

**THE
COMMONWEALTH OF
DOMINICA'S**

**SIXTH NATIONAL
REPORT**

**TO THE CONVENTION ON
BIOLOGICAL DIVERSITY**

This report has been prepared in fulfilment of the Commonwealth of Dominica's reporting obligations as a Party to the Convention on Biological Diversity. It provides a review of progress in the implementation of Dominica's National Biodiversity Strategy and Action Plan 2014-2020. It also describes Dominica's progress in implementation of the Strategic Plan for Biodiversity 2011-2020, including progress towards the Aichi Biodiversity Targets.

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2019

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ACRONYMS AND ABBREVIATIONS

6NR	Sixth National Report to the Convention on Biological Diversity	FAO	Food and Agriculture Organisation of the United Nations
ABS	Access and benefit-sharing	GEF	Global Environment Facility
ABT	Aichi Biodiversity Target	GEF-UNDP SGP	Global Environment Facility-United Nations Development Programme Small Grants Programme
CARDI	Caribbean Agricultural Research and Development Institute	GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit
CARICOM	Caribbean Community	GMO	Genetically-modified organism
CATS	Caribbean Aqua-Terrestrial Solutions	IAS	Invasive alien species
CBD	Convention on Biological Diversity	IICA	Inter-American Institute for Cooperation on Agriculture
CBO	Community-based organisation	IUCN	International Union for Conservation of Nature
CEPA	Comunications, education, and public awareness	IWRM	Integrated water resources management
CITES	Convention on the International Trade in Endangered Species of Wild Fauna and Flora	KAP	Knowledge, attitudes, and practices
DEEP	Dominica Environmental Education Programme	LCDS	Low-Carbon Climate-Resilient Development Strategy
DOAM	Dominica Organic Agriculture Movement	LMO	Living modified organism
DYEO	Dominica Youth Environment Organisation	METT	Management effectiveness tracking tool
ECMMAN	Climate-Resilient Eastern Caribbean Marine Managed Areas Network	MMA	Marine managed area

NBSAP National Biodiversity Strategy
and Action Plan

NRDS National Resilience
Development Strategy -
Dominica 2030

NGO Non-governmental
organisation

OECS Organisation of Eastern
Caribbean States

EXECUTIVE SUMMARY

This sixth national report (6NR) has been prepared in fulfilment of the Commonwealth of Dominica's reporting obligation as a Party to the Convention on Biological Diversity (CBD), and is a description and assessment of the country's implementation of the CBD and the global Strategic Plan for Biodiversity 2011 - 2020, with reference to Dominica's National Biodiversity Strategy and Action Plan (NBSAP) 2014 - 2020.

The 6NR was prepared using a participatory process that engaged and involved over 25 entities, including government agencies, regional and international organisations, non-governmental organisations (NGOs), community-based organisations (CBOs), and the private sector. The stakeholder engagement process undertaken to prepare the 6NR is outlined in Annex IV to this report.

Dominica's 2014 - 2020 NBSAP includes three national biodiversity goals, five national biodiversity objectives, five national biodiversity targets, 12 biodiversity strategies, and 20 actions with associated outputs/outcomes. The contents of the NBSAP are summarised in Annex II to this report. There has been limited progress in implementing the planned actions and achieving the desired outcomes. As of 2019, five of the 20 actions in the NBSAP have been partially implemented, and none have been fully implemented, that is, none of the planned outcomes have been achieved. Further findings re implementation of the NBSAP are summarised in the synopsis table below.

Dominica's implementation of the 2014 - 2020 NBSAP has been hampered by the effects of two major natural disasters: Tropical Storm Erika in 2015 and Hurricane Maria in 2017. Tropical Storm Erika was Dominica's worst natural disaster in 36 years. Hurricane Maria was the worst natural disaster in Dominica's recorded history. Losses as a result of Hurricane Maria have been estimated at US\$1.37 billion, more than 200% of Dominica's 2016 gross domestic product. As a consequence, national priorities and resources have been sharply oriented towards reconstruction and restoration of infrastructure, livelihoods, and the economy. Several of the strategies in the NBSAP are no longer feasible at present given the storm damage caused to relevant habitats and ecosystems. The post-hurricane recovery process has introduced new or exacerbated existing biodiversity management challenges, for example, an increase in invasive alien species (IAS).

In the post-Hurricane Maria context, some of the main focal areas for biodiversity action in Dominica have been:

- Ecosystems restoration and resilience, particularly through revegetation and reforestation;
- Restoring and enhancing biodiversity-based livelihoods, especially in the agriculture and fisheries sectors; and
- Combatting the introduction and spread of IAS, with initiatives in this regard being spearheaded by the non-governmental sector.

For improved progress towards the national biodiversity goals, objectives and targets, areas requiring additional attention, capacity, and resources include, but are not limited to:

- Strengthening the action planning component of the NBSAP to include specific tasks, allocation of roles and responsibilities, timelines, budgets and resource mobilisation strategies, and mechanisms to facilitate incorporation of NBSAP strategies and actions into the work programmes and projects of biodiversity stakeholders;
- Adopting and/or strengthening sectoral policies, legislation, and action plans to support and promote the conservation, management and sustainable use of biodiversity;
- Establishing a systematic programme of monitoring and reporting in relation to the indicators and outcomes outlined in the NBSAP;
- Improving the collection, sharing, use, and publication of biodiversity-related data, both to monitor progress in implementation of the NBSAP and to inform broader science-based policy-making;
- Improving awareness of the value of Dominica's biodiversity and enhancing the ability of Dominicans, particularly the indigenous Kalinago people, to effectively participate in biodiversity management and conservation; and
- Increasing funding for biodiversity.

Planned Action		Degree of implementation	Notes
I	Conduct inventory of biodiversity resources	Not implemented	Plans for an inventory were developed prior to Hurricane Maria; implementation has been postponed
2	Establish baseline for agreed targets	Not implemented	
3	Strengthen quarantine efforts and enforcement legislation	Not implemented	
4	Coordinate policy on food security, technology and biodiversity conservation	Not implemented	National food security policy does not include references to GMOs or biosafety
5	Reduce conflict between traditional agriculture and organic farming	Not implemented	Requires a national policy on organic agriculture
6	Expand public awareness on biosafety issues	Not implemented	
7	Include biosafety regulation into environmental legislation	Not implemented	Environmental legislation still in draft
8	Draft legislation to stop the use of deleterious substances in the harvesting river fish.	Not implemented	Relevant provisions in existing legislation (Forestry and Wildlife Act) date back to 1976
9	Direct the Caribbean Agricultural Research and Development Institute (CARDI) to act as first level genetic pool	Not implemented	
10	Strengthen and enforce permitting system for harvesting, development and research of forest resources	Not implemented	Relevant provisions in existing legislation (Forestry and Wildlife Act) date back to 1976
11	Establish biodiversity knowledge network among Environment, Agriculture, Forestry and Fisheries with some emphasis on traditional knowledge	Not implemented	The communications strategy for the 6NR proposes an approach in this regard

Planned Action		Degree of implementation	Notes
12	Bring agriculture sector performance in line with biodiversity principles	Partially implemented	Agriculture stakeholders have been taken action to promote and build capacity for more environmentally sustainable and biodiversity-friendly agriculture. However, there is a need for national policy definitions of sustainable agriculture and of relevant biodiversity principles
13	Promote soil conservation through education	Partially implemented	GEF project for sustainable land management approved for implementation Agriculture agencies have taken some action to build capacity for soil conservation and good land husbandry
14	Seek agreement among farmers to regulate pesticide use in support of the Organic Island concept	Not implemented	The Organic Island concept needs to be given a firm grounding and definition in national policy and planning
15	Encourage the use of the sustainable principles spelt out in the agriculture policy to support both traditional and organic agriculture	Partially implemented	Some actions have been taken that align with proposals in the Draft Agriculture Policy and Action Plan. However, the Draft has not been formally adopted as a national policy, and contains little to no reference to organic agriculture
16	Develop economic accounting system for biodiversity resources	Not implemented	
17	Pursuing REDD and REDD+ and carbon financing in support of Dominica's forest	Not implemented	Hurricane damage to the forests poses an obstacle to implementation of this action

Planned Action		Degree of implementation	Notes
18	Promote partnership between government and private land owners	Partially implemented	Forestry, Wildlife and Parks Division supports and promotes sustainable forest management on private lands. NGO WildDominique is in discussion with government and a private land owner about establishment of a conservation area for the endemic and critically endangered Mountain Chicken frog (<i>Leptodactylus fallax</i>) As yet, no formal partnership agreements or memoranda of understanding have been put in place.
19	Training of indigenous people in resource management	Partially implemented	Some training has been reported, but its reach and impact is unclear
20	Formulation of financial plan to support biodiversity management	Not implemented	

NATIONAL BIODIVERSITY TARGETS

This section of the report presents information on the national biodiversity targets that the Commonwealth of Dominica has adopted in line with the Strategic Plan for Biodiversity 2011 - 2020.

Dominica has adapted five of the 20 Aichi Biodiversity Targets (ABTs, see Annex I) as priorities for national biodiversity action. These targets are contained in Dominica's NBSAP 2014 - 2020, and are as follows:

1. By 2020 at the latest, all residents of the Commonwealth of Dominica will be aware of the value of biodiversity, and the steps they can take to conserve and use it sustainably.
2. By 2020, at least 15 % of areas under agriculture, aquaculture and forestry are managed sustainably, ensuring conservation of biodiversity.
3. By 2020, pollution, including from excess nutrients, has been brought to levels that are not detrimental to ecosystem function and biodiversity.
4. By 2020, at least 15 %¹ of terrestrial, inland water and 15 % of coastal and marine areas, especially areas of particular importance for biodiversity and ecosystem service, are conserved through comprehensive ecologically representative and well-connected systems of effectively managed protected areas and other means, and integrated into the wider land and seascape.
5. By 2020, ecosystem resilience and the contribution of biodiversity to carbon stock has been enhanced, through conservation and restoration, including restoration of at least 15 % of degraded ecosystems, thereby contributing to climate change mitigation and adaptation, and to combating desertification.

These five targets correspond to ABT 1, *Awareness increased*, ABT 7, *Sustainable agriculture, aquaculture and forestry*, ABT 8, *Pollution reduced*, ABT 11, *Protected areas increased and improved*, and ABT 15, *Ecosystems restored and resilience enhanced*.

¹ There is a discrepancy in the NBSAP regarding the target to terrestrial and inland water protected areas. At some points the target is stated as 20 %, and at others it is stated as 15 %. 15 % is the figure used in this report, as it appears in the NBSAP more frequently.

The process of developing the NBSAP and selecting the national biodiversity targets was guided by a national steering committee, and involved consultation with government agencies, NGOs, and other biodiversity stakeholders. The NBSAP contains a summary of the planning and prioritisation process.

Although the above five targets are the national priorities for biodiversity action, the NBSAP indicates that all the goals and targets of the Strategic Plan for Biodiversity are considered relevant and will be addressed, to the extent possible, within Dominica's national development framework. To reflect this, the NBSAP includes objectives, strategies and action plans that support progress towards all 20 ABTs. The full NBSAP framework of targets, objectives, strategies and action plans, including correspondence with the ABTs, is summarised in Annex II.

The *Implementation* section of this report describes and assesses measures taken in respect of Dominica's national biodiversity objectives, which represent the country's short and medium term expectations for the management of its biological resources. The *Progress* section of the report focuses on the five national biodiversity targets. Progress towards the full range of ABTs is summarised in the section on *National Contribution to the Achievement of each Global Aichi Biodiversity Target*.

IMPLEMENTATION

This section of the report describes measures taken in the Commonwealth of Dominica in respect of its five national biodiversity objectives, and assesses the overall effectiveness of these measures. This section also presents an outline of the connections between the national objectives, related goals and strategies, and the ABTs, and summarises obstacles and capacity needs related to the achievement of each objective.

NATIONAL BIODIVERSITY OBJECTIVE 1: TO ENSURE THAT THE BIOLOGICAL RESOURCE OF DOMINICA REMAINS RICH AND DIVERSE

This objective was established in Dominica's first NBSAP, which was formulated in 2000, and was retained as a national biodiversity objective for the second NBSAP for the period 2014 - 2020.

The full objective is to ensure that the biological resource of Dominica remains rich and diverse by:

- maintaining optimum systems resilience;
- maintaining resistance to IAS;
- maintaining ecosystems structure and function; and
- maximising ecological integrity by reducing negative environmental impact of human influences.

Relevance to national biodiversity goals and strategies and the ABTs

This objective contributes to Dominica's national biodiversity goal 1, *the conservation and sustainable management of Dominica's terrestrial and marine biodiversity*.

The NBSAP contains the following strategies and actions relevant to this objective:

- Improve the protection and management of the country's natural environment;
- Develop a built-in reporting system for early warning of threats, periodic update for policy makers and support to the national reporting requirement under the CBD;

- Seek approval for the Climate Change, Environment and Natural Resource Bill with inclusion relative to the ABS and Biosafety protocols;
- Conduct inventory of biodiversity resources;
- Establish baseline for agreed targets;
- Strengthen quarantine efforts and enforcement legislation.

This objective and associated strategies and actions are relevant to ABT 2, *Biodiversity values integrated*, ABT 5, *Habitat loss halved or reduced*, ABT 9, *Invasive alien species*, ABT 10, *Pressures on vulnerable ecosystems reduced*, ABT 14, *Ecosystems and essential services safeguarded*, ABT 15, *Ecosystems restored and resilience enhanced*, and ABT 19, *Knowledge improved, shared and applied*.

Measures taken

Maintaining systems resilience

Objectives related to maintaining and enhancing the resilience of ecosystems have been included in the *National Resilience Development Strategy - Dominica 2030* (NRDS), which is an overarching policy document providing the road map for Dominica's sustainable development up to the year 2030. One of the seven development objectives outlined in the NRDS as part of Dominica's vision for climate resilience is "enhancing the resilience of ecosystems and sustainable use of natural resources".

The NRDS emphasises the importance of resilience-building through conservation and restoration of forests and landscapes. It also includes calls to address anthropogenic threats (for example, pollution, land-clearing, and over-harvesting) to vulnerable ecosystems and the services they provide. The protection and management of ecosystems, including forests, watersheds, and marine spaces, are considered as important contributors to the establishment of national climate-resilient systems.

Maintaining resistance to IAS

The principal items of legislation containing provisions that would protect Dominica from IAS are the Plant Protection and Quarantine Act of 1986 and accompanying regulations, the Forestry and Wildlife Act of 1976, and the Animal Diseases Act of 1952. The Plant Protection Act focuses specifically on "protection of the agricultural resources of Dominica from dangerous plants, pests, and diseases". In 2013 new statutory rules and orders were issued under the Plant Protection Act to strengthen Dominica's resistance to new and emerging agricultural pests such as black sigatoka and a range of pests known to affect citrus crops. The Forestry and Wildlife Act makes it an offence to, without an appropriate permit, import, introduce, possess, transport, or release any species of

wildlife not indigenous to Dominica. The Animal Diseases Act prohibits the unlicensed importation of birds, reptiles, or insects. The Importation of Frogs (Prohibition) Regulations of 2004 extend these prohibitions to the importation of live or dead frogs or parts thereof. There has been no recent legislative action to revise the provisions of the Forestry and Wildlife Act or the Animal Diseases Act to strengthen the control and management of IAS.

Since 2018, the conservation NGO WildDominique has been implementing two projects with a focus on control of introduced/invasive species. One project seeks to control the spread of *Iguana iguana*, which is a threat to the native, regionally endemic and critically endangered *Iguana delicatissima*. The second project focuses on the eradication of the invasive Cuban tree frog (*Osteopilus septentrionalis*). Both projects include species surveys and mapping, public outreach and awareness-raising, and building local capacity to identify and capture the target species. The Forestry, Wildlife and Parks Division is a partner on these projects, as are several international organisations, including the International Union for Conservation of Nature (IUCN), Fauna & Flora International, and the International Iguana Foundation. The Global Environment Facility-United Nations Development Programme Small Grants Programme (GEF-UNDP SGP) provides financial support for the Cuban tree frog eradication programme.

Dominica is a participating country in the regional project *Preventing Costs of Invasive Alien Species in Barbados and the OECS (Organisation of Eastern Caribbean States) Countries*, which is funded by the Global Environment Facility (GEF). The project's objective is to improve prevention, early detection, control and management frameworks for IAS in target countries, taking a risk management approach and focusing on the highest risk invasion pathways. Implementation of the project commenced in late 2018. The component of the project from which Dominica is expected to benefit is that related to strategy development, coordination, capacity-building and awareness for improving regional biosecurity.

Maintaining ecosystems structure and function

In order to maintain the structure and function of Dominica's forest ecosystems, the Forestry, Wildlife and Parks Division is undertaking a national reforestation programme, which commenced in 2015 and intensified after Hurricane Maria. In keeping with the NRDS, the emphasis is on reforestation of priority storm-impacted areas in the forests. The goal is to plant at least 1 million trees islandwide, including in urban spaces. Planting is done using tree stock from the Division's three forest nurseries. The Division is taking action to establish eight community nurseries and to involve farmers, NGOs, youth,

private land owners, and other members of civil society in the national reforestation efforts.

The Forestry Division is also making arrangements, as part of the World Bank-funded Disaster Vulnerability Reduction Project, to carry out a national inventory of flora and fauna types across the island. Information from this inventory will be used to develop nurseries and plan reforestation and slope stabilisation actions.

In 2017 the GEF approved implementation of a national project on *Sustainable Land Management in the Commonwealth of Dominica*. The project includes a component focused on reducing the effects of land degradation on ecosystems services, aiming to restore at least 4,000 hectares of degraded forest areas with native vegetation. The emphasis will be on the rehabilitation of degraded watershed areas that were significantly damaged by Tropical Storm Erika and subsequently declared as disaster areas.

The Caribbean Aqua-Terrestrial Solutions (CATS) project, which is being implemented regionally by the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) in partnership with the Caribbean Community (CARICOM) and the Caribbean Public Health Agency, is building capacity for reforestation of watersheds adjoining the Soufriere-Scotts Head Marine Reserve and the Cabrits National Park marine managed area (MMA), by providing community members with training in nursery management and forest ecology. This will be followed by action, led by the Forestry, Wildlife and Parks Division, to reintroduce endemic and commercially viable species in the watersheds. It is anticipated that this will improve ecological health and provision of ecosystems services in the watershed and, by reducing soil loss and surface run-off, improve the recovery of coral reef systems in the near-shore coastal waters.

Under the regional Global Climate Change Alliance Plus project on *Climate Change Adaptation and Sustainable Land Management in the Eastern Caribbean*, in 2017 revegetative ecosystem restoration works were undertaken in three areas along the west coast of Dominica.

Measures for the preservation of the structure and function of ecosystems related to water resources are proposed in the draft National Integrated Water Resources Management (IWRM) Policy, which was developed in 2011. Such measures include development and implementation of watershed and coastal area management plans, measures to alleviate and control the effects of pollution, land use zoning for protection of water-related ecosystems, restoration of degraded watersheds, and protection and conservation of wetlands. The draft IWRM Policy has not yet been adopted by the Government for implementation.

The National Land Use Policy, which was officially adopted in 2015, includes strategies for maintaining and enhancing the structure and functioning of forests, rivers and wetlands, coastal ecosystems, and agricultural ecosystems.

Maximising ecological integrity by reducing negative environmental impact of human influences

The NRDS, draft IWRM Policy, National Land Use Policy, and draft National Physical Development Plan all contain strategies and measures to reduce negative environmental impacts associated with, *inter alia*, deforestation, pollution, human settlement and infrastructural development, agriculture, water extraction, and waste disposal.

Effectiveness of measures taken

Following consultation with biodiversity stakeholders in Dominica, effectiveness was assessed on two bases: effectiveness in terms of achieving the strategic outcomes and outputs identified in the NBSAP, and effectiveness in terms of achieving the overall biodiversity objective.

The measures taken have been **ineffective** in producing the outputs identified in the NBSAP. These outputs would have provided baseline and trend data with which to measure progress towards the overall objective.

Partly because that data has not been generated, effectiveness in relation to the overall objective is **unknown**. Other factors influencing this latter assessment are the deficiencies in information about the extent to which Hurricane Maria set back progress towards the objective, and the fact that some of the measures taken are relatively recent and therefore there has not yet been sufficient time to confidently evaluate their effect.

Based on the strategic outputs identified in the NBSAP, the following effectiveness indicators were applied:

- Has a national inventory of biodiversity resources been conducted, and is there an updated list of flora and fauna in Dominica?
- Have baselines for the national biodiversity targets been established?
- Are quarantine regulations and standard operating procedures in place?

There has not been a national inventory of biodiversity resources. However, the Forestry, Wildlife and Parks Division is preparing to carry out, with support from the World Bank's Disaster Vulnerability Reduction Project, an inventory of flora and fauna types across the island.

Baselines have not been established for the national biodiversity targets. Estimated baselines are provided in the NBSAP, but most of these are not quantitative and some of the quantitative data presented is inaccurate.

The Plant Protection and Quarantine Act and associated Importations and Import Prohibition Regulations have been in place since 1986. The Animal Diseases Act of 1952 also includes quarantine provisions. In 2013 additional statutory rules and orders came into effect under the Plant Protection and Quarantine Act, with the aim of protecting Dominica's agricultural resources from new pests. There are no formally documented standard operating procedures relating to surveillance, discovery, reporting and management of quarantine pests or other introduced species.

Other measures have been taken, and are described in the preceding section, that are not directly related to the outputs/indicators in the NBSAP, but that nevertheless contribute towards the overall objective of preserving the richness and diversity of Dominica's biological resources. Some of these measures are relatively recent, and it is too soon to be able to confidently assess their effectiveness, particularly given the lack of reliable baseline data.

Obstacles and scientific and technical needs related to the measures taken

An overarching obstacle related to achievement of this biodiversity objective is the shortage of reliable baseline and time-series data for ongoing assessment of and reporting on the state of Dominica's biological resources and their management and use. For example, it has been over 20 years since the last national farm census and over 30 years since the last national forest inventory.

A fundamental cause of the information deficiency is the lack of the requisite human and technical capacity to consistently gather/generate the relevant data. To address these shortcomings, Dominica needs scientific, technical, capacity-building, and financial support to:

- increase the staff complement and technical capacity for biodiversity research and monitoring in the public sector;
- provide agencies with equipment and tools (e.g. vehicles, geographic information systems equipment and software, telecommunications equipment) for effective and efficient fieldwork, monitoring, and research;

- carry out biodiversity inventories for key ecosystems and habitats in forests, national parks, wetlands, and coastal zones;
- develop a key suite of biodiversity status indicators, establish relevant baselines, and plan and implement a sustainable national biodiversity monitoring programme.

To improve progress towards other desired outcomes under biodiversity objective 1, Dominica would benefit from scientific, technical, capacity-building and/or financial support to:

- develop and implement a national IAS strategy, which should include measures to minimise the risk of IAS introductions associated with emergency relief, aid and response efforts;
- carry out risk assessment and priority setting related to IAS, their pathways of introduction, and their ecological and economic impacts;
- review and strengthen national quarantine legislation;
- review and strengthen the national legislative framework for the control, management and eradication of non-agricultural introduced/invasive species;
- expand the reach of existing programmes for control of introduced/invasive species;
- build capacity for surveillance and enforcement related to preventing the introduction of IAS, with a focus on control measures to be taken at ports of entry;
- develop, document, and disseminate standard operating protocols in relation to suspected/confirmed introduction/presence of quarantine pests and other potential invasive species;
- train relevant stakeholders, including those in the fields of port operations, border control, agriculture, forestry, wildlife, and fisheries, in the standard operating protocols.

NATIONAL BIODIVERSITY OBJECTIVE 2: TO REDUCE OR ELIMINATE THE POTENTIAL RISKS FROM THE USE OF BIOTECHNOLOGY AND ITS BY-PRODUCTS

This objective was established in Dominica's first NBSAP and was retained as a national biodiversity objective for the second NBSAP for the period 2014 - 2020.

The full objective is to reduce or eliminate the potential risks from the use of biotechnology and its by-products while at the same time exploiting opportunities presented that are in keeping with Dominica's sustainable development agenda.

Relevance to national biodiversity goals and the ABTs

The NBSAP contains the following strategies and actions relevant to this objective:

- Improve the protection and management of the country's natural environment;
- Seek approval for the Climate Change, Environment and Natural Resource Bill with inclusion relative to the Nagoya Protocol on Access and Benefit-Sharing (ABS) and the Cartagena Protocol on Biosafety;
- Coordinate policy on food security, technology, and biodiversity conservation;
- Reduce conflict between traditional agriculture and organic farming;
- Expand public awareness on biosafety issues;
- Include biosafety regulations in environmental legislation.

This objective and associated strategies are of relevance to ABT 1, *Awareness increased*, ABT 2, *Biodiversity values integrated*, ABT 5, *Habitat loss halved or reduced*, ABT 7, *Sustainable agriculture, aquaculture and forestry*, ABT 13, *Genetic diversity maintained*, and ABT 16, *Nagoya Protocol in force and operational*.

This objective contributes to Dominica's national biodiversity goal 3, *to ensure that biotechnology knowledge and concerns are widely distributed so that all life is guaranteed and benefits derived are equitably shared*.

It also supports implementation of the Cartagena Protocol on Biosafety, to which Dominica is a Party.

Measures taken

Over the period 2012 to 2019, Dominica was a participating country in the GEF-funded regional project *Implementing National Biosafety Frameworks in the Caribbean sub-Region*. This project supported countries in the development of draft National Biosafety Frameworks and produced a number of technical outputs such as manuals, guidelines, and factsheets to support national and regional biosafety action.

In 2014 the Dominica Food and Nutrition Council, with support from the Food and Agriculture Organisation of the United Nations (FAO), the Caribbean Public Health Agency, and the Inter-American Institute for Cooperation in Agriculture (IICA),

developed a National Food and Nutrition Security Policy. There is no reference in the Policy to biosafety, the use of biotechnology in food production, or the importation, production, and use of genetically modified organisms (GMOs) or living modified organisms (LMOs).

Effectiveness of measures taken

Following consultation with biodiversity stakeholders in Dominica, effectiveness was assessed on two bases: effectiveness in terms of achieving the strategic outcomes and outputs identified in the NBSAP, and effectiveness in terms of achieving the overall biodiversity objective. In both cases, the measures taken are assessed to have been **ineffective**. None of the planned actions in the NBSAP have been implemented, and none of the desired outcomes have been achieved.

Based on the strategic outputs identified in the NBSAP, the following indicators were used to assess effectiveness:

- Is there a national food security policy that addresses GMOs?
- Is there a national policy on organic agriculture?
- Have biosafety issues been brought to public attention via the national print and electronic media?
- Have biosafety regulations been incorporated into enacted environmental legislation?

There is a National Food and Nutrition Security policy, but it does not address GMOs. In 2016 a draft National Agricultural Policy and Action Plan was completed. The Policy and Action Plan includes elements related to food and nutrition security, but does not address issues related to GMOs, LMOs or biosafety.

There is no national policy on organic agriculture. The draft National Agriculture Policy and Action Plan 2016 - 2025 does not contain any objectives, strategies or actions explicitly related to organic agriculture.

Based on information obtained from stakeholders, there has been no concerted effort to bring biosafety issues to the public attention via the national print and electronic media.

There has been no enactment of environmental legislation that incorporates biosafety regulations.

Overall, the measures taken with respect to this objective have been insufficient to generate the desired outcomes as laid out in the NBSAP. None of the planned NBSAP

actions related to this objective have been implemented, and the measures that have been taken have not contributed in any significant way to the achievement of the objective.

Obstacles and scientific and technical needs related to the measures taken

The chief obstacle in relation to this objective is the lack of clear national policy statements and directions regarding GMOs, LMOs, and other products of modern biotechnology.

To overcome this obstacle, there is a need for support and assistance to:

- increase awareness and knowledge among stakeholders, including high-level decision and policy-makers, about the Cartagena Protocol on Biosafety and Dominica's obligations as a Party to the Protocol;
- carry out risk assessments in relation to the import and use of GMOs/LMOs and other products of modern biotechnology, with consideration of the social, economic, and ecological impacts, including impacts on food and nutrition security and food sovereignty;
- formulate, adopt, and implement a national biosafety policy;
- incorporate considerations related to LMOs, GMOs, and other products of modern biotechnology into national agricultural policies;
- finalise and enact a national legislative framework for the implementation of the Cartagena Protocol;
- establish and maintain a national biosafety clearing-house;
- build capacity for monitoring, surveillance and control in respect of the import, use, handling, and export of GMOs/LMOs.

In the development of national policy and legislative frameworks for biosafety, consideration should be given to minimising the risk of unregulated importation of GMOs/LMOs as a result of emergency response, relief and aid efforts.

To improve overall progress towards biodiversity objective 2 more broadly, Dominica would benefit from scientific, technical, capacity-building and/or financial support to:

- develop, adopt, and implement a national policy on organic agriculture;

- increase awareness and knowledge among stakeholders, including high-level decision and policy-makers and the Kalinago community, about principles of best practice for ABS;
- assist the Kalinago people in the development of community protocols and procedures for ABS with respect to genetic resources and traditional knowledge associated with genetic resources;
- develop, adopt, and implement national policy and legislation on ABS in keeping with current international best practice.

With respect to accession to and implementation of the Nagoya Protocol, an issue of concern for Dominica is that many of its major research partners are located in countries that are not party to the Protocol. Support is therefore needed to help Dominica develop and implement ABS frameworks that will be effective and serve the interests of the country and its people, even outside of the context of the Nagoya Protocol.

NATIONAL BIODIVERSITY OBJECTIVE 3: TO REDUCE AND/OR MINIMISE THE LOSS OF TERRESTRIAL AND MARINE BIODIVERSITY²

This objective was established in Dominica's first NBSAP and was retained as a national biodiversity objective for the second NBSAP for the period 2014-2020.

Relevance to national biodiversity goals and the ABTs

The NBSAP contains the following strategies and actions relevant to this objective:

- Improve the protection and management of the country's natural environment;
- Establish and utilise the Clearing House Mechanism for more effective data dissemination;
- Strengthen *ex situ* conservation of threatened and endangered species, using available institutions, relevant organisations and research entities as repository for genetic resources;
- Develop and implement a protected area systems plan with allocated financial resources;

² At some places in the NBSAP this objective is stated as "to reduce and/or minimise the loss of terrestrial and riverine biodiversity".

- Draft legislation to stop the use of deleterious substances in the harvesting of river fish;
- Direct CARDI to act as a first level genetic pool;
- Strengthen and enforce permitting systems for harvesting, development and research of forest resources;
- Establish a biodiversity knowledge network among Environment, Agriculture, Forestry and Fisheries with some emphasis on traditional knowledge;
- Bring agriculture sector performance in line with biodiversity principles;
- Promote soil conservation through education.

This objective and associated strategies and actions are relevant to ABT 1, *Awareness increased*, ABT 4, *Sustainable consumption and production*, ABT 5, *Habitat loss halved or reduced*, ABT 6, *Sustainable management of marine living resources*, ABT 7, *Sustainable agriculture, aquaculture and forestry*, ABT 8, *Pollution reduced*, ABT 10, *Pressures on vulnerable ecosystems*, ABT 11, *Protected areas increased and improved*, ABT 12, *Extinction prevented*, ABT 13, *Genetic diversity maintained*, ABT 14, *Ecosystems and essential service safeguarded*, and ABT 19, *Knowledge improved, shared and applied*.

This objective contributes to Dominica's national biodiversity goal 1, *the conservation and sustainable management of Dominica's terrestrial and marine biodiversity* and biodiversity goal 2, *the promotion of sound and sustainable agricultural practices and technology within existing agricultural human capital*.

Measures taken

Measures taken in relation to biodiversity objective 1, described above, also contribute to the achievement of this objective.

In addition to the previously described measures, several organisations have taken action to reduce agriculture's impact on Dominica's biodiversity.

The FAO's 2016 - 2019 country programme framework for Dominica includes actions to promote sustainable agriculture by assisting farmers in the adoption of organic and agro-ecological production techniques. The FAO has been strengthening the use of climate-smart and resilient agricultural practices such as rainwater harvesting, on-farm water management, and soil conservation and management.

The IICA 2014 - 2018 country strategy for Dominica involved an emphasis on building capacity for the sustainable use of the natural resource base. Measures taken in this regard included promoting the production and use of compost, and training farmers and

extension workers in good land husbandry techniques. Dominica was also a participating country in IICA's programme for Climate Smart Agriculture in the Eastern Caribbean States.

The Agriculture Division has taken measures through its extension service to promote and create an enabling environment for the adoption of eco-friendly, low-input alternatives to conventional agricultural techniques. Such alternatives include composting, mulching, and use of integrated/biological pest management. The Agriculture Division and the Forestry, Wildlife and Parks Division are promoting the adoption of agroforestry and the planting of tree crops as a means of reforesting Dominica's steep hillsides, reducing erosion and stabilising soils, and diversifying the agricultural sector.

NGOs such as the Dominica Organic Agriculture Movement (DOAM) and various community-based organic farming organisations have also been active in promoting principles of sustainable agriculture and training farmers in organic agriculture techniques.

There has been considerable extension outreach and capacity-building for farmers in relation to the adoption of good agricultural practices, including practices related to soil conservation, low-input agriculture, and climate-smart agriculture. IICA and the Dominica Bureau of Standards are cooperating to develop standards for good agricultural practices, benchmarked against international best practice. IICA is working with the Agriculture Division's extension service to strengthen farmers' capacity (starting with a small pilot group) to meet national good agricultural practices standards.

The draft National Agricultural Policy and Action Plan includes actions intended to contribute to the preservation of the natural resource base for agriculture. Examples are: educating pesticides suppliers and farmers on proper storage and use of pesticides; engaging the farming community on best practices so that water is not contaminated through improper use of pesticides; and practising techniques such as crop rotation.

CARDI has undertaken some actions to conserve indigenous varieties, landraces and cultivars of agricultural crops. This has included the establishment of germplasm plots and banks, and some characterisation of indigenous landraces and cultivars with respect to productivity, disease resistance and climate change resilience. The focus in this regard has been primarily on root crops and tubers, particularly dasheen.

The GEF project *Sustainable Land Management in the Commonwealth of Dominica* will, through the Agriculture Division's extension programme, assist farmers in practising

sustainable land management and adopting techniques for soil and water conservation. The project will also develop and deliver a national education awareness and education programme on sustainable land management.

Measures related to the development and implementation of a protected areas system plan are described in the section on *National Biodiversity Target 4: Protected Areas Increased and Improved*.

Effectiveness of measures taken

Following consultation with biodiversity stakeholders in Dominica, effectiveness was assessed on two bases: effectiveness in terms of achieving the strategic outcomes and outputs identified in the NBSAP, and effectiveness in terms of achieving the overall biodiversity objective.

The measures taken have been **ineffective** in producing the strategic outcomes (new draft legislation on harvesting of river fish, a national storage site for agriculture genetic resources, a new permitting system for harvesting of aquatic forest resources, a functional national biodiversity clearing-house mechanism) identified in the NBSAP. This is largely because the measures taken were not strategically aimed at realising the NBSAP outcomes. Of the six NBSAP actions related to this objective, two have been partially implemented.

In relation to the overall objective, the effectiveness of the measures taken is **unknown**, largely because of the unavailability of the requisite trend and baseline data on ecosystem status and biodiversity management practices in agriculture and other sectors. Stakeholders report that some farmers have adopted more biodiversity-friendly practices, but there are also reports that unsustainable practices, such as the use of pesticides and indiscriminate clearing of land, are becoming more common.

Based on the strategic outputs identified in the NBSAP, the following indicators were used to assess effectiveness:

- Has legislation been drafted to prohibit the use of deleterious substances in the harvesting river fish?
- Is there a national storage site for agricultural genetic resources?
- Is there an improved permitting system in place to regulate the harvesting of aquatic forest resources?
- Is there a functional national biodiversity clearing-house mechanism that incorporates traditional knowledge?

- Trends in national pesticide use.
- Trends in use and size of agricultural buffer zones.
- Trends in adoption of good agricultural practices, including practices related to soil conservation, among farmers.
- Trends in level of sedimentation in rivers and coastal waters.

No new legislation has been drafted to prohibit the use of deleterious substances in harvesting river fish, nor have amendments to the existing legislation been prepared. The existing legislation that addresses this concern is the Forestry and Wildlife Act of 1976, which makes it an offence to deposit deleterious substances of any type in water frequented by fish, shrimps or crabs, or in any place where the deleterious substance may enter such water.

There is no national storage site for agricultural genetic resources. Stakeholders report that at least one agricultural station where genetic resources were maintained *in situ* no longer exists, having been converted to residential use.

Under the Forestry and Wildlife Act of 1976, there is a licensing system to regulate the taking of wildlife, including aquatic forest resources such as “frogs and the eggs thereof; reptiles and fishes, their fry and eggs, and crustaceans found in fresh water streams or impoundments”. No action has been taken to enhance the existing system.

There is no functional national biodiversity clearing-house mechanism.

Data on trends in national pesticide use were not readily available.

Data on the use and size of agricultural buffer zones were not available. It should be noted that there are currently no legislative or policy requirements in relation to agricultural buffer zones, no official definition of what constitutes an agricultural buffer zone, and no national guidance on how agricultural buffer zones should be designed and implemented.

Quantitative data on the adoption of good agricultural practices was not available.

While quantitative data on the level of sedimentation in rivers and coastal waters was not available for the purposes of this report, experts from the water sector indicated that data has been collected which shows a significant increase in the level of sedimentation in rivers post-Hurricane Maria. This is attributed to increased land slippage and soil erosion as a result of damage to upland forests. Some stakeholders have also suggested that dredging rivers to mitigate the risk of flooding has also contributed to increased sedimentation.

Obstacles and scientific and technical needs related to the measures taken

A substantial constraint on the effectiveness of measures related to this objective is the lack of a national policy and action framework to operationalise principles related to sustainable agriculture. Although there are references in various policy documents to the vision of Dominica as an “Organic Island”, there is no clear indication of what this means and what strategies are to be implemented to achieve this vision. There is no national policy on organic agriculture and there are no national organic farming standards. There is no official national definition, with accompanying criteria/indicators, of sustainable agriculture. Action in related to sustainable, biodiversity-friendly agriculture has been described by some stakeholders as *ad hoc* and reactive rather than proactive.

There are also inadequacies in data for decision-making and assessing the effectiveness of policies and actions. For example, the draft National Agricultural Policy and Action Plan includes actions to engage the farming community on best practices so that water is not contaminated through improper use of pesticides, but there is no routine monitoring of pesticide levels in water or soil, and therefore no way to determine whether measures taken in this regard are effective. In the absence of reliable data, it is difficult to determine the scope and severity of specific threats to terrestrial and marine biodiversity, and to appropriately plan and prioritise actions to address these threats.

Stakeholders in both government and civil society have expressed concern that the strategies and actions in the NBSAP in relation to this objective are largely focussed on management of terrestrial ecosystems. For enhanced progress towards the overall objective, strategic attention must also be given to coastal and marine ecosystems, and to sustainable resource use and management in the marine fisheries sector.

Dominica would benefit from scientific, technical, capacity-building and/or financial support to:

- develop a national organic agriculture policy and action plan;
- carry out a national agriculture census/farm survey;
- develop, in consultation with stakeholders, clear policy guidance on the purpose, use, establishment and management of agricultural and riverine buffer zones;
- enhance the capacity of the national agriculture, fisheries, and forestry extension services, including through extension training, additional staffing, and development

and dissemination of good practice guidance, e.g. in the form of a field handbook or manual for extension officers.

Farmers have identified the need for capacity-building programmes to be gender sensitive; farming traditions and practices in Dominica differ with gender, and so men and women have different needs and expectations with regard to capacity-building and other forms of support.

Technical assistance and support is also required to:

- review and update, as necessary, the Forestry and Wildlife Act and accompanying regulations, including provisions related to hunting and fishing;
- improve data collection and management in relation to hunting and fishing, to allow monitoring, analysis and reporting of trends in, for example, the number of permits issued, number of permit violations recorded and in which areas, quantities and spatial distribution of wildlife harvested, etc.;
- strengthen the capacity for surveillance and enforcement related to the Forestry and Wildlife Act, including through training, additional staffing, and provision of vehicles and other equipment for effective forest patrolling;
- raise awareness of biodiversity practitioners and of policy-makers and technical staff within the Ministry of Information about the need, purpose, and standards of good practice for a national biodiversity clearing-house mechanism, as outlined in the CBD;
- digitise existing paper-based data for inclusion in the clearing-house mechanism;
- establish and maintain said clearing-house mechanism.

In respect of this overall objective of minimising biodiversity loss, a specific concern for wildlife conservation in Dominica relates to national implementation of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), to which Dominica is a Party. In January 2018, the CITES Standing Committee determined that Dominica had failed to provide its annual reports for three consecutive years without adequate justification. As a result the CITES Secretariat issued a recommendation to suspend trade in CITES-listed species with Dominica. The suspension, which has since been lifted, was Dominica's second suspension of trade for non-reporting. This suggests that Dominica requires some capacity-building support to enhance its ability to meet its obligations as a party to CITES.

Dominica would also benefit from technical support and capacity-building to develop post-hurricane species recovery plans for its threatened, endangered, and critically endangered endemic species. In this regard, it should be noted that while the export of

parrots and other species for captive breeding is theoretically in keeping with the NBSAP strategy of strengthening *ex situ* conservation, there are cases where *in situ* conservation may prove more effective. Indeed, after Hurricane David in 1979, and up until Hurricane Maria in 2017, populations of both *Amazona imperialis* and *Amazona arausiaca* were consistently increasing based on *in situ* conservation approaches. In the development of species recovery plans, the appropriate use of *in situ* and/or *ex situ* conservation strategies for each species of concern should be determined based on sound science, stakeholder consultation, and international best practice.

NATIONAL BIODIVERSITY OBJECTIVE 4: TO ENSURE THAT THE BASIS FOR DEVELOPMENT IS THROUGH THE SUSTAINABLE USE OF TERRESTRIAL AND MARINE BIOLOGICAL RESOURCES

This objective was established in Dominica's first NBSAP and was retained as a national biodiversity objective for the second NBSAP for the period 2014-2020.

Relevance to national biodiversity goals and the ABTs

The NBSAP contains the following strategies relevant to this objective:

- Improve the protection and management of the country's natural environment;
- Develop and implement an economic valuation system for biodiversity resources and ecosystems services with a view to more accurately reflecting their contribution to the economy;
- Seek approval for the Climate Change, Environment and Natural Resource Bill with inclusion relative to the ABS and Biosafety protocols.
- See agreement among farmers to regulate pesticides use in support of the Organic Island concept;
- Encourage the use of the sustainable principles spelt out in the agriculture policy to support both traditional and organic agriculture;
- Develop economic accounting systems for biodiversity resources;
- Pursue REDD and REDD+ and carbon financing in support of Dominica's forests.

This objective is relevant to ABT 2, *Biodiversity values integrated*, ABT 7, *Sustainable agriculture, aquaculture and forestry*, ABT 8, *Pollution reduced*, and ABT 15, *Ecosystems restored and resilience enhanced*.

This objective contributes to Dominica's national biodiversity goal 1, *the conservation and sustainable management of Dominica's terrestrial and marine biodiversity* and biodiversity goal 2, *the promotion of sound and sustainable agricultural practices and technology within existing agricultural human capital*.

Measures taken

Principles and objectives related to the sustainable use of biological resources have been incorporated into a number of national development policies and strategies, including the Low-Carbon Climate-Resilient Development Strategy (LCDS) 2012 - 2020, the Growth and Social Protection Strategy 2012 - 2014, and the NRDS.

Biodiversity considerations have also been included in sectoral policy documents, such as the National Land Use Policy, the draft IWRM Policy, the draft Agricultural Policy and Action Plan, the draft National Physical Development Plan, the draft Fisheries and Aquaculture Policy, and the draft National Forest Policy.

Measures related to promoting sustainability in the agriculture sector are described in the section on national biodiversity objective 3.

Dominica is a participating country in the World Bank-funded Caribbean Regional Oceanscape Project. Under this project The Nature Conservancy will be assessing and mapping ecosystem service values, particularly related to fisheries and nature-based tourism, in five Eastern Caribbean countries, including Dominica.

Effectiveness of measures taken

Following consultation with biodiversity stakeholders in Dominica, effectiveness was assessed on two bases: effectiveness in terms of achieving the strategic outcomes and outputs identified in the NBSAP, and effectiveness in terms of achieving the overall biodiversity objective.

In relation to achievement of the strategic outcomes, the measure taken are assessed to have been **ineffective**. To some extent, this is because of the impact of Hurricane Maria. Plans for the valuation of Dominica's forest ecosystems had to be postponed as a result of the extensive damage to those ecosystems as a result of the hurricane. Similarly, plans to undertaken projects via the Adaptation Fund and Clean Development

Mechanism were dealt a major blow, as those project would also have relied heavily on the adaptation and mitigation capacity of Dominica's forests.

With regard to the overall objective, the measures taken are assessed to be **partially effective**, in that the LCDS, NRDS and National Land Use Policy set an overarching policy basis for mainstreaming biodiversity into Dominica's sustainable and resilient development. However, effectiveness has been limited by the delays in adopting sectoral policies, strategies and action plans to give concrete effect to the broad objectives outlined in national policy documents.

Based on the strategic outputs identified in the NBSAP, the following indicators were used to assess effectiveness:

- Is there a land zoning policy that demarcates areas for organic and conventional farming?
- Are there policy guidelines for the designation of organic farming areas?
- Extent to which economic values of ecosystems and ecosystems services have been assessed.
- Numbers of project proposals submitted to, and amount of financing obtained via, the Adaptation Fund.
- Number of Clean Development Mechanism projects operational.

The draft National Physical Development Plan contains proposals for the demarcation of designated Agricultural Areas, but not for the demarcation of areas of organic and conventional farming. The draft National Physical Development Plan has not yet been formally adopted for implementation.

There are no policy guidelines for the designation of organic farming areas.

There has been no reported action to assess the economic value of ecosystems and the services they provide. However, after Hurricane Maria, there was some evaluation of the economic impacts of the loss of natural assets and associated ecosystem services. The findings were captured in a Post-Disaster National Assessment, which was then used to mobilise financial resources and to design policies and programmes for recovery.

In 2017, the Government of Antigua and Barbuda submitted an Adaptation Fund grant proposal of behalf of the Government of Dominica, requesting funding in the amount of US\$50,000 to support South-South cooperation with the aim of accrediting an Adaptation Fund National Implementing Entity in Dominica. This proposal was approved in December 2017. In August 2019, Dominica endorsed a concept prepared by

the United Nations Human Settlements Programme for the proposed Adaptation Fund project *Increasing resilience of the education system to climate change impacts in the Eastern Caribbean region: Antigua and Barbuda, the Commonwealth of Dominica and St Lucia*. The project is still at the proposal preparation phase.

There has been no registration or request for registration of Clean Development Mechanism projects in Dominica.

Obstacles and scientific and technical needs related to the measures taken

One of the key obstacles to progress towards this objective is that several of the policies that seek to enshrine sustainable use of biodiversity as the basis for Dominica's development have not been formally endorsed and adopted by the Government. Some policies have languished as draft documents for years. Without formally approved policies, it is difficult to establish the appropriate frameworks (including legislation and institutional arrangements) and mobilise the necessary resources (including personnel) for achievement of this objective.

A second obstacle is the absence of clear frameworks for cross-sectoral implementation, monitoring, and evaluation of approved policies. Government policies, strategies, and plans should ideally be accompanied by implementation action plans that identify the roles and responsibilities of relevant agencies, including those in civil society and the private sector. Action should be taken to raise stakeholders' awareness of their roles and responsibilities, to strengthen their capacity to fulfil these roles and responsibilities, and to support them in incorporating national objectives and targets into their annual work programming, monitoring and reporting. Without such frameworks, the integration of biodiversity into national policy and strategy documents is unlikely to have the desired practical impact.

For greater progress towards this objective, Dominica would benefit from support to:

- develop and implement communications strategies to raise awareness of the biodiversity-related provisions in national policies and strategies;
- update and adopt relevant sectoral policies in keeping with accepted good practice and Dominica's resilience goals;
- advocate to the political directorate for the formal adoption of biodiversity-relevant policies that remain in draft;

- develop implementation plans and monitoring and evaluation plans for national and sectoral policies that address the sustainable use of biological resources;
- develop a national integrated coastal zone management policy, as recommended in the National Land Use Policy;
- develop, using participatory approaches, a national organic agriculture policy and accompanying implementation plan;
- hold consultations among relevant stakeholders, including the Division of Agriculture, the Physical Planning Division, farmers, and farmers' organisations, on the feasibility of a zoning plan for agricultural land that demarcates areas for organic and conventional farming;
- improve awareness amongst biodiversity practitioners and economic planners about natural resource valuation and natural capital accounting, including awareness of how these practices can inform policy development and implementation;
- carry out policy-relevant economic valuations of ecosystems and the services they provide;
- build capacity to incorporate the economic value of natural resources in national economic and environmental policy;
- raise awareness, especially among high-level decision makers, about the economic values of biodiversity and the costs of biodiversity loss, as a rationale for increasing biodiversity funding;
- raise awareness among biodiversity practitioners and other relevant stakeholders of the funding opportunities available via the Adaptation Fund, and build capacity, including via training and workshops, to write Adaptation Fund grant and project proposals.

NATIONAL BIODIVERSITY OBJECTIVE 5: TO ENSURE THE EQUITABLE AND SUSTAINABLE DISTRIBUTION OF SOCIAL AND ECONOMIC BENEFITS FROM THE USE OF TERRESTRIAL AND MARINE BIOLOGICAL RESOURCES

This objective was established in Dominica's first NBSAP and was retained as a national biodiversity objective for the second NBSAP for the period 2014 - 2020.

Relevance to national biodiversity goals and the ABTs

The NBSAP contains the following strategies and actions relevant to this objective:

- Improve public awareness and participation in decision-making;
- Improve stakeholder involvement in biodiversity management;
- Establish a biodiversity knowledge network and coordinating mechanism with links to the various Ministries and Departments, academic institutions, professional organisations and non-state actors;
- Establish a financial mechanism or provide incentives to support biodiversity development, including linkages to research opportunities and bio-prospecting;
- Promote partnerships between government and private land owners;
- Develop joint ventures between Government and private land owners to save and protect fragile, sensitive, threatened ecosystems located on private lands;
- Train indigenous people in resource management.

This objective is relevant to ABT 1, *Awareness increased*, ABT 3, *Incentives reformed*, ABT 16, *Nagoya Protocol in force and operation*, ABT 18, *Traditional knowledge respected*, ABT 19, *Knowledge improved, shared and applied*, and ABT 20, *Financial resources from all sources increased*.

This objective contributes to Dominica's national biodiversity goals 1, *the conservation and sustainable management of Dominica's terrestrial and marine biodiversity* and 3, *to ensure that biotechnology knowledge and concerns are widely distributed so that all life is guaranteed and benefits derived are equitably shared*.

Measures taken

The work of the Forestry, Wildlife and Parks Division includes promoting and encouraging reforestation and sustainable forest management on privately-owned lands. The Division supports and advises private landowners in a variety of ways, including making planting materials available via the Division's nurseries, carrying out species identification and lumber and timber assessments, giving technical advice on resources harvesting techniques, and providing training in silviculture and vegetative management, particularly for tree crops in agroforestry plots.

The Division has worked with the Kalinago community to promote sustainable management of the forest resources over which the Kalinago have communal property rights and management jurisdiction. Actions in this regard have included training community-based paraforesters, building community members' capacity for

conservation and sustainable harvesting of forest resources, with an emphasis on resources traditionally used by the Kalinago (e.g. gommier, *Dacryodes excelsa*, and larouma, *Ischosiphon arouma*), and establishment of plantations for these resources. There are plans in place to set up a community nursery in the Kalinago Territory as part of the national revegetation and reforestation programme.

IICA has consistently implemented programmes to build the organisational and income-generating capacity of rural/agricultural producers. Measures taken have included training in governance, leadership, financial prudence and accountability, communications, strategic planning, value addition, and entrepreneurial resilience.

The GEF-UNDP SGP has provided financial support to numerous NGOs and CBOs for projects that create and enhance livelihood opportunities that are grounded in the conservation and sustainable use of biodiversity. Projects have included action to create sustainable livelihoods via reforestation; development of community-based ecotourism opportunities based on nature conservation; strengthening and restoring traditional agricultural sectors; promoting environmentally-friendly agricultural production practices; and developing/enhancing value chains for agricultural products.

As part of the response and rehabilitation effort after Hurricane Maria, farmers and fishers were provided with direct support in the form of grants, technical support, equipment, materials and other key inputs to enable the rapid recovery of their livelihoods.

As a result of funding criteria established by international donors and partners, such as the World Bank, principles of environmental and social safeguards are increasingly applied as part of the implementation of government projects and programmes.

Effectiveness of measures taken

Following consultation with biodiversity stakeholders in Dominica, effectiveness was assessed on two bases: effectiveness in terms of achieving the strategic outcomes and outputs identified in the NBSAP, and effectiveness in terms of achieving the overall biodiversity objective.

In relation to achievement of the strategic outcomes, the measures taken have been assessed as **ineffective**. Of the three NBSAP actions related to this target, two have been partially implemented, but none of the desired outcomes have been achieved.

In relation to the overall objective the effectiveness of the measures taken is **unknown**. Although there have been efforts made to involve a broader groups of stakeholders,

including private land owners and the Kalinago community, in biodiversity management and conservation, the reach and impact of these efforts has not been reliably measured, particularly in relation to whether the measures taken have resulted in more sustainable practices and/or enhanced the biodiversity-based livelihoods of the intended beneficiaries. Kalinago people have voiced the opinion that the capacity-building and technical support provided has been too limited to achieve significant improvements in environmentally and economically sustainable harvesting and management of natural resources in their community, particularly in the post-Hurricane Maria context.

Based on the strategic outputs identified in the NBSAP, the following indicators were used to assess effectiveness:

- Number of agreements between government and private land-owners to support biodiversity conservation on private lands.
- Number of Kalinago people trained in natural resource management.
- Is there a national financial plan to support biodiversity management?

There are no formal agreements between the Government and private land-owners for the purpose of supporting biodiversity conservation on private lands. The Forestry, Wildlife and Parks Division provides technical support and guidance to private land owners for conservation and ecosystems restoration. WildDominique is in discussion with a private land owner to establish a conservation area for the endangered endemic mountain chicken frog. Additionally, some land owners are voluntarily implementing conservation and sustainable management measures.

There have been measures taken to train Kalinago people in natural resource management, but data was not readily available on the number of people trained, nor on the extent to which the training resulted in improvements in management and sustainable use.

There is no national financial plan for biodiversity management.

Obstacles and scientific and technical needs related to the measures taken

A key obstacle to progress towards this objective and most of the other obstacles and targets in the NBSAP is the shortage of financial resources for essential biodiversity action.

Another key obstacle is the absence of an actively functioning cross-sectoral national coordinating mechanism for biodiversity. The NBSAP makes reference to a national biodiversity steering committee, but that committee has been dormant for several years.

In a consultation held in 2018 as part of the preparation of an Indigenous Peoples Planning Framework for the Caribbean Regional Oceanscape Project, the Kalinago council expressed the view that the Kalinago community is consulted as a formality to meet the requirements of international donors, but that often their real priorities and needs are not translated into transformative action in policy and project design and implementation.

To improve progress towards this objective, Dominica would benefit from support to:

- assess biodiversity funding needs, evaluate biodiversity expenditures (including state and non-state expenditures) and sources of revenue, and develop a strategy to meet funding shortfalls;
- evaluate and revise, as necessary, the existing National Parks fees structure, including the extent to which revenue from fees is used to support conservation and management of biodiversity in the Parks and other protected areas;
- assess the current framework of concessions, incentives, and subsidies to identify biodiversity-positive and biodiversity-perverse concessions, incentives and subsidies;
- develop and apply fiscal and other incentives for the conservation and sustainable use of biodiversity, particularly biodiversity on private lands;
- develop a strategy for engaging the private sector in biodiversity conservation and management, for example through corporate social responsibility programmes;
- raise awareness, especially amongst youth, about sustainable biodiversity-based opportunities for entrepreneurship and income generation, and build capacity to take advantage of these opportunities;
- raise awareness among the Kalinago community about the CBD, with particularly reference to Article 8(j) and the participation of indigenous peoples in the Convention;
- create, in collaboration with the Kalinago people, an enabling environment for sustainable conservation action in the Kalinago community, taking into consideration social, cultural and economic factors, and the arrangements in the Territory with respect to governance and land tenure;

- implement programmes and projects for the Kalinago Territory as identified in the Indigenous Peoples Planning Framework for the Caribbean Regional Oceanscape Project;
- preserve traditional practices of the Kalinago people by building community and national capacity to conserve and sustainably use the natural resources (e.g. larouma and gommier) upon which those practices depend;
- implement citizen-science programmes;
- build capacity for effective stakeholder consultation and engagement, in keeping with international best practice;
- build capacity for NGO, CBO, and indigenous people's advocacy, fund-raising, project management, and participation in national policy development;
- develop and disseminate national biodiversity research priorities;
- publish periodic state of biodiversity reports;
- raise awareness, especially among high-level decision makers, about the social and economic values of biodiversity and the costs of biodiversity loss, as a rationale for increasing biodiversity funding;
- build capacity of state and non-state organisations, including Kalinago organisations, to write grants and project proposals to access financing and resources for biodiversity actions;
- raise awareness amongst practitioners in the fields of biodiversity, economics, and finance about new and innovative approaches to sustainable financing for biodiversity, including good practices and lessons learned from the Caribbean region in the establishment and operation of national conservation funds.

It should be noted that Hurricane Maria had a notable adverse impact on the economic benefits to be derived from biodiversity, and on people's capability to avail themselves of those benefits. As a result, initiatives to restore livelihoods are an important component of this objective in the post-Maria context. Care should be taken to ensure that such initiatives are implemented with equity and sustainability in mind. Social and environmental safeguard policies can be useful instruments in this regard.

PROGRESS ASSESSMENT

This section of the 6NR provides an assessment of progress towards each of the national biodiversity targets.

NATIONAL BIODIVERSITY TARGET 1: AWARENESS INCREASED



Progress towards this target has been made, but the rate of **progress is insufficient** for the target to be met by 2020 unless further measures are taken.

Stakeholders engage in biodiversity-related awareness-raising and education via a number of channels, including social media (Facebook, Instagram, YouTube), print media, outreach to students from pre-school to tertiary levels, outreach to village councils and community groups, television and radio programming, exhibitions, career days, murals, interpretive signage at nature tourism sites, and production and distribution of informational materials in the form of posters and leaflets. Some examples of awareness-raising activities are described below; these examples are not an exhaustive list.

The Forestry, Wildlife and Parks Division's environmental education unit has been in existence for over 30 years, and engages in routine outreach and awareness raising, including via its Facebook page (<https://www.facebook.com/Dominicas-Forestry-Wildlife-Parks-DivisionEnvironmental-Education-Unit-574968226039832/>), about Dominica's biodiversity, the work of the Division, and ways in which the public can contribute to conservation and sustainable management of biodiversity.

From the mid 1990s to 2016, the Fisheries Division spearheaded the celebration of an annual Soufriere-Scott's Head Marine Reserve Day. The purpose of the Day is to raise promote environmental awareness and stewardship of the Soufriere-Scott's Head Marine Reserve and MMAs generally. Each year, students and teachers from primary schools across Dominica were invited to the Marine Reserve to learn about the role of marine protected areas in biodiversity conservation, and about how individuals can contribute to the protection of marine ecosystems. Activities on the day included presentations, quiz competitions, poster displays, and boat tours of the reserve. In 2016, Soufriere-Scott's Head Marine Reserve Day attracted over 500 students and 90 teachers

from more than 30 schools. Due to a shortage of funding and staff, Soufriere-Scott's Head Marine Reserve Day has not been celebrated since 2016.

The Dominican Youth Environment Organisation (DYEO) has a membership of over 250, with more than 100 of its members being actively engaged in projects and programmes related to biodiversity. A flagship activity of the DYEO is supporting the operation of environmental clubs at schools as a means of raising youth awareness about the importance of conserving Dominica's natural resources.

The GEF-UNDP SGP works with beneficiaries to develop and deliver awareness-raising programmes about biodiversity conservation and management. Some key topics over the period of the NBSAP have related to sea turtle conservation, the importance of bees and other pollinators, sustainable agricultural practices such as composting, and preservation of traditional herbal species. Outreach is delivered through campaigns in schools and communities, radio programmes, and news releases.

DOAM has delivered training to several village and community groups about the benefits of organic agriculture, the importance of maintaining traditional agricultural varieties, for example via seed saving, and the conservation of indigenous medicinal plants. DOAM supplements these outreach activities with a monthly radio show.

Environmental NGO WildDominique makes public awareness and education an essential component of all its project and programmes. Outreach strategies include community-based training activities, news releases, school visits, radio programmes, and sharing information via Facebook (<https://www.facebook.com/WildDominique767/>) and other social media.

Primary and secondary school science and social studies curricula incorporate information about Dominica's biodiversity, as do training courses delivered for tour guides and other operators in the tourism sector.

In 2016 researchers carried out a survey of Dominican students' knowledge and attitudes about wildlife. There were 426 survey respondents from rural and urban primary and secondary schools. Overall, the survey found that young Dominicans' knowledge of wildlife was low. Over 80 % of the knowledge questions asked had an overall knowledge index below 50 %. Given a list of seven species, only one respondent of the 426 could correctly identify the three endemic species on the list. However, students did express some appreciation of the importance of wildlife conservation and management, particularly for preferred species such as parrots, hummingbirds, sea turtles and agouti.

Approximately half of the students expressed interest in participating in environmental classes or clubs.

WildDominique has developed a proposal for a Dominica Environmental Education Programme (DEEP). The sample curriculum, which includes field-based learning, is intended to be adapted for delivery to both primary and secondary school students. WildDominique is currently in dialogue with the Ministry of Education about the adoption of the DEEP curriculum on a pilot basis in selected schools.

The majority of stakeholders consulted during preparation of this report indicated that they had recently been exposed to some form of biodiversity messaging. The most commonly cited messages were those related to the national reforestation and urban beautification programmes.

Although there is limited quantitative information with which to assess progress towards this targets, biodiversity experts and practitioners indicated that there has been a substantial increase in biodiversity outreach and awareness-raising since 2014, and that this has resulted in increased appreciation among Dominicans of the value of biodiversity and the importance of conserving it. However, this increase in awareness may not apply equally to all components of biodiversity; for example, awareness of the value of Dominica's forests appears to be greater than awareness about Dominica's endemic wildlife.

Indicators and other tools used in assessing progress

Indicators in the NBSAP relevant to this target are:

- Has the Environmental Coordinating Unit developed a comprehensive environmental education programme?
- Are biodiversity education programmes aired on the country's leading radio station?
- % of schools recognising World Biodiversity Day.

A proposal for a national environmental education programme has been developed, although not by the Environmental Coordinating Unit.

Both Government agencies and civil society organisations report that they regularly engage in awareness-raising and outreach via programmes aired on the leading radio stations.

Data was not available on the number/percentage of schools celebrating World Biodiversity Day.

Level of confidence in the assessment of progress

This assessment is based largely on information and opinions provided by biodiversity stakeholders via interviews, focus groups, and the national 6NR validation workshop. There is limited quantitative data with which to assess progress towards this target.

Progress towards this target was evaluated on September 25, 2019, with input from stakeholders present at the national validation workshop for the 6NR.

Adequacy of monitoring information to support assessment

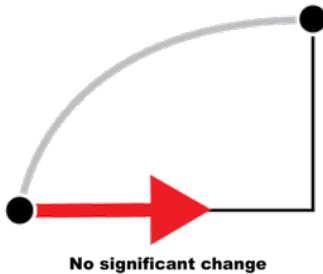
According to the NBSAP, these indicators are to be monitored via a biodiversity survey, and the level of monitoring required is standard. Monitoring towards this target is partial. Some data relevant to the target is collected, but is not routinely compiled and evaluated.

Ideally, a principal means of assessing progress towards this target would be via periodic knowledge, attitudes, and practices (KAP) surveys. If this is not feasible, organisations delivering communications, education, and public awareness (CEPA) activities should, wherever possible, invite participants to complete brief pre- and post-event questionnaires to assess changes in knowledge/understanding as a result of the CEPA interventions. It is also recommended that organisations implementing CEPA activities and events should compile records of:

- activities/events and their topics/objectives;
- the target audiences;
- the number of participants (preferably disaggregated by age, gender, and other demographic categories).

This would provide information about the number of people exposed to biodiversity-related CEPA, and this information could serve as a reasonable proxy for the number of people whose awareness of the value of biodiversity has increased.

NATIONAL BIODIVERSITY TARGET 2: SUSTAINABLE AGRICULTURE, AQUACULTURE, AND FORESTRY



No significant progress has been observed in relation to this target. Particularly in relation to sustainable agriculture, experts and practitioners in the field report that, despite actions being taken by a variety of stakeholders to promote and encourage biodiversity-friendly agriculture, there have been observable increases in unsustainable practices, hampering overall progress towards the target.

Progress towards sustainable management of land under agriculture, aquaculture and forestry has been hampered by the devastation caused by Tropical Storm Erika and Hurricane Maria. Both storms caused significant damage to farm lands, feeder roads, crop and livestock production, and forest reserves, and the process of recovery and strengthening resilience is still ongoing.

Agriculture

There has been substantial investment by the Government of Dominica and its partners to support the diversification and development of the agricultural sector for greater sustainability and productivity. Resources have been directed to enhancing cultivation, production, and marketing of bananas and plantains, citrus, root crops (dasheen, sweet potatoes, and cassava), cocoa, and coffee. Measures have also been taken to develop the livestock sector and to enhance the diversity and resilience of the livestock population through the introduction of new breeds of small ruminants.

Key regional and international partners that contribute to the sustainable development of Dominica's food and agriculture sector include CARDI, the FAO, and IICA. Priority areas for partnership with these organisations include, but are not limited to:

- food and nutrition security;
- agricultural health and food safety;
- building an agricultural sector that is resilient to climate change and ecologically sustainable;
- value-chain development in the agro-food sector, including via organic niche markets and agro-tourism initiatives.

Following the passage of Tropical Storm Erika in 2015 and then Hurricane Maria in 2017, the main foci of action in the agricultural sector in Dominica were post-disaster recovery and rehabilitation, risk management, and making the sector more climate resilient. Actions in this regard have included:

- clearing and restoring agricultural lands, farm access roads, landslide areas, and riverbeds;
- providing producers with agricultural inputs (e.g. seeds and other planting material, young animals, fertilisers, animal feed, tools, equipment, building materials) to help them reestablish farms and agribusinesses;
- providing materials to support the rehabilitation of the apiculture industry in Dominica; and
- capacity-building for extension personnel, farmers, and farm workers on disaster risk management and good land husbandry practices.

Further measures taken to reduce the impacts of agriculture on biodiversity, as well as some of the obstacles to progress, are described in the *Implementation* section.

Aquaculture

In 2012 a draft Fisheries and Aquaculture Policy was prepared, with the assistance of the FAO. This included goals and strategies for sustainable aquaculture development, with the aim of ensuring that

Aquaculture plays a positive role in the Dominican economy, providing income, jobs and food, with minimal negative impacts on terrestrial, coastal or marine ecosystems.

However, the Policy has not been formally endorsed and adopted by the Government of Dominica.

According to FAO reports, as of 2019 there are an estimated 11 hectares of freshwater aquaculture operations in Dominica, with estimated 1 tonne of freshwater prawns and 5 tonnes of tilapia annual production in recent years. Information available from the Caribbean Regional Fisheries Mechanism indicates that aquaculture production in Dominica fluctuates considerably and is sensitive to the impacts of severe weather.

Following the passage of Hurricane Maria, the Fisheries Division has assisted in the restoration, improvement and establishment of aquaculture facilities. There are a number of established businesses in Dominica based on the farming, harvesting and processing of seaweed into beverages and other commercial products. Dominica is a participant in the regional FAO project *Climate Change Adaptation in the Eastern Caribbean Fisheries Sector Project*, which has delivered activities to support and promote the

sustainable development of seaweed production, associated value addition practices, and the associated creation and management of small and medium scale enterprises.

Forestry

Dominica has an active small-scale commercial forestry sector, which includes the harvesting of both timber and non-timber forest products, primarily for the local market. The goal for the management of this sector is to maintain its sustainability, continuing to support traditional forestry-based livelihoods while avoiding overexploitation of the forest resources. A portion of Dominica's state-owned forest has been set aside for production, and plantation forests have been established specifically to cultivate trees of commercial value, such as mahogany, blue mahoe, Caribbean pine, and teak. The national reforestation programme currently being implemented includes tree planting in existing plantations, as well as establishment of new ones. Measures are being taken to introduce techniques, equipment and technology (e.g. portable sawmills) to increase the efficiency of production and the quality of the lumber produced.

There is also an emphasis on promoting agroforestry, and promoting and encouraging sustainable forestry on privately-owned lands. The Forestry, Wildlife and Parks Division supports and advises private landowners in variety of ways, including making planting materials available via the Division's nurseries, carrying out species identification and lumber and timber assessments, giving technical advice on resources harvesting techniques, and providing training in silviculture and vegetative management, particularly for tree crops in agroforestry plots.

Indicators and other tools used in assessing progress

Indicators in the NBSAP relevant to this target are:

- Are there relevant ongoing training programmes for agricultural extension officers?
- Has a protected areas management system been developed and are all forest managers included?

There is no routine ongoing training programme for agricultural extension officers, and the corresponding lack of capacity in the agricultural extension service has been identified by stakeholders as a significant constraint on progress towards this target. Extension officers do receive training in techniques and technologies for sustainable agriculture, but this training is *ad hoc*, rather than planned and systematic. There is little to no training in extension methodologies.

Actions are being taken to prepare a revised management plan and framework for the Morne Trois Pitons National Park, as a step to the development of an overall national protected areas systems plan. Further details on these action are presented in the section related to progress towards national biodiversity target 4. The development of the management system is not yet completed.

Level of confidence in the assessment of progress

There is limited quantitative information with which to assess progress towards this target; as a result, this assessment draws heavily on expert opinions.

Progress towards this target was evaluated on September 25, 2019, with input from stakeholders present at the national validation workshop for the 6NR.

Adequacy of monitoring information to support assessment

According to the NBSAP, these indicators are to be monitored via a biodiversity survey and site assessment, and the level of monitoring required is standard. No arrangements are in place for systematic monitoring towards this target. To improve future monitoring against the first indicator, it is proposed that routine (e.g. quarterly or annual) reports on extension training be submitted to the national NBSAP focal point by the Agriculture Division.

It should be noted that biodiversity stakeholders expressed some concern that the indicators in the NBSAP are too narrow in scope to adequately assess progress towards the overall target. It was recommended that future targets and indicators should be grounded in the establishment of measurable criteria for sustainability, against which quantitative and qualitative monitoring can take place.

NATIONAL BIODIVERSITY TARGET 3: POLLUTION REDUCED



Progress towards the attainment of this target is **unknown**, largely because of the unavailability of reliable data on levels of pollution in Dominica.

The need to reduce pollution is recognised and incorporated in the NRDS, which outlines several actions that are to be taken towards this goal. These include strengthening waste management and recycling initiatives, developing a national

solid waste management plan, and improving existing relevant legislation and regulations.

The Prime Minister, in his 2018 Budget Address, announced that measures would be taken to prohibit the importation and use of non-biodegradable containers and plastics implement used in food service. With effect from January 1, 2019, Dominica banned importation of single-use food service containers and utensils made from expanded polystyrene and other plastics. To accompany the ban, import duties on biodegradable alternatives were reduced to 0 %. In the 2019 Budget Address, the Prime Minister announced that further measures would be taken to prohibit the importation of single-use plastic bags.

Dominica is one of 12 Caribbean countries participating in the GEF-funded FAO project *Disposal of Obsolete Pesticides including POPs, Promotion of Alternatives and Strengthening Pesticides Management in the Caribbean*. One of the main objectives of this project was to reduce the environmental risk posed by stockpiles of obsolete chemicals. Approximately 567 kgs of obsolete pesticides were identified, safeguarded, and shipped to the United Kingdom for environmentally sound disposal in keeping with the Basel and Stockholm Conventions, thus eliminating their threat to the environment and ecosystems.

In 2015, following a dive survey of dumping in the nearshore coastal environment, Dominica Electricity Services Ltd. removed several electrical transformers that had been dumped offshore.

Various civil society and private sector organisations have spearheaded or participated in environmental clean-up activities, especially on beaches. In clean-ups spearheaded by WildDominique, approximately 50 % of the waste collected, by item, was plastic. Data was not available on the composition by weight of the waste collected during these clean-ups. The DYEO also carries out routine beach clean-up activities in communities around the island, and works with village councils to effect improvements to local waste management.

Data from beach clean-ups reveal that transboundary marine and coastal debris is an issue of concern for Dominica, as several of the items collected during the clean-ups appear to originate from the neighbouring islands of Martinique and Guadeloupe. There is also some concern about transboundary chemical marine pollution originating from land-based sources, particularly in relation to fertilisers and pesticides that are commonly used in neighbouring islands, but not in Dominica.

The passage of Hurricane Maria has had impacts on levels of pollution, as there has been an observed increase in the dumping of large items of debris (e.g. vehicles, sheets of corrugated metal from roofs, other construction and demolition debris) in the onshore and offshore coastal environments.

Indicators and other tools used in assessing progress

Indicators in the NBSAP relevant to this target are:

- Has the use of pesticides in agriculture been further regulated?
- Health of ecosystems adjacent to agriculture fields.

At the time of preparation of this report there was no report of further measures, beyond those that existed prior to adoption of the NBSAP, to regulate the use of pesticides. However, consideration is being given to prohibiting the importation, sale, and use of herbicides containing glyphosate. Additionally, actions are being taken by several agriculture stakeholders to encourage farmers to voluntarily reduce their use of chemical pesticides.

No data was available regarding the health of ecosystems adjacent to agriculture fields.

Level of confidence in the assessment of progress

There is limited quantitative information with which to assess progress towards this target; as a result, this assessment draws heavily on expert opinions. Biodiversity and agriculture experts and stakeholders indicated that the information available is inadequate to confidently assess progress towards the target using the indicators established in the NBSAP.

Progress towards this target was evaluated on September 25, 2019, with input from stakeholders present at the national validation workshop for the 6NR.

Adequacy of monitoring information to support assessment

According to the NBSAP, these indicators are to be monitored via a qualitative site assessment, and the level of monitoring required is standard. No arrangements are in place for monitoring towards this target.

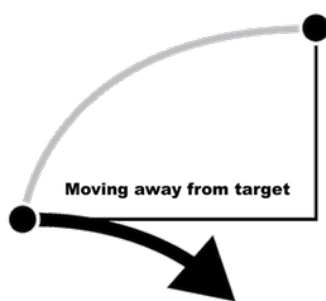
In order to improve monitoring information on the first indicator, it is recommended that there should be routine compilation and publication of information about the

pesticides regulated (i.e. prohibited or restricted) under the Pesticides Control Act, including pesticides registered, pesticides for which applications for registration were refused, and pesticides struck from the register.

With respect to the second indicator, indicators for assessment of ecosystem health should be formulated and an associated monitoring protocol should be developed, including identification of locations where monitoring is to take place.

Biodiversity stakeholders identified a key limitation with respect to the indicators in the NBSAP for this target, in that they appeared to address only one specific type of pollution (terrestrial pollution from pesticide use) prevalent in Dominica. It was recommended that a broader suite of indicators would be more useful, as long as relevant monitoring programmes are established to capture the data necessary to assess status and trends.

NATIONAL BIODIVERSITY TARGET 4: PROTECTED AREAS INCREASED AND IMPROVED



Despite the measures taken to improve the management of protected areas, protected areas coverage in Dominica has decreased, and as result Dominica is **moving away from this target**.

The main reason for this assessment is the overall reduction of Dominica's protected areas estate over the reporting period.

In 2014 the Cabrits National Park was reduced in size by 15 acres, to facilitate the construction of a tourism resort. There is concern that the construction and operation of the resort adjacent to the remaining protected area will threaten the integrity of the terrestrial and coastal ecosystems within the Park.

Proposals dating back to 1995 have been made for the designation of the Indian River and the Soufriere Sulphur Springs, both of which are significant tourism attractions, as protected areas, but formal designation has not yet occurred. WildDominique is currently developing a proposal to designate a conservation area on private lands for the protection of the regionally endemic and critically endangered mountain chicken frog (*Leptodactylus fallax*).

Management plans have been drafted for several of Dominica's National Parks and reserves, but these plans have yet to be approved or ratified by the Cabinet.

During the period 2013 - 2017, Dominica was one of six countries participating in the Climate-Resilient Eastern Caribbean Marine Managed Areas Network (ECMMAN) project. The goal of the ECMANN project was to establish a regional network of MMAs that would more than double the area of effectively managed marine management areas in the Caribbean, while providing for improved livelihood opportunities. ECMANN project activities in Dominica centred around the Cabrits National Park, and a variety of actions were taken to improve effective management of the Park:

- Establishing operational documents for the Park management organisation;
- Hiring additional staff for the MMA;
- Providing training, including training of trainers, for MMA staff and stakeholders;
- Purchasing equipment, including safety equipment and a patrol boat;
- Building capacity for sustainable use of living marine resources by providing biodegradable fish traps, teaching net mending according to conservation standards, and installing fish aggregating devices to reduce inshore fishing pressure;
- Installing cruise and dive moorings;
- Public awareness and education via billboards, and television and radio programmes.

Under the ECMANN project, measures were also taken to improve equitable and participatory management of the National Park: with support from the Fisheries Division, nine stakeholder organisations from communities in the vicinity of Cabrits formed a committee to manage the marine section of the National Park, enforce Park regulations, and oversee fundraising.

The regional CATS project is delivering activities to strengthen management of the Soufriere-Scotts Head marine reserve, including via the drafting of a management plan, a legal and organisational framework, and a communications strategy and plan.

With financial support from the GEF, Dominica is currently implementing a national project, *Supporting Sustainable Ecosystems by strengthening the Effectiveness of Dominica's Protected Area System*. The project aims to strengthen the effectiveness of the Morne Trois Pitons National Park, which is a designated World Heritage Site, and to establish a buffer zone for the Park, in order to reduce threats to biodiversity and ecological functioning .

Activities implemented and planned under the project include, but are not limited to:

- Revising the management plan for the Morne Trois Pitons National Park to take into consideration resources management, visitor management, and financial sustainability;
- Establishing a protected areas Coordinating Unit and Advisory Committee to provide an enhanced institutional basis for more effective protected areas management;
- Preparing a national policy for the conservation and management of protected areas;
- Revising and updating the legislative framework for protected areas management;
- Developing a National Protected Areas System Plan that addresses representativeness, connectivity, threat abatement, management effectiveness, governance, participation, distribution of benefits, and sectoral integration;
- Demarcating and legally establishing the Morne Trois Pitons National Park buffer zone as a managed landscape;
- Outreach and education to farmers and communities in the buffer zone;
- Strengthening community participation in the management of the buffer zone.

This project supports policies and principles in the National Land Use Plan and draft Physical Development Plan, which respectively set the objective of defining transition/buffer zones around the national parks, and propose locations and width of transition/buffer zones for both national parks and forest reserves. The purpose of the buffer zones is to protect the environmental integrity of these protected areas, and especially the Morne Trois Pitons National Park.

The NRDS has set as one of its strategic outcomes the establishment of a dedicated National Parks Service.

Plans are being made for evaluation and possible revision of the national parks fee structure. This revision may include proposals for fees collected to be allocated specifically for protected areas management.

Indicators and other tools used in assessing progress

Indicators in the NBSAP relevant to this target are:

- Amount of funding for protected areas management;
- Level of conservation education and awareness; and

- Status of management of coastal, marine, and terrestrial ecosystems.

In 2015 the GEF granted approval for the project *Supporting Sustainable Ecosystems by Strengthening the Effectiveness of Dominica's Protected Areas System*. Through this project, approximately US\$1.7 million of GEF project funding and US\$7.7 million dollars worth of co-finance has been mobilised to strengthen protected areas management in Dominica. Apart from the resources available through this project, protected areas management is funded primarily via the Government's central budget, including through capital project investment for trail maintenance and infrastructure improvement. The amount of funding available from central government is estimated to have increased since adoption of the NBSAP, largely as a result of the need to respond to tourism pressures within the national parks. Nonetheless, protected areas in Dominica have been described as grossly underfunded, with budgets that barely allow for the maintenance of immediate management functions and key staff.

No quantitative data is available on levels of conservation education and awareness related to protected areas. However biodiversity stakeholders are concerned that there is a lack of understanding and appreciation, including among policy-makers, about the value and importance of Dominica's protected areas, and the need for them to be managed primarily as protected areas, rather than as tourism attractions.

No quantitative data is available on the status of management of coastal, marine and terrestrial ecosystems. With the reduction in size of the Cabrits National Park, there has been an overall decline in the extent of ecosystems managed as protected areas.

Level of confidence in the assessment of progress

Some information, in the form of published reports and project documents, was available for assessing progress towards this target, but data limitations exist. As a result, this assessment was based on partially on published information and partially on expert opinion.

Progress towards this target was evaluated on September 25, 2019, with input from stakeholders present at the national validation workshop for the 6NR.

Adequacy of monitoring information to support assessment

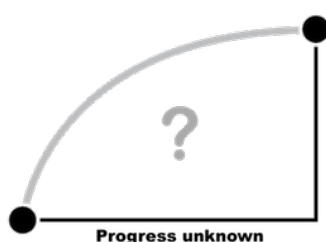
According to the NBSAP, these indicators are to be monitored via quantitative assessment, and the level of monitoring required is advanced. However, no parameters, indicators or metrics for quantitative assessment were proposed. No arrangements are in place for monitoring towards this target.

With respect to the first indicator, amount of funding for protected areas management, data would need to be routinely (e.g. annually) compiled about the amounts of funding and expenditure on protected areas management. Ideally this data should be disaggregated to provide information about categories of spending (e.g. staff salaries, training, maintenance of trails and equipment, construction of infrastructure, fuel, public education and outreach, monitoring and evaluation). In addition to data on the overall funding levels, data could also be generated about the levels of funding/expenditure per square kilometre of protected area.

Levels of conservation awareness could be measured via routine KAP surveys. Ideally surveys would be designed to capture information about different stakeholder groups, including protected areas staff, tourism operators, local visitors to protected areas, international visitors to protected areas, youth, and the general public.

Consideration should be given to adopting the protected areas Management Effectiveness Tracking Tool (METT) approach to monitor the management and status of protected areas. METT assessments should be carried out at regular intervals, at least every few years and ideally as part of the annual protected areas work programme.

NATIONAL BIODIVERSITY TARGET 5: ECOSYSTEMS RESTORED AND RESILIENCE ENHANCED



Progress towards the attainment of this target is **unknown**.

There has been a policy focus on ecosystems restoration and enhancing resilience. However, Tropical Storm Erika and Hurricane Maria have had significant impacts on Dominica's terrestrial and marine ecosystems, the scale and nature of which have not been fully assessed.

There have been some post-hurricane assessments undertaken of both marine and terrestrial ecosystems. A 2018 survey of coral reefs assessed the rate of damage from Hurricane Maria at 20 to 40 %, concentrated on the shallow (<12 m) reef flats. This is a relatively low level of damage compared to that observed in other Eastern Caribbean countries affected by the storm.

In 2018, a study was carried out on the effects of Hurricane Maria on flora in five ecosystem types: dry-scrub woodland, semi-evergreen forest, rainforest, cloud forest,

and littoral forest. Data was gathered from 17 forest plots, each 0.1 ha in size. Findings were that the rate of damage to living trees ranged from 83 % in rainforest to 99% in littoral forests. Lack of baseline data meant that it was not possible to confidently assess tree mortality as a result of Hurricane Maria.

The impacts on forest ecosystems in particular are a considerable setback to efforts that were being made to increase the resilience of Dominica's ecosystems and improve biodiversity's contribution to national carbon stocks. In this context it is important to conduct further research and monitoring necessary to establish post-Maria baselines for ecosystems status, ecosystem health, and contribution of biodiversity to carbon storage and sequestration. Such baselines would facilitate future monitoring of progress not only towards this target, but towards Dominica's overall resilience goal.

Dominica's LCDS, finalised in 2012, contains several objectives and actions intended to enhance ecosystems resilience and the contribution of biodiversity to carbon stocks. These include, but are not limited to:

- working to increase the number of agroforestry farmers;
- promoting sound land use planning;
- establishing integrated coastal zone management;
- formulating a coastal zone management plan;
- establishing agricultural practices that enhance the resilience of natural ecosystems.

The objectives have been advanced through work undertaken by the Agriculture Division, the Forestry, Wildlife and Parks Division, and the Physical Planning Division. Relevant measures are described in the sections of this report related to National Biodiversity Target 2, and ABTs 2, 5, and 10.

The NRDS places an even more explicit emphasis on ecosystems resilience, identifying it as one of Dominica's seven key developmental objectives. Activities undertaken and to be undertaken to contribute to this objective include:

- reforestation of priority areas in forest affected by storms, including Hurricane Maria;
- adoption of agro-forestry/silvopastoral systems on degraded lands and adjacent farms;
- ensuring that watersheds and catchments areas, riverbanks, and slopes are replanted with species that are climate resilient and also support forest-based livelihoods;

- restoration of riparian and mangrove forests;
- updating the national forest inventory to include a greenhouse gas inventory and produce an assessment of the carbon sequestration capacity of Dominica's forests.

Measures related to ecosystems restoration are described in the section of this report related to national biodiversity objective 1.

Indicators and other tools used in assessing progress

Indicators in the NBSAP relevant to this target are:

- (Changes in) Forest cover;
- (Changes in) Condition of degraded lands; and
- (Changes in) Net CO₂ emissions.

Data from the 2015 Forest Resources Assessment indicated that forest cover in Dominica was declining at a rate of 0.6 % annually. However, this figure is based on desk-based estimates and extrapolation, as there has not been a national forest inventory since 1987. The passage of Hurricane Maria has had observable effects on forest cover in Dominica, but these effects have not been comprehensively quantitatively assessed. After the passage of Hurricane David in 1979, estimates of the time needed for the forest to recover ranged from 30 to more than 50 years; experts indicate that the effects of Hurricane Maria on Dominica's forests are as severe or more severe than the damage caused by Hurricane David.

Data about the condition of degraded lands in Dominica is not available. There is no clear definition of what constitutes degraded land or a degraded ecosystem in the Dominican context, nor were specific degraded ecosystems or causes of degradation identified in the NBSAP for action. It should be noted that the specific reference to degraded lands appears to exclude coastal and marine ecosystems, which can also contribute significantly to resilience and carbon sequestration.

Net CO₂ emissions data is not available for the period following adoption of the NBSAP.

Level of confidence in the assessment of progress

Some information and indicators exist for assessing progress towards this target, but information limitations exist. As a result, this assessment was based on partial indicator information and expert opinion.

Progress towards this target was evaluated on September 25, 2019, with input from stakeholders present at the national validation workshop for the 6NR.

Adequacy of monitoring information to support assessment

According to the NBSAP, these indicators are to be monitored via quantitative assessment, and the level of monitoring required is advanced. No arrangements are in place for systematic monitoring towards this target.

Every effort should be made to carry out a national forest inventory to provide both an indication of changes in forest cover as a result of Hurricane Maria and a baseline for measuring the progress and success of current and future restoration measures (e.g. the programme to plant a million trees).

Definitions/criteria should be established in relation to identifying degraded ecosystems and locations for restoration. Based on the ecosystems identified and the associated cause of degradation, process and output indicators should be determined as the basis for routine monitoring of restoration progress.

Technical assistance will be required to produce updated estimates of net CO₂ and greenhouse gas emissions.

NATIONAL CONTRIBUTIONS TO THE ACHIEVEMENT OF EACH GLOBAL AICHI BIODIVERSITY TARGET

This section of the 6NR presents information on progress towards the global ABTs, and links implementation and progress at the national level to the global Targets.

AICHI BIODIVERSITY TARGET 1: AWARENESS INCREASED

This ABT corresponds to Dominica's first national biodiversity target; actions and progress towards this target are described in detail in the *Progress Assessment* section of this report.

A communications strategy for the 6NR has been developed (see Annex V). The strategy has been designed so that its implementation will contribute to progress towards ABT 1, and will also support the following strategies in Dominica's NBSAP:

- Strategy 2: Establish a biodiversity knowledge network and coordinating mechanism with links to the various Ministries and Departments, academic institutions, professional organisations and non-state actors;
- Strategy 3: Improve public awareness and participation in decision making;
- Strategy 4: Improve stakeholder involvement in biodiversity management.

AICHI BIODIVERSITY TARGET 2: BIODIVERSITY VALUES INTEGRATED

In 2012 Dominica launched its LCDS, which included a strong focus on “enshrining green principles as the guide to ... national planning.” In this strategy, the Government of Dominica affirmed that “an important part of its mission is to lead a process of collaboration with others with a view of preserving the nation's forests, rivers, and eco-tourism product, preserving the marine environment and the country's biodiversity.”

Key component activities under the LCDS included:

- Protection of carbon sinks including action to
 - assess the viability of protecting additional terrestrial and marine areas;
 - establish a compensation framework to suppuration protect of forests and agricultural land;
 - prevent deforestation for firewood.
- Promotion of food security through climate resilient agriculture/fisheries developing, including action to
 - improve agricultural land use planning;
 - promote the sustainable utilisation of non-timber forest products and sustainable wildlife farming;
 - achieve self-sufficiency in food production and reversal of trend for farmers leaving the land and fisherfolk leaving the sea.
- Enhancement of ecosystem resilience, including action to
 - implement and enforce environmental protection legislation;
 - improve waste and wastewater treatment and management;
 - establish an Integrated Coastal Zone and Watershed Management Planning Framework.

The LCDS was designed to complement the country's Growth and Social Protection Strategy 2012 - 2014, which included objectives related to, *inter alia*, sustainable use of natural resources, sustainable agriculture, forestry and fisheries, greening Dominica's economy, strengthening environmental management, integrated water resources management, protected areas management.

Subsequent to the devastation caused by Hurricane Maria, the Government developed the National Resilience Development Strategy Dominica 2030. The NRDS builds on the LCDS and the National Climate Change Adaptation Policy, as well as integrating the principles of the 2030 Sustainable Development Agenda. The NRDS comprises seven development objectives, including enhancing the resilience of ecosystems and sustainable use of natural resources.

Biodiversity is also incorporated into the national policy and planning framework via the National Land Use Policy, which was completed in 2014 and has been formally adopted by the Government. The National Land Use Policy recognises that "the vision for continuing development of Dominica must ensure stewardship of the natural environment, and managing the agricultural vitality that the land offers as Dominica's

most valuable resources.” In keeping with this recognition, one of the three overarching policy priorities for land use in Dominica is “Enhanced forest, natural environment, and agricultural vitality.”

This is further reflected in the draft National Physical Development Plan, which establishes a vision for the year 2035 that includes the following key objective:

Dominica will have retained forest cover over 65% of the land mass including protected National Parks and Forest Reserves and privately owned forests as a way to protect biodiversity, prevent erosion, mitigate climate change, and provide opportunities to earn a sustainable livelihood without destructive activities.

The draft National Physical Development Plan outlines strategies for management of, *inter alia*, national parks, forest reserves, riverine ecosystems, marine reserves, forested areas, wildlife habitats, watersheds, and the coastal zone. The draft National Physical Development Plan was finalised in 2016, and has not yet been adopted as an official national policy document.

Biodiversity values are also incorporated into sectoral policies such as the draft National Agriculture Policy, draft National Forest Policy, and the Statement of Nationally Determined Contributions under the Paris Agreement.

A I C H I B I O D I V E R S I T Y T A R G E T 3 : I N C E N T I V E S R E F O R M E D

In 2018, as part of measures taken to reduce plastic pollution, import duties on biodegradable alternatives to plastic food service containers and utensils were reduced to 0 %.

A I C H I B I O D I V E R S I T Y T A R G E T 4 : S U S T A I N A B L E C O N S U M P T I O N A N D P R O D U C T I O N

Measures and progress towards sustainable production in the agriculture, aquaculture, fisheries, and forestry sectors are described under the headings related to national biodiversity target 2 *Sustainable agriculture, aquaculture, and forestry* and ABT 6 *Sustainable management of marine living resources*.

Tourism is also an important economic sector in Dominica. Dominica has the reputation of being the “Nature Island of the Caribbean” and its marketing as a tourist destination is very much based on promoting the island’s natural assets and beauty. Several national policies and draft policies acknowledge the need for sustainability in the tourism sector. For instance, the draft National Physical Development Plan states that, “the long-term priority of the Government [is] to promote Dominica as the ‘Nature Island’ through environmental protection”. The NRDS highlights the following principles for tourism development in Dominica.

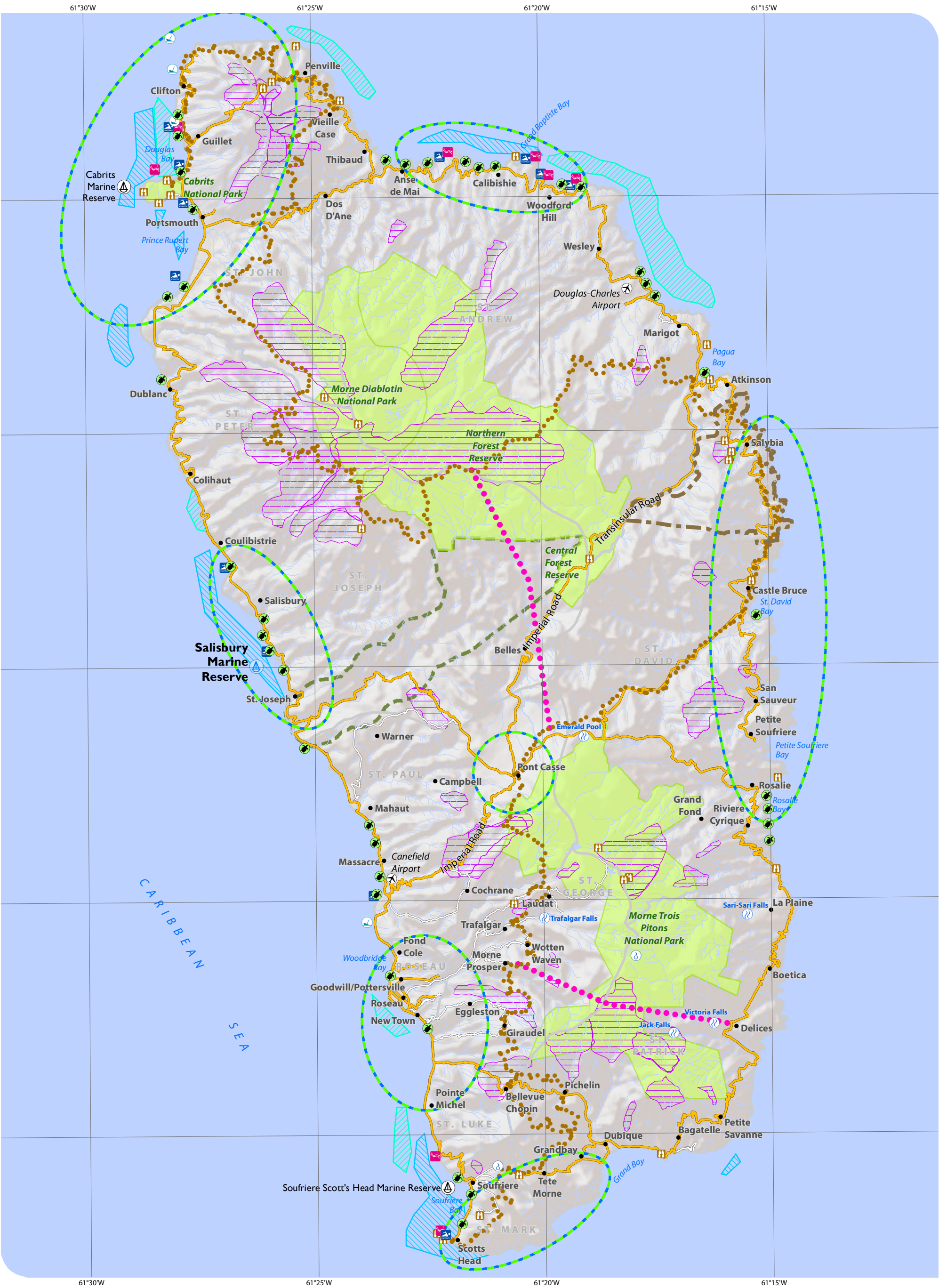
- 1) maintain and enhance Dominica’s pristine environment;*
- 2) tourism policies, programmes and standards to conform with the principles and directions required of the tourism sector arising from ‘Green Globe and/or other certification programme.*

Dominica’s key eco-tourism features are depicted in Map 1 below.

The NRDS also documents the Ministry of Tourism’s commitment to developing a climate resilient sustainable tourism policy. Action has been taken to review and update both the national tourism policy and national tourism master plan to incorporate sustainability principles.

Measures are being taken, also in keeping with the NRDS, to create sustainable linkages between tourism and biodiversity livelihoods. The previously dormant Agro-Tourism Technical Committee has been revived and is working to create and promote opportunities for local producers to supply fish and fresh produce, as well as value-added products, to hotels and other tourism sector operators. The growth of the luxury tourism market in Dominica is seen by both agriculture and tourism stakeholders as an opportunity for a shift towards certified sustainable/certified organic agricultural production; customers in the high-end tourism market segment are thought to be more likely to show both preference and willingness to pay for organic food. Local producers require capacity building and technical support to enable them to access these emerging markets.

The Dominica Community Tourism Association and its members encourage and support sustainability in the tourism sector by promoting environmentally-friendly community-based tourism, raising awareness among visitors about Dominica’s natural heritage, raising awareness among members of the need for biodiversity conservation and environmental protection, and enhancing natural attractions and resources for recreation and sustainable community livelihoods.



COMMONWEALTH OF DOMINICA

NATIONAL PHYSICAL DEVELOPMENT PLAN

SUSTAINABLE TOURISM AND NATURAL FEATURES
FIGURE 2

- | | | | | | |
|----------------|--------|-------------------------|-----------------|------------------------------|----------------------------------|
| Airport | Parish | Turtle Nesting Site | Sulphur Springs | Tourism Development Area | Coral Reef |
| Settlement | | Marine Reserve | Swimming | Waitukubuli National Trail | Seagrass Bed |
| Primary Road | | Proposed Marine Reserve | View Point | Kalinago Territory | National Park and Forest Reserve |
| Secondary Road | | Snorkelling | Waterfall | Proposed Trail Connection | Layout River Management Area |
| Watercourse | | | | DOWASCO Water Catchment Area | |

MAP DRAWING INFORMATION:
DATA PROVIDED BY GOOD/PPD/Dominode

MAP CREATED BY: GM
MAP CHECKED BY: CH
MAP PROJECTION: WGS 1984 UTM Zone 20N

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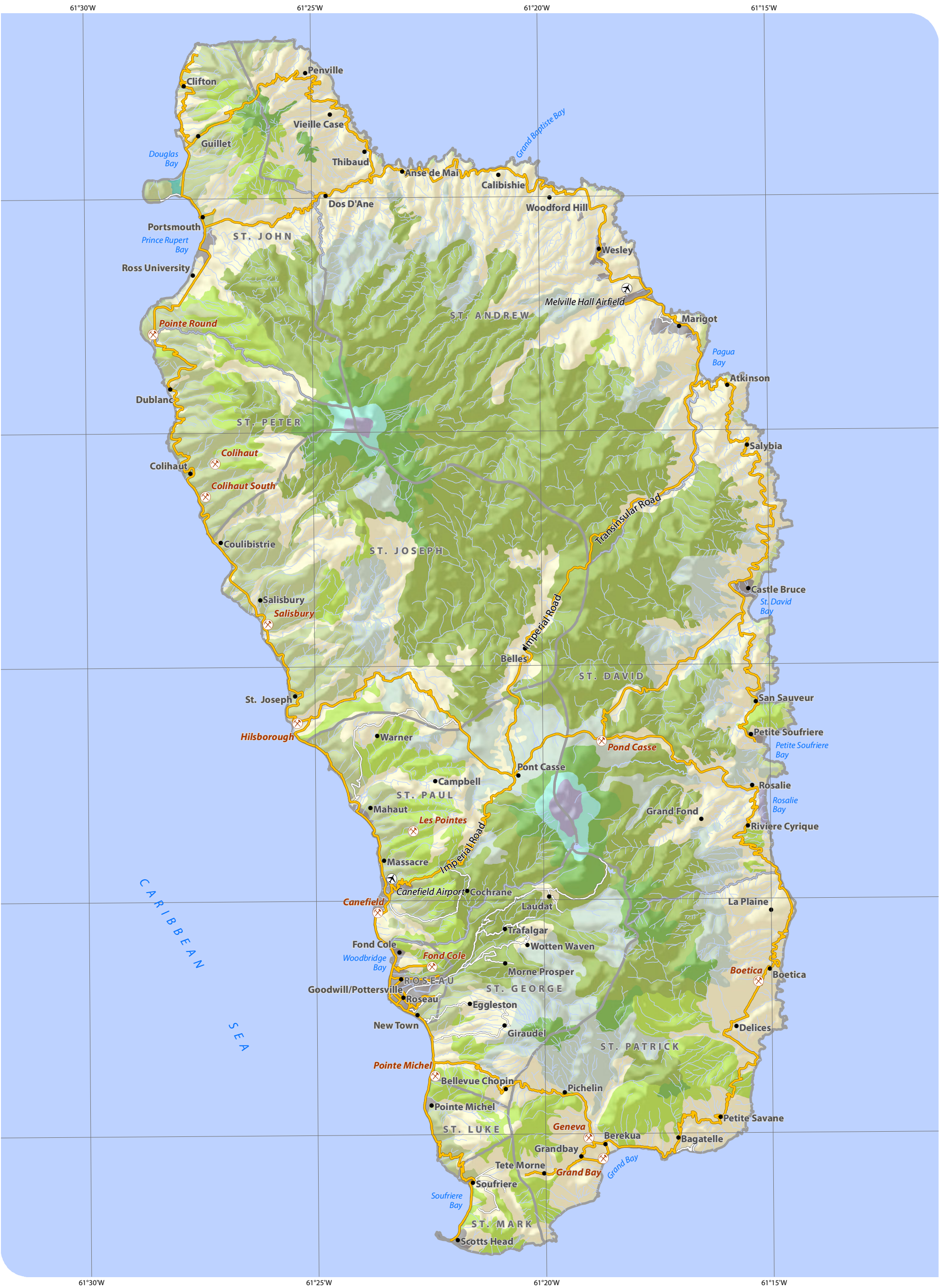
PROJECT: 148894 STATUS: DRAFT DATE: 10/31/2016

AICHI BIODIVERSITY TARGET 5: HABITAT LOSS HALVED OR REDUCED

According to FAO data, as of 2015 approximately 58% (43,330 ha) of Dominica's land area was forest covered, and 60% of that forest cover was primary forest. As such, Dominica is home to the largest acreage of anthropogenically undisturbed forest in the Lesser Antilles. Approximately 20,000 ha of forests are protected by inclusion in national parks, forest reserves, and protected forest areas. Map 2 below shows Dominica's main land cover and ecosystem classes.

Data in the 2015 Global Forest Resources Assessment suggest that Dominica's forest cover decreased by 2,000 hectares over the period 2010 to 2015, and that the annual rate of deforestation was 0.6%, the same as for the period 2000 to 2010. It must be noted that these data are based on desk studies and extrapolation of data from 1984 and 2000, rather than on field assessments. There has not been a comprehensive forest inventory in Dominica since 1987. In 2014, the Forestry Division began, with the support of the World Bank, to take action to initiate a national forest inventory, but plans for further action were interrupted by the passage of Tropical Storm Erika in 2015 and Hurricane Maria in 2017. Both of these severe weather events had significant and observable impacts on forest ecosystems and tree cover, as well as on forest fauna. The degree of this impact is yet to be thoroughly assessed. Furthermore, hard- and soft-copy information about the extent and health of Dominica's forest were lost as a result of Hurricane Maria. As a result it is difficult to conclusively assess Dominica's progress towards ABT5.

Notwithstanding these challenges in assessing the impact of their work, the Forestry, Wildlife and Parks Division has continued to implement the national reforestation drive that commenced prior to 2015 and intensified after Hurricane Maria. The current goal is to plant at least 1 million trees islandwide, including in urban spaces. Planting is done using tree stock from the Division's three forest nurseries. Action is being taken to establish eight community nurseries and to involve farmers, NGOs, youth, private land owners, and other members of civil society in the national reforestation efforts.



COMMONWEALTH OF DOMINICA
NATIONAL PHYSICAL
DEVELOPMENT PLAN

LAND COVER

- Airport
- Quarry
- Primary Road
- Secondary Road
- Watercourse

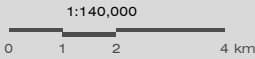
- Parish
- Lakes

- AGRICULTURE
- ALPINE MEADOW
- LITTORAL WOODLAND
- MATURE RAIN FOREST
- MONTANE RAIN FOREST
- MONTANE THICKET
- SCRUB WOODLAND
- SECONDARY RAIN FOREST

- SEMI-EVERGREEN FOREST
- SWAMP AND WETLANDS
- URBAN



MAP DRAWING INFORMATION:
DATA PROVIDED BY GOCD/PPD/Dominode
MAP CREATED BY: GM
MAP CHECKED BY: CF
MAP PROJECTION: NAD 1983 UTM Zone 20N



FILE LOCATION: I:\GIS\148894 - Dominica\mxd

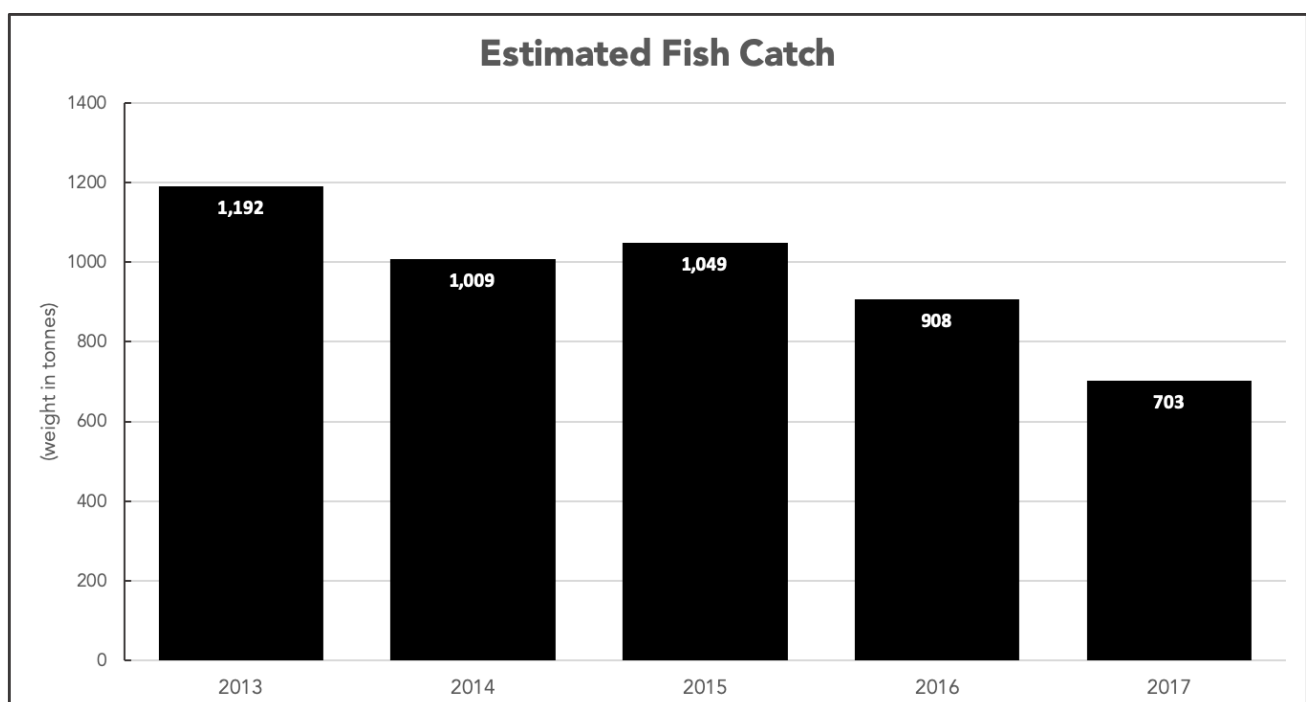
PROJECT: 148894

A I C H I B I O D I V E R S I T Y T A R G E T 6 : S U S T A I N A B L E M A N A G E M E N T O F M A R I N E L I V I N G R E S O U R C E S

The Fisheries Act of 1987, along with accompanying regulations, sets the framework for the management of marine living resources in Dominica.

In 2012 a national fisheries and aquaculture policy was drafted, including goals related to sustainable inshore and offshore fisheries, integrated coastal zone management, protection of marine inshore habitats, and resilience and climate change adaptation in the fisheries sector. The draft policy has not been formally adopted for implementation, but its core goals and strategies have been incorporated into the NRDS.

The Fisheries Division routinely provides fishers with basic and advanced training. This includes a week-long Basic Fishers' Training Course, which is compulsory for all recipients of fishing licences. Since 2005, more than 1,000 fishers have completed the Basic Fishers' Training Course. The course includes modules on the local and global fisheries sectors, the characteristics of fish, fishing technology, fishing as a business, cooperative and group development, product development and quality control, marine resource management, and safety at sea. Additional training is provided on navigation and safety at sea, engine repairing, and the traditional practice of net mending. The draft fisheries and aquaculture policy contains proposals for training fishers in biology and ecology of key species and good environmental practices.



Estimated fish catch, 2013 to 2017. Data source: Government of Dominica Fisheries Division

A national Fisheries Industry Census was carried out in 2011, and the Fisheries Division prepares detailed annual reports including, *inter alia*, information on estimated catch (disaggregated by fishery, species, type, and selected species), nominal catch per unit effort, fishing activity, fishing locations, and nominal cost of operations. Data shows that estimated annual fish catch declined by 41 % over the period 2013 to 2017, from 1,192 tonnes to 703 tonnes. This decline is attributable in part to damage to fishing vessels, equipment, and infrastructure caused by Tropical Storm Erika and Hurricane Maria.

In recent times, there has been increased use of fish-aggregating devices (FADs), and a corresponding decrease in the use of fish-pots. The impact that the use of FADs has had on fish catches and fish stocks has not been fully assessed. There is some concern that the use of FADs has reportedly resulted in an increase in the catch of juvenile fish, which may impact the sustainability of the affected fisheries. One possible positive impact of the shift from pot-fishing to FADs is a decrease in the rate of “ghost-fishing” by lost or abandoned fish pots.

Dominica is one of the participating countries in the GEF-funded FAO project *Climate Change Adaptation in the Eastern Caribbean Fisheries Sector*. The main objective of the project is to increase resilience and reduce vulnerability to climate change impacts in the Eastern Caribbean fisheries sector, through introduction of adaptation measures in fisheries management and capacity building of fisherfolk and aquaculturists.

A I C H I B I O D I V E R S I T Y T A R G E T 7 : S U S T A I N A B L E A G R I C U L T U R E , A Q U A C U L T U R E , A N D F O R E S T R Y

This ABT corresponds to Dominica’s second national biodiversity target; actions and progress towards this target are described in detail in the *Progress Assessment* section of this report.

A I C H I B I O D I V E R S I T Y T A R G E T 8 : P O L L U T I O N R E D U C E D

This ABT corresponds to Dominica’s third national biodiversity target; actions and progress towards this target are described in detail in the *Progress Assessment* section of this report.

A I C H I B I O D I V E R S I T Y T A R G E T 9 : I N V A S I V E A L I E N S P E C I E S P R E V E N T E D A N D C O N T R O L L E D

This ABT is linked to Dominica's first national biodiversity objective; actions and progress towards this target are described in detail in the *Implementation* section of this report.

A I C H I B I O D I V E R S I T Y T A R G E T 1 0 : P R E S S U R E S O N V U L N E R A B L E E C O S Y S T E M S R E D U C E D

Recognising the importance of preserving and sustainably managing ecosystems, in particularly coastal ecosystems, vulnerable to the effects of climate change, the Government of Dominica has defined strategies in sectoral and national policies and plans for implementing integrated coastal zone management.

The implementation of integrated coastal zone management, in keeping with international best practices, is a key component of the National Land Use Policy; planned strategies include “protecting marine and coastal habitats in accordance with the principles of integrated coastal zone management” and avoiding development or resource extraction that causes “major erosion, degradation, or pollution harmful to the health of fisheries, coral reefs, seagrass beds, coastal zones, or beaches”.

The NRDS identifies integrated coastal zone management as part of the overall strategy for sustainable resource management in both the fisheries and forestry sector.

In August 2017, prior to Hurricane Maria, the Government of Dominica submitted a concept note to the Green Climate Fund on the development of an integrated water and coastal management framework for urban areas in Dominica.

In the 2016 Coral Reef Report Card for Dominica, average coral cover was assessed to be 21 %, which is significantly higher than the Caribbean average of 14 %. However, it was noted that this assessment was based largely on data from 2005, and that a representative island-wide survey of coral reefs should be considered a priority for future monitoring and management. According to the Report Card, 10 km² (5 %) of seagrass, 0.8 km² of mangroves (19 %), and 0.8 km² of coral reef are within existing marine managed areas.

In 2014 the CATS project enhanced Dominica's capacity for coral reef monitoring by training/re-certifying seven people as Reef Check EcoDivers. Two Reef Check surveys were carried out in 2014 and eight in 2018, at locations along the west coast of the island.

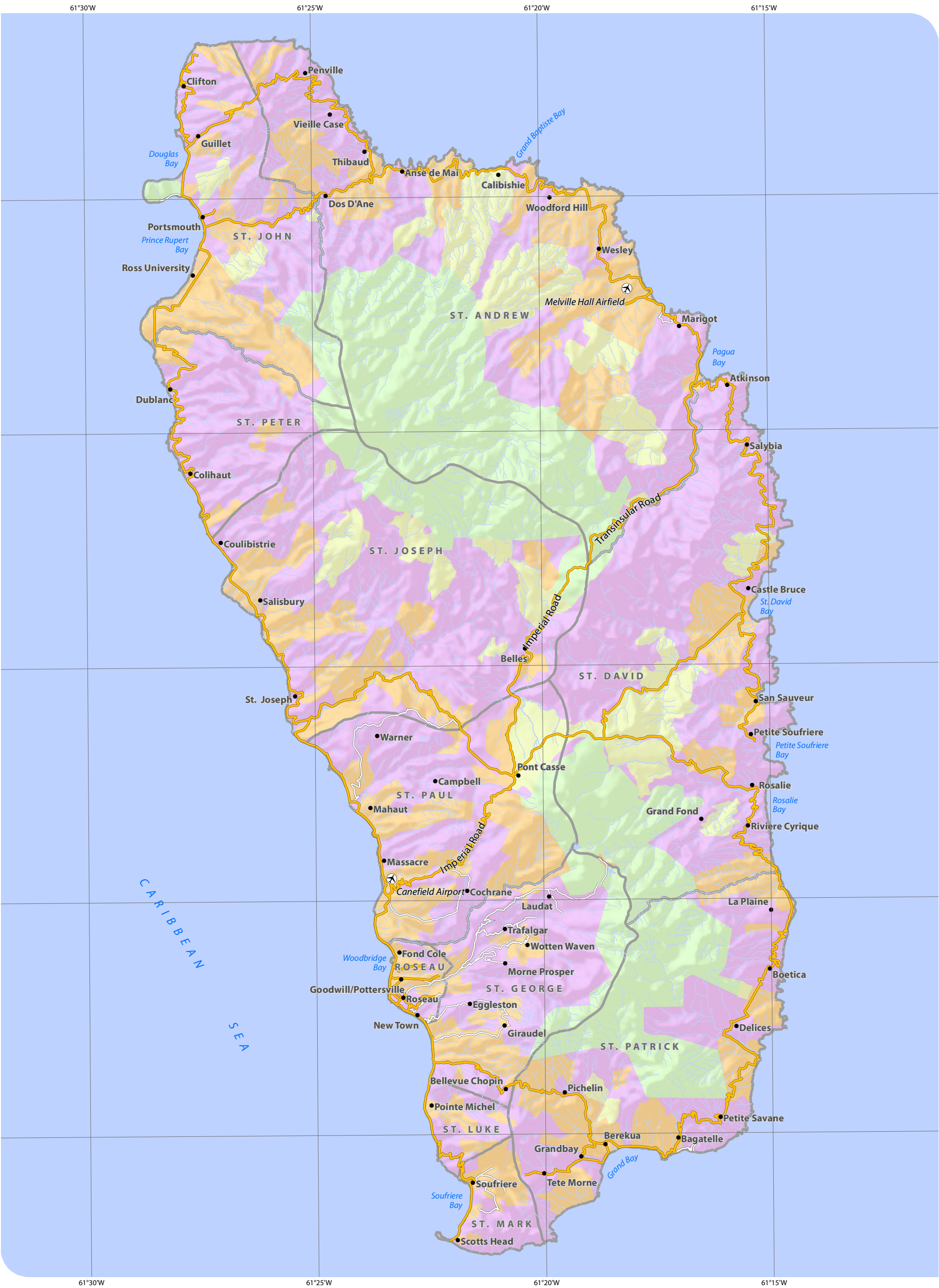
In 2018 a survey of the Dominica's reefs was carried out to assess the extent of the damage caused by Hurricane Maria. It was found that damage was moderate, with approximately 15 % of corals broken or killed. Overfishing and warming of the oceans were deemed to be the most significant threats to Dominica's coral reefs.

Dominica's NRDS indicates that the Government intends to address sustainable coral reef management as an area of immediate concern for the fisheries sector.

A I C H I B I O D I V E R S I T Y T A R G E T 1 1 : P R O T E C T E D A R E A S I N C R E A S E D A N D I M P R O V E D

This ABT corresponds to Dominica's fourth national biodiversity target; information about actions and progress towards this target is provided in the *Progress Assessment* section of this report.

The World Database on Protected Areas reports Dominica's terrestrial protected areas coverage as 168 km², or 21.99 %, in excess of the ABT goal of 17 % and the national goal of 15 %. This figure includes 2 protected areas, totalling 0.62 km², that have been proposed but not yet officially designated. Dominica's terrestrial protected areas are indicated in green on Map 3 below. In 2015 alterations to the boundaries of the Cabrits National Park resulted in a 15 acre decrease in the size of Dominica's protected areas estate.



COMMONWEALTH OF DOMINICA
NATIONAL PHYSICAL
DEVELOPMENT PLAN

LAND TENURE

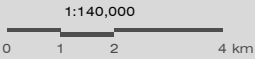
- | | | |
|----------------|--------|-----------------------|
| Airport | Parish | Large Estates |
| Primary Road | Lakes | Other Lands |
| Secondary Road | | Protected Areas |
| Watercourse | | State Land Settlement |



MAP DRAWING INFORMATION:
DATA PROVIDED BY GOCD/PPD/Dominode

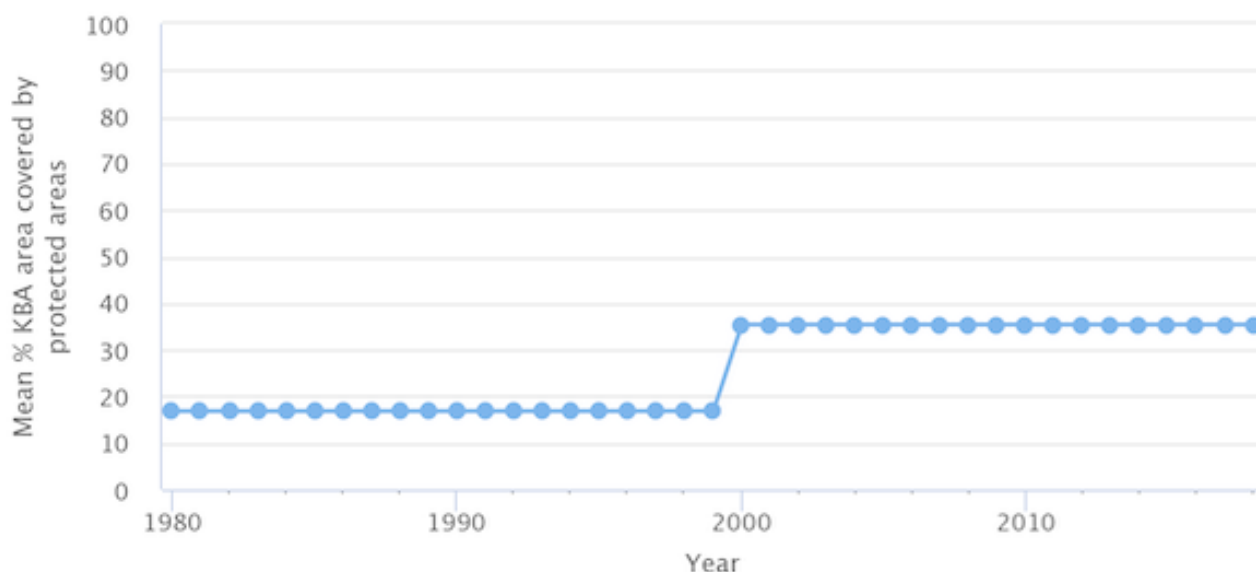
MAP CREATED BY: GM
MAP CHECKED BY: CF
MAP PROJECTION: NAD 1983 UTM Zone 20N

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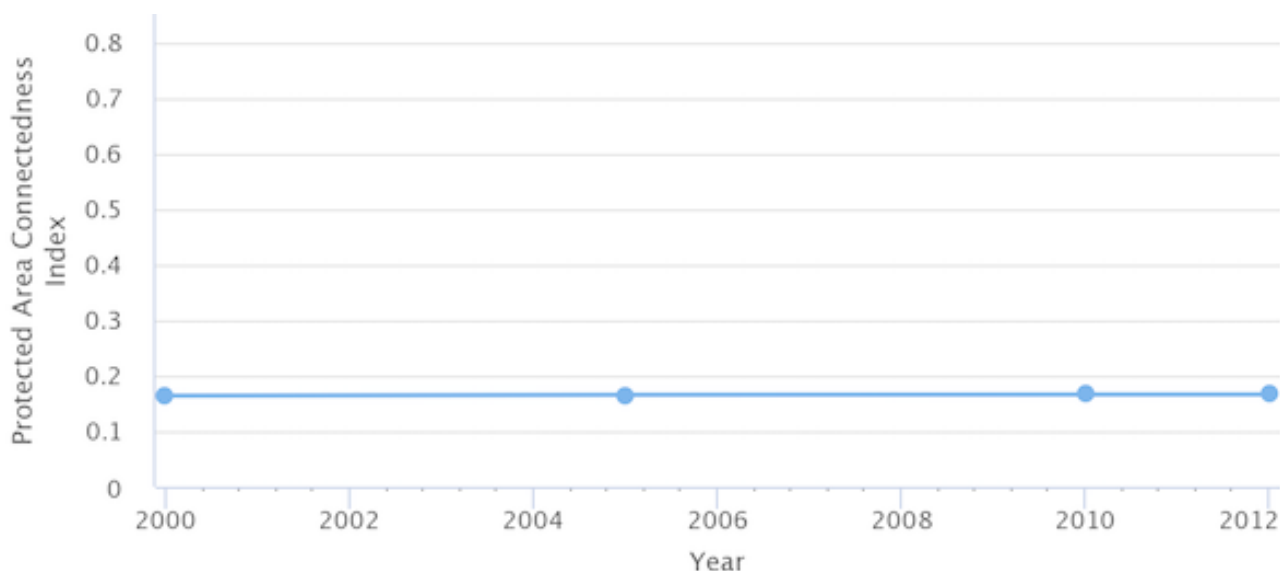
PROJECT: 148894

Protected area coverage of key biodiversity areas remained constant at 35.41 % over the period 2000 to 2018.



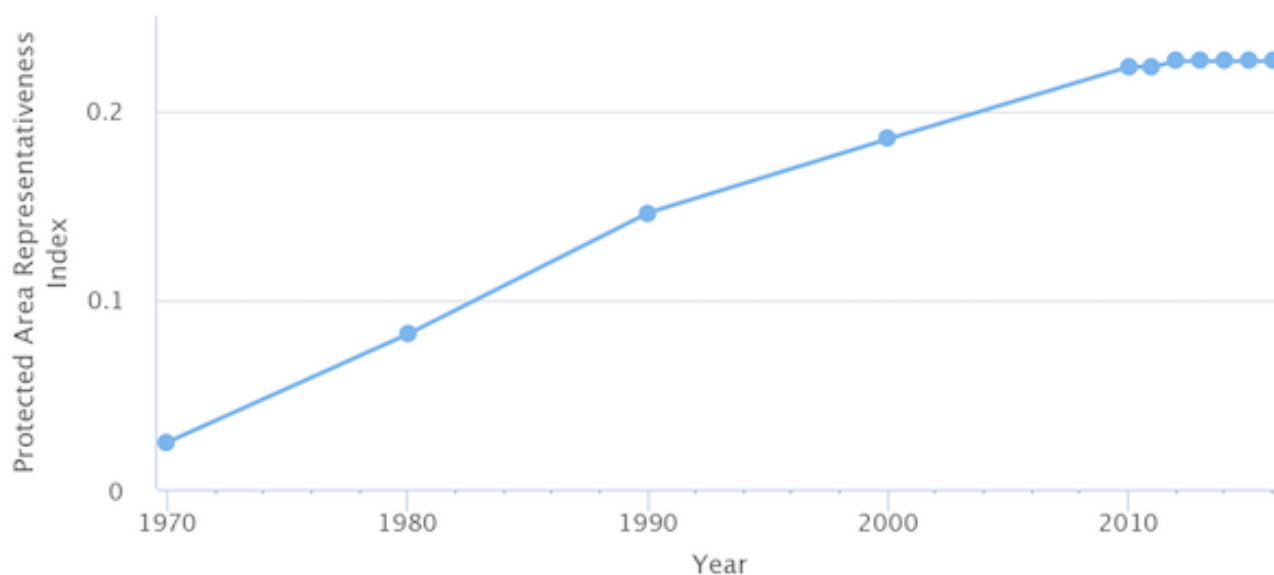
Data sources: BirdLife International, International Union for Conservation of Nature (IUCN), and UN Environment World Conservation Monitoring Centre (UNEP-WCMC) (2018)
Image downloaded from the Biodiversity Indicators Partnership Dashboard.
Further information at [/bip_metadata/protected-area-coverage-key-biodiversity-areas](#).

Dominica's protected areas connectedness index increased marginally, from 0.1637 to 0.1659, over the period 2000 to 2012.



Data sources: Commonwealth Scientific and Industrial Research Organization (CSIRO)
Image downloaded from the Biodiversity Indicators Partnership Dashboard.
Further information at [/bip_metadata/protected-area-connectedness-index](#).

The protected areas representativeness index increased from 0.185 to 0.226 over the period 2000 to 2016.



Data sources: Commonwealth Scientific and Industrial Research Organization (CSIRO)
Image downloaded from the Biodiversity Indicators Partnership Dashboard.
Further information at [/bip_metadata/protected-area-representativeness-index](#).

A I C H I B I O D I V E R S I T Y T A R G E T 1 2 : E X T I N C T I O N P R E V E N T E D

Dominica is home to two endemic species of bird (*Amazona arausiaca* and *Amazona imperialis*), one endemic amphibian species (*Eleutherodactylus amplinympha*), and five endemic reptiles (*Anolis oculatus*, *Mabuya dominicana*, *Pholidoscelis fuscatus*, *Alsophis sibonius*, and *Antillotyphlops dominicanus*). *Amazona imperialis* and *Eleutherodactylus amplinympha* are both endangered species. *Amazona imperialis* is classified as vulnerable. All five nationally endemic reptiles are species of least concern on the IUCN Red List.

Amazona imperialis (also known as the Imperial Amazon or the Sisserou parrot) and *Amazona arausiaca* (known as the Red-necked Amazon or Jaco/Jacquot) are protected by national legislation and are also listed in CITES Appendix I, which means that international commercial trade is prohibited. Both species of parrot have been the subject of active education and conservation programmes since the 1980s. In particular, the Sisserou, which is the national bird and appears on the flag, has been considered a flagship species for conservation in Dominica. The success of the parrot conservation programmes has been widely acknowledged, and as of 2016 both species were experiencing sustained population increases.

Hurricane Maria's impacts on the parrots' forest habitats and food supplies are thought by conservation experts to have reduced population numbers by as much as 50%. Post-hurricane conservation actions have included importation of food for the parrots and treatment of injured parrots at the Parrot Conservation and Research Centre at the Dominica Botanic Gardens. Action is underway to better assess the status of the *Amazona imperialis* and *Amazona arausiaca* populations, and to develop species recovery strategies.

Dominica is home to a number of regionally endemic species of conservation concern, including the Forest Thrush (*Turdus lherminieri*), a vulnerable species found only in Dominica, Guadelope, Montserrat, and Saint Lucia; the critically endangered Lesser Antillean Iguana (*Iguana delicatissima*), whose range is restricted to seven Caribbean islands between St. Barthelemy and Martinique; the endangered Black-capped Petrel (*Pterodroma basitata*) which is only known to breed on Dominica and Hispaniola; and the critically endangered mountain chicken frog (*Leptodactylus fallax*), which is found in the wild only in Dominica and Montserrat.

The Government of Dominica is an active participant in the multi-partner Mountain Chicken Recovery Programme. Other partners are the Durrell Wildlife Conservation Trust, the Chester Zoo, the Zoological Society of London, Nordens Ark, and the Government of Montserrat. It is estimated that since 2002 the global mountain chicken population has declined by 99 % as a result of the rapid spread of chytridiomycosis, a fatal fungal diseases which affects amphibians. The majority of the currently known wild population of mountain chicken is found in Dominica. Conservation efforts have included establishment of conservation breeding facilities in Dominica and in the United Kingdom, training in mountain chicken husbandry, field survey and laboratory techniques, development of a 20-year conservation action plan, and campaigns to eradicate the Cuban tree frog, an IAS which poses a threat to mountain chicken habitats and populations. Field surveys have shown evidence that the mountain chicken population in Dominica is recovering slowly. However, the total wild population is still very small; estimates place the number of wild frogs in Dominica at approximately 100, down from a population that was in the tens of thousands prior to the chytridiomycosis epidemic.

The IUCN Red List of species survival for Dominica has shown a decline from 0.69 in 2010 to 0.67 in 2018. This indicates a decline in aggregate survival probability of the country's species overall.



AICHI BIODIVERSITY TARGET 13: GENETIC DIVERSITY MAINTAINED

CARDI has undertaken some actions to conserve indigenous varieties, landraces and cultivars. This has included the establishment of germplasm plots and banks, and some characterisation of indigenous landraces and cultivars with respect to productivity, disease resistance and climate change resilience. The focus in this regard has been primarily on root crops and tubers, particularly dasheen. These efforts have been largely project-funded and there have been challenges with maintaining the conservation efforts post-project. For example, in cases where germplasm plots are set up on private lands, there is little incentive for farmers to continue to cultivate crop varieties for which there is no ready market. The 2014 NBSAP reported that despite conservation efforts by CARDI and other organisations, Dominica has experienced a loss in agricultural genetic diversity. For instance, over the period 2003 to 2012 the number of varieties of sweet potato found in Dominica declined by 65 %, from 23 to five. There have also been reports that development of land for housing has resulted in the loss of important field-based germplasm collections.

There are some farmers who voluntarily engage in on farm conservation of indigenous varieties and landraces, and of under-utilised wild species such as medicinal plants. DOAM is embarking on a seed-saving initiative and views conservation of agricultural

genetic diversity as an important aspect of resilience-building in the agricultural sector. The National Association of Youth in Agriculture has undertaken a project, funded by the GEF-UNDP SGP, to conserve local varieties of livestock.

In recent years, there have been efforts to improve commercial viability of some crops (e.g. bananas, coffee, potatoes, cocoa) via the introduction of new strains and varieties. Stakeholders in the agriculture sector recognise the importance of ensuring that the introduction of new varieties does not lead to the accelerated decline or loss of local varieties and landraces, but there is not currently a dedicated national programme in this regard.

A I C H I B I O D I V E R S I T Y T A R G E T 1 4 : E C O S Y S T E M S A N D E S S E N T I A L S E R V I C E S S A F E G U A R D E D

The protection of ecosystems and the services they provide are important principles of Dominica's NRDS. Essential ecosystem services identified in the NRDS relate to:

- fishing, associated livelihoods, and food and nutrition security;
- agriculture and food and nutrition security;
- provision of water;
- forest-based livelihoods and provision of subsistence materials (food, fuel, medicines, and construction materials);
- tourism;
- other leisure and recreation;
- climate change mitigation and adaptation.

Measures taken to protect and restore relevant ecosystems are described in the sections of this report related to National Biodiversity Targets 2 and 5, and ABT 4.

In terms of action to contribute to the safeguarding of ecosystems providing services related to water, in 2011 a draft National IWRM Policy and accompanying Policy Brief were prepared under the GEF-funded project *Integrated Watershed and Coastal Area Management in Caribbean Small Island Developing States*. The draft Policy includes many commitments related to watershed management and management of sensitive ecosystems. Examples of such commitments are:

- adopt an integrated approach to watershed management and coastal area management;
- establish land uses based on land suitability and soil and water conservation criteria;
- establish and maintain land zoning areas that are critical for the protection of the water resources;
- classify water resources uses in watersheds; and
- develop and implement measures in collaboration with major stakeholders for the restoration of degraded watersheds and coastal areas, and mitigation of negative practices.

The draft National IWRM Policy has not yet been officially endorsed and adopted by the Government of Dominica, but several of its key proposals have been incorporated into the NRDS.

In August 2017, prior to Hurricane Maria, the Government of Dominica submitted a concept note to the Green Climate Fund on the development of an integrated water and coastal management framework for urban areas in Dominica. The concept note was in keeping with recommendations put forward in the draft IWRM Policy.

The Dominica Water and Sewerage Company Limited recognises the importance of implementing an IWRM approach, but in the aftermath of Hurricane Maria, the priorities for allocation of scarce financial, human, and technical resources relate to the restoration of water supply infrastructure and equipment. According to the NRDS, the passage of Hurricane Maria damaged 41 water supply areas, 16 of which were heavily damaged.

Although infrastructural recovery is the immediate priority for Dominica's water sector, the NRDS recognises that strategies for restoration and resilience of the sector must incorporate ecosystems conservation and protection:

Resilience building in the water sector goes beyond the sector itself to land-use and forest management. The demarcating and protecting of water catchment areas to avoiding encroachment through farming and forest harvesting must be maximised. Since the bulk of pipe borne water is drawn from rivers and streams, enforcement of buffer zones must also be instituted. In so doing, those buffer zones must be cultivated with the right resilient species to avoid easy breakage and toppling as a result of tropical weather systems.

AICHI BIODIVERSITY TARGET 15: ECOSYSTEMS RESTORED AND RESILIENCE ENHANCED

This ABT corresponds to Dominica's fifth national biodiversity target; actions and progress towards this target are described in detail in the *Progress Assessment* section of this report.

AICHI BIODIVERSITY TARGET 16: NAGOYA PROTOCOL IN FORCE AND OPERATIONAL

Dominica has not yet become Party to the Nagoya Protocol on ABS. A draft Climate Change, Environment and Natural Resource Bill has been prepared, with a section on ABS.

In 2013 the CARICOM Secretariat and the ABS Capacity Development Initiative supported a project which reviewed and assessed the current and proposed policy context in Dominica with regard to ABS. This project resulted in several recommendations to clarify and strengthen the draft framework for ABS in Dominica, particularly in relation to the rights of the Kalinago people with respect to genetic resources and associated traditional knowledge.

Also in 2013, Dominica hosted a Caribbean regional capacity-building workshop, organised by the CARICOM Secretariat and supported by the ABS Capacity Development Initiative, on Drafting Legislation for the Implementation of the Nagoya Protocol.

In the absence of legislation on ABS, access to genetic resources is currently controlled via a research permit system. Permits are typically granted on the condition that researchers' findings and results are shared with relevant agencies in Dominica. External researchers are also encouraged to work with local counterparts and assistance, including students and staff from the Dominica State College, in order to contribute to capacity-building and skills-sharing. However, biodiversity stakeholders have expressed concern that in the absence of a strong legal framework for access and benefit-sharing, Dominica is vulnerable to biopiracy, and is not deriving fair and equitable benefits from external entities' use of its biological and genetic resources.

A I C H I B I O D I V E R S I T Y T A R G E T 1 7 : N B S A P S A D O P T E D A S P O L I C Y I N S T R U M E N T

Dominica has formulated and adopted an NBSAP for the period 2014 - 2020 that takes into consideration the Strategic Plan for Biodiversity 2011 - 2020. The NBSAP prioritises five ABTs for national action. However, the NBSAP is not limited to addressing only these five targets; it includes objectives, strategies, and actions that relate to all of the 20 ABTs.

Information gathered in the process of preparing this sixth national report suggests that the goals, objectives and strategies in the NBSAP are not being effectively translated into action. Progress in this regard would be improved by the development of a multi-stakeholder implementation framework for the NBSAP. The implementation framework would specify what tasks are to be carried out and by whom, establish timelines/timeframes for action, define measurable milestones, indicate activity and tasks budgets, outline a resource mobilisation strategy, and include provisions for regular reporting and evaluation. Such a framework would facilitate the integration of the NBSAP into the work programmes and projects of biodiversity stakeholders in both the state and non-state sectors.

A I C H I B I O D I V E R S I T Y T A R G E T 1 8 : T R A D I T I O N A L K N O W L E D G E R E S P E C T E D

The indigenous Kalinago people of Dominica share communal ownership of 3,700 acres of land on the windward side of the island. Internationally funded projects typically require that consideration be given to the rights, customs and practices of the Kalinago people in relation to natural resources, including biodiversity. For example, the World Bank-funded Caribbean Regional Oceanscape Project included the development of an Indigenous People's Planning Framework for the Kalinago Territory. In this Planning Framework, the Kalinago Council identified "better protection of forest, rivers, water, catchment areas (territorial lands), as well as fisheries" as one of five key aspirations for the Kalinago people.

The National Land Use Policy highlights the Kalinago Territory as a special policy area, where planning should "support the culture and lifestyle of the people, their social structures, and historical and natural attractions."

Projects have been implemented with the aim of enabling the sustainable continuation of customary uses of biodiversity in the Kalinago community. Examples include programmes to encourage the replanting of the gommier trees (*Pachylobus excelsa*), used in traditional boat-building, to develop value chains and production capacity for cassava, to increase cultivation and promote sustainable harvesting of larouma (*Ischosiphon arouma*) a reed used in basket-making and other traditional craft, and to preserve traditions related to uses of medicinal herbs.

Recently, biodiversity stakeholders have recognised the need for conservation, management, and sustainable use initiatives in the Kalinago Territory to be planned and implemented in ways that better take into account the systems of governance and social organisation among the Kalinago people, and allow for broader participation and engagement across the community at all stages of project design, implementation, monitoring and evaluation.

Members of the Kalinago community also recognise the need for better engagement with and outreach to the community. There is a desire for culturally-sensitive communications, education, and public awareness about biodiversity for all levels, from pre-school to the Kalinago Chief and Council. Efforts should be made to increase community leaders' knowledge and understanding of the CBD and the role indigenous people play in the implementation of the Convention. To complement this, there should be awareness-raising for biodiversity stakeholders and practitioners in Dominica about the significance of Articles 8(j) and 10 (c) of the CBD.

Outside of the Kalinago community, there is also interest in maintaining traditional knowledge and practices related to biodiversity. Examples of initiatives undertaken include cultivating herbal medicine gardens, preservation of local and heirloom agricultural varieties, promoting innovation and enhancing sustainability in traditional sectors such as the production of essential oils and spices, and documenting and transmitting knowledge about the use of plants for health and medicinal purposes.

The Dominica Herbal Business Association researches local traditional botanical medicines as the basis for the development of commercial products. The Association delivers training to its members, and engages in public education and outreach to schools and the general public, raising awareness of the value of Dominica's traditional botanical pharmacology. The Association is working with partners (including scientists at the University of the West Indies Cave Hill campus) in Barbados and Saint Lucia on research and development of phyto-pharmaceutical products based on local plants and herbal medicine traditions.

Some CBOs and NGOs have expressed the desire for kweyol to be more widely used in biodiversity-related CEPA.

A I C H I B I O D I V E R S I T Y T A R G E T 1 9 : K N O W L E D G E I M P R O V E D , S H A R E D A N D A P P L I E D

Biodiversity experts and stakeholders have indicated that biodiversity action is severely constrained by deficiencies with regard to generating, accessing, sharing and applying scientific information. Lack of data and of data gathering capacity pose obstacles in relation to accessing funding for biodiversity, as sound baseline data and reliable arrangements for consistent monitoring and evaluation are typically a condition for obtaining grants and other financial aid.

The persistent challenges in relation to ABT 19 were exacerbated by the passage of Hurricane Maria, which resulted in the loss of data, information and reports, both hard copy and digital.

In 2019, the GIZ-funded regional CATS project delivered training in the use of drones for aerial spatial mapping, as well as in post-flight data management, processing, and analysis.

Plans are being made, with support from the World Bank, to carry out a national survey of forest flora and fauna.

A I C H I B I O D I V E R S I T Y T A R G E T 2 0 : F I N A N C I A L R E S O U R C E S F R O M A L L S O U R C E S I N C R E A S E D

The GEF is a key source of funding for biodiversity in Dominica. In the past five years, approval has been granted for two national medium-sized projects related to biodiversity, with a total value of approximately US\$25 million (of which GEF grants provide US\$3.5 million). The concept for a third project valued at US\$3.5 million has also been approved.

International rehabilitation assistance after Tropical Storm Erika and Hurricane Maria has included biodiversity-relevant funding, including for reforestation and for recovery of the agriculture and fisheries sector.

Sources of revenue at the national level include eco-tourism site user fees, hunting and fishing licences, eco-tourism site vendor and concession fees, research fees, and sale of plants, trees, and lumber.

Biodiversity is the largest component of the GEF-UNDP Small Grants Programme in Dominica, accounting for nearly 50 % of all grants awarded since the programme started operations in Dominica.

Civil society organisations such as WildDominique have also been able to mobilise financial resources from international organisations such as the IUCN, Fauna & Flora International, and Mohamed Bin Zayed Species Conservation Fund.

There is a need to build the capacity of both government and civil society organisations to access funding for biodiversity, particularly from regional and international sources. This capacity-building should involve building awareness of available funding opportunities, delivering training in project development and grant/proposal writing, and support to improve organisation's abilities for project organisation, management, monitoring and reporting.

There are some instances of the private sector providing financial support for biodiversity in Dominica. One notable example was the contribution made by Rosalie Bay Resort to support turtle conservation and the work of the Dominica Sea Turtle Conservation Organisation. Although Dominica's private sector is still recovering from losses incurred as a result of Hurricane Maria, there is scope for an increase in private sector funding for biodiversity, particularly from the tourism sector.

There is also scope for the development of new and innovative financial mechanisms such as national conservation funds, such as have recently been established in several other Caribbean countries.

Dominica has not submitted information to the CBD's financial resources mobilisation reporting framework. There is need for a routine data compilation and analysis to track biodiversity expenditures, revenues, and other funding, and to evaluate shortfalls in biodiversity financing.

RELATIONSHIPS BETWEEN NATIONAL BIODIVERSITY ACTION AND THE SUSTAINABLE DEVELOPMENT GOALS

Measures to increase awareness of biodiversity and its values support the achievement of SDG 4 on lifelong learning, and specifically target 4.7 on knowledge and skills necessary to promote sustainable development. They also support achievement of SDG 12, target 12.8 on information and awareness for sustainable development and lifestyles in harmony with nature.

Measures to integrate biodiversity into national policies for sustainable climate resilient development contribute to achievement of SDG 1, target 1.5 on building the resilience of the poor and those in vulnerable situations; SDG 2, targets 2.3 on doubling agricultural productivity, and 2.4 on sustainable food production; SDG 6, target 6.6 on protecting and restoring water-related ecosystems; SDG 13, targets 13.1 on strengthening resilience and adaptive capacity and 13.2 on integrating climate change measures into national policies, strategies, and planning; SDG 14, targets 14.4 on ending overfishing, and 14.7 on increasing benefits to SIDS from sustainable use of marine resources; SDG 15, target 15.9 on integrating ecosystem and biodiversity values into national and local planning; and SDG 17, target 17.14 on enhancing policy coherence for sustainable development.

Measures to achieve sustainable consumption and production support the achievement of SDG 2, target 2.4 on sustainable food production; SDG 8, targets 8.4 on resource efficiency and 8.9 on sustainable tourism; SDG 12, target 12.2. on the sustainable management and efficient use of natural resources; SDG 14, targets 14.4 on ending overfishing; and SDG 15, targets 15.1 on sustainable use of terrestrial and freshwater ecosystems and 15.2 on sustainable forest management.

Measure to reduce the rate of habitat loss and degradation contribute to achievement of SDG 6, target 6.6 on protecting and restoring water-related ecosystems; and SDG 15, targets 15.1 on sustainable use of terrestrial and freshwater ecosystems, 15.2 on sustainable forest management, 15.3 on combatting land degradation, 15.4 on conservation of mountain ecosystems, and 15.5 on reducing the degradation of natural habitats and halting the loss of biodiversity.

Measures to improve the sustainable use of living marine resources contribute to achievement of SDG 2, target 2.4 on sustainable food production systems; SDG 12, target 12.2. on the sustainable management and efficient use of natural resources; and

SDG 14, targets 14.2 on sustainable management of coastal and marine ecosystems, and 14.4 on ending overfishing.

Measures to enhance the sustainable management of areas under agriculture, aquaculture and forestry support SDG 2, targets 2.3 on doubling agricultural productivity and 2.4 on sustainable food production; SDG 8, targets 8.4 on resource efficiency; SDG 12, target 12.2. on the sustainable management and efficient use of natural resources; SDG 13, targets 13.1 on strengthening resilience and adaptive capacity and 13.2 on integrating climate change measures into national policies, strategies, and planning; and SDG 15, targets 15.1 on sustainable use of terrestrial and freshwater ecosystems, 15.2 on sustainable forest management, 15.3 on combatting land degradation.

Measures to reduce pollution support SDG 14, target 14.1 on reducing marine pollution.

Measures to prevent and control IAS contribute to SDG 11, target 11.4 on protecting and safeguarding the world's natural heritage; and SDG 15, targets 15.5 on reducing habitat degradation and preventing extinction, and 15.8 on IAS.

Measures towards effective and equitable management of protected areas support SDG 11, target 11.4 on protecting and safeguarding the world's natural heritage; SDG 15, targets 15.1 on conservation of terrestrial and freshwater ecosystems, 15.2 on forests management, 15.4 on conservation of mountain ecosystems, and 15.5 on stopping habitat loss and preventing extinction.

Measures for reducing the risk of species extinction contribute to SDG 11, target 11.4 on protecting and safeguarding the world's natural heritage and SDG 15, target 15.5 on reducing habitat degradation and preventing extinction.

Measures to safeguard agricultural genetic diversity contribute to SDG 2, targets 2.4 on sustainable food production systems and 2.5 on maintaining the genetic diversity of seeds and cultivated plants.

Measures to safeguard ecosystems that provide services related to water and sanitation support SDG 6, targets 6.5 on integrated water resources management, and 6.6 on protecting and restoring water-related ecosystems; SDG 13, targets 13.1 on resilience and adaptive capacity and 13.2 on integrating climate change measures into national policies, strategies, and planning; and SDG 15, targets 15.1 on sustainable use of terrestrial and freshwater ecosystems, 15.2 on sustainable forest management, 15.3 on combatting land degradation.

Measures to enhance ecosystem resilience contribute to SDG 1, target 1.5 on building the resilience of the poor and those in vulnerable situations; and SDG 13, targets 13.1 on resilience and adaptive capacity and 13.2 on integrating climate change measures into national policies, strategies, and planning.

Measures to implement access and benefit-sharing support SDG 15, target 15.6 on access and benefit-sharing.

Measures related to traditional knowledge and the participation of local communities support SDG 1, target 1.4 on ownership and control of natural resources; SDG 11, target 11.4 on protecting and safeguarding the world's cultural and natural heritage; SDG 12, targets 12.2 on sustainable management and efficient use of natural resources, and 12.8 on ensuring that people everywhere have the relevant information and awareness for sustainable development and lifestyles in harmony with nature.

Measures to improve and share the biodiversity knowledge base support SDG 4, target 4.7 on knowledge and skills necessary to promote sustainable development; and SDG 12, target 12.8 on information and awareness for sustainable development and lifestyles in harmony with nature.

Measures to mobilise financial resources for biodiversity support SDG 15, targets 15.A on financial resources for biodiversity, and 15.B on financial resources for sustainable forest management; as well as SDG 17, target 17.3 on mobilising financial resources for developing countries.

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ANNEX I: THE AICHI BIODIVERSITY TARGETS

Strategic Goal A: Address the underlying causes of biodiversity by mainstreaming biodiversity across government and society

- 1 By 2020, at the latest, people are aware of the values of biodiversity and the steps they can take to conserve and use it sustainably.
- 2 By 2020, at the latest, biodiversity values have been integrated into national and local development and poverty reduction strategies and planning processes and are being incorporated into national accounting, as appropriate, and reporting systems.
- 3 By 2020, at the latest, incentives, including subsidies, harmful to biodiversity are eliminated, phased out or reformed in order to minimise or avoid negative impacts, and positive incentives for the conservation and sustainable use of biodiversity are developed and applied, consistent and in harmony with the Convention and other relevant international obligations, taking into account national socio economic conditions.
- 4 By 2020, at the latest, Governments, business and stakeholders at all levels have taken steps to achieve or have implemented plans for sustainable production and consumption and have kept the impacts of use of natural resources well within safe ecological limits.

Strategic Goal B: Reduce the direct pressures on biodiversity and promote sustainable use

- 5 By 2020, the rate of loss of all natural habitats, including forests, is at least halved and where feasible brought close to zero, and degradation and fragmentation is significantly reduced.
- 6 By 2020 all fish and invertebrate stocks and aquatic plants are managed and harvested sustainably, legally and applying ecosystem based approaches, so that overfishing is avoided, recovery plans and measures are in place for all depleted species, fisheries have no significant adverse impacts on threatened species and vulnerable ecosystems and the impacts of fisheries on stocks, species and ecosystems are within safe ecological limits.
- 7 By 2020 areas under agriculture, aquaculture and forestry are managed sustainably, ensuring conservation of biodiversity.
- 8 By 2020, pollution, including from excess nutrients, has been brought to levels that are not detrimental to ecosystem function and biodiversity.
- 9 By 2020, invasive alien species and pathways are identified and prioritised, priority species are controlled or eradicated, and measures are in place to manage pathways to prevent their introduction and establishment.
- 10 By 2015, the multiple anthropogenic pressures on coral reefs, and other vulnerable ecosystems impacted by climate change or ocean acidification are minimised, so as to maintain their integrity and functioning.

Strategic Goal C: Improve the status of biodiversity by safeguarding ecosystems, species and genetic diversity

- 11 By 2020, at least 17 per cent of terrestrial and inland water, and 10 per cent of coastal and marine areas, especially areas of particular importance for biodiversity and ecosystem services, are conserved through effectively and equitably managed, ecologically representative and well connected systems of protected areas and other effective area-based conservation measures, and integrated into the wider landscapes and seascapes.
- 12 By 2020 the extinction of known threatened species has been prevented and their conservation status, particularly of those most in decline, has been improved and sustained.
- 13 By 2020, the genetic diversity of cultivated plants and farmed and domesticated animals and of wild relatives, including other socio-economically as well as culturally valuable species, is maintained, and strategies have been developed and implemented for minimising genetic erosion and safeguarding their genetic diversity.

Strategic Goal D: Enhance the benefits to all from biodiversity and ecosystem services

- 14 By 2020, ecosystems that provide essential services, including services related to water, and contribute to health, livelihoods and well-being, are restored and safeguarded, taking into account the needs of women, indigenous and local communities, and the poor and vulnerable.
- 15 By 2020, ecosystem resilience and the contribution of biodiversity to carbon stocks has been enhanced, through conservation and restoration, including restoration of at least 15 per cent of degraded ecosystems, thereby contributing to climate change mitigation and adaptation and to combating desertification.
- 16 By 2015, the Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilisation is in force and operational, consistent with national legislation.

Strategic Goal E: Enhance implementation through participatory planning, knowledge management and capacity building

- 17 By 2015 each Party has developed, adopted as a policy instrument, and has commenced implementing an effective, participatory and updated national biodiversity strategy and action plan.
- 18 By 2020, the traditional knowledge, innovations and practices of indigenous and local communities relevant for the conservation and sustainable use of biodiversity, and their customary use of biological resources, are respected, subject to national legislation and relevant international obligations, and fully integrated and reflected in the implementation of the Convention with the full and effective participation of indigenous and local communities, at all relevant levels.
- 19 By 2020, knowledge, the science base and technologies relating to biodiversity, its values, functioning, status and trends, and the consequences of its loss, are improved, widely shared and transferred, and applied.
- 20 By 2020, at the latest, the mobilisation of financial resources for effectively implementing the Strategic Plan for Biodiversity 2011-2020 from all sources, and in accordance with the consolidated and agreed process in the Strategy for Resource Mobilisation, should increase substantially from the current levels. This target will be subject to changes contingent to resource needs assessments to be developed and reported by Parties.

ANNEX II: SUMMARY OF DOMINICA'S NBSAP AND CORRESPONDENCE WITH THE AICHI BIODIVERSITY TARGETS

National Biodiversity Goals

1. The conservation and sustainable management of Dominica's terrestrial and marine biodiversity.
2. The promotion of sound and sustainable agricultural practices and technology within existing agricultural human capital.
3. To ensure that biotechnology knowledge and concerns are widely distributed so that all life is guaranteed and benefits derived and equitable shared.

Priority National Biodiversity Targets and Alignment with Aichi Biodiversity Targets

National Biodiversity Target	Relevant ABTs
1. By 2020 at the latest, all residents of the Commonwealth of Dominica will be aware of the value of biodiversity, and the steps they can take to conserve and use it sustainably.	I
2. By 2020, at least 15% of areas under agriculture, aquaculture and forestry are managed sustainably, ensuring conservation of biodiversity.	7
3. By 2020, pollution, including from excess nutrients, has been brought to levels that are not detrimental to ecosystem function and biodiversity.	8
4. By 2020, at least 20% of terrestrial, inland water and 15% of coastal and marine areas, especially areas of particular importance for biodiversity and ecosystem service, are conserved through comprehensive ecologically representative and well-connected systems of effectively managed, protected areas and other means, and integrated into the wider land and seascape.	II
5. By 2020, ecosystem resilience and the contribution of biodiversity to carbon stock has been enhanced, through conservation and restoration, including restoration of at least 15% of degraded ecosystems, thereby contributing to climate change mitigation and adaptation, and to combating desertification.	20

Biodiversity Management Strategies and Alignment with Aichi Biodiversity Strategies

Biodiversity Management Strategies	Relevant ABTs
1. Improve the protection and management of the country's natural environment.	5, 10, 14, 15
2. Establish a biodiversity knowledge network and coordinating mechanism with links to the various Ministries and Departments, academic institutions, professional organisations and non-state actors.	2, 19
3. Improve public awareness and participation in decision making. ... Coordinate the development of a national environmental education and awareness programme.	1, 18
4. Improve stakeholder involvement in biodiversity management.	2, 18
5. Establish and utilise the Clearing House Mechanism for more effective data dissemination.	19
6. Develop and implement an economic valuation system for Biodiversity resources and ecosystems services with the view to more accurately reflect their contribution to the economy.	2
7. Establish a financial mechanism or provide incentives to support biodiversity development ... linked to research opportunities and bio-prospecting.	3, 19, 20
8. Develop a built in reporting system for early warning of threats, periodic update for policy makers and support to the national reporting requirement under the convention.	2, 19
9. Strengthen ex-situ conservation of threatened and endangered species using available institutions, relevant organisations and research entities as repository for genetic resources	12
10. Develop joint ventures between Government and private land owners to save and protect fragile, sensitive, threatened ecosystems located on private lands.	5, 10, 14, 15
11. Seek approval for the Climate Change, Environment and Natural Resource Bill with inclusion relative to the ABS and Biosafety protocols.	2, 13, 16
12. Develop and implement a protected area systems plan with allocated financial resources. The plan will include a description of key strategies and priorities, and make provision for integration into government institutional, administrative and budgeting process.	11

National Biodiversity Objectives and Action Plans and Alignment with the Aichi Biodiversity Targets

Objectives	Action Plan	Relevant ABTs
To ensure that the biological resource of Dominica remain rich and diverse	Conduct inventory of biodiversity resources	2, 5, 19
	Establish baseline for agreed targets	19
	Strengthen quarantine efforts and enforcement legislation	9
To reduce or eliminate the potential risks from the use of biotechnology and its byproducts	Coordinate policy on food security, technology and biodiversity conservation.	7
	Reduce conflict between traditional agriculture and organic farming	7
	Expand public awareness on biosafety issues	1, 7, 13
	Include biosafety regulation into environmental legislation	7, 13
To reduce and/or minimise the loss of terrestrial and riverine biodiversity.	Draft legislation to stop the use of deleterious substances in the harvesting of river fish.	7, 8
	Direct CARDI to act as first level genetic pool.	13
	Strengthen and enforce permitting system for harvesting, development and research of forest resources	4, 7, 19
	Establish biodiversity knowledge network among Environment, Agriculture, Forestry and Fisheries with some emphasis on traditional knowledge	6, 7, 18, 19
	Bring Agriculture Sector performance in line with biodiversity principles	7
	Promote soil conservation through education	1, 7, 14
To ensure that the basis for development is through the sustainable use of terrestrial and marine biological resources.	Seek agreement among farmers to regulate pesticide use in support of the Organic Island concept	7, 8
	Encourage the use of the sustainable principles spelt out in the agriculture policy to support both traditional and organic agriculture	7
	Develop economic accounting system for biodiversity resources	2
	Pursuing REDD and REDD+ and carbon financing in support of Dominica's forest	15, 20

To ensure the equitable and sustainable distribution of social and economic benefits from the use of terrestrial and marine biological resources	Promote partnership between government and private land owners	5, 14, 18
	Training of indigenous people in resource management	18
	Develop joint ventures between Government and private land owners to save and protect fragile, sensitive, threatened ecosystems located on private lands.	20

**ANNEX III: UPDATED
BIODIVERSITY PROFILE
FOR THE COMMONWEALTH
OF DOMINICA**

INTRODUCTION

The Commonwealth of Dominica is a small island developing state located in the Eastern Caribbean. Its total land area is approximately 750 square kilometres. The coastline is 148 km long. The exclusive economic zone is 28,653 square kilometres in area and the continental shelf is 356 square kilometres.

Dominica is a volcanic island, with rugged mountainous terrain. The summit of Morne Diablotin is the country's highest peak, at an elevation of 1,447 m above sea level. According to the 2015 FAO Forest Resources Assessment, Dominica's forests covered approximately 430 square kilometres, or 58 % of the total land area. Just over 20% of the total land area is protected by designation as National Parks, Forest Reserves or Protected Forest. One of these protected areas, the Morne Trois Pitons National Park, is also a World Heritage Site, designated in 1997 on the basis that it contained "important and significant natural habitats for in-situ conservation of biological diversity, including those containing threatened species of outstanding universal value from the point of view of science or conservation" and was an outstanding example "representing major stages of earth's history, including the record of life, significant on-going geological processes in the development of landforms, or significant geomorphic or physiographic features."

Dominica's climate is characterised as tropical maritime. Daytime temperatures average 26-27 degrees in coastal areas and 19-21 degrees in mountainous inland areas. Annual rainfall ranges from approximately 1,270 mm along the driest parts of the coast to over 10,000 mm at higher elevations. As a result of the high rainfall, Dominica boasts of an extensive network of streams, rivers, waterfalls, and subterranean water. The combination of high rainfall and steep terrain means that the island is prone to flash flooding and landslides, sometimes to catastrophic effect.

World Bank estimates place Dominica's population at approximately 71,500 as of 2017. As a result of the topographic conditions, the majority (estimates range from 60 to 90%) of the population live along the coast.

Dominica's GDP in 2018 was approximately US\$503 million. In 2017, when the island was struck by Hurricane Maria, GDP declined by US\$78.7 million (13 %) and is still well below pre-Maria levels. Agriculture, forestry, and fishing accounted for 13 % of Dominica's 2018 GDP.

The effects of Hurricane Maria on biodiversity and ecosystems have not yet been comprehensively assessed.

BIODIVERSITY FACTS: STATUS AND TRENDS OF BIODIVERSITY

Terrestrial Ecosystems, Flora and Fauna

Dominica's terrestrial ecosystems include elfin woodland/cloud forest, littoral woodland, mature rainforest, montane rainforest, montane thicket, scrub woodland, secondary rainforest, semi-evergreen forest (including grassland and savanna), and swamps and wetlands. The island supports a high level of plant and animal diversity.

Faunal diversity consists of a reported 155 families, 672 genera and 1226 species of vascular plants. The vegetation in Dominica's forests has been assessed as comprising over sixty woody plant and tree species per hectare. Accounts of the number of endemic plant species in Dominica vary from eight to 22. Five of Dominica's plant species have been assessed by the IUCN as endangered or critically endangered. One of these, *Phycolepidozia exigua*, is endemic to Dominica.

A total of 206 bird species have been recorded in Dominica. Of these 159 are migratory species. The resident species include two endemic parrots, *Amazona imperialis*, known locally as the Sisserou, and *Amazona arausiaca*, known as the Jaco or red-necked parrot. The Sisserou is listed by the IUCN as endangered, and the Jaco is listed as vulnerable. Prior to Hurricane Maria, both species were showing a consistent increasing population trend. There is no conclusive population data with which to assess the impacts of Hurricane Maria on parrot populations, but it has been estimated that they may have suffered reduction by as much as 50 %.

Eighteen species of wild terrestrial mammals have been recorded on Dominica, including 12 species of native bats and six introduced mammals. No endemic species of wild mammals have been identified.

Fifteen terrestrial species of reptile have been recorded, including two endemics. Dominica represents the largest area remaining with a pure population of the critically endangered *Iguana delicatissima*, whose known range is restricted to seven countries in the Lesser Antilles. The population in Dominica is now facing threats from the invasive alien common green iguana (*Iguana iguana*).

Dominica's known amphibian fauna consists of four frog species, including two endemics, *Eleutherodactylus amplinympha* and *Leptodactylus fallax*. *Eleutherodactylus amplinympha* is endangered and *Leptodactylus fallax* is critically endangered, with a declining population.

The freshwater flora and fauna of Dominica have not been thoroughly studied. Thirteen species of freshwater fish have been recorded, 11 of which are native. Two species of tilapia have been introduced. One of the native species, *Anguilla rostrata*, has been assessed by the IUCN as endangered.

The main threats to terrestrial species in Dominica are loss of habitat due to residential, commercial and tourism development; loss and degradation of habitat as a result of agriculture, logging, and wood harvesting; hunting and trapping; invasive alien species; and the impacts, including storms and flooding, of climate change. It has been noted by the IUCN that post-hurricane recovery efforts have increased the risks posed by invasive alien species, as the result of the increased importation necessary to deliver relief supplies and reconstruction materials.

Coastal and Marine Ecosystems, Fauna and Flora

Dominica has one of the smallest continental shelf areas in the Eastern Caribbean, and coral reefs are isolated rather than continuous. Accounts of the number of coral species recorded in Dominica vary from 46 to 53. Mangroves are uncommon; two species (*Avicennia germinans* and *Laguncularia racemosa*) are found in small areas along the northwest and east coasts. Seagrass beds are the most extensive natural coastal habitat. The invasive seagrass species *Halophila stipulacea* has colonised several areas along the west coast, in some cases replacing native species.

Dominica 2016 Reef Health Index was 2.8 out of 5, a Fair rating. The ratings for coral cover and fleshy macroalgae were Good. The rating for herbivorous fish was Poor and for commercial fish was Critical. The scarcity and small size of reef fish were remarked on during a Reef Check survey carried out in January 2018.

A subsequent reef survey assessed the overall level of coral reef damage from Hurricane Maria at 20 to 40 %. This is a relatively low level of damage compared to that observed in other Eastern Caribbean countries affected by the storm. Damage was concentrated on the shallow (<12 m) reef flats. Deep reefs were found to be largely intact.

Four species of sea turtles have been observed in Dominica's waters: the hawksbill (*Eretmochelys imbricata*), leatherback (*Dermochelys coriacea*), loggerhead (*Caretta caretta*), and green (*Chelonia mydas*) turtles. Of these, the hawksbill, leatherback, and green turtles are known to nest in Dominica.

There are 495 species of fish that have been recorded as present in Dominica's waters. Fisheries reports indicate that over 150 types of fish are caught in Dominica's waters,

including tunas, flyingfish, snappers, marlins, parrotfish, wrasse, grunts, ballyhoo, and groupers. Eleven species of marine mammals have been observed and Dominica is home to a resident breeding population of sperm whales (*Physeter macrocephalus*).

The main threats to Dominica's nearshore marine ecosystems are sedimentation (as a result of coastal development, agriculture, and quarries); pollution (from agricultural chemicals, untreated sewage, and solid waste); overfishing; and acute impacts (coral bleaching and storms) of global climate change.

Protected Areas

Just under 22 % of Dominica's terrestrial area is incorporated in protected areas. There are six nationally designated terrestrial protected areas:

- Central Forest Reserve, established 1952, 4.1 square kilometres;
- Morne Trois Pitons National Park, established 1975, 68.75 square kilometres;
- Stewart Hall Water Catchment, established 1975, 3.18 square kilometres;
- Northern Forest Reserve, established 1977, 88.14 square kilometres;
- Cabrits National Park (terrestrial section), established 1987, 1.10 square kilometres;
- Morne Diablotin National Park, established 2000, 34.50 square kilometres.

The Morne Trois Pitons National Park was inscribed as a World Heritage Site in 1997. The inscription recognised that the Park possesses the richest biodiversity in the Lesser Antilles.

There are two designated marine protected areas:

- Cabrits National Park (marine section), established 1987, 4.21 square kilometres;
- Soufriere/Scotts Head Marine Reserve, established 1998, 5.35 square kilometres.

Three additional protected areas have been proposed, but not yet officially designated:

- Indian River, proposed area 0.79 square kilometres;
- Soufriere Sulphur Spring, proposed area 1.02 square kilometres;
- Syndicate Parrot Reserve, proposed area 0.83 square kilometres.

Data available through the Biodiversity Indicators Partnership indicate that 35.41 % of Dominica's Key Biodiversity Areas are included in protected areas. Dominica's protected areas contribute to the preservation of forest ecosystems, endemic and endangered species (particularly the Sisserou and Jaco parrots), water catchments, historic sites, wetlands, and coral reefs.

The National Parks and Protected Areas Act of 1975, along with associated regulations, rules, and orders, provides the main legislative framework for the management of protected areas in Dominica.

MAIN PRESSURES ON AND DRIVERS OF CHANGE TO BIODIVERSITY

The main threats to terrestrial ecosystems in Dominica are climate change and natural disasters; land use change and habitat destruction; and invasive/introduced species. These threats also affect coastal and marine ecosystems, which are further threatened by unsustainable harvesting of living marine resources; land-based sources of marine pollution; and the effects of coastal development.

Climate Change

As a small island developing state in the Caribbean, Dominica is among the countries most at risk from the impacts of climate change. The observed effects of global climate change in the Caribbean region include increases in average atmospheric temperatures, increased sea surface temperatures; reduced average rainfall, increased intensity of tropical storms. Dominica faces a high level of meteorological risk. Since 2000, Dominica has experienced 4 major tropical storms, including Hurricane Dean, which hit Dominica as a Category 2 hurricane in 2007, and Hurricane Maria, which struck as a Category 5 hurricane in 2017 and was the worst natural disaster in Dominica's recorded history. Even less severe storm events can cause major devastation in the form of flash flooding and landslides; this was the case with Tropical Storm Erika in 2015. Ecosystem impacts of flooding and landslides include land degradation, forest loss, and reduced water quality as a result of increased siltation.

Terrestrial ecosystems are severely affected by tropical cyclones. In 1979, Hurricane David damaged 50 % of trees in the southern half of the island; forest recovery time was estimated to be between 30 to 50 years. In 2007, Hurricane Dean caused a 35 % loss of forest cover in the eastern portion of Dominica's forest range. The scale and nature of the impacts of Hurricane Maria have not yet been quantitatively assessed but are clearly visible in the country's landscape. Data obtained via remote sensing suggest that Dominica's cloud forests, evergreen forests, and wetlands were the land cover types most severely affected by Hurricane Maria. Dominica's wildlife is also intensely affected by tropical storms; populations are reduced by injury and death as a direct result of storm events, as well as by the loss of habitats and ecosystems that provide species with food

and shelters. The impacts of Hurricane Maria on Dominica's endemic and globally threatened species are yet to be thoroughly assessed.

Tropical cyclones can cause damage to coastal and marine ecosystems via direct impacts of wind and wave energy on coral reefs; wind and wave erosion of mangrove forests; introduction of terrestrial debris such as silt, trees, and roofing; generation of reef debris; and abrasion of corals by sand forced into the water column by the storm.

Tropical storms have acute effects on biodiversity-based livelihoods, such as farming, fishing, and forestry. The effects may occur via damage to the lands and ecosystems that enable these livelihoods, but also via damage to related equipment and infrastructure, for example fishing boats, greenhouses, fish landing sites, and farm access roads.

In addition to the acute impacts caused by increased frequency and intensity of several weather events, the chronic effects on climate change on Dominica's biodiversity are anticipated to include:

- elevated sea temperatures and resulting coral bleaching;
- saltwater intrusion into coastal waterways, compromising the composition of freshwater and riparian ecosystems;
- alteration and/or loss of habitats as a result of changing climatic conditions, and subsequent migration or loss of wildlife species, including marine species, from altered habitats;
- sea level rise and increased rates of beach and coastal erosion;
- reduced food availability for wildlife;
- decreases in crop productivity as a result of changes in precipitation levels;
- decreased availability of water, particularly in small watershed and streams, as a result of increased incidence of drought;
- increased incidence of forest fires as a result of increased incidence of drought.

The actual impacts of climate change on Dominica's ecosystems and the services they provide have not been assessed.

Dominica's *National Resilience Development Strategy - Dominica 2030* includes strategies intended to preserve and enhance the resilience of ecosystems and the services they provide.

Invasive/Introduced Species

Over 150 introduced/invasive species have been verified as being present in Dominica, roughly evenly split between plant and animal (including microbe) species. The principal pathway for introduction of potentially invasive alien species is transportation, in particular via commercial and recreational shipping.

As of 2017, the ten priority introduced/invasive species in Dominica were determined to be:

- Black Sigatoka (*Mycosphaerella fijiensis*);
- Cane toad (*Rhinella marina*);
- Catclaw Mimosa (*Mimosa pigra*);
- Chytrid Fungus (*Chytridiomycosis*);
- Lemongrass (*Cymbopogon citratus*);
- Citrus greening disease vectors;
- *Citrus tristeza virus*;
- Giant African Snail (*Achatina fulica*);
- Lionfish (*Pterois volitans*);
- Mediterranean seagrass (*Halophila stipulacea*).

Recorded impacts of invasive/introduced species have included damage to crops (especially citrus and bananas), gravely reduced agricultural productivity, predation of native wildlife, and outcompeting native wildlife and vegetation. Introduced flora have been known to disturb land cover, resulting in increased soil erosion and incidence of grass/bush fires, particularly on the relatively arid west coast.

Two of the introduced/invasive species reported to be present in Dominica were recorded only after the passage of Hurricane Maria in 2017. These are the Cuban tree frog (*Osteopilus septentrionalis*) and the common green iguana (*Iguana iguana*). The Cuban tree frog appears to have entered Dominica as a transport stowaway via the port of entry at Portsmouth in the north of the island. The green iguana appears to have entered Dominica as a transport stowaway via the Woodbridge Bay port. These alien species, which have become invasive in other countries, pose a threat to native species via predation, disease transmission, hybridisation, and out-competing natives. They are of particular concern because of the risks posed to two critically endangered native species, *Leptodactylus fallax* and *Iguana delicatissima*. The largest remaining wild population of

Leptodactylus fallax is found in Dominica. Dominica is also the location of the world's largest enclave of pure native *Iguana delicatissima*.

The legislative framework for control and management of introduced/invasive species in Dominica is provided by the Animal Diseases Act of 1952, the Forestry and Wildlife Act of 1976, the Plant Protection and Quarantine Act of 1986, and respective accompanying regulations, rules and orders.

Habitat Conversion

The principal causes of habitat conversion and anthropogenic habitat loss in Dominica are:

- deforestation;
- unsustainable agricultural practices;
- infrastructural development, including for housing, roads, and tourism;
- mining and quarrying.

The main drivers of deforestation in Dominica have been conversion of forest lands for agriculture and urban expansion. Exploitation of forests for timber, fuelwood, and charcoal is also a contributing factor. According to the 2015 Forest Resources Assessment, Dominica's annual rate of deforestation is approximately 0.6 %.

Unsustainable agricultural practices include intensive cultivation on steep slopes, poorly managed shifting cultivation, and indiscriminate use of fertilisers and pesticides. Land tenure arrangements may contribute to the problem of unsustainable agriculture in a number of ways. One of these is via the lack of effective controls on land use and land husbandry on private lands. Another is the increase in the practice of agriculture by small-scale short-term leaseholders rather than by landowners. Under this tenure system, leaseholding farmers tend to engage in intense land-clearing and cultivation even on marginal lands, with a focus on maximising short-term returns rather than maintaining long-term sustainability and productivity. Finally, agricultural land hunger may lead to unsustainable shifting agriculture practised by farmers without official title or tenure arrangements for the land they are cultivating. Unsustainable agricultural practices accelerate soil erosion, resulting in increased sediment loadings and nutrient and chemical pollution in rivers and nearshore coastal ecosystems.

Forest lands have been cleared and converted for construction of houses, tourism development, and roads. The expansion of housing developments to highest elevations has been identified as one of the major pressures on Dominica's forests. In cases where

houses are constructed (sometimes illegally) in or close to watersheds or catchment areas, there are also threats posed to water-related ecosystems services. In some cases, the land converted to housing has been agricultural land rather than forests. This has had a knock-on effect, by prompting the clearing of steeper forest lands at higher elevations for conversion to agriculture.

The extraction of pumice sand typically takes place in locations close to rivers and to the coast, and is particularly common on Dominica's west coast. The development of sand quarries not only causes habitat loss as a result of land clearing at the quarry site, but also results in pollution, including increased sedimentation, of adjacent rivers, coastal, and marine ecosystems.

The overarching framework for managing and controlling land use (and therefore habitat conversion) in Dominica is to be provided by the National Land Use Policy and draft National Physical Development Plan. The Land Use Policy has been approved by the Cabinet. As of September 2019, the draft Physical Development Plan had not received Cabinet approval.

IMPLEMENTATION OF THE NBSAP

Dominica's first NBSAP was adopted, and implementation commenced, in 2001. This first NBSAP identified three national biodiversity goals, five biodiversity objectives, and 32 strategic actions. Over the period 2001 to 2013, an estimated 60% of the expected results in Dominica's first NBSAP were achieved.

In 2013, a second NBSAP was prepared, aligned with the Strategic Plan for Biodiversity 2011 - 2020. The second NBSAP was adopted in 2014 for implementation over the period 2014 to 2020. It retains the national goals and objectives of the first NBSAP and identifies revised and new strategies and outputs in support of the national goals and objectives. Dominica's second NBSAP also sets out five national biodiversity targets, which are based on ABTs 1, 7, 8, 11, and 15. The other 15 ABTs, while not prioritised for national action, are nonetheless incorporated in the NBSAP via the national biodiversity objectives, strategies, and outputs.

Dominica would benefit from the development of an implementation framework for the NBSAP. Such an implementation framework could, for example, define specific tasks and actions to achieve the NBSAP objectives; establish timelines/timeframes for implementation, along with measurable milestones; and outline the roles and responsibilities of various biodiversity stakeholders (including state, civil society, and

private sector stakeholders) in the implementation of the plan and the achievement of its objectives.

Overall actions taken to contribute to the implementation of the Strategic Plan for Biodiversity 2011-2020

Dominica has formulated an NBSAP that reflects and is aligned with the Strategic Plan for Biodiversity 2011 - 2020. Additionally, principles and goals of the CBD and the Strategic Plan for Biodiversity 2011 - 2020 are, to an extent, reflected in key national development policies such as the NRDS and the National Land Use Policy.

The severe damage to ecosystems and infrastructure as a result of Tropical Storm Erika in 2015 and Hurricane Maria in 2017 has hampered Dominica's implementation of the NBSAP, and thus of the Strategic Plan for Biodiversity. The storms had significant adverse effects on the country's natural resources, economy, and on the livelihoods of Dominicans. The result was a shift of national priorities and resources towards reconstruction and restoration of infrastructure, livelihoods, and the economy. Several of the strategies in the NBSAP are no longer feasible given the damage caused to relevant habitats and ecosystems. The post-hurricane recovery process has also introduced or exacerbated challenges (e.g. an increase in invasive alien species) for biodiversity management and conservation. Consequently, biodiversity action in Dominica has been focused on:

- ecosystems restoration and resilience, particularly through revegetation and reforestation;
- restoring and enhancing biodiversity-based livelihoods, especially in the agriculture and fisheries sectors;
- combatting the introduction and spread of invasive alien species, with initiatives in this area being spearheaded by the non-governmental sector.

Support mechanisms for national implementation of the Strategic Plan for Biodiversity 2011 - 2020

The legislative framework for biodiversity management, conservation, and sustainable use in Dominica include the Forestry Act and associated regulations, the National Parks and Protected Areas Act and regulations, the Forestry and Wildlife Act and regulations, the Fisheries Act and regulations, the Water and Sewerage Act and regulations, the Physical Planning Act, the Plant Protection and Quarantine Act and associated orders, and the Animal Diseases Act and associated orders.

The NRDS serves to mainstream some key aspects of biodiversity into national development policy. A number of policies, plans, and bills related to biodiversity management have been prepared, but have not yet been formally endorsed and adopted for implementation.

Financial resources for biodiversity management in Dominica come largely from the government's recurring budget (which covers the cost of salaries and operating expenses, as well as some capital projects) and from external funding from organisations such as the GEF, FAO, IICA, and the World Bank. The GEF-UNDP SGP is a significant source of funding for local NGOs and CBOs undertaking biodiversity-related action. There is no national fund for biodiversity and/or the environment.

Mechanisms for monitoring and reviewing implementation

The NBSAP includes key outputs, outcomes, and indicators to be used in evaluating implementation. However, no mechanism has been put in place for monitoring the relevant indicators and outputs, nor is there a sound environmental data collection, monitoring, and reporting system that could inform assessment of progress towards the national targets and objectives.

ANNEX IV: STAKEHOLDER ENGAGEMENT FOR 6NR PREPARATION

The process of stakeholder engagement for the preparation of Dominica's 6NR began in July 2019 with a stakeholder familiarisation meeting with the Permanent Secretary in the Ministry of Environment, Climate Change, Disaster Resilience and Urban Renewal and the Permanent Secretary in the Ministry of Agriculture, Food and Fisheries.

Interviews and Focus Groups

Following the familiarisation meeting, interviews were held virtually and in person, with representatives of the following organisations:

- Agriculture Division, Ministry of Agriculture, Food and Fisheries;
- Caribbean Agricultural Research and Development Institute;
- Dominica Water and Sewerage Company Ltd;
- Fisheries Division, Ministry of Agriculture, Food and Fisheries;
- Forestry and Wildlife Division, Ministry of Environment, Climate Change, Disaster Resilience and Urban Renewal;
- Inter-American Institute for Cooperation on Agriculture;
- Ministry of Environment, Climate Change, Disaster Resilience and Urban Renewal;
- Ministry of Planning and Economic Development;
- Ministry of Tourism;
- Parks Division, Ministry of Agriculture, Food and Fisheries;
- Physical Planning Division, Ministry of Planning and Economic Development;
- United Nations Development Programme Global Environment Facility Small Grants Programme;
- WildDominique.

Of the organisations who participated in the interviews, 69 % were governmental or quasi-governmental, 23 % were international or regional organisations, and 8 % were NGOs. In total, 16 people were interviewed, seven women (44 %) and nine men (56 %).

Over the period August 19 to 21, focus groups on the 6NR and accompanying communications strategy were held with stakeholders from the Kalinago community, representatives of non-governmental organisations and community-based organisations, government agencies, and youth.

In total 32 people participated in the focus groups, 17 female (53 %) and 16 male (47 %). Of the participants, 22 % were representatives of government organisations, 6 % were

representatives of regional/international organisations, 28 % were representatives of CBOs or NGOs, 9 % were Kalinago, 6 % were from private sector entities, and 25 % were youth between the ages of 12 and 18.

Dissemination of the draft 6NR for review and feedback

The draft 6NR, including the draft communications strategy, was disseminated to stakeholders, including representatives from government and civil society, for review and feedback. Stakeholders will be invited to submit written comments.

National 6NR Workshop

Following circulation of the draft 6NR, a national multi-sectoral workshop was held on September 25, 2019, to review and validate the draft 6NR and the accompanying communications strategy. The workshop was attended by 27 people (12 men, 15 women) from 20 organisations. Of these organisations 35 % were governmental or quasi-governmental, 45 % were NGOs/CBOs, 10 % were regional/international, and 10 % were private sector.

At the validation workshop the contents of the draft 6NR was presented to participants in a tabular form for each national biodiversity objective and target. Workshop participants were invited to review and provide feedback on the information in the report. Stakeholders confirmed the accuracy of the report's content, made corrections and clarifications as needed, and provided additional information on measures taken, challenges and needs. There was also the opportunity for stakeholders to provide feedback on the draft 6NR communications strategy. Following the workshop, stakeholders were given the opportunity to submit additional information and feedback on the draft 6NR and communications strategy via e-mail. Stakeholder inputs obtained at the workshop and via e-mail have been incorporated into the final 6NR.

Communications Strategy

A communications strategy has been developed to accompany the final 6NR. The goal of the communications strategy is to leverage communication of Dominica's 6NR process and report findings to activate strategies 2, 3 and 4 of the NBSAP:

- Strategy 2: Establish a biodiversity knowledge network and coordinating mechanism with links to the various Ministries and Departments, academic institutions, professional organisations and non-state actors;
- Strategy 3: Improve public awareness and participation in decision making;

- Strategy 4: Improve stakeholder involvement in biodiversity management.

The communications strategy is included in this document as Annex V to the 6NR.

ANNEX V: 6NR COMMUNICATIONS STRATEGY



COMMUNICATIONS STRATEGY

COMMONWEALTH OF DOMINICA SIXTH NATIONAL REPORT TO THE CONVENTION ON BIOLOGICAL DIVERSITY

**PREPARED BY DIANNE N. SQUIRES
SEPTEMBER 14, 2019**

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Introduction

The Commonwealth of Dominica became a party to the UN Convention on Biodiversity (CBD) in 1994 and is completing its sixth national report (6NR) for submission to the CBD secretariat this year. This report will detail the measures that have been taken in Dominica towards achieving the Aichi Biodiversity targets under the Global Strategic Plan for Biodiversity 2011-2020. It will also outline the challenges encountered in meeting targets and identify the actions necessary to move closer to those targets. The 6NR is the last report to be submitted before the expiration of the Global Strategic Plan in 2020 and therefore the last opportunity to help set the stage for a new global plan. It is noteworthy that Dominica has missed the deadline for submission of the 6NR which was due in December of 2018.

Dominica's NBSAP

Dominica formulated its National Biodiversity Strategy and Action Plan (NBSAP) for the period 2014 to 2020. In it, five (5) of the Aichi Biodiversity targets were selected for greatest focus and each of these has been assessed in the 6NR.

1. By 2020 at the latest, all residents of the Commonwealth of Dominica will be aware of the value of biodiversity, and the steps they can take to conserve and use it sustainably. **(progress unknown)**
2. By 2020, at least 15% of areas under agriculture, aquaculture and forestry are managed sustainably, ensuring conservation of biodiversity. **(progress being made but at insufficient rate)**
3. By 2020, pollution, including from excess nutrients, has been brought to levels that are not detrimental to ecosystem function and biodiversity **(progress unknown)**
4. By 2020, at least 20% of terrestrial, inland water and 15% of coastal and marine areas, especially areas of particular importance for biodiversity and ecosystem services, are conserved through comprehensive ecologically representative and well-connected systems of effectively managed, protected areas and other means, and integrated into the wider land and seascape **(moving away from target)**
5. By 2020, ecosystem resilience and the contribution of biodiversity to carbon stock has been enhanced, through conservation and restoration, including restoration of at least 15% of degraded ecosystems, thereby contributing to climate change mitigation and adaptation, and to combating desertification. **(progress unknown)**

This Communications Strategy

Given the assessment above, this communications strategy is intended to set a launchpad for measurable progress by laying at least some of the communications frameworks needed, as outlined in the 6NR, towards a more definitive next round of reporting. In this way, it differs a bit from the original intention in respect of one of its objectives "to tell success stories".[see page 4]

NBSAP Strategies Considered in this Strategy

The NBSAP 2014-2020 highlights twelve strategies to be used for guiding practices and achieving the national targets. Strategies 2-5, in particular, are directly communications related and therefore also related in some manner to target 1 and have also been considered in formulating this 6NR communications strategy. These are:

- Strategy 2: Establish a biodiversity knowledge network and coordinating mechanism with links to the various Ministries and Departments, academic institutions, professional organizations and non-state actors. The effort would be led by the ECU that should have wider jurisdiction and mandate under the evolving environmental legislation.
- Strategy 3: Improve public awareness and participation in decision making. The ECU will coordinate the development of a national environmental education and awareness program that will bring together the sectoral pieces that currently exist.
- Strategy 4: Improve stakeholder involvement in Biodiversity management. NGOs should be facilitated to participate in decision making surrounding resource management and exploitation.

Problem statement

While Dominica has many of the necessary strategy frameworks in place to direct biodiversity management actions, the 6NR clearly demonstrates that: the country needs critical financial, operational, technical and human resources support for implementation and; a means for reducing fragmented communications between stakeholders. These are most certainly in part due to the immense impacts and disruptions caused by Tropical Storm Erika in 2015 and Hurricane Maria in 2017.

Communications Goal

Leverage communication of Dominica's 6NR process and report findings to activate strategies 2, 3 and 4 of the 2014-20 National Biodiversity Strategy and Action Plan.

Communication Objectives

The original objectives of the 6NR communications and public awareness strategy are shown below. In the case of the second objective*, there is far more emphasis in this plan on building internal governmental frameworks and government-stakeholder frameworks than there is on telling success stories. This is necessary to help the country get back on track with its very well-formulated plans.

Objective
To inform stakeholders (national, regional, and international) and the general public about Dominica's implementation of the CBD and the Strategic Plan for Biodiversity, and about Dominica's progress towards the Aichi Biodiversity Targets
*To highlight success stories and good practices as described in the 6NR;
To mobilize national, regional and international stakeholder support for and involvement in continued action to achieve the Aichi Biodiversity Targets; and
To inform stakeholders and the public in Dominica about the 6NR preparation process.

Situation

Communications Channels Overview

Government domain and website

The government of the Commonwealth of Dominica's website www.dominica.gov.dm gives access to information on all Ministries and departments in government.

Government channels for internal & external communication

Government email addresses and telephone lines are the usual means of communication between government departments. Whatsapp is however a powerful means of communicating informally within and outside of government. Select government officers may also be assigned cell phones and cell phone service packages in order to conduct government business.

Government-owned DBS radio is one of the most widely listened to on the island and the Government Information Service carries news from government departments, special productions and features on its Youtube channel.

Television

There is no local terrestrial television station however two cable stations Marpin Telecommunications and SAT telecommunications produce local news segments that can be accessed via Youtube.

Radio

Several radio stations ranging from popular music formats to talk shows exist, with Q 95FM and Kairi FM carrying some of the most popular programming.

Newspapers

There are no printed papers but online news sites Dominica Vibes, Dominica News Online, and Sun Dominica are widely used. Dominica News Online sister channel Cbn4News is on Youtube.

Use of media for disseminating biodiversity messaging

There are no surveys or similar studies directly related to biodiversity in Dominica that would indicate the best media channels to use for biodiversity-related communications. However, a Knowledge, Attitudes and Practices (KAP) survey on climate change [UNDP/ J-CCP, 2016, p.50] noted locals' preference for radio then TV news reports, followed by radio then TV advertisements, for packaged information on climate change.

Social media

The Division of Forestry, Wildlife and Parks, Division of Fisheries, Division of Agriculture, GIS and many other Ministries keep active Facebook pages.

Current campaigns

Current public awareness, education, and communication about biodiversity are the ongoing reforestation “Each one, plant one” campaign and the urban beautification campaign. During focus groups with young people ages 12-16 years old as well as with government stakeholders, Kalinago adults and non-Kalinago adults involved in NGOs they all referred to these campaigns either directly or indirectly.

Audience segmentation and stakeholder map

<p>Satisfy - High Influence, low interest <i>Keep them on-side</i></p> <p>Physical Planning Unit Ministry of Housing and Lands Ministry of Tourism Discover Dominica Authority</p>	<p>Manage - High influence, high interest <i>Build strong relationships and keep engaged</i></p> <ul style="list-style-type: none"> • Ministry of Environment, Climate Resilience, Disaster Management, and Urban Renewal • Environmental Coordinating Unit (ECU) • Ministry of Agriculture - Forestry, Fisheries, National Parks and Protected Areas • Ministry of Education • Ministry of information, science, telecommunication, and technology • Policymakers in Environment, Economy, Tourism, Finance, Agriculture • Ministry of Tourism • CBD • UNDP- funding the 6NR preparation process • UNEP - funded the NBSAP 2014-20 development • UNDP GEF Small Grants Programme - funds numerous biodiversity-related programmes in communities
<p>Monitor - Low influence, low interest <i>Communicate periodically, encourage interest</i></p> <p>Public - those unconcerned with matters of environment</p>	<p>Inform - Low influence, High interest <i>Engage and harness support</i></p> <ul style="list-style-type: none"> • Environmental CBO's e.g. WildDominique, DomSeTCO, (NET) Rosalie • Fishing Cooperatives • Farming Cooperatives • Other commercial fishers • Other commercial farmers • Agribusinesses • Community Tourism entities • Environmental businesses - SALT Dominica • Media - broadcast, digital • Influencers - social media and traditional • Youth environment clubs • Dominica Youth Environment Organisation (DYEO) • GIS - government information service • City, town, village councils & Kalinago Councils • Dominica State College • Public of Dominica - special focus on children & youth (account for over 40% of the population) • Dominicans overseas

*primary stakeholders to the 6NR process are shown in the highlighted cell

A close-up photograph of a green leaf with a white rectangular box in the center containing the text "ACTION PLAN". The leaf's veins are clearly visible, and the text is in a bold, white, sans-serif font.

ACTION PLAN

Communications Action Plans

Government and policymakers

Apart from the fact that biodiversity has impacts on every sphere of life, Dominica's national positioning as the "Nature Island" and the cultural, economic, and social orientation of its people towards "the land", makes the involvement of almost every Ministry especially important in biodiversity planning and management.

The 6NR calls for "communications strategies to raise awareness of the biodiversity-related provisions in national strategies and policies" and this should certainly start within and between ministries and divisions of government before emanating externally. This was validated during a focus group held with government stakeholders in environment, tourism, forestry, lands, fisheries, and agriculture who confirmed that they need mechanisms for multisectoral collaboration and information-sharing to reduce biodiversity impacts caused by some initiatives and to better manage biodiversity overall.

The 6NR further refers to the need to engage stakeholders including NGOs, CBOs, the private sector, and the Kalinago community in biodiversity planning and management.

Action #1 - Establish a biodiversity sub-committee within the existing National Climate Change Committee (NCCC) with representatives from multiple government agencies

Forestry, Wildlife and Parks Division
Fisheries Division
Ministry of Education
Ministry of Youth Affairs
Government Information Service

Ministry of Kalinago Affairs
Discover Dominica Authority
Community Tourism
Physical Planning Division

Objectives:

- Develop mechanisms for cooperation and communication between ministries/government departments on biodiversity protection by locals and visitors
- Lead the consultation process for the development of a new National Strategic Plan on Biodiversity (current plan expires in 2020)
- Lead the consultation process for biodiversity policy-making involving broad stakeholder and public engagement
- Lead on the establishment of the clearinghouse mechanism on biodiversity (website development)

Key message: Government will coordinate efforts between ministries and departments for more successful biodiversity management and conservation

Monitoring and evaluation: a brief survey of high-level and line-level staff in government ministries and departments represented on the committee should be done. This would assess the extent to which they believe efforts related to biodiversity are coordinated between Ministries and departments. It should be carried out prior to the formation and functioning of the steering committee and at quarterly or biannual periods afterward for comparison of results.

Resource responsible: The Minister for Environment's blessing would be needed for the formation of the Committee and approval of relevant members. ECU may be tasked with coordinating meetings of the committee.

Action #2 - Establish a National Environment Partnership comprising:

- Government (represented by Biodiversity Sub-committee)
- Non-state Actors Advisory Panel (NSAAP)
- Local NGOs (who are not already a part of the NSAAP)
- CBOs
- Private sector
- Farming and Fishing Associations/Cooperatives
- Kalinago Council

Objectives:

- Establish a formalised mechanism for unified attention to biodiversity protection, planning, management, and financing
- Establish a national directory of biodiversity-related organisations (to reside on the clearinghouse website)
- Provide training in grant writing and fundraising

Key message: Government is serious about a national focus on biodiversity and will engage all the major players continually to do so.

Monitoring and evaluation: survey all parties prior to the establishment of the partnership and at quarterly or biannual intervals after its establishment to determine the extent to which they believe they are more informed, engaged and empowered in decision-making on biodiversity.

Resource responsible: Biodiversity Sub-committee/ECU

Action #3 - Hold grant writing and fundraising workshops for relevant parties in government and local NGOs

Objective

1. Develop a cadre of persons across sectors who can significantly increase the chances of an inflow of funding for biodiversity-related projects and programmes

Key messages: "Government will do its part to ensure that those stakeholders who are advancing the cause of biodiversity are equipped with the skills to compete successfully for regional and international funding."

Monitoring and Evaluation: assessment before and after each workshop of attendees' level of comfort with grant writing and likelihood of applying for regional and international grants. A periodic monitoring every year to determine the number of grants written and awarded by attendees or their organisations.

Resource responsible: ECU to coordinate workshops and administer surveys

Action #4: Conduct a KAP study among adults 18 years and over on biodiversity. Include government officers in all departments as a segment.

Objective:

Have a baseline reference point for communications within government and externally to the public on biodiversity conservation and management.

Key message: "Government will measure and capture data in order to adequately set strategies and measure progress in communicating the message of biodiversity conservation".

Monitoring and evaluation: A follow-up KAP should be done following the conclusion of any national communications, education and public awareness campaigns.



Youth 14 - 24 years

A 6NR focus group among youth 12-16 years was held to delve into the key attitudes, behaviours, and beliefs of participants regarding specific areas of biodiversity. Some of the strongest views among this group related to protecting plant life. The young people in this group were either active members of environmental clubs or a beekeeping group but all had experience with growing fruit trees at home. Deforestation/reforestation, separation of trash and littering seemed to be the most top-of-mind environmental concerns for them and appeared to be related to communications messages they had seen/heard in their schools and communities. Strong communications within their family, at their school and via their village councils, were the modes they identified if they were educating or making others aware of these environmental issues.

Information from the Dominica Youth Environment Organisation noted that educational programmes like their “living classrooms”, where students learned about marine life and then went snorkelling to experience it, have been most successful for them.

In a 2016 survey among primary and secondary students to gauge their knowledge and attitudes towards wildlife in Dominica students at both levels scored very low on the knowledge aspect of wildlife, “Thirteen of 16 knowledge questions had a correct knowledge index below 50% for any strata” (Brisbane, Jacobson, and Pine, p.13). The report on the survey also identifies using wildlife that students are more familiar with and have more affinity for as an entry point for teaching about related species, how they are connected and why those connections are important.

Youth activities to create awareness about biodiversity need to include participation, learning by doing, and a gateway to future employment opportunities.

Action #1: Establish a partnership with Junior Achievement Dominica (JA Dominica), DYEO, Dominica Youth Business Trust, Ministry of Environment and Ministry of Agriculture to create a 1-year biodiversity training and entrepreneurship programme aimed at youth 14-24 years with the goal of youth bringing biodiversity related products/services to market. Seek private sector support.

Potential Modules:

- Organic farming
- Marine life
- Tree planting
- Biodiversity and ecosystem services
- Invasive species
- Innovation
- Entrepreneurship
- Social Enterprise
- Product and Service Development

Objectives:

- Start to build deeper understanding of biodiversity among young people
- Build/expand on efforts like the GROW Project launched in primary school 4-H clubs in 2018
- Relate biodiversity to some of the major concerns for young people at this age - future employment, self-worth, developing unique skills
- Create a pool of resources ideal for biodiversity-related internships with various stakeholders - e.g. extension services in the Ministry of Agriculture, an ECU community promotions and youth educator team
- Develop future biodiversity champions

Key messages: “The government will continue to create opportunities for young people to develop personally and professionally and to contribute positively to Dominica, through entrepreneurship

Resource responsible: ECU to coordinate partners; all partners to collaborate to develop the programme

Monitoring & evaluation:

Assessment of the number of participants who: complete each module successfully, create a feasible business model, produce a product prototype or viable service and who go on to a start up phase. Also, the number of participants who complete the programme and periodic assessment from participants of how useful the programme is in relation to their daily lives, how their perspectives on biodiversity and on business have changed.

Children, Youth, Teachers

The existing curriculum guides for science, language arts, health and family life education, social science and visual and performing arts at all levels of the primary school curriculum either already incorporate or provide numerous opportunities to educate about, build awareness for and interact with biological diversity in Dominica. In the guides, the term “biodiversity” is not explicitly used or related to the relevant areas but this linkage can be made during the teaching process. Similarly, those opportunities to explicitly represent biodiversity-related areas exist in the Caribbean Certificate of Secondary Level Competence (CCLSC), Caribbean Secondary Education Certificate (CSEC), and Caribbean Advanced Proficiency (CAPE) curricula. Teachers can be equipped with tools to help them easily incorporate biodiversity into teaching while enriching their teaching practice.

Action #1: Develop complementary resource materials for existing curricula to help teachers incorporate biodiversity management and conservation ideas, concepts, and terms into daily teaching practice.

- Develop two booklets. One for teachers at the primary school level and the second for teachers at the secondary school level, both with tips and examples on how to incorporate biodiversity ideas, concepts and terms into their lessons. These booklets can be digitised or printed. The digitised version would be housed on the Ministry of Education website under the teacher’s portal for easy access and the Ministry would notify schools of the resource.

- Develop video materials to be used in conjunction with existing science, language arts, social studies, health and family life education, mathematics and other curriculum units at primary and secondary school levels.
 - e.g. “Growing and using herbs for traditional medicine”. This would include how Dominicans especially the Kalinago people use this in daily life (possible subject areas: agriculture, health and family life education, social studies, history, English/language arts)
 - E.g. “Dominica’s plants and animals: A rich biodiversity”. This could be a staple for the science curriculum while being valuable material for other subject areas at the secondary and primary levels. It could be done in a modular form to allow teachers to go to specific sections as desired. Consideration should be given to the use of language in narration, with a version using slightly simpler language for primary school children. There can be more advanced modules targeting students in years 4 and 5 of secondary school and the CAPE level.
- Develop colouring pages or colouring books using images of Dominican endemic plant and animal species (Level K and Grade 1)
- Develop biodiversity-related spelling and vocabulary sheets (with images) including words like “biodiversity”, “ecosystem”, “watershed”, “buffer-zone”, “endemic”, “invasive”, “resources”, “environment”, “reforestation” etc. These could target grades 4-6 and first and second-year secondary school students.

Objectives

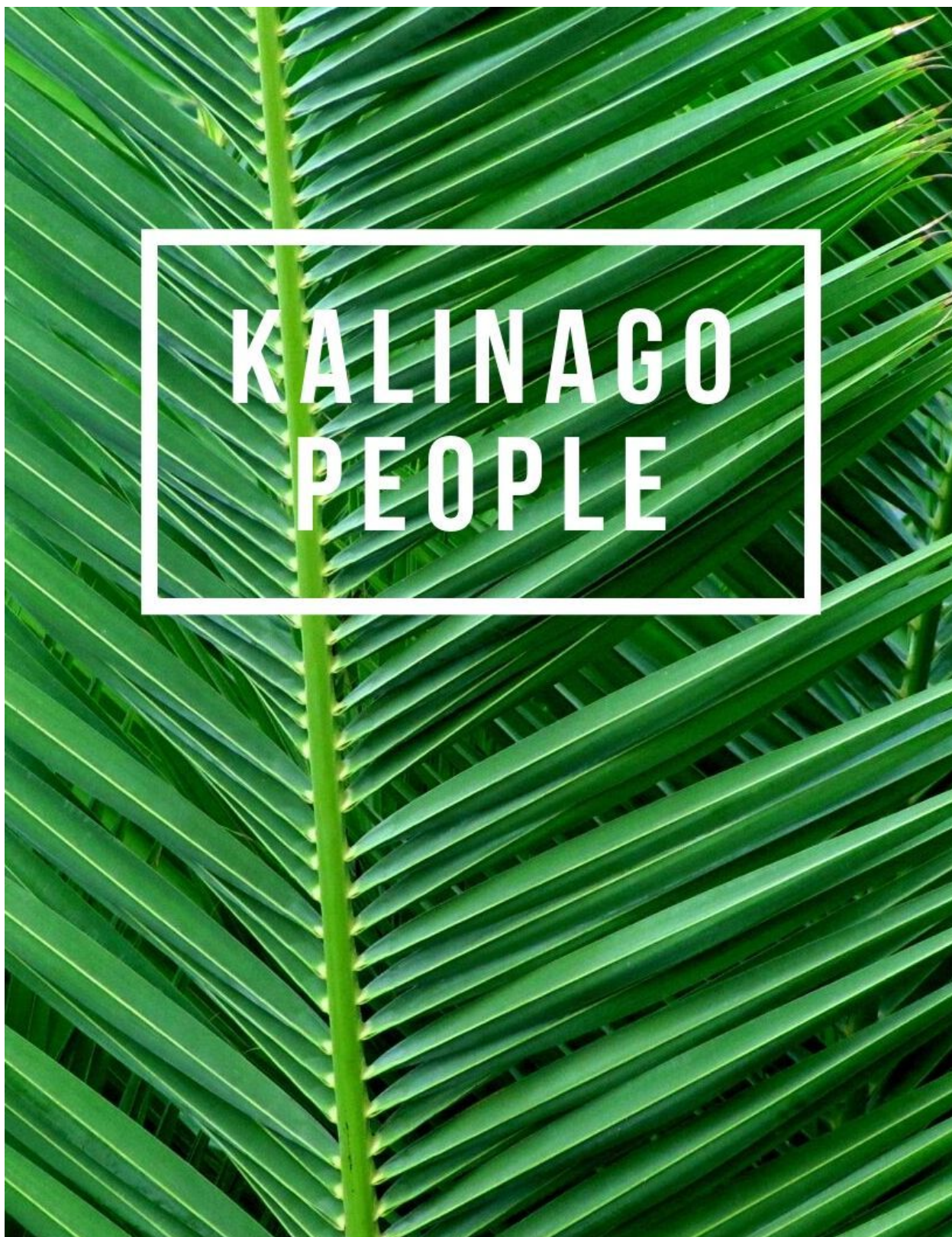
1. Allow a focus on biodiversity in existing curricula without added pressure to teachers’ workload.
2. Equip teachers with tools to easily incorporate ideas, terms, and concepts of biodiversity into existing curriculum requirements

Key messages: *“Government will integrate learning tools to promote knowledge and awareness of biodiversity while helping teachers enrich their practice”*

Resources responsible: Biodiversity Steering Committee with the Ministry of Education and ECU representatives taking lead.

**GIS could be assigned the responsibility to produce the videos and practising teachers at each level should inform the process and content.*

Monitoring and Evaluation: Teachers should be periodically surveyed (first, before using the materials and then subsequently) to determine how often they use the tools, how easy they are to incorporate into lessons, the extent to which they believe their students have become more aware and knowledgeable of biodiversity terms and issues in Dominica. Students should also be surveyed before implementation and at intervals thereafter.



Kalingo People

The Convention on Biodiversity has made a commitment to the “respect, preserve and maintain the knowledge, practices and innovations of indigenous and local communities [<https://www.cbd.int/traditional/pow.shtml>]. A focus group with members of the Kalingo community revealed their interest in receiving more information about the CBD and the special provisions relating to indigenous communities.

Action #1:

Request a special meeting of the Kalingo Council to share/present information on the CBD, CBD article 8(j), “Traditional knowledge, Innovations and Practices”, the “Traditional Knowledge Information Portal”, and opportunities for indigenous people to participate in the CBD.

Action#2:

Request another meeting with other members of the community to share this information.

Objective:

1. Raise awareness among the Kalingo leaders and wider community about their place in international affairs related to biodiversity and the environment.
2. Encourage the renewed interest in conserving sustainable traditional practice

Monitoring and evaluation: assess the level of knowledge and interest in the CBD before and then after each meeting.

Kalinago Youth

While the national curriculum is used by all teachers in Dominica, the Kalingo territory remains unique in its culture and practices and attention should be given to these characteristics in developing teaching resources for the territory. All resources mentioned on pages 14 & 15 above should, therefore, be adapted or specially developed for Kalingo children. This is an area that was firmly supported by members of the Kalingo community attending the 6NR focus group.

Action #1:

Develop complementary resource materials for existing curricula to help teachers incorporate biodiversity management and conservation ideas, concepts and terms into daily teaching practice with a focus on Kalingo traditions and practices.

- Develop two booklets. One for teachers at the preschool level and the second for teachers at the primary school level (this can be an adaptation of the generic booklet referred to on page 14) with tips and examples on how to incorporate biodiversity ideas, concepts and terms from a Kalingo

perspective into their lessons. These booklets can be digitised or printed. The digitised version would be housed on the Ministry of Education website under the teacher's portal for easy access

- Develop video materials to be used in conjunction with existing science, language arts, social studies, health and family life education, mathematics and other curriculum units at the primary level (this can be an adaption of the video described on page XX, especially to show more footage of Kalinago people and distinct areas of Kalinago territory)
 - e.g. "Growing and using herbs for traditional medicine". This would focus on how the Kalinago people use this in daily life (possible subject areas: health and family life education, social studies, English/language arts)
 - E.g. "Dominica's plants and animals: A rich biodiversity". This could be a staple for the science curriculum while being valuable material for other subject areas at the primary level. It could be done in a modular form to allow teachers to go to specific sections as desired and cover areas like the definition of biodiversity, biodiversity and Kalinago traditions, endemic species, invasive species, marine biodiversity, biodiversity in rivers and forests, threats to ecosystems and biodiversity.
- Develop colouring pages or colouring books using images of Dominican endemic plant and animal species (Level K and Grade 1)
- Develop biodiversity-related spelling and vocabulary sheets (with images) including words like "biodiversity", "ecosystem", "watershed", "buffer-zone", "endemic", "invasive", "resources", "environment", "reforestation" etc. These could target grades 4-6 and first and second-year secondary school students.

Objectives

1. Encourage pride in Kalinago customs and heritage
2. Allow a focus on biodiversity in existing curricula without added pressure to teachers' workload.
3. Equip teachers with tools to easily incorporate ideas, terms, and concepts of biodiversity into existing curriculum requirements

Key message: "Government continues to recognise and support the cultural uniqueness of the Kalinago people and will reflect this in new educational resources focused on Dominica's rich biodiversity"

Resources responsible: Biodiversity Steering Committee with the Ministry of Education and ECU representatives taking lead.

**GIS could be assigned the responsibility to produce the videos and practising teachers at each level in the Kalinago Community should inform the process and content.*

Monitoring and evaluation: Teachers should be periodically surveyed (first, before using the materials and then subsequently) to determine how often they use the tools, how easy they are to incorporate into lessons, the extent to which they believe their students have become more aware and knowledgeable of biodiversity terms and issues in Dominica. Students should also be surveyed before implementation and at intervals thereafter.

**NGOS
& CBOS**

NGOs & CBOs

The 6NR indicates the need to “build capacity for NGO and CBO advocacy, fund-raising, project management, and participation in national policy development”. The government of Dominica in its NBSAP 2014-20 has clearly acknowledged the importance of NGOs as a major stakeholder in biodiversity management. NGOs and CBOs are very active in communities and in addressing niche initiatives in many biodiversity-related areas and are therefore also partners in biodiversity. Many have been quite good at accessing funding but will always require more to continue their work. Many will also find themselves competing with other NGOs, not only locally but regionally, for funding opportunities. It is therefore important to arm these entities with ongoing knowledge about funding opportunities and how they can use their unique positions through advocacy in the regional and international spheres to draw attention and support to their work.

Action#1: Seminar on the Adaptation Fund, what it is, who and what is funding for, how to access funding.

Action #2: Seminar on Advocacy with special reference to gaining a regional and international voice in development affairs of Dominican communities.

Objective:

To build capacity among NGOs and CBOs for fundraising and advocacy, especially at the regional and international levels.

Key message: “The NGO and CBO communities are important to the development of Dominica and must be armed with skills to continue their work.”

Resource responsible: ECU to coordinate Seminars



Fishers

In a 6NR focus group of government stakeholders, it was noted that many fishing cooperatives are inactive. Communications from the Division of Fisheries to fishermen is therefore through individual contact by extension officers. Also, there is currently no approved legislation that would allow the Division to enforce fishing out of season so the Division has to depend on the voluntary compliance of fishers in this regard. The communication and relationship building skills of extension officers will, therefore, play a great role in marine biodiversity management at this level to gain the respect and trust of fishers heightening the chances of compliance. In addition other methods of educating about and building awareness regarding the CBD and the 6NR should be provided to fishers who are key biodiversity stakeholders.

Action #1: Develop an orientation booklet with sections for new officers and for officers who have served for over 5 years. This will reinforce and accompany the ideas, concepts, and tools shared in orientation workshops (below)

Action #2: Develop a communication and relationship building orientation workshop for new extension officers. The content should draw on the knowledge and expertise of experienced officers who are models for best practice and a communications specialist. It should include the below or similar topics among others:

- The CBD, Dominica's role and the role of the Fisheries Division
- What to expect in the field (scenarios)
- Active listening
- Communicating effectively (including role-play exercises)
- Developing rapport
- Having difficult discussions
- Mastering persuasiveness

Action #3: Develop a refresher workshop for extension officers with more than 5 years' service.

Objectives:

1. Develop interpersonal communications and relationship-building skills of extension officers in the Fisheries Division to enable them to effectively listen, speak with and persuade (where needed) fishers in matters of compliance related to marine biodiversity.
2. Enhance officers' awareness of the UN CBD

Key message: "Delivering first-class extension services is critical for success in working with fishers to improve their businesses and their appreciation for conserving Dominica's biodiversity."

Monitoring and evaluation: Pre and post-workshop/orientation assessment with extension officers to determine their level of preparedness for going into the field, in the case of new officers, and for existing officers how helpful the workshop was in giving them new tools or tips. Also, assess knowledge and awareness of the CBD pre and post workshop/orientation.

Action #4: Incorporate information on the CBD and relevant requirements for marine conservation in existing fishers' training.

Objective:

1. Use training interactions as an opportunity to spread the message to fishers about the UN CBD, the value of marine biodiversity, and their important role in biodiversity management
2. To continue to build capacity for fishers as business people and experts in their field

Key message: "Dominican fishers continue to build their expertise"

Monitoring and evaluation: pre and post training assessment of fishers' knowledge of the UN CBD and how they view their role in conserving Dominica's biodiversity.

Resource responsible: Division of Fisheries Extension Services Unit

Action #5: Host a series of "Meet the Minister" events in which fishers are hosted at semi-formal catered gatherings, addressed by the Minister of Agriculture, Food and Fisheries, and mingle.

Objective:

1. Give the Minister the opportunity to address fishers in major fishing communities on the CBD and the role of fishers in conserving marine resources and to encouraging the formation of fishing cooperatives while also commending fishers' efforts in their service to Dominicans.
2. Provide a forum for fishers to gather and socialise outside of landing sites or fishing complexes and build a rapport.
3. Provide an opportunity for fishers to speak one-on-one with the Minister and others in leadership positions in the Division of Fisheries.
4. Stimulate interest in the formation of fishing cooperatives

Key message: "Fishers are valuable to Dominican life, culture and economy, their role in biodiversity conservation and protection is paramount"

Monitoring and evaluation: Brief exit survey after each event to determine if attendees feel more informed about the CBD and biodiversity-related issues and whether they believe they have an important role.



FARMERS

Farmers

Farmers are significant stakeholders in Dominica's biodiversity who are not only impacted by it but impact it. One major area of concern is the use of pesticides and equally the promotion of organic farming. The 6NR notes that there is tremendous outreach to farmers by the Ministry of Agriculture in relation to safe farming practices and the effects of pesticides and weedicides on biodiversity and water quality etc. It is, however, as with Fisheries Extension Officers, valuable to equip field extension officers who interact with farmers with communication and relationship building skills.

It was noted in an NGO focus group by representatives of both DOAM and the North-East Agriculture Women's Movement that women seem to be more open to organic farming as they appear more cautious about the dangers of pesticides and weedicides. They also often have smaller lots to manage.

Action #2: Develop a communication and relationship building orientation workshop for new extension officers. The content should draw on the knowledge and expertise of experienced officers who are models for best practice and a communications specialist. It should include the below or similar topics among others:

- The CBD, Dominica's role and the role of the Ministry of Agriculture and the Agriculture Extensions Unit
- What to expect in the field (scenarios)
- Active listening
- Communicating effectively (including role-play exercises)
- Developing rapport
- Having difficult discussions
- Mastering persuasiveness

Action #3: Develop a refresher workshop for extension officers with more than 5 years' service.

Objective:

1. Develop interpersonal communications and relationship-building skills of extension officers to enable them to effectively listen, speak with and persuade (where needed) farmers in matters of biodiversity conservation and management.

Key message: "Delivering first-class extension services is critical for success in working with farmers to improve their businesses and their appreciation for conserving Dominica's biodiversity."

Monitoring and evaluation: Pre and post-workshop/orientation assessment with extension officers to determine their level of preparedness for going into the field, in the case of new officers, and for existing officers how helpful the workshop was in giving them new tools or tips. Also, assess knowledge and awareness of the CBD pre and post-workshop/orientation.

Action #4: Incorporate information on the CBD and relevant requirements for terrestrial biodiversity management and conservation in existing and planned farmers' training.

Objectives

1. Use training interactions as an opportunity to spread the message to farmers about the UN CBD, the value of terrestrial biodiversity, and their important role in biodiversity management
2. To continue to build capacity for farmers as business people and experts in their field

Key message: "Dominican farmers continue to build their expertise"

Monitoring and evaluation: pre and post-training assessment of what farmers' knowledge of the UN CBD and how they view their role in conserving Dominica's biodiversity.

Resource responsible: Ministry of Agriculture Extension Services Unit

Action #5: Host a series of "Meet the Minister" events in which farmers and farmers' groups including women's groups are hosted at semi-formal catered gatherings, addressed by the Minister of Agriculture, Food and Fisheries, and mingle.

Objectives:

1. Give the Minister the opportunity to address farmers on the CBD and the role of farmers in conserving biodiversity while also commending their efforts in service to Dominicans.
2. Provide an opportunity for farmers to speak one-on-one with the Minister and others in leadership positions in the Division of Fisheries.

Key message: "Farmers are valuable to Dominican life, culture, and economy, their role in biodiversity conservation and protection is paramount"

Monitoring and evaluation: Brief exit survey after each event to determine if attendees feel more informed about the CBD and biodiversity-related issues and whether they believe they have an important role.

Action #6: Partner with DOAM to develop training and on-going support services in organic farming for women farmers. over a 6-month period to enhance their skills in organic farming.

Objective:

1. Find at least 5 female farmers who would agree to a 6-month organic farming pilot (no conventional methods during that time period).
2. To monitor the progress and evaluate the outcomes over the period, including the farmers' experiences with organic farming.
3. To capture the experiment in video and audio including periodic interviews with the women.
4. To produce a video capturing the womens' experiences with organic farming
5. To leverage womens' interest in organic farming to start a movement away from conventional farming using success stories.

Key message: “Government recognises the strong leadership by women in adopting safe organic agriculture and will help them strengthen their skills in this area.”

Monitoring and evaluation: Pre and post programme assessment to determine what women believe they have learned, whether the training was valuable for their business and if they believe they will continue those practices.

Resource responsible: Ministry of Agriculture’s Education and Communications Unit



PRIVATE SECTOR

Private Sector

The 6NR notes the need to “develop a strategy for engaging the private sector in biodiversity conservation and management, for example through corporate social responsibility programmes.”

Action#1: Conduct a survey among Corporate Communications Managers, Marketing Managers, PR Managers and the like, who develop the corporate social responsibility strategies for their companies.

Action #2: Develop a booklet “Biodiversity and Your Business: Opportunities for Committed Corporate Citizens” or similar title that outlines the benefits of engaging in, donating to or funding biodiversity-related initiatives and the initiatives available

Objectives:

Get clear answers on what benefits companies are looking for in partnerships or relationships as a corporate citizen

Apply these findings to the development of a booklet to give them the information they need to decide to support biodiversity-related initiatives and what kinds of opportunities exist.

Key message: “Biodiversity brings value to business but its loss can negatively impact business. Corporate Citizens can explore the best ways to support and contribute to biodiversity conservation using this guide”

Resource responsible: ECU to coordinate survey and contract services to produce the booklet.

Monitoring and evaluation: Survey the same company officials targeted in the first survey to determine the usefulness of the booklet to them and whether they will more seriously consider or engage in CSR activities related to biodiversity.



Media

Media practitioners from Kairi FM, DBS Broadcasting Corporation, and Dominica News Online responded to a short series of questions around biodiversity knowledge and programming. They all indicated that a workshop giving information on the CBD and biodiversity issues, in general, would be valuable for and welcomed by media professionals (one practitioner noted the general lack of training that new journalists especially are exposed to). They also noted that knowledge of the CBD and biodiversity issues would enhance programming especially for news, talk shows or special segments. They suggested that the workshop be facilitated through the Dominica Media and Communications Association.

Action: Conduct a media workshop to inform the media about the CBD, the 6NR process and its findings in general. This workshop should include the work being done by NGOs and other government departments besides the Division of Forestry, Wildlife and National Parks.

Objectives:

1. To spark interest in the media community for the burning issues in biodiversity
2. To identify the media's main areas of interest for programming in this area coming out of the workshop
3. To see an increase in programming related to biodiversity in all major media channels and preferably all channels.

Key message: "Government understands that the media needs to have more information on issues like biodiversity in order to adequately speak to, report on and discuss them, so it is helping by addressing this knowledge gap"

Resource Responsible: ECU to coordinate with the media association

Monitoring and Evaluation: Assess media professionals' knowledge and awareness of the CBD and key biodiversity concerns in Dominica before and after the workshop. Monitor media houses who sent representatives for any changes in reporting or discussion on biodiversity in the media. Monitor mentions of the word "biodiversity" in media.



Public Education & Awareness

Much more emphasis has been placed on communications for building capacity within ministries and among other primary stakeholders to increase the chances of seeing progress than on telling success stories. The public awareness efforts, while important, are considered secondary to the foundational stakeholder engagement, education, and communication outlined in the previous sections.

KAP Study

It will be critical to complete a KAP survey on biodiversity prior to the launch of this campaign as a reference point for monitoring change.

Action: develop a national public education and awareness campaign that encourages Dominicans to embody the concept of “Nature Island” with urgency for the sake of their own survival. Campaign sub-messages should relate biodiversity to

- improved climate resilience (being able to bounce back or more readily absorb the negative impacts of climate change)
- a sense of patriotism -being a true Dominican, proudly citing Dominica’s biodiversity as a winning trait
- living sustainably and knowing how to survive using nature’s resources

The campaign should include Public Relations and advertising components in a variety of channels and use the 6NR process as a “jumpoff point” for public discussion.

Communications materials and activities

- Each community via their village council will develop a biodiversity-related event or activity in line with the main campaign theme. Communities in each zone North, West, etc. will compete for prizes based on the best judged project.
- A news release on the 6NR process and meeting of national stakeholders subsequent to the 6NR validation workshop
- News release on the 6NR completion and submission and key highlights - post submission
- Video feature summarising the main highlights of the 6NR and areas where Dominica needs to build capacity in order to improve reporting. It should include:
 - Interviews with 6NR Technical Consultant, focal point in the Ministry of Environment and PS in the Ministry of Environment speaking about the main achievements, issues, findings of the 6NR. This gives an opportunity to talk about what the government will be doing next.
 - Also include key Forestry, National Parks, and Fisheries officers, NGO representatives, youth representatives, Kalinago representatives

- A series of PSAs for television, Youtube, Facebook, and radio in standard English and in Creole. The language should be simple and clear. Each of the below questions should be answered by a single PSA.
 - Biodiversity? what do you mean?
 - Where can I find biodiversity?
 - Why should I care about biodiversity?
 - How do I benefit from biodiversity?
 - What happens when there is less and less biodiversity?
 - Will I be affected if Dominica's biodiversity gets less and less?
 - How can I help to protect biodiversity?
- 5-10 minute segments on select radio stations including DBS, Kairi FM, Q95 run at least 3 times per week including discussion on CBD, the 6NR, the state of Biodiversity in Dominica
- Biodiversity-focused interviews on popular talk shows e.g. "The Hot Seat" on Q95FM
- Biodiversity jingle (English and Creole) to be used in schools, at national and community events and festivals, and for radio and television advertising
- Community participatory programmes - e.g. organic home agriculture
- Signage, messaging, presentations bearing the campaign theme to be used/present at village festivals

Social media content - series of videos based on the campaign theme

Printed calendar of biodiversity events compiled by the ECU - the ECU formerly published an annual calendar highlighting government and non-government activities related to the environment and also including tips for how to care for the environment and biodiversity. This could be published in smaller quantities and with the inclusion of a list of biodiversity-related projects and events that readers/users can become involved in. This list would come from all the parties in the biodiversity partnership.

Series of “living” signs - letters formed out using plants and recycled materials maintained as elevated gardens (used instead of billboards to carry campaign messages). See the example below.



Resource responsible: ECU contracts entity to develop the campaign concept and materials; ECU, GIS, Division of Agriculture, Division of Fisheries, Ministry of Education, and other Ministries disseminate content on their social media platforms. These Ministries and select NGOs may also judge community competitions.