Plan: Roseau & Portsmouth Urbanization Plan

Concept

Resilient Dominica Physical Plan: A comprehensive plan that addresses the condition of physical infrastructure, the risks/hazards that threaten its intended use, the standards required to achieve that resilience, and the scope/cost/time required to achieve resilience. Provides a structured approach and road map to creating a resilient country and identifies potential funding sources to finance this vision.

Roseau & Portsmouth Redevelopment Plan: Resilience can only be achieved if other socio-economic aspects of development are addressed. Regional development plans that look at socio-economic factors in addition to infrastructure will ensure that that resilience is not only achieved, but that it is sustainable.

It is proposed to begin this process with Roseau and Portsmouth in the first instance. Government has already begun the process of reviewing this for Roseau and it seems appropriate to include this as a sub-component of the RDPP.

Rationale

Revitalize the cities of Roseau & Portsmouth with physical, commercial, and socio-economic resilience the core considerations

Key Delivery Entities

- CREAD
- Ministry of Economic Affairs, Planning, Resilience, Sustainable Development, Telecommunications and Broadcasting
- Ministry of Public Works and The Digital Economy
- Ministry of Housing and Urban Development

Impact	Resources Requirements
Communities: High Economy: High Infrastructure: High Institutional systems: Medium Collective Consciousness: Low Natural and other Unique Assets: Medium	Costs: <ul style="list-style-type: none"> • Roseau XCD 1.90 million • Portsmouth XCD 1.10 million Time to delivery: Q4-2020
Outcomes	
<ul style="list-style-type: none"> • Plan for redevelopment and revitalization of the Roseau and Portsmouth areas • Framework for development of urban / regional revitalization plans created 	

3. National Disaster Management Plan

- a) **National Shelter Strategy** (see Dominica Resilient Physical Development Plan)
- b) **Community Disaster Risk Management and Climate Adaptation Plan** (see Strong Communities section)
- c) **Community Training and Awareness** (see Strong Communities section)

4. Centre of Excellence for Data in Resilience Decision-Making

Concept

Dominica has set the goal to be the first climate resilient nation in the world. In order to achieve this, data collection, analysis, and overall data management must be improved. This means reviewing the policies, procedures, and general attitudes towards data collection. Risks and natural disasters are very geographic, and integrating resilience into planning and land use decisions, requires a robust GIS.

This initiative seeks to establish a dedicated GIS Unit within the Ministry of Economic Affairs, Planning, Resilience, Sustainable Development, Telecommunications and Broadcasting, and to institutionalize a data-driven approach to investment and planning decisions. This Unit is critical to the finalizing and implementation of the Resilient Dominica Physical Plan and to proper land management, hazard mapping, and investment planning/decisions.

Rationale

- Performance management is about acting to improve lives of citizens
- It must be embedded in every part of the organization
- Must deliver the big picture vision through continuous improvements of short-term targets

Key Delivery Entities

- Ministry of Economic Affairs, Planning, Resilience, Sustainable Development, Telecommunications and Broadcasting
- CREAD
- Ministry of Public Works and The Digital Economy
- Central Statistics Office

Impact	Resources Requirements
Communities: High Economy: High Infrastructure: High Institutional systems: High Collective Consciousness: Low Natural and other Unique Assets: Medium	Costs: XCD 6.75 million Time to delivery: Q3-2020
Outcomes	
<ul style="list-style-type: none"> • Data-driven planning for resilience institutionalized • Economic & social impact from natural disasters reduced 	

5. Capacity Building (in Project Preparation, Procurement & Contract Administration)

Concept

Following Tropical Storm Erika and Hurricane Maria, Dominica has significant capital works to be complete over the coming decade. In addition to this spike of capital works there is also the baseline of maintenance and incremental improvements to build assets. In the medium and long-term the technical and professional inputs will fall mainly to the Ministry of Public Works and The Digital Economy. The Ministry of Public Works and The Digital Economy needs a core of experienced and certified professionals to meet this challenge and who can pass on these skills to other Ministries. Appropriate project management tools also are required to help professionals within the ministries monitor & control the various projects, while keeping stakeholders informed.

Rationale

- Professionals able to hold their own with contractors and consultants.
- Responsive service able to meet annual targets.
- A seed/feeder for the consulting sector.

Key Delivery Entities

- Ministry of Public Works and The Digital Economy
- CREAD

Impact	Resources Requirements
<p>Communities: None</p> <p>Economy: High</p> <p>Infrastructure: High</p> <p>Institutional systems: Medium</p> <p>Collective Consciousness: None</p> <p>Natural and other Unique Assets: None</p>	<p>Costs: XCD 1.35 million</p> <p>Time to delivery: Q2-2020</p>
Outcomes	
<ul style="list-style-type: none"> • All section leaders/heads professionally qualified by an internationally recognized professional body i.e. AIA, ICE, RICS, RIBA, CIBSE, PMI et al. • Project management tool introduced • 90% of projects implemented within budget and schedule, and at required quality. • Ministry of Public Works and The Digital Economy delivering project management and contract administration support to other agencies • Procurement Act revised (as required) and operationalized. 	

Section 4: Strengthened Institutional Systems Initiatives

1. Resilient Dominica Physical Development Plan (see under Infrastructure section)

2. Centralized GIS team and Data management team (see under Infrastructure section)

3. Digitalized land management system (see under Infrastructure section)

4. Centre of Excellence for Data in Resilience Decision-making (see under Infrastructure section)

5. Supportive Policies and Regulations

Concept

- Historic and current configuration of Ministries has meant that policies are not always aligned in a single ministry and changes in configuration may impact ownership of policies.
- Policy statements may be encapsulated in Bills currently being considered by Parliament.
- The review of legislation/bills may identify gaps in regulations that require addressing.

Rationale

Policies are essential for providing direction, setting out the aspiration for the sector, providing the basis from which strategic objectives can be developed and the execution of services to the public.

Key Delivery Entities

- All Ministries

Impact	Resources Requirements
Communities: High Economy: High Infrastructure: High Institutional systems: High Collective Consciousness: Low Natural and other Unique Assets: Medium	Costs: Technical: XCD 400,000 Time to delivery: 2021
Outcomes	
<ul style="list-style-type: none">• All relevant policies and regulations aligned to CRRP in order to ensure delivery on plan	

1. Enhanced Disaster Risk Management Agency

Concept

- Dominica is susceptible to the impact of climate change and natural disasters. Such threats to the lives and livelihoods of Dominicans were witnessed by Tropical Storm Erika in 2015 and Hurricane Maria 2017 which caused losses and damage equivalent to 90% and 226% of GDP respectively.
- Managing disasters and risk through all phases from prevention and rehabilitation, is critical to Dominica. This requires a fully functioning disaster management agency.

Rationale

- Disasters have and will impacted the lives and livelihoods of Dominicans
- Preventing, mitigating, preparing are continuous activities that must be institutionalized
- Coordinating responses, recovery and supporting the rehabilitation are critical functions that require all segments of the Dominican society.

Key Delivery Entities

- Ministry of National Security and Home Affairs
- Ministry of Governance, Public Service Reform, Citizen Empowerment, Social Justice and Ecclesiastical Affairs
- CREAD

Impact	Resources Requirements
Communities: High Economy: High Infrastructure: High Institutional systems: High Collective Consciousness: Low Natural and other Unique Assets: None	Cost: XCD 8 million over 10 years Time to delivery: Set up by 2021
Outcomes	
<ul style="list-style-type: none"> An Agency responsible for advancing the principles of comprehensive disaster management to include all phases of the disaster cycle (prevention & mitigation, preparedness, response, recovery & rehabilitation). 	

2. Government continuity plan

Concept

- Principle plan that sets out how the Government will continue operations during an emergency
- The plan must identify 'business critical' operations that must continue during an emergency and those that are needed to resume immediately after the emergency
- The plan must be updated frequently, include simulation exercises based on different scenarios.
- The plan needs to identify key personnel and facilities that are needed during an emergency
- Includes a comprehensive National Disaster Management Plan, including maintaining law and order and ensuring national security in the event of a disaster

Rationale

Dominica is susceptible to natural disasters such as hurricanes, earthquakes and volcanic eruptions.

Key Delivery Entities

- Ministry of Governance, Public Service Reform, Citizen Empowerment, Social Justice and Ecclesiastical Affairs
- Ministry of Economic Affairs, Planning, Resilience, Sustainable Development, Telecommunications and Broadcasting
- Ministry of National Security and Home Affairs/Office of Disaster Management
- All relevant line Ministries
- CREAD

Impact	Resources Requirements
Communities: High Economy: High Infrastructure: High Institutional systems: High Collective Consciousness: None Natural and other Unique Assets: None	Cost: XCD 200,000 Time to delivery: Set up by 2021
Outcomes	
<ul style="list-style-type: none"> • A government that maintains the semblance of normality during emergencies including the delivery of business-critical services, public relevant messages, emergency 	

8. Revised Public Sector Investment Programme Allocation Methodology and Enhanced Public Sector Performance Management Framework

Concept

In order to achieve the Government’s resilience vision, sectoral policies, strategies and budgets must be synchronized to specific aspirations identified in the CRRP. In particular, the Public Sector Investment Programme (PSIP) must be tightly aligned with the CRRP, reflecting initiatives to deliver on resilience targets. This will require adjustments to the budget-setting process and criteria, to include definition and weighting of resilience-related indicators;

Most objectives are delivered by public service officers. The success is in part due to how well the public officer performs. Accordingly, monitoring performance must include how well the objectives are being delivered both at the ministry level (management by objectives) and at the individual level through the performance appraisal mechanism.

Rationale

- Performance management is about taking action to improve lives of citizens.
- It must be embedded in every part of the organization.
- Must deliver the big picture vision through continuous improvements of short-term targets.

Key Delivery Entities:

- Ministry of Governance, Public Service Reform, Citizen Empowerment, Social Justice and Ecclesiastical Affairs

Impact	Resources Requirements
<p>Communities: High</p> <p>Economy: High</p> <p>Infrastructure: High</p> <p>Institutional systems: High</p> <p>Collective Consciousness: Medium</p> <p>Natural and other Unique Assets: Medium</p>	<p>Costs: XCD100,000</p> <p>Time to delivery: 2021</p>
Outcomes	
<ul style="list-style-type: none"> • A public service where there's a culture of continuous improvement in services and building back better of infrastructure. Public officers who are clear how they contribute to strategic objectives • Public service managers clear what improves performance, encourage Innovation amongst their staff and who challenge any tendency to coast through a robust performance management framework. 	

Section 5: Enhanced Collective Conscience Initiative

1. Community Emergency Readiness Initiative

Concept

Making communities safe and self-reliant during an emergency and in the ensuing period thereafter is critical to ensuring resilience at the community level.

This initiative will seek to form Disaster Management Committees in each community, undertake physical vulnerability assessments of communities, develop a comprehensive Community Disaster Management Plan, and provide all necessary infrastructure, supplies and equipment required for the community to manage without outside support or utilities for a period of 15 days.

Rationale

Based on the experience from Hurricane Maria, some communities were cut off from central emergency responders, and unable to cope with their most basic needs, resulting in physical and mental stress that could have been avoided had they been better prepared.

Key Delivery Entities

- Office of Disaster Management
- Local Government Authority
- National Emergency Planning Organization sub-committees
- CREAD

Impact	Resources Requirements
<p>Communities: High</p> <p>Economy: Low</p> <p>Infrastructure: Medium</p> <p>Institutional systems: Medium</p> <p>Collective Consciousness: High</p> <p>Natural and other Unique Assets: Low</p>	<p>Funding requirements: XCD 11 million</p> <p>Capital costs (equipment for all communities): XCD 9.5-10 million</p> <p>Ende Domnik smartphone app for early warning, monitoring critical needs post event and education on resilience: XCD1-1.5 million</p> <p>Time to delivery: 2025</p> <p>Infrastructure costs: XCD 2-3 million</p> <p>Food cost: XCD 12-15 million annually, although if recirculated into the economy this cost could be recouped</p> <p>Time to delivery: 2025 100% of communities have access to requisite food stores to ensure self-sufficiency for 15 days</p>
Outcomes	
<ul style="list-style-type: none"> • Functioning Disaster Committees in all communities fully equipped • Emergency shelter well equipped with secured supplies—including water storage, power and communications backup, first aid and emergency equipment-for 15 days in all communities 	

2. Respect for All Initiative

Concept

- Inclusive approaches to strengthen community cohesion and empowerment by promoting a higher consciousness (spiritual, theological and culturally inclusive) that underpins respect, dignity and peace among all citizens, ensuring that no one is excluded or left behind – through organizing community groups around civic education, public awareness raising and targeted engagement with vulnerable communities.
- Establish community-based resilience task forces.
- Broaden the base of partners and stakeholders.
- Work with teachers, parents, children, youth, young adults to revalue cultural identity, lifestyle decisions, consumption choices and equal responsibilities of men and women.

Rationale

- Promote social cohesion and community resilience;
- Broaden the base of partners and stakeholders to support an inclusive approach to societal resilience;
- Build on the combined efforts of women and men at different levels;
- Build trust among people in all their diversity

Key Delivery Entities

- Ministry of Youth Development and Empowerment, Youth at Risk, Gender Affairs, Seniors' Security, and Dominicans With Disabilities
- Ministry of the Environment, Rural Modernisation and Kalinago Upliftment
- Women's Bureau
- Kalinago Village Council
- Community Practitioners Platform
- Non-governmental organizations
- National media and social media

Impact	Resources Requirements
<p>Communities: High</p> <p>Economy: Low</p> <p>Infrastructure: None</p> <p>Institutional systems: Medium</p> <p>Collective Consciousness: High</p> <p>Natural and other Unique Assets: Low</p>	<p>Funding requirements: XCD 1.5 million annually</p> <p>Time to delivery: 2030</p>
Outcomes	
<ul style="list-style-type: none"> • Violence against women and girls significantly reduced; • Greater advocacy on behalf of community needs and at-risk target populations; • Empowered rural and indigenous communities; • At-risk communities, vulnerable groups and women community leaders supported in managing risk at the individual, household and community levels; • Significant capacity building in risk management, particularly among women; 	

3. Koudmen Domnik National Volunteer Initiative

Concept

Koudmen refers to the Dominican spirit of sharing and cooperative effort. Koudmen Domnik aims to help build a movement of national pride. It encourages people to care about each other to the benefit of the most vulnerable people in the community, to care about the environment, and to work together to build Dominica’s future.

Koudmen Domnik will engage in volunteer led projects, with special emphasis on youth involvement and inclusion of marginalized groups such as the elderly and persons living with disabilities across the country.

Rationale

- Individual & community self-help and cooperation is an essential part of being resilient.
- Inclusive community driven programs are more sustainable.
- Volunteering makes use of people’s skills and helps encourage them to care about each other.

Key Delivery Entities

- Ministry of Education, Human Resource Planning, Vocational Training and National Excellence (Primary & Secondary Schools)
- Dominica State College
- Ministry of Youth Development and Empowerment, Youth at Risk, Gender Affairs, Seniors’ Security, and Dominicans With Disabilities
- Village/town councils
- Faith-based Organizations
- Established NGOs/volunteer clubs

Impact	Resources Requirements
<p>Communities: High</p> <p>Economy: Low</p> <p>Infrastructure: High</p> <p>Institutional systems: Low</p> <p>Collective Consciousness: High</p> <p>Natural and other Unique Assets: Low</p>	<p>Funding requirements: XCD 2.5 million</p> <p>Program supported for 10 years</p> <p>Time to delivery: commencing in 2020 and running to 2030</p>
Outcomes	
<ul style="list-style-type: none"> • An active volunteer movement through which each Dominican participates to the best of their ability to uplift all citizens. 	

4. Centre of Excellence for Data in Resilience Decision-making (see under Infrastructure section)

5. Resilient Dominica Physical Development Plan (detailed under Infrastructure section)

Section 6: Protected and Sustainably Leveraged Natural and Other Unique Assets Initiatives

1. ResilienSEA Blue Economy Triple Bottomline Investment Fund

Concept

The Blue Economy Investment Fund seeks to leverage private sector investment while, at the same time, steering it towards initiatives which are key to support the overall climate resilience ambitions of the Government of the Commonwealth of Dominica.

This Fund would need to operate effectively while catering to such a diverse mix of financing sources, potentially with very different goals (pure profit, social and financial bottom-line).

Additionally, it would only be funded by a combination of the Government/International Donors/Multi-lateral Financial Institutions/etc., and private investors, the latter of which could apply to this fund to co-invest with them on projects that they come up with, with preferred financing terms.

Rationale

- Dominica’s marine ecology is essential for protecting the coastline and coastal communities.
- Developing businesses in a sustainable way is essential for protecting these environments and the jobs that depend on it.

Key Delivery Entities

- Ministry of Finance, Economic Affairs, Investment, Planning, Resilience, Sustainable Development, Telecommunications and Broadcasting
- Ministry of Blue and Green Economy, Agriculture and National Food Security
- Coastal Business Associations
- Investors and Technical Assistance entities
- CREAD

Impact	Resources Requirements
<p>Communities: Medium</p> <p>Economy: High</p> <p>Infrastructure: None</p> <p>Institutional systems: Low</p> <p>Collective Consciousness: Medium</p> <p>Natural and other Unique Assets: High</p>	<p>Costs:</p> <ul style="list-style-type: none"> • XCD 500,000 to establish fund • XCD 50,000,000 to capitalize investment fund using a combination of concessional and commercial capital • XCD 5 million technical assistance fund <p>Time to delivery: 2020</p>

Outcomes
<ul style="list-style-type: none"> • Dominica’s coastal assets are secured, with beaches, coral reefs and offshore marine assets protected against climate risks • Coastal areas are developed in a sustainable way to support fisheries, marine based tourism, and coastal businesses. • The fund is receiving return on investment to reflect the increased value of these assets as they are developed in a sustainable way.

2. Geothermal Export to Neighbouring Islands

Concept

Dominica’s specific geology provides the perfect opportunity to harness geothermal renewable energy; The neighbouring islands of Martinique and Guadeloupe both have increased energy requirements and would be a perfect export market; Developing a 50MW Geothermal Plant is already being considered by the Government and utilizing the export of energy to form a sustainable, climate resilient revenue stream to fund the initiatives in the CRRP would assist in closing the funding gap.

Rationale

- Urgent need to raise revenues to finance the Climate Resilience agenda
- Alignment with Dominica’s branding as the Nature Island
- Reduced Greenhouse Gas contributions

Key Delivery Entities

- Ministry of Blue and Green Economy, Agriculture and National Food Security
- Ministry of the Environment, Rural Modernisation and Kalinago Upliftment
- Private Sector

Impact	Resources Requirements
<p>Communities: None</p> <p>Economy: High</p> <p>Infrastructure: Medium</p> <p>Institutional systems: Medium</p> <p>Collective Consciousness: None</p> <p>Natural and other Unique Assets: High</p>	<p>Private sector investment to design, build, operate-so low level of investment beyond scoping/feasibility/procurement and contracting costs</p> <p>Time to delivery: 2025</p>
Outcomes	
<ul style="list-style-type: none"> • Export of power to form a climate resilient revenue stream for the Government • Reduced carbon emissions 	

3. Debt for Nature Swap

Concept

Dominica’s relatively high debt levels are constraining its capacity for adequately funding the national budget and addressing urgent needs for reconstruction spending. Marine systems are underfunded and face significant threats from climate change, overfishing and pollutants. Debt swaps have been in use since the 1980s, both commercial and bilateral in nature—typically involving the creation of fiscal space through the purchase of the debt at a discount, in exchange for commitments to support conservation efforts and/or climate change mitigation policies.

Rationale

- Urgent need to create the fiscal space to support reconstruction and resilience efforts, as well as blue economy investments.
- Debt restructuring results in lower levels of debt, reduction in interest payments and release of funds to support blue economy efforts.

Key Deliverables Entities

- Ministry of Economic Affairs, Planning, Resilience, Sustainable Development, Telecommunications and Broadcasting
- Ministry of Finance and Investment
- Ministry of the Environment, Rural Modernisation and Kalinago Upliftment

Impact	Resources Requirements
<p>Communities: Medium</p> <p>Economy: Low</p> <p>Infrastructure: Medium</p> <p>Institutional systems: Medium</p> <p>Collective Consciousness: Low</p> <p>Natural and other Unique Assets: Medium</p>	<p>Successfully complete debt swaps for at least XCD 75 million worth of Dominica’s debt financed based on success-fee</p>
Outcomes	
<ul style="list-style-type: none"> • Adoption of new marine protected areas; • Coral restoration activities completed; • Regulatory protection regime in place with viable enforcement mechanisms; • Economic diversification (sustainable tourism and fisheries); • Social resilience to climate change in local communities; • Reduce interest rates of debt refinanced; • Government to obtain catastrophic risk insurance 	

4. Forestry/Ecosystem Audit/Protection Plans

Concept

This initiative seeks to undertake a comprehensive assessment of the country's ecosystems to determine the level of damage and the areas that require urgent attention through the following activities:

- Collate the various damage assessments that have been undertaken and where gaps have been identified, undertake additional assessments to obtain an accurate quantitative and qualitative picture of the state of the natural environment in Dominica.
- Identify and prioritize the areas that are most in need of attention.
- Capture this information in a GIS platform that maps out the country's natural assets.
- Develop a system to continuously monitor the State of the Environment and track changes that affect the integrity of the country's natural assets. Development protection plans to maintain assets.

Rationale

- The ecosystem of Dominica is a unique asset which is important to tourism and national identity.
- Preservation of the ecosystem is important for the long-term sustainability of Dominica.
- Could form the baseline data for a green bond.

Key Delivery Entities

- Ministry of the Environment, Rural Modernisation and Kalinago Upliftment

Impact	Resources Requirements
<p>Communities: Medium</p> <p>Economy: Medium</p> <p>Infrastructure: None</p> <p>Institutional systems: Medium</p> <p>Collective Consciousness: Low</p> <p>Natural and other Unique Assets: High</p>	<p>Costs: XCD 2.2 million</p> <p>Time to delivery: 2020</p>
Outcomes	
<ul style="list-style-type: none"> • Maintain and improve the natural environment of the Nature Island 	

5. “Roots” National Tree Planting Initiative

Concept

- National campaign;
- Each one, plant one;
- Plant 70,000 trees by December 2019;
- Plant 1 million trees by December 2020;
- Mobilise entire country - All educational institutions, community groups, Village & Town Councils, Kalinago Territory, youth groups, social and faith groups, volunteer organisations, government ministers and opposition members etc.

Rationale

- Get the right tree in the right place and ensure quality over quantity;
- Prioritize education, training and community engagement;
- Track, monitor and report on the survival and health of all trees planted. Share success stories and lessons learned in order to inspire and continually improve planting efforts;
- Work in partnership with non-profit organisations to expand planting programs that have demonstrated past success.

Key Delivery Entities

- Ministry of Sports, Culture and Community Development
- Ministry of the Environment, Rural Modernisation and Kalinago Upliftment, Forestry Division
- Ministry of Blue and Green Economy, Agriculture and National Food Security
- Caribbean neighbours – seedling supply

Impact	Resources Requirements
<p>Communities: Medium</p> <p>Economy: Medium</p> <p>Infrastructure: None</p> <p>Institutional systems: Medium</p> <p>Collective Consciousness: High</p> <p>Natural and other Unique Assets: Medium</p>	<p>Cost: XCD 10 million</p> <p>Time to delivery: 2020</p>
Outcomes	
<ul style="list-style-type: none"> • One million trees planted • Legacy and machinery in place for the country to continue the national effort • Planting new roots and contributing to a fertile planet • Contributing to a sustainable future 	

6. Marine Environment Audit and Protection Plans

Concept

This initiative seeks to undertake Marine managed areas (MMA) are clearly defined areas that allow for the management and protection of marine resources. They are particularly effective where there are multiple conflicting uses of marine space, as they establish clear rules and guidelines for operations within the MMA through the following activities:

- Audit the Marine Environment and develop a master plan.
- Strengthen the management of the designated marine reserves, including rehabilitation of coral reefs.
- Engage all relevant stakeholders in the formulation of policies and the management of the Marine Reserves/MMAs.

Rationale

- The Ecosystem of Dominica is a unique asset which is important to tourism and national identity.
- Preservation of the ecosystem is important for the long-term sustainability of Dominica.
- Important Step in realizing the Blue Economy.

Key Delivery Entities

- Ministry of Blue and Green Economy, Agriculture and National Food Security
- Ministry of the Environment, Rural Modernisation and Kalinago Upliftment

Impact	Resources Requirements
Communities: Medium Economy: Medium Infrastructure: None Institutional systems: Medium Collective Consciousness: Medium Natural and other Unique Assets: High	Cost: <ul style="list-style-type: none"> • Assessment: XCD 300,000 • Rehabilitation: XCD 2 million Time to delivery: <ul style="list-style-type: none"> • Assessment: 2020 • Rehabilitation: 2025
Outcomes	
<ul style="list-style-type: none"> • Healthier and more resilient marine ecosystems • Reduction in user conflicts in popular marine spaces • Better managed marine resources to the benefit of all 	

7. Mangrove Stabilization

Concept

Mangroves play an important role in protecting coastal areas from erosion due to storm surges, waves, floods and the effects of strong winds during storms and hurricanes. They also act as filters for sediments and pollutants, which helps to maintain water quality. Their roots help with stabilization of coastlines.

They play an important role in preserving biodiversity by providing nesting and breeding grounds for fish, shellfish and migratory birds. Therefore, stabilization of mangroves is an important element of the marine resilience agenda. Because of the important role they play in carbon storage, mangrove restoration allows for the establishment of blue carbon sinks and count as a climate change mitigation measure.

Rationale

- Preservation of the marine environment is important for the long-term sustainability of Dominica
- Mangroves play an important part in managing storm surge in storm events
- Important Step in realizing the Blue Economy

Key Delivery Entities

- Ministry of the Environment, Rural Modernisation and Kalinago Upliftment

Impact	Resources Requirements
<p>Communities: Medium</p> <p>Economy: Medium</p> <p>Infrastructure: None</p> <p>Institutional systems: Low</p> <p>Collective Consciousness: Low</p> <p>Natural and other Unique Assets: Medium</p>	<p>Cost:</p> <ul style="list-style-type: none"> • Assessment: XCD 100,000 • Rehabilitation: XCD 2 million <p>Time to delivery:</p> <ul style="list-style-type: none"> • Assessment: 2020 • Rehabilitation: 2025
Outcomes	
<ul style="list-style-type: none"> • Improved coastline stability • Improvement in the health and quantities of fish stocks • Healthier marine ecosystems • More engaged and educated coastal communities 	

8. Waste Management and Recycling

Concept

Reducing litter, improving waste management, increasing recycling and reducing the volume of waste going to the landfill are all necessary for the sustainability of Dominica.

Activities would include:

- Pass legislation and develop incentives to encourage reductions in the volumes of waste products going to the landfill.
- Promote reuse and recycling of waste products at the household and commercial levels.
- Provision of receptacles to the public (household)
- Construction of Material Recovery Facility (MRF)
- Develop a bulky waste collection system Island wide, that encompasses derelict vehicle removal
- Public awareness campaign

Rationale

Preservation of the natural environment is important for the long-term sustainability of Dominica, poor waste management and litter is not acceptable on the Nature Island

Key Delivery Entities

- Ministry of the Environment, Rural Modernisation and Kalinago Upliftment
- Ministry of Sports, Culture and Community Development

Impact	Resources Requirements
<p>Communities: Medium</p> <p>Economy: Medium</p> <p>Infrastructure: None</p> <p>Institutional systems: Low</p> <p>Collective Consciousness: Low</p> <p>Natural and other Unique Assets: Medium</p>	<p>Capital costs: XCD 3 million</p> <p>Annual operational costs: XCD 1 million</p> <p>Time to delivery</p> <ul style="list-style-type: none"> • Material Recovery Facility: 2020 • Waste reduction targets met: 2025
Outcomes	
<ul style="list-style-type: none"> • At least a 50% reduction in the volume of waste material being sent to the landfill. • Reduction in the incidents of flooding as a result of drain blockage from improperly disposed waste material. • Increase in waste separation at source • Increase in recycle material processed for export and a reduction in waste being tipped at the landfill • Reduction in soil and water pollution in the agricultural sector • Reduction in illegal dumping and derelict vehicles 	

9. Post Disaster Water Management Plan

Concept

Reducing the impact of debris following an extreme weather event will substantially impact the recovery time, to this end Dominica will:

- Develop and issue guidelines for routine activities that citizens and contractors (public and private) must carry out prior to the start of the Hurricane Season in order to minimize the possibility of harm to lives and property from felled trees or debris that may become projectiles in strong winds or flood waters;
- Develop a Debris Management Plan that has both national and district level components;
- Establish a hazardous waste facility;
- Procurement of specialised equipment for processing disaster waste;
- Conduct Waste Composition Study.

Rationale

- Reduction of time and cost to clean up following an extreme weather event
- Proper storage and disposal of Hazardous waste
- Reduction in cost to the state for processing of disaster waste

Key Delivery Entities

- Ministry of the Environment, Rural Modernisation and Kalinago Upliftment
- ODM

Impact	Resources Requirements
Communities: High Economy: Medium Infrastructure: None Institutional systems: Medium Collective Consciousness: Medium Natural and other Unique Assets: High	Cost Assessment: XCD 50,000 Hazardous Waste Facility: XCD 2 million Time to delivery: 2020
Outcomes	
<ul style="list-style-type: none"> • Reduction in the volume of debris that is produced after an extreme weather event or other natural disaster; • Prompt, effective and efficient removal of debris after a disaster; • Significantly reduced cost of debris management post disaster 	

10. Museum-Hurricane Experience

Concept

Documents Dominica’s “indomitable” nature, from Kalinago to slaves to today’s issues. Serves as a space to respectfully present Dominican’s resilience stories through photo/video exhibition, testimonies, poems and art. Turn the library into a repository of Dominica’s hurricane experience and resilience journey, making it a regional “hub” for climate-related data to educate visitors (including Dominican children), IPCC data on climate change scenarios. Offers an immersive 4-dimensional emotional simulation of Hurricane Maria (“wind tunnel” experience and Virtual Reality goggles with video footage of the storm) followed by option of touring areas devastated by the storm (tourism). Demonstrate the impact of climate change to visitors, what Dominica is doing to address the impact and provide a message of what individuals can do to reduce their impact at home.

Rationale

- Capture the unique experience of Dominica of resilience through the years

Key Delivery Entities

- Ministry of the Environment, Rural Modernisation and Kalinago Upliftment
- Ministry of Tourism, International Transport, and Maritime Initiatives
- Ministry of Economic Affairs, Planning, Resilience, Sustainable Development, Telecommunications and Broadcasting
- Ministry of Education, Human Resource Planning, Vocational Training and National Excellence

Impact	Resources Requirements
<p>Communities: Medium</p> <p>Economy: Low</p> <p>Infrastructure: None</p> <p>Institutional systems: Medium</p> <p>Collective Consciousness: High</p> <p>Natural and other Unique Assets: High</p>	<p>Cost:</p> <ul style="list-style-type: none"> • Design: XCD 250,000 • Capital costs: XCD 20 million <p>Time to delivery: 2021</p>
Outcomes	
<ul style="list-style-type: none"> • Documenting the history and journey to resilience • Documenting, honouring and sharing Dominica’s resilience journey with the world 	

11. Export “Climate Resilience in a Box”

Concept

Document Dominica’s journey to climate resilience in a format that can be shared with regional and international Governments as a methodology and process to assist other nations in improving climate resilience. This initiative will provide systematic frameworks, programmes and metrics which can be developed to suit other nations.

Rationale

- Dominica is possibly the first country in the world to establish an agency to drive such an ambitious climate resilience Key Delivery Entities;
- Codifying the country’s experience, as well as some of the key innovations of this agency, can help other countries on their own resilience journey.

Key Delivery Entities

- CREAD

Impact	Resources Requirements
Communities: Low Economy: High Infrastructure: Medium Institutional systems: Medium Collective Consciousness: Medium Natural and other Unique Assets: Medium	<ul style="list-style-type: none"> • XCD 250,000
Outcomes	
<ul style="list-style-type: none"> • Documenting, honouring and sharing Dominican resilience with the World • Dominica as a leading light in the approach to National Climate Resilience 	

12. Renewable energy initiatives across public sector infrastructure and private sector

Concept

Dominica has committed itself to pursue a low carbon emission energy pathway. The country has already established the required framework to establish a renewable sector based on a mix of hydro, geothermal, solar and wind.

Approximately thirty (30) percent of the country’s energy requirements is already supplied by hydro power and by the end of 2020 a 7.5-megawatt geothermal power plant will be commissioned. Continuing effort will therefore focus on the following:

- Fully established renewable energy development framework;
- Operationalize private sector initiatives in renewable energy;
- Pursue an energy efficiency programme for both the public and private sector.

Rationale

- Integral to the vision to build the first climate resilient nation in the world;
- Consistent with the pursuit of a low carbon pathway;
- Fulfillment towards the country’s commitment to the Paris Agreement;

Key Delivery Entities

- Ministry of Blue and Green Economy, Agriculture and National Food Security
- Ministry of Finance and Investment
- Ministry of Economic Affairs, Planning, Resilience, Sustainable Development, Telecommunications and Broadcasting
- CREAD
- DGDC
- DOMLEC
- Private Investors

Impact	Resources Requirements
<p>Communities: High</p> <p>Economy: High</p> <p>Infrastructure: Medium</p> <p>Institutional systems: Low</p> <p>Collective Consciousness: Low</p> <p>Natural and other Unique Assets: High</p>	<p>Cost: XCD 30 million</p> <p>Time to delivery: 2030</p>
Outcomes	
<ul style="list-style-type: none"> • Cost of electricity reduced • Cleaner environment with the economic returns • A more developed and vibrant economy 	



VI. FINANCING THE GAP TO RESILIENCE

The cost to Dominica becoming Climate Resilience by 2030 is estimated at XCD 8.2-9.8 billion, of which the Government of the Commonwealth of Dominica has already invested close to XCD 1.7 billion on critical infrastructure and other projects since Hurricane Maria.

Hence, the remaining financing gap is estimated at about XCD 7-8 billion.

Based on current Government capital expenditures, the expected financing gap is XCD 2.5-3.5 billion (approximately US\$90-130 million annually).

Since 2017, the Government has spent about XCD 400 million to rebuild Dominica, with significant investments in the sectors of:

- Housing XCD 120 million
- Infrastructure XCD 220 million
- Agriculture XCD 30 million; and
- Social Welfare XCD 20 million

Based on present annual expenditure under the Public Sector Investment Programme (PSIP) of about XCD 300 million, an additional XCD 3 billion could be available for CRRP initiatives till 2030.

An additional amount of approximately XCD 300 million has been allocated under the 2019/2020 budget and is committed to:

- Housing XCD 77 million
- Infrastructure XCD 212 million
- Agriculture XCD 20 million; and
- Social Welfare XCD 36 million

A further approximately XCD 1 billion has been leveraged from Dominica's Citizenship by Investment Programme to support urgent housing recovery needs.

Assuming steady Government revenues and expenditures, the resulting financing gap of delivering the Climate Resilience and Recovery Plan to 2030 would therefore be approximately XCD 2-3 billion to 2030, or XCD 200-300 million annually (equivalent to about US\$90-130 million annually, or US\$12,500-18,000 per capita to achieve resilience).

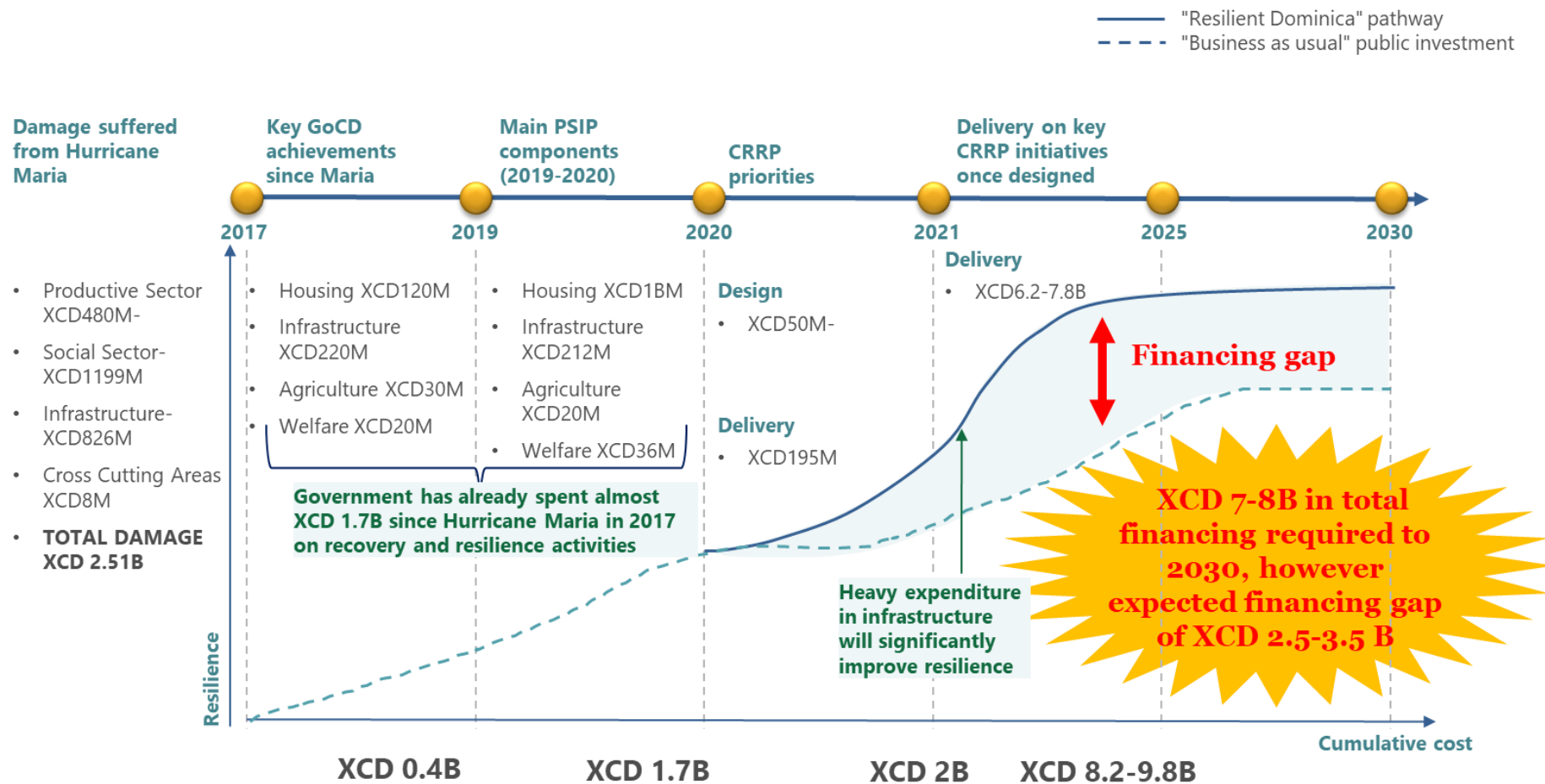


Figure 36: Estimated cumulative cost of delivering the CRRP

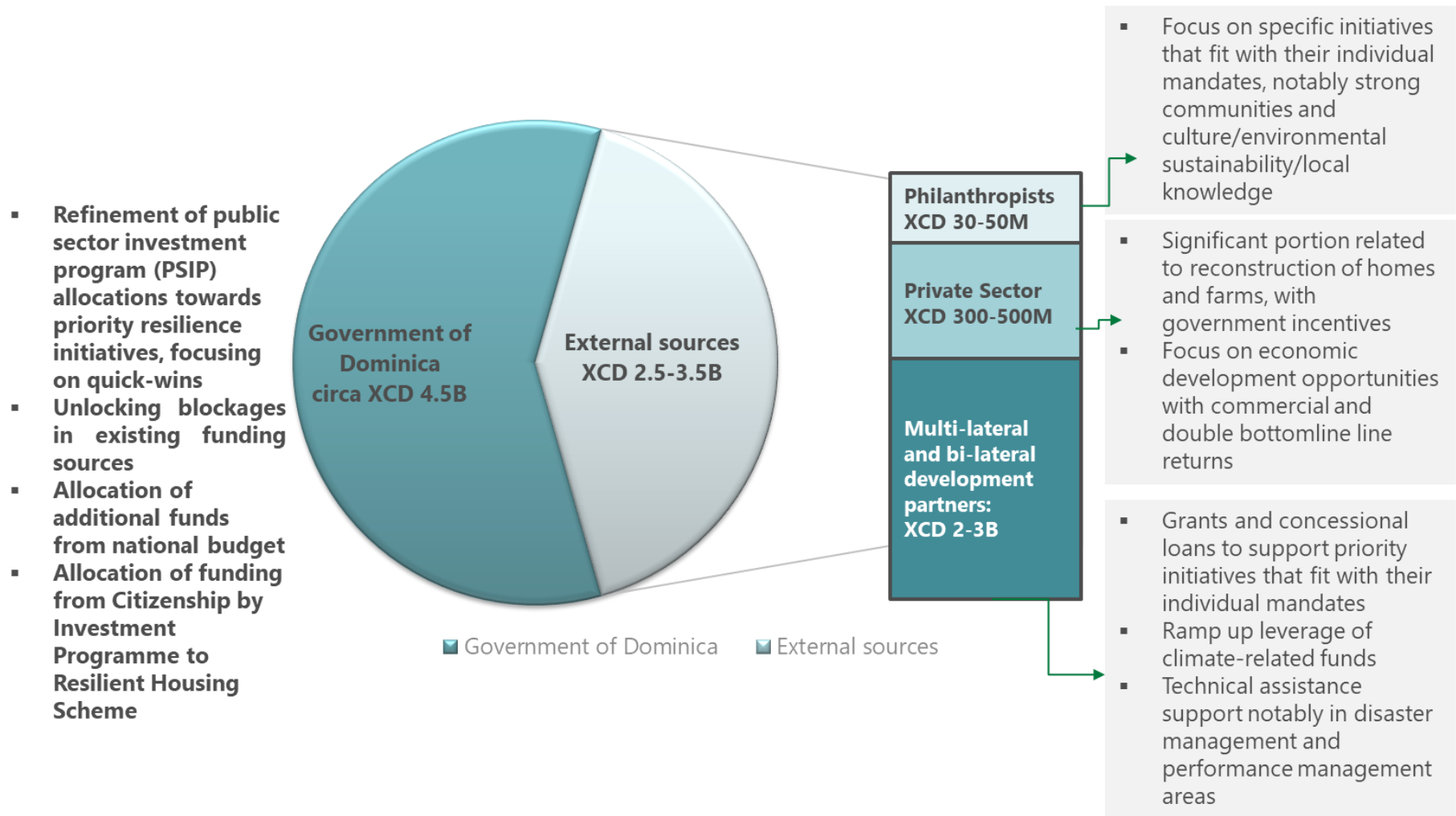


Figure 37: Overview of financing sources for CRRP initiatives

Potential Sources of Funding for the Resilience Agenda

Initiative	Estimated cost (XCD)	Potential Source of Financing			
		Government of Dominica	Development partners	Private investors	Philanthropy
1 Each One, Reach One	11M				X
2 Responsible Land Stewardship	250K	X			
3 Community Emergency Readiness	25-29M	X	X		
4 Modern Village Council Initiative	100K	X	X		
5 Enhanced Social Safety Net	35M	X	X		
6 Resilient Housing Scheme	1B	X	X	X	
7 Kalinago Territory Development Plan	42M	X	X	X	
8 National Shelter Plan	Applied to Infrastructure				
9 SMART Health Care	Applied to Infrastructure				
10 SMART Schools	Applied to Infrastructure				
TOTAL	1.1B				

Figure 38: Potential sources of funding for Strong Communities Initiatives

		Potential Source of Financing			
Initiative	Estimated cost (XCD)	Government of Dominica	Development partners	Private investors	Philanthropy
1 Global Centre for Agricultural Resilience	200-500M	✘	✘	✘	
2 Support for Resilient Tourism	100K	✘	✘		
3 Rehabilitation of Essential Oils Sector	3-7M			✘	✘
4 Development of High Value Export Sector	10-15M		✘	✘	
5 Development of Knowledge & Technology Sector	1-2M	✘		✘	
6 Unlocking Local Finance	100K		✘	✘	
7 Crowd Funding Platform	100K			✘	✘
8 Venture Capital Investment – Women’s Agriculture	1.2M			✘	✘
9 Innovative Approach to Insurance	650K	✘			
10 MSME Capacity Building	1M	✘			
11 Innovation Award	500K	✘		✘	
TOTAL	218-528M				

Figure 39: Potential sources of funding for Robust Economy Initiatives

Initiative	Estimated cost (XCD)	Potential Source of Financing			
		Government of Dominica	Development partners	Private investors	Philanthropy
1 Resilient Dominica Physical Plan (RDPP)	36.4M	X	X		
2 RDPP – (Capital Works Program based on double cost of PDNA damage cost assessment to build back better)	4.5-5.4B	X	X		
3 Centre of Excellence for Data in Resilience Decision-making	6.75M	X	X		
4 Procurement Capacity Building	1.35M	X	X		
TOTAL	4.6-5.5B				

Figure 40: Potential Sources of funding for Well-planned and Durable Infrastructure Initiatives

		Potential Source of Financing			
Initiative	Estimated cost (XCD)	Government of Dominica	Development partners	Private investors	Philanthropy
1 Centre of Excellence for Data in Resilience Decision-making	Applied to Infrastructure	X			
2 National Physical Plan	Applied to Infrastructure	X	X		
3 Updated Policies & Regulations	400K	X	X		
4 Revised PSIP Management Framework	100K	X			
5 Enhanced Disaster Risk Management Agency	8M	X	X		
6 Government Continuity Plan	200K	X	X		
TOTAL	320-550M				

Figure 41: Potential sources of funding for Strengthened Institutional Systems Initiatives

		Potential Source of Financing			
Initiative	Estimated cost (XCD)	Government of Dominica	Development partners	Private investors	Philanthropy
1 Koudmen Domnik	2.5M	X			X
2 Respect for All	1.5M	X	X		X
3 Community Resilience	Applied to Community				X
TOTAL	4M				

Figure 42: Potential sources of funding for Enhanced Collective Consciousness Initiatives

Initiative	Estimated cost (XCD)	Potential Source of Financing			
		Government of Dominica	Development partners	Private investors	Philanthropy
1 Blue Economy Investment Fund	20M	X	X	X	X
2 Geothermal Export	TBC		X	X	
3 Debt for Nature Swap	Success fee	X			
4 Forest/Ecosystem Audit	2.2M	X	X		
5 Plant One Million Trees	10M	X	X	X	X
6 Marine Environment Audit/Plans	2.3M	X	X	X	
7 Mangrove Stabilization	2.1M	X	X		
8 Waste Management	4M	X	X		
9 Post Disaster Waste Management	2.1M	X	X		
10 Renewable Energy	30M	X	X	X	
11 Museum/Hurricane Experience Knowledge Centre	20.25M			X	X
12 Export Resilience in a Box	N/A	X			
TOTAL	93M				

Figure 43: Potential sources of funding for Protected and Sustainably Leveraged Natural and other Unique Assets Initiatives





ANNEX 1: CONTRIBUTORS AND STAKEHOLDERS CONSULTED

Public Service Entities

Ministry of Blue and Green Economy, Agriculture and National Food Security

Ministry of Education, Human Resource Planning, Vocational Training and National Excellence

Ministry of the Environment, Rural Modernisation and Kalinago Upliftment

Ministry of Foreign Affairs, International Business and Diaspora Relations

Ministry of Finance and Investment

Ministry of Governance, Public Service Reform, Citizen Empowerment, Social Justice and Ecclesiastical Affairs

Ministry of Housing and Urban Development

Ministry of Health, Wellness and New Health Investment

Ministry of National Security and Home Affairs

Ministry of Public Works and The Digital Economy

Ministry of Sports, Culture and Community Development

Ministry of Telecommunications and Broadcasting

Ministry of Trade, Commerce, Entrepreneurship, Innovation, Business and Export Development

Ministry of Tourism, International Transport, and Maritime Initiatives

Ministry of Youth Development and Empowerment, Youth at Risk, Gender Affairs, Seniors' Security, and Dominicans With Disabilities

Statutory Bodies

Dominica Water and Sewage Company Limited (DOWASCO)

Dominica Air and Sea Port Authority (DASPA)

Agricultural Industrial Development (AID) Bank

Invest Dominica Authority (IDA)

Dominica Export Import Agency (DEXIA)

Dominica Bureau of Standards (DBOS)

Independent Regulatory Commission (IRC)

Dominica Association of Local Government Authorities

Private Sector Entities

Dominica Association of Industry and Commerce (DAIC)

Dominica Cooperative Societies League Ltd
National Development Foundation of Dominica (NDFD)
Dominica Electricity Services (DOMLEC)
Dominica Manufacturer's Association (DMA)
Dominica Hotel & Tourism Association (DHTA)
Dominica Youth Business Trust (DYBT)
Dominica Essential Oils and Spices Cooperative (DEOSC)
Dominica Organic Agriculture Movement (DOAM)
Dominica Association of Persons with Disabilities (DAPD)
West & East Dominica Children's Federation

Academia and Thought Leaders

Dr. Lennox Honychurch
Dominica State College (DSC)

Social Sector Entities

National Council of Women
International Organization for Migration
Kalinago Territory Council
Concern Citizens Movement
Marigot Council

Regional and International Organizations

Caribbean Agricultural Research and Development Institute (CARDI)
Caribbean Public Health Agency (PAHO)
The CARICOM Secretariat
The Organization for Eastern Caribbean States (OECS) Commission
The Food and Agriculture Organization (FAO)
The Inter-American Institute for Cooperation on Agriculture (IICA)
Centre for Resource Management and Environmental Studies (CERMES) of the UWI
The Caribbean Community Climate Change Centre (CCCCC)
United Nations Development Programme (UNDP)
Caribbean Disaster and Emergency Management Agency (CDEMA)
Caribbean Catastrophe Risk Insurance Facility (CCRIF)
Rocky Mountain Institute (RMI)
Clinton Climate Initiative (CCI)

ANNEX 2: RATIONALE OF, APPROACH TO, AND INITIATIVES FOR ACHIEVING TARGETS

Strong Communities

1. Zero Climate Related Fatalities by 2025

In order to achieve this metric we need to ensure that the entire population has safe shelter ahead of a major weather event, Disaster Management Plans and resources are available within each community and the vulnerability of housing is reduced, with the most vulnerable in the population within emergency shelters ahead of a major weather event. First aid and healthcare will also be required within communities during and directly after an event and a communication system will need to be 100% operational throughout a storm so that emergency evacuation can be arranged at the earliest opportunity.

2. All communities to operate safely and independently for up to 15 days after a major storm event by 2025

Having learnt from the impact of Hurricane Maria the passing of a major storm can lead to flooding, landslides and road obstructions, which can leave communities cut off for prolonged periods of time. In order for the individuals within a community to be able to survive and be able to communicate with the rest of the nation is essential. In major events utilities can become interrupted and it will be important for communities to have access to power, water and communications. It will be critically important for communities to have food stores with sufficient supplies for 15 days.

3. Individuals to return to a basic standard of living with 3 days after a major storm event by 2030

It is important for a community and its individuals to be able to bounce back to a basic standard of living quickly after a disaster and in order to do that community facilities need to be able to resume basic service within 3 days, including Schools and Healthcare facilities, and access to major roads (secondary roads and remote communities may take longer). In order to ensure that this is possible schools and healthcare facilities will need to be built to resilient building standards and have independent back up water and electrical supplies, an operational continuity plan and community based staffing plans to ensure that basic education and health services can be delivered in the community.

4. 90% of Housing Built to or retrofitted to resilient standards by 2030

The damage caused to the housing stock of Dominica during Hurricane Maria was considerable with over 90% of homes being damaged. To build resilience it is critical that the nation's homes must be built to appropriate structural standards that can resist the strong winds of a major storm event. To this end, it is critical that all new homes are built and certified as complying with the standards and that all existing homes are inspected, have any structural issues addressed and are certified to meet the required codes.

5. 100% Resettlement of individuals living physically vulnerable locations by 2025

The goal is to transform the structural reliability of the nation's housing to extreme weather and relocate those currently located in physically vulnerable locations

Robust Economy

6. Total damage incurred in a major weather event to be no more than 5% of GDP

In order to achieve this target we need to ensure that many other targets are achieved including the targets for infrastructure, housing, agriculture, ports/airports and many other sectors to ensure that damage is minimized. All our initiatives will have a contribution to this.

7. Losses to Agriculture/Fisheries to be no more than 50% of their GDP contribution

Ensuring that the Agriculture/Fisheries sector is more resilient to extreme weather events is critical to both the economy and livelihoods.

8. 100% functioning of Critical Government and Emergency Services during and after and event

Continuity of a functioning Government is critical to the economy and communities to enable bouncing back from a disaster.

9. Airports and Ports open within 1 week of a disaster

Airports and Ports Operational Continuity Plans with appropriate resourcing will allow the free movement of people and goods to and from the country, within 1 week of a major event, benefiting the economy and community to a business as usual outlook. The development of specific Government Continuity Plan for these key national assets, along with procurement of additional equipment and hardening of infrastructure will be critical to achieving this target.

10. Sustained, sustainable growth of a minimum 5% GDP annual achieved

Growing the economy creates jobs and can lead to individuals having increased disposable income, thus providing a personal financing buffer to economic shocks caused by climatic disasters. In addition, diversifying the key economic markets away from markets such as agriculture, fishing and tourism which all can be impacted by major climatic events, will develop economic resilience. Improved regulation and coverage of assets with appropriate risk transfer mechanisms, including insurance will also protect borrowers and lenders from economic losses of extreme climatic events.

Well-planned and Durable Infrastructure

11. 100% Primary Roads and bridges open within 3 days

Ensuring that major access routes are clear and safe within 3 days of the passing of a major weather event is critical to getting the country up and running again. Two major initiatives will deliver on this target:

- Government Operational Continuity Plan-will also identify management systems, resources and equipment to remove debris hindering access

12. At least 60% water/sanitation (as a % of population) within 7 days

Maintaining access to quality drinking water is a critical concern after a major storm event where utility infrastructure could be damaged, leading to the community being stressed by limited access to water for health purposes.

13. At least 90% power coverage restored (as a % of population) within 3 days

Ensuring that 90% of the country has access to mains power within 3 days of a natural disaster passing is critical to get communities and the economy up and running again, as well restoring individual well-being.

14. Less than 5% of schools and healthcare facilities damaged or destroyed (not functioning)

Ensuring that key community infrastructure like schools and healthcare facilities are constructed to withstand major storm impacts and have a continuity plan in terms of secondary utilities, will enable them to reopen and service communities quickly.

15. 100% of communication systems will be restored within 3 months

Ensuring that 100% of the country has access to communications within 3 months of a natural disaster passing is critical to get the economy up and running again, as well restoring individual well-being. Critical communications infrastructure will be target for early resumption, but full island coverage needs to be re-established within 3 months.

Strengthened Institutional Systems

16. 100% of national budgeting, policies in place and enforced, and government performance measurement framework informed by resilience targets

Ensuring that the Public Service can implement the Climate Resilience Mandate is critical to the successful achievement of all targets and with this in mind it is critical to develop supporting budget-setting processes, policies (including enforcement procedures) and frameworks to guide and measure the performance on staff in terms of delivering on priority initiatives.

Enhanced Collective Consciousness

17. 90% of the population able to identify the pillars of resilience and at least one measure undertaken, with specific focus on respect for people, planet and property; and law and order maintained following significant disasters

The Collective Consciousness of Dominica is how each citizen sees themselves in the larger scheme of the country's development aspirations, and their sense of personal responsibility to assist with Dominica becoming the first Climate Resilient Nation. Enhanced community cohesion through working together with shared vision and goals, as well as to ensure law and order under all circumstances, thereby building a peaceful and prosperous nation.

Protected and Sustainably Leveraged Natural and Other Unique Assets

18. 60% of agriculture land cultivated organically and full ban on use of chemical pesticides in national parks, and near rivers

Agriculture is one of the most disaster affected sectors. Agricultural production and livelihoods, particularly of the majority of smallholder farmers in Dominica are recurrently affected by a variety of natural hazards. Smallholder farmers in Dominica are particularly vulnerable to natural hazard impacts since their hazard exposure is high. Organic farming is an important method for increasing resilience. This aside, staying true to Dominica's mantra of being the Nature Island of the World, protecting lands and waters from harmful chemicals is a priority for the country.

19. 50% increase of healthy coral reef coverage

Dominica has one of the smallest shelf areas supporting stretches of seagrass meadows, a variety of coral reefs and limited wetlands. Nearshore waters have been impacted by chronic disturbances like sediment (coastal development, agriculture, quarries), pollution (pesticides, untreated sewage, trash) and fishing (traps, spears, nets) and acute impacts like storms and coral bleaching. Therefore, protection of three key habitats: Coral reefs, mangroves/seagrass beds are crucial as they support fisheries, stabilize coastlines and host tourism activities.

20. Carbon Neutral Dominica, achieved through 100% domestic renewable energy production, and increase of protected forest areas to 67% of Dominica's land mass

Dominica is committed not just to adapting to climate change, but also to doing its part to reduce any contribution, however small, to greenhouse gas emissions. As such, the country will become 'carbon neutral', producing less emissions than it sequesters. This will be achieved by leveraging its large domestic renewable energy resources (hydro power, geothermal power, solar power) that can produce electricity more cheaply than using imported fossil fuels. Use of these renewable resources will also reduce energy costs and tariffs to the consumer. Increasing energy efficiency will further reduce energy costs and increase environmental sustainability. It will also increase forest coverage from the current level of 62 percent of land mass to 67 percent of landmass, thereby further sequestering carbon emissions.

ANNEX 3: DELIVERY LEAD AND SUPPORT ENTITIES

Strong Communities Initiatives

Initiative	Estimated cost (XCD)	Time to Delivery	Delivery Entity Lead	Support Entity
1 Each One, Reach One	11M	2020-2025	MoEHRPVTNE	Community Orgs, NYCD & CREAD
2 Responsible Land Stewardship	250K	2020-2021	MoHUD	MoBGANFS
3 Community Emergency Readiness	25-29M	2020-2025	ODM, NEPO S/C and MoSCCD/LGA	CREAD
4 Modern Village Council Initiative	100K	2020-2022	MoSCCD	CREAD
5 Enhanced Social Safety Net	35M	2020-2022	MoEAPRSDTB	MoHWNHI, CREAD,
6 Resilient Housing Scheme	1B	2020-2030	MoHUD	Physical Planning, CREAD
7 Kalinago Territory Development Plan	42M	2020-2030	MoERMKU	Kalinago Council
8 National Shelter Plan	Covered under Infrastructure	2020-2030	MoSCCD/MoNSHA ODM/Physical Planning	CREAD
9 SMART Health Care	Covered under Infrastructure	2020-2030	MoHWNHI	CREAD
10 SMART Schools	Covered under Infrastructure	2020-2030	MoEHRPVTNE	CREAD
TOTAL	XCD 1.1B			

Robust Economy Initiatives

Initiative	Estimated cost (XCD)	Time to Delivery	Delivery Entity Lead	Support Entity
1 Dominica Global Centre for Agriculture	200-500M	2020-2030	MoBGANFS	CREAD, MoERMKU, MoEAPRSDTB
2 Support for Resilient Tourism	100K	2020	MoTITMI	DHTA, MoNSHA ODM
3 Rehabilitation of Essential Oils Sector	3-7M	2020-2022	CREAD working with DEOSC	MoSCCD, MoBGANFS, MoTCEIBED
4 Development of High Value Export Sector	10-15M	2020-2021	DEXIA, CREAD	MoTCEIBED, IDA, MoBGANFS
5 Development of Knowledge & Technology Sector	1-2M	2020-2022	CREAD	MoEHRPVTNE, DSC, DAIC and IDA
6 Unlocking Local Finance	100K	2020-2022	MoEAPRSDTB	Banks, Credit Unions, AID Bank, MoTCEIBED, DMA, CREAD
7 Crowd Funding Platform	100K	2020	CREAD	MoF and MoTCEIBED
8 Venture Capital Investment – Women’s Agriculture	1.2M	2020	CREAD	GEF SGP UNDP, Cooperatives, MoBGANFS, LGA and MoTCEIBED
9 Innovative Approach to Insurance	500K	2020	MoFI -Financial Services Unit	CREAD, MoHUD and Insurance Companies
10 MSME Capacity Building	1M	2022	CREAD	MoTCEIBED
11 Innovation Award	500K	2019	MoTCEIBED	CREAD
TOTAL	218-528M			

Well-planned and Durable Infrastructure Initiatives

Initiative	Estimated cost (XCD)	Time to Delivery	Delivery Entity Lead	Support Entity
1 Resilient Dominica Physical Plan (RDPP)	36.4M	2020-2021	CREAD	MoEAPRSDTB and All Line Ministries
2 RDPP – (Capital Works Programme based on double cost of PDNA damage cost assessment to build back better)	4.5-5.4B	2022-2040	CREAD	MoEAPRSDTB and all Ministries and Utilities
3 Centre of Excellence for Data in Resilience Decision-making	6.75M	2020	MoEAPRSDTB and Central Statistics Office	CREAD
4 Procurement Capacity Building	1.35M	2020	CREAD	MoPWDE and MoFI
TOTAL	4.6-5.5B			

Strengthened Institutional Systems Initiatives

Initiative	Estimated cost (XCD)	Time to Delivery	Delivery Entity Lead	Support Entity
1 Centre of Excellence for Data in Resilience Decision-making	Applied to Infrastructure	2020-2021	MoEAPRSDTB	CREAD
2 Resilient Dominica Physical Plan (RDPP)	Applied to Infrastructure	2020-2021	CREAD	MoEAPRSDTB
3 Updated Policies & Regulations (1)	400K	2020-2021	All Ministries	CREAD
4 Revised Public Sector Investment Plan Allocation Process and Performance Management Framework (2)	100K	2020	MoEAPRSDTB, MoFI and MoGPSRCESJEA	CREAD
5 Enhanced Disaster Risk Management Agency (3)	8M	2020-2021	MoNSHA and ODM	CREAD
6 Government Continuity Plan (4)	200K	2020-2021	CREAD	MoEAPRSDTB/ODM
TOTAL	320-550M			

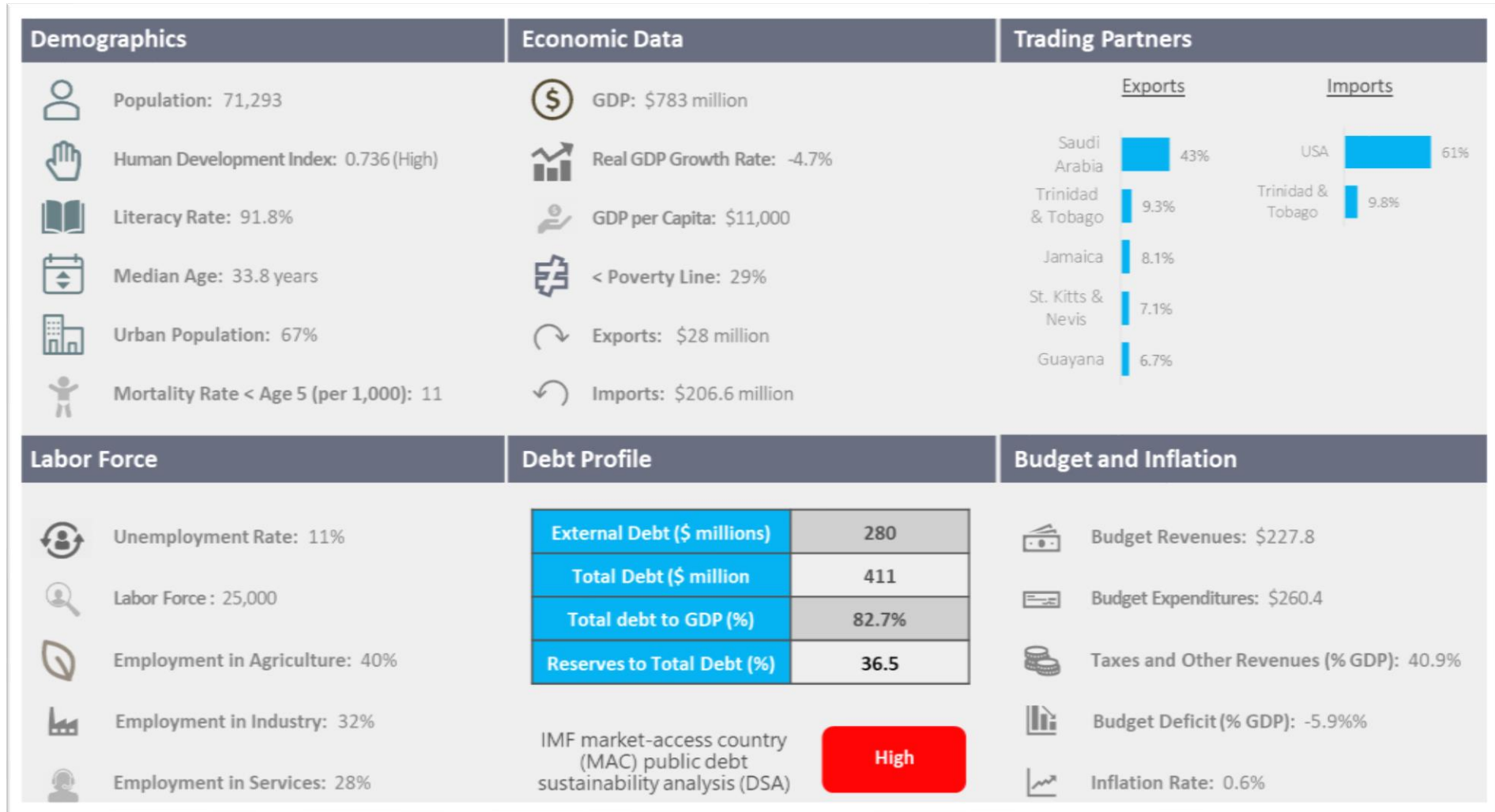
Enhanced Collective Consciousness Initiatives

Initiative	Estimated cost (XCD)	Time to Delivery	Delivery Entity Lead	Support Entity
1 Koudmen Domnik Volunteer Initiative	2.5M	2020-2030	MoEHRPVTNE, MoSCCD, MoYDEYRGASSDD	DSC, Village/town councils, Faith-based Organisations
2 Respect for All	1.5M	2020-2030	MoEHRPVTNE, MoSCCD, MoYDEYRGASSDD	Women's Bureau, Village Councils, Community Practitioners Platform, NGO's
3 Community Emergency Readiness Initiative	Covered under Community	2020-2025	ODM, NEPO S/C and LGA	CREAD
TOTAL	4M			

Protected and Sustainably Leveraged Natural and other Unique Assets Initiatives

	Initiative	Estimated cost (XCD)	Time to Delivery	Delivery Entity Lead	Support Entity
1	Blue Economy Investment Fund	20M	2020-2025	MoBGEANFS	CREAD
2	Geothermal Export	TBC	2022-2025	MoBGEANFS	DGDC
3	Debt for Nature Swap	Success fee	2020-2021	MoFI, MoERMKU	CREAD
4	Forest/Ecosystem Audit	2.2M	2020	MoERMKU	
5	Plant One Million Trees	10M	2020	MoERMKU, MoBGEANFS	MOSCCD
6	Marine Environment Audit/Plans	2.3M	2021-2025	MoBGEANFS	
7	Mangrove Stabilization	2.1M	2021-2025	MoBGEANFS	
8	Waste Management	4M	2021-2025	MoERMKU	MOSCCD
9	Post Disaster Waste Management	2.1M	2020-2021	MoERMKU	
1 0	Renewable Energy	30M	2020-2030	MoBGEANFS	DOMLEC, IRC, CREAD
1 1	Museum/Hurricane Experience Knowledge Centre	20.25M	2020-2022	MoEHRPVTNE	MoTITMI, MoEAPRSDTB
1 2	Export Resilience in a Box	N/A	2020	CREAD	
	TOTAL	93M			

ANNEX 4: COUNTRY PROFILE AND KEY STATISTICS



Source: Dominica Census 2011; Caribbean Development Bank (2016); Index Mundi

ⁱ Post Disaster Needs Assessment, Government of the Commonwealth of Dominica, November 2017

ⁱⁱ Intergovernmental Panel on Climate Change (IPCC) Fifth Assessment Report (AR5) (2014), IPCC Special Report on Climate Change and Land (2019)

ⁱⁱⁱ Taylor et al (2018) Future Caribbean Climates in a World of Rising Temperatures: The 1.5 vs 2.0 Dilemma

^{iv} International Monetary Fund (IMF) Policy Paper, Building Resilience in Developing Countries Vulnerable to Large Natural Disasters, June 2019.

^v The Caribbean and Climate Change: The cost of Inaction, Bueno, R. E. Stanton, C. Herzfeld, Stockholm Environment Institute, 2008.