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A decorative graphic element consisting of a series of overlapping triangles in various shades of green and yellow, forming a large, abstract shape that resembles a stylized 'A' or a mountain range.

## Caribbean Strategy for Climate-Resilient Forests and Rural Livelihoods



CARIBBEAN NATURAL  
RESOURCES INSTITUTE

# Caribbean Strategy for Climate-Resilient Forests and Rural Livelihoods

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# Abbreviations & acronyms

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**ACP** African, Caribbean and Pacific Group of States

**ACS** Association of Caribbean States

**AF** Adaptation Fund

**AMEXCID** Mexican Agency for International Development Cooperation

**BIOPAMA** Biodiversity and Protected Areas Management Programme

**BMZ** German Federal Ministry for Economic Cooperation and Development

**CABI** Centre for Agriculture and Bioscience International

**CBF** Caribbean Biodiversity Fund

**CANARI** Caribbean Natural Resources Institute

**CARDI** Caribbean Research and Development Institute

**CARPHA** Caribbean Public Health Agency

**CARICOM** Caribbean Community

**CAST** Caribbean Alliance for Sustainable Tourism

**CBS** CARICOM Biodiversity Strategy

**CBD** Convention on Biological Diversity

**CCCCC** Caribbean Community Climate Change Centre

**CDEMA** Caribbean Disaster Emergency Management Agency

**CEPF** Critical Ecosystem Partnership Fund

**CHTA** Caribbean Hotel and Tourism Association

**CI** Conservation International

**CIMH** Caribbean Institute for Meteorology and Hydrology

**CITES** Convention on International Trade in Endangered Species

**CMS** Convention on Migratory Species

**CONQUITO** Economic Promotion Agency of Quito

**CPF** Country Programming Framework

**CSCRFRL** Caribbean Strategy for Climate-Resilient Forests and Rural Livelihoods

**CSO** Civil Society Organisation

**CWWA** Caribbean Water and Wastewater Association

**DMQ** Metropolitan District of Quito

**EbA** Ecosystem-based Adaptation

**ECROP** Eastern Caribbean Regional Ocean Policy

**EDF** European Development Fund

**EU** European Union

**FAO** Food and Agriculture Organization of the United Nations

**FCPF** Forest Carbon Partnership Facility

**FIP** Forest Investment Programme

**GCF** Green Climate Fund

**GCCA** Global Climate Change Alliance

**GEF** Global Environment Facility

**GFFFN** United Nations Global Forest Financing Facilitation Network

**GHG** Greenhouse gas

**GI** Green Infrastructure

**GIZ** German Agency for International Cooperation

**GPS** Global Positioning System

**ICT** Information and Communications Technology

**IDB** Inter-American Development Bank

**IKI** International Climate Initiative

**Intra-ACP GCCA+** Intra-ACP Global Climate Change Alliance Plus Programme

**IPBES** Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services

**IUCN** International Union for Conservation of Nature

**IWEco** Integrating Water, Land and Ecosystems Management in Caribbean Small Island Developing States

**KfW** German Development Bank

**LAC** Latin American and the Caribbean

**MIF** Multilateral Investment Fund

**NAP** National Adaptation Plan

**NBSAP** National Biodiversity Strategic Plan of Action

**NPIF** Nagoya Protocol Implementation Fund

**NTFP** Non-Timber Forest Product

**ODA** Official Development Assistance

**OECS** Organisation of Eastern Caribbean States

**OGDS** OECS Growth and Development Strategy

**PFM** Participatory Forest Management

**ProEcoServ** Project for Ecosystem Services

**RAMSAR** Ramsar Convention on Wetlands of International Importance

**REDD** Reducing Emissions from Deforestation and Forest Degradation

**REDD+** Reducing emissions from deforestation and forest degradation and the role of conservation, sustainable management of forests and enhancement of forest carbon stocks in developing countries

**RIMISP** Latin American Centre for Rural Development

**SAMOA Pathway** Small Island Developing States Accelerated Modalities of Action Pathway

**SDGs** Sustainable Development Goals

**SFDRR** Sendai Framework for Disaster Risk Reduction

**SIDS** Small Island Developing States

**SME** Small and Micro Enterprise

**SPAW** Specially Protected Areas and Wildlife

**SO** Strategic Objective

**TNC** The Nature Conservancy

**UG** University of Guyana

**UN-CEP** United Nations Caribbean Environment Programme

**UNDP** United Nations Development Programme

**UNDRR** United Nations Office for Disaster Risk Reduction

**UNECLAC** United Nations Economic Commission for Latin America and the Caribbean

**UNEP** United Nations Environment

**UNEP-CAR/RCU** United Nations Environment - Caribbean Regional Coordinating Unit

**UNFF** United Nations Forum on Forests

**UWI** University of the West Indies



# Foreword

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Caribbean rural livelihoods are heavily dependent on natural resources including forest-based goods and services. The region's forests provide timber and fuelwood as well as non-timber forest products (NTFPs) such as food, medicine and handicraft materials. Globally, forested areas house over 80 percent of terrestrial biodiversity and in the Caribbean, forested locales are also important for hunting and eco-tourism. Furthermore, forests are critical for ecosystem services such as water provision, slope stabilisation and soil protection.

Climate change impacts in the Caribbean include higher ambient temperatures and more extreme weather patterns e.g. more intense hurricanes and increased likelihood of droughts and floods. The question we have to ask ourselves is, "How will climate change affect the region's forests? Will Caribbean forests continue to provide the goods and services we are accustomed to? What can we do to make the region's forest ecosystems more resilient against climate change?"

By their very nature we know that the forests in the Caribbean are resilient. All the natural forest we see on the islands have regenerated after a hurricane. However, we are also aware that degraded forest, if hit by a hurricane, regenerates back to the same level of degradation the ecosystem showed before the hurricane. This thus underscores the importance of preventing degradation and restoring these ecosystems as part of a climate resilience thrust. This is especially important given the important role of the region's forests in climate mitigation.

Trees and forests as long-lived individuals and ecosystems, by their very nature are resilient. They are designed to be able to cope with the many challenges they face during their long lifecycle. The natural resilience of trees is an asset foresters and farmers can make use of by integrating trees

and forests into agriculture production systems to make them more resilient and productive. Trees, either planted or naturally regenerated, can protect agricultural crop and coastlines, roads and infrastructure.

In summary, trees and forests protect the environment around them and are well suited to be integrated in human production systems to make these more resilient. However, this is unlikely to happen on its own and will require active participation of all stakeholders as well as suitable financing. This includes forest conservation financing, financing to invest in forest-based livelihood opportunities and financing to integrate trees and forest into social protection systems to make the islands as a whole more resilient to climate change.

This Caribbean Strategy for Climate-Resilient Forests and Rural Livelihoods, prepared by CANARI, documents the current state of discussion around this issue. It was compiled through a dedicated review of the literature, a detailed analysis of past initiatives and projects, extensive consultation with government and civil society stakeholders across the Caribbean and finally, validated at a regional workshop in Barbados in 2019. As such, it is a good foundation and valuable stepping-stone to integrate sustainable forest management and climate change resilience.



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The project was administered through the Regional Office of the FAO for Latin America and the Caribbean (FAO-RLC) and supported by FAO Sub-regional Office for the Caribbean (FAO-SLC). The main FAO technical liaison was Dr. Claus-Martin Eckelmann, Regional Forestry Officer for the Caribbean. The CANARI project manager and technical lead was Dr. Natalie Boodram, Senior Technical Officer. The CANARI team also comprised Ms. Nicole Leotaud, Executive Director as well as Technical Officers Ms. Neema Ramlogan, Ms. Melanie Andrews and Ms. Frederique Fardin.

Administrative and technical staff of the FAO-RLC and the FAO-SLC as well as officers of the FAO country offices provided contact information, technical input and review. FAO country offices responsible for Haiti, Jamaica, Dominica, Grenada and Saint Vincent and the Grenadines, (the focal countries for the initiative) also contributed similarly. While Trinidad and Tobago, Suriname and Guyana were not focal countries, the FAO offices for these countries also provided support.

Staff of the agencies and departments responsible for forest resources management in the five target countries contributed relevant literature, photographs and technical inputs during project interviews. Participants at a 2018 workshop on “Building climate resilience into Caribbean forest resources management and associated livelihoods” hosted within the inaugural Latin America and Caribbean Congress for Conservation Biology highlighted research needs pertinent to the workshop topic. Stakeholders at a Regional Validation Workshop in 2019 reviewed and commented on draft deliverables prior to finalisation.

# Executive summary

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In 2017, the Food and Agriculture Organization of the United Nations (FAO) entered into a Strategic Alliance with the Caribbean Natural Resources Institute (CANARI) to build the climate resilience of the Caribbean sub-region's forest resources and associated rural livelihoods through the development of a FAO sub-regional strategy, titled the Caribbean Strategy for Climate-Resilient Forests and Rural Livelihoods (CSCRFRL). This initiative recognises the fact that forests provide critical ecological goods and services within Caribbean islands. This recognition is further reflected in several Caribbean FAO Country Programming Frameworks (CPFs), including for Dominica, Grenada, Haiti, Jamaica and Saint Vincent and the Grenadines, which specifically prioritise forest resources management as part of an overall push towards climate resilience and enhancement of rural livelihoods.

The development of the strategy was preceded and informed by two mapping and prioritisation exercises. The first was a mapping and prioritisation exercise of suitable forestry initiatives for vertical and horizontal scaling. The second was a funding mapping exercise to elucidate suitable funding streams for the prioritised forestry initiatives. Both exercises were conducted using a highly participatory process with extensive consultation with

FAO country and regional officers, government forestry departments, civil society and academia. The outputs from these exercises were synthesised and used to develop a cohesive strategy to serve as an overarching programming and investment framework for forest management activities in the aforementioned five countries.

Overall, the CSCRFRL matches prioritised initiatives for vertical and horizontal scaling with suitable funding streams. It also identifies possible regional and national partners for project development and execution. While the strategy is focused on forest resources management, it also emphasises poverty alleviation and food security in line with FAO's Strategic Objectives. The strategy also has a gender and youth focus in addition to an emphasis on ecosystem services to support agricultural systems. Overall, the strategy can be thought of as a roadmap to mobilise investment for specific priority initiatives for vertical and horizontal scaling of climate resilience actions in the Caribbean forestry sector.

The CSCRFRL articulates five themes, each with goals, objectives and programme areas detailed in the table below. The strategy further outlines areas of alignment, partnerships and possible funding sources for the programme areas, outlined below.



Figure 1: Forestry officers clearing fallen trees in Saint Vincent and the Grenadines. Photo: © Fitzgerald Providence

## Summary of themes, goals, objectives and programmes in the CSCRFRL

Theme	Goal	Objectives	Programme areas
1. Resilient forest products, livelihoods and local green enterprises	To support forest-based livelihoods and local green enterprises and ensure their resilience to climate change.	<ul style="list-style-type: none"> <li>a) To assess and share knowledge on the climate vulnerabilities of forest goods and services that support rural livelihoods.</li> <li>b) To identify, protect and sustainably use climate-resilient goods and services.</li> <li>c) To strengthen technical expertise, methodologies, processes and organisational capacity to support resilient forest livelihoods and enterprises.</li> </ul>	<ul style="list-style-type: none"> <li>a) Research, assessments and knowledge exchange</li> <li>b) Forest germplasm conservation</li> <li>c) Timber harvesting</li> <li>d) Non-timber forest products (ntfps)</li> <li>e) Climate-resilient livelihoods and local green enterprises.</li> </ul>
2. Resilient forest ecosystems	To manage Caribbean forest ecosystems for climate change adaptation and mitigation.	<ul style="list-style-type: none"> <li>a) To build the knowledge base and facilitate knowledge exchange on the impacts of climate change on Caribbean forest ecosystems.</li> <li>b) To conduct forest management that responds to the impacts of climate change on forest ecosystems.</li> <li>c) To plan for and manage threats to forest ecosystems that are exacerbated by climate change.</li> <li>d) To support forest-based climate change mitigation.</li> </ul>	<ul style="list-style-type: none"> <li>a) Research, assessments and knowledge exchange</li> <li>b) Planning and management for resilient forest ecosystems</li> <li>c) Carbon sequestration</li> </ul>
3. Forest ecosystem services for climate resilience	To use forest ecosystem services to facilitate climate change adaptation across rural, urban, upper watershed and coastal areas.	<ul style="list-style-type: none"> <li>a) To utilise forests to protect vulnerable upper watershed and coastal areas from the impacts of climate change.</li> <li>b) To build the climate resilience of agricultural and urban areas using trees as green infrastructure.</li> </ul>	<ul style="list-style-type: none"> <li>a) Stabilisation of steep slopes</li> <li>b) Wetland management</li> <li>c) Agroforestry</li> <li>d) Urban forestry</li> </ul>
4. Disaster resilience for the forestry sector	To build disaster resilience within the Caribbean forestry sector.	<ul style="list-style-type: none"> <li>a) To ensure forestry stakeholders are equipped with the knowledge, tools, equipment and capacity to prepare for, respond to and recover from disasters.</li> <li>b) To use risk transfer, social protection programmes and other relevant mechanisms to reduce the social and financial impact of disasters on forestry stakeholders.</li> </ul>	<ul style="list-style-type: none"> <li>a) Research, assessments and knowledge exchange</li> <li>b) Disaster management protocols, plans and frameworks</li> <li>c) Tools, equipment and capacity building</li> <li>d) Disaster risk reduction for forestry stakeholders</li> </ul>
5. Frameworks, tools and mechanisms for climate resilience	To create an enabling environment for building climate resilience in the Caribbean forestry sector.	<ul style="list-style-type: none"> <li>a) To develop or update forestry frameworks to be more climate-resilient.</li> <li>b) To strengthen the economic knowledge base to inform and advocate for funding for the sustainable management of forests.</li> <li>c) To enhance capacity to access climate finance.</li> <li>d) To utilise innovative economic tools for sustainable financing of climate resilience initiatives.</li> </ul>	<ul style="list-style-type: none"> <li>a) Climate-resilient plans and policies</li> <li>b) Innovative economic tools for climate resilience</li> <li>c) Sustainable financing and access to climate finance</li> <li>d) Research, assessments and knowledge exchange and management</li> </ul>

# 1. Introduction

## 1.1 Background

In 2017, the Food and Agriculture Organization of the United Nations (FAO) entered into a Strategic Alliance with the Caribbean Natural Resources Institute (CANARI) to build the climate resilience of the Caribbean sub-region's forest resources and associated rural livelihoods through the development of a FAO sub-regional strategy, titled the Caribbean Strategy for Climate-Resilient Forests and Rural Livelihoods (CSCRFRL). The strategy prioritises initiatives for scaling up, along with suggestions for mobilisation of resources and enhancement of the readiness of sub-regional and national stakeholders for implementation. This initiative recognises the fact that forests provide critical ecological goods and services within Caribbean islands. This recognition is further reflected in several 2017 Caribbean FAO Country Programming Frameworks (CPFs), which specifically prioritise forest resources management as part of an overall push towards climate resilience and enhancement of rural livelihoods. These countries included Dominica, Grenada, Haiti, Jamaica and Saint Vincent and the Grenadines which are the focus of this strategy. The rural communities in these countries are highly dependent on forest resources for their livelihoods, ranging from ecotourism services to the production of non-timber forest products (NTFPs) and the artisanal production of timber. Forest resources management is also important in these countries for source water protection, both in terms of water supply and maintenance of water quality. Thus, a key goal of the CSCRFRL is to guard and protect these critical resources by building the climate resilience of forests and accompanying ecosystem goods and services in these islands.

Overall, the FAO/CANARI Strategic Alliance provides a direct response to the growing national, regional and international commitment to building the resilience of small island natural resources and livelihoods to the devastating

impacts of climate change. This includes actions to cope with slow onset changes like temperature and sea level rise, as well as actions to prepare for and rehabilitate livelihoods and forest ecosystems after rapid onset events like the intense hurricanes linked to climate change.

This CSCRFRL builds on the vast body of work that has already been done by FAO, CANARI and others to gather scientific and local knowledge, pilot innovative methodologies, build capacity, assess results and document lessons and recommendations from forest resources management initiatives. The CSCRFRL solidifies and amplifies the net impact of these initiatives by bringing these isolated projects and programmes together and scaling them up and out under a cohesive framework. The development and implementation of this sub-regional strategy, through ongoing multi-stakeholder engagement, ensures that key needs are addressed and stakeholder buy-in is built to facilitate development and resourcing of specific national and sub-regional projects by FAO, CANARI and others.

## 1.2 Report purpose, scope and structure

The specific objectives of this report are to outline the development of and articulate the final CSCRFRL to build climate resilience in the Caribbean forestry sector and associated livelihoods. It first provides summaries of the two precursor exercises for the strategy, namely the mapping of successful forestry initiatives executed in the Caribbean over the last ten years and a concordant mapping of available funding streams for Caribbean forest-related projects and programmes. This is then followed by a description of how these two information sources were synthesised along with stakeholder feedback to produce the final strategy. The CSCRFRL itself is presented as a series of themed tables, with accompanying supplementary information, including suggestions for implementation.

## 2. Summary of the forestry project mapping exercise

This exercise informed the development of the CSCRFRL by providing a map of forest resources management initiatives, programmes and public policies in the sub-region and subsequently determining the suitability and priority of these initiatives for scaling up and out. The activity began by gathering information on recent (within the last 10 years) projects and programmes through desk research and interviews with key national and FAO forestry personnel in target countries.

Several key issues arose from the literature and interviews which required suitable interventions under the strategy. These included the recognition that Caribbean forests were threatened by deforestation due to agriculture, housing, forest fires and invasive species. Climate change was also a major concern, exacerbating the impacts of many of these threats. For example, by affecting the structure and health of forests, including changes in plant flowering seasons and species composition, climate change indirectly affects forest livelihoods by reducing the availability of raw materials and tourism revenues. The importance of forests in climate mitigation was recognised, along with their role in adaptation, for example, soil protection by hillside forests and coastal protection by mangroves. The need to involve multiple stakeholders in climate mitigation and adaptation actions related to forestry management was also noted.

The projects that were mapped were analysed using the tool and criteria shown in Table 2.1 below to produce a list of suitable projects and initiatives for scaling. This included vertical scaling, which refers to the institutionalisation or integration of a successful initiative into a national programme or policy, as well as horizontal scaling, which refers to the replication of an initiative from one country

across to other Caribbean countries. These and other key technical terms are described in the glossary at the end of the report. Designation of suitability for scaling was based on stakeholder needs, regional synergies, potential socio-economic and climate-resilient impact, geographic replicability and whether the project was within a strong FAO niche, as illustrated in the tool in Table 2.1.



Figure 2: Charcoal production- a common forest-based livelihood in Haiti. Photo: © Foundation for the Protection of Marine Biodiversity

Application of the tool by CANARI resulted in a list of initiatives for possible scaling, arranged around several themes as summarised in Table 2.2. below. The table also shows successful actions or recommendations from the initiatives around which projects to be scaled could be organised, along with some key elements for incorporation within each theme.

Apart from the themes outlined in Table 2.2. above, there were several cross-cutting issues applicable to the mapped initiatives, which were also considered for horizontal and vertical scaling. These are outlined in Table 2.3 below.

Table 2.1: Final Tool to determine forestry initiatives for vertical and horizontal scaling across the Caribbean					
Theme	Project Title	Geographic scope of initiative	Funding	Implementers	Indicative project outcomes
<b>Criteria assessed</b> (Qualitative score of either high or low)					
<b>Need expressed by multiple stakeholders</b>	<b>Regional synergies</b>	<b>Socio-economic impact/FAO S03</b>	<b>Relevance to climate change adaptation, mitigation and resilience/FAO S05</b>	<b>Geographic replicability</b>	<b>Suitable for scaling (if more than 3 Highs scored)</b>
Option: High or Low	Option: High or Low	Option: High or Low	Option: High or Low	Option: High or Low	Option: Suitable or Unsuitable

**Table 2.2: Key themes and possible elements for scaling within the sub-regional strategy**

Theme	Potential project components/actions to include or emphasise in scaling
Climate change	<ul style="list-style-type: none"> <li>• Update national forest-related frameworks to integrate climate change considerations.</li> <li>• Ensure mainstreaming of forest ecosystem services and forest-based rural livelihoods into national climate plans and policies, including National Adaptation Plans (NAPs) and associated sectoral plans.</li> <li>• Build country capacity to access Green Climate Fund (GCF) funding to implement country-led national climate adaptation and mitigation plans.</li> <li>• Conservation and management of natural resources were prioritised, in particular:               <ul style="list-style-type: none"> <li>◦ including actual and projected climate change impacts on these activities; and</li> <li>◦ including interventions to increase communities' resilience to climate change.</li> </ul> </li> <li>• Engage stakeholders in reducing emissions from deforestation and forest degradation and the role of conservation, sustainable management of forests and enhancement of forest carbon stocks in developing countries (REDD+) initiatives and in other readiness activities by:               <ul style="list-style-type: none"> <li>◦ ensuring communities and marginalised groups' involvement via developing and utilising suitable communication and engagement strategies for these target audiences; and</li> <li>◦ involving traditionally marginalised groups, including indigenous and forest-dependent communities and representative groups in defining REDD+ communication strategies and co-developing action plans.</li> </ul> </li> <li>• Build climate adaptation practices into forestry management for resilience to climate change, including extreme weather events by:               <ul style="list-style-type: none"> <li>◦ including training in suitable silvicultural techniques to build forest resilience;</li> <li>◦ organising Caribbean regional exchange fora to share forestry best practices for climate change adaptation and mitigation, especially as it pertains to hurricanes and extreme weather events; and</li> <li>◦ supporting civil society organisations (CSOs), including those groups at the community level, working in forestry management to rebuild and recommence their work after climate-related disaster events (i.e. short-term recovery) and include disaster preparedness in their strategic plans.</li> </ul> </li> <li>• Emphasise carbon sequestration projects:               <ul style="list-style-type: none"> <li>◦ Build government agency capacity to support carbon sequestration activities;</li> <li>◦ Focus on civil society involvement in carbon sequestration activities to:                   <ul style="list-style-type: none"> <li>▪ Promote technical capacity building of CSOs to engage in practical actions, for example planting, nursery maintenance, fire prevention, etc.; and</li> <li>▪ Conduct organisational capacity development of target CSOs to enhance participation in carbon sequestration.</li> </ul> </li> </ul> </li> </ul>
Sustainable livelihoods and green enterprises	<ul style="list-style-type: none"> <li>• Encourage the formation of forest-based small and micro enterprise (SME) cooperatives to:               <ul style="list-style-type: none"> <li>◦ include technical and organisational management support to cooperatives, including on good governance and sustainability; and</li> <li>◦ provide business development support for cooperatives and member SMEs, including market testing and promotion.</li> </ul> </li> <li>• Support climate proofing of forest-based SMEs to:               <ul style="list-style-type: none"> <li>◦ support SMEs to apply relevant value chain analysis tools to analyse climate risks to their business and to assess potential adaptation options; and</li> <li>◦ support SMEs to implement adaptation actions.</li> </ul> </li> <li>• Support SMEs to 'green' their enterprises to include assessment of environmental impacts of the SME and strategies to reduce negative environmental impacts as well as maximise delivery of environmental benefits.</li> <li>• Factor in gender sensitive and social elements into forest-based livelihoods to:               <ul style="list-style-type: none"> <li>◦ focus on the empowerment of women and rural poor; and</li> <li>◦ promote the inclusion of at-risk groups, for example provide alternative livelihoods for young men involved in marijuana cultivation.</li> </ul> </li> <li>• Support the upscaling of sustainable livelihood and green enterprise projects into full-fledged national programmes embedded within forestry or rural enterprise government departments, including appropriate capacity building for the departments as needed.</li> </ul>

Table 2.2 continued: **Key themes and possible elements for scaling within the sub-regional strategy**

Theme	Potential project components/actions to include or emphasise in scaling
Participatory and sustainable forest management, including wildlife management	<ul style="list-style-type: none"> <li>• Build organisational capacity for lobbying and advocacy among groups involved in participatory and sustainable forest management, including government agencies, private sector organisations and CSOs.</li> <li>• Establish coordinating mechanisms among private sector, government, CSOs and others for sustainable forest management initiatives.</li> <li>• Build capacity of government departments and CSOs to access funding, in particular climate financing. This includes project management and proposal writing skills.</li> <li>• Target the rural poor and other marginalised groups for participation.</li> <li>• Support the development of forest management plans, using simple templates.</li> <li>• Support national and regional knowledge exchange fora for stakeholders involved in forestry management.</li> <li>• Build technical capacity to support forestry management, including capacity in conducting biodiversity and wildlife assessments, as well as best practices and techniques for general environmental monitoring among government agencies, CSOs and other relevant entities.</li> <li>• Develop and support forestry initiatives in which payments for ecosystem services is a component.</li> </ul>
Watershed management	<ul style="list-style-type: none"> <li>• Build the climate resilience of watersheds, associated communities and water supplies through riverbank and river management, including:               <ul style="list-style-type: none"> <li>◦ riverbank stabilisation utilising suitable plant species for biodiversity maintenance and community needs, and agroforestry initiatives for food security;</li> <li>◦ post-hurricane and disaster event rehabilitation and restoration (e.g. clean-up of debris and logs from riverbeds, repair of ecotourism infrastructure, clearing fallen trees, logs and other unwanted debris into smaller appropriate movable pieces then using removed logs in charcoal production); and</li> <li>◦ using participatory approaches involving communities along the riverbanks.</li> </ul> </li> <li>• Encourage stabilisation of steep slopes using suitable species and techniques to protect soil, biodiversity and support livelihoods (e.g. use of vetiver grass which also can be used as a NTFP for handicraft production).</li> <li>• Promote partnerships with water and electricity authorities which depend on forest ecosystem services.</li> <li>• Emphasise small-scale timber harvesting techniques in target countries. This can include the use of small portable sawmills to convert round timber into lumber, which can be particularly useful for post-hurricane debris management.</li> </ul>
Timber production Food security and agroforestry	<ul style="list-style-type: none"> <li>• Integrate agroforestry into watershed management activities.</li> <li>• Promote the use of agroforestry as buffers around protected areas and within forest corridors between protected areas.</li> <li>• Use invasive forest species as raw materials for farm infrastructure, as part of an invasive species management plan.</li> </ul>
Protected areas management	<ul style="list-style-type: none"> <li>• Develop climate-resilient protected areas management plans emphasising the inclusion of representative ecosystems, using participatory approaches with collaboration among government, civil society and private sector partners.</li> </ul>

**Table 2.3: Key cross-cutting issues for consideration for scaling within the sub-regional strategy**

Cross-cutting theme	Potential project components/actions to include or emphasise in scaling
Capacity building	<ul style="list-style-type: none"> <li>• Increase capacity of forestry departments to:               <ul style="list-style-type: none"> <li>◦ manage and monitor forest field operations, including tree harvesting;</li> <li>◦ use sabbaticals and exchanges for short-term training for junior foresters and support long-term training including participation in forestry diploma or degree programmes;</li> <li>◦ manage mangroves and wetlands; and</li> <li>◦ facilitate forest law compliance and participatory governance.</li> </ul> </li> <li>• Build civil society and private sector capacity for forestry management, including:               <ul style="list-style-type: none"> <li>◦ organisational capacity including development of CSO strategic plans;</li> <li>◦ technical capacity building (e.g. in the use of tools like geographic positioning systems [GPS] and information and communication technologies [ICTs]);</li> <li>◦ general forestry management;</li> <li>◦ climate adaptation, including understanding potential roles in and techniques for adaptation; and</li> <li>◦ capacity to develop and manage local green enterprises based on the sustainable use of forest resources.</li> </ul> </li> </ul>
Research and assessments	<ul style="list-style-type: none"> <li>• Support research and assessments on impacts and vulnerabilities, particularly:               <ul style="list-style-type: none"> <li>◦ impact of climate change on small-range and endemic forest species;</li> <li>◦ impact of climate change on animal behaviour;</li> <li>◦ at-risk forest ecosystems (such as cloud forests); and</li> <li>◦ identification of the forest-based livelihoods most vulnerable to climate change.</li> </ul> </li> <li>• Conduct data collection, mapping and modelling on:               <ul style="list-style-type: none"> <li>◦ up-to-date forest cover data, and standardised data sets;</li> <li>◦ species distribution models in response to climate change; and</li> <li>◦ downscaling of climate models to map specific forest ecosystem and site impacts.</li> </ul> </li> <li>• Conduct research on adaptation solutions and appropriate forest management measures, including:               <ul style="list-style-type: none"> <li>◦ possible adaptation strategies for forest-based livelihoods, including alternative livelihoods;</li> <li>◦ carbon sequestration best practices;</li> <li>◦ resilient tree species;</li> <li>◦ pros and cons of native versus non-native species to maintain ecosystem services;</li> <li>◦ invasive species management, including post disasters;</li> <li>◦ fire management, considering drier conditions predicted for the Caribbean;</li> <li>◦ the use of agroforestry to improve forest connectivity to facilitate species migration needs due to climate change;</li> <li>◦ agroforestry buffer zones and integrated plantations for maintaining adjacent forest cover;</li> <li>◦ mechanisms, best practices and guidelines for setting up protected areas on private land; and</li> <li>◦ biodiversity offsets.</li> </ul> </li> </ul>

### 3. Summary of the funding mapping exercise

A second mapping exercise assessed available funding streams for the prioritised initiatives from the first exercise. This was based on the analysis of online data and documentation, CANARI regional assessments<sup>1</sup> and a series of interviews with key national past and current finance ministry personnel.<sup>2</sup> The main online database used was the FAO's AIDmonitor.<sup>3</sup> For each of the five priority countries (Dominica, Grenada, Haiti, Jamaica and Saint Vincent and the Grenadines) the exercise:

- Mapped and assessed regional and international funding opportunities, including South-South cooperation and Official Development Assistance (ODA). This covered multi-lateral as well as bilateral sources, channelled through both regional and national initiatives. The report also described funding streams through United Nations agencies, international development agencies, international financial institutions and CSOs.
- Mapped and assessed national public sector investment opportunities as follows:
  - mapped windows of opportunity with the public sector in each target country and identified appropriate engagement times with public sector actors; and
  - analysed national budgetary systems and public investment, including: 1) budgetary cycles (critical points, key players, negotiation procedures); 2) opportunities where the FAO qualified for public investments and budgets; and 3) the legal, political and institutional arrangements required for the mobilisation of funds from national budgets, including government funds for national projects.

The exercise revealed that funding for natural resources management, including forest resources management, in the Caribbean was primarily derived from multilateral and bilateral ODA sources disbursed through regional and national projects and programmes annually. ODA initiatives were often implemented through regional and international institutions like the FAO, which is accredited to the Global

Environment Facility (GEF) (and has accessed significant funding for the Caribbean from this source) as well as the GCF (with proposals currently in development).

Currently there is a lot of focus on climate finance ODA for environmental management in the Caribbean. For example, many Caribbean countries and regional entities are actively pursuing multi-lateral climate financing from the GCF as well as the Adaptation Fund (AF). The FAO is accredited to the GCF for medium-sized projects ranging from USD 50-250 million and this is possibly one of the most viable funding streams for the FAO to exploit for the CSCRFL. This is particularly true as forestry-related projects have the advantage that they can be pitched as both adaptation and mitigation initiatives.

Other climate-related funding sources to be considered for the strategy include the Reducing Emissions from Deforestation and Forest Degradation (REDD), and the successive REDD+ initiatives. These utilise compensation schemes such as the cap-and-trade arrangement to deter deforestation and enhance carbon stocks. REDD+ has been in operation in Belize, Guyana and Suriname, developing low emission strategies with bilateral and multilateral funding, largely from Finland, Norway and the Forest Carbon Partnership Facility. REDD+ funding sources may be less suitable for the Caribbean islands which have limited land areas and even smaller forested zones to serve as carbon offsets, compared to the larger continental Caribbean countries.

In general, it was noted that ODA funding was limited for the Caribbean forestry sector in comparison to other environmental sectors, as there is currently a greater focus on general biodiversity conservation and climate resilience. Further, ODA funding to the region is low overall, given the classification of several Caribbean countries as middle-income or upper-income countries. There has also been a stronger regional emphasis, particularly recently, on ocean conservation as opposed to terrestrial conservation. However, it was also noted that while forest resources management is not an explicit focal area for ODA in the Caribbean, aspects such as disaster risk management,

1 **CANARI**. 2018a. *Synthesis Report for the Caribbean strategy for the implementation of the biodiversity cluster of MEAs*. Port of Spain, CANARI.

2 **CANARI**. 2018b. *Draft Ecosystem Profile: The Caribbean Islands Biodiversity Hotspot*. Critical Ecosystem Partnership Fund. Port of Spain, CANARI.

3 **FAO**. 2020. AIDmonitor. In: *Food and Agricultural Organization of the United Nations* [online]. Rome. [Cited 29 July 2020]. <http://www.fao.org/aid-monitor/en/>

food security and water security are possible umbrellas under which funding for forestry and associated rural livelihood initiatives can be subsumed and advanced. In particular, given the importance of forests for the protection of the region's freshwater supply and quality, water security can be an important avenue to channel funding to forest resources management.

In terms of bilateral investments, the European Union (EU) has been the most significant contributor to natural resource management funding in the region, through funding streams like the European Development Fund (EDF). German sources of funding have also been substantial, for example through the German Development Bank (KfW), the German Agency for International Cooperation (GIZ) and the Federal Ministry for Economic Cooperation and Development (BMZ). Pooled investments were also significant in the region, for example the Critical Ecosystem Partnership Fund (CEPF) financed by a coalition of The World Bank, GEF, Conservational International (CI), the European Union, l'Agence Française de Développement, the Government of Japan, and the John D. and Catherine T. MacArthur Foundation. The FAO has also recently embarked on a pooled investment for the Caribbean in partnership with the Mexican Agency for International

Development Cooperation (AMEXCID). This pooled investment aims to provide funding to several Caribbean Community (CARICOM) countries, targeted at climate resilience in agriculture, food security and rural livelihoods. The Caribbean Biodiversity Fund (CBF) is another pooled fund for the conservation, protection and maintenance of biodiversity in the Caribbean, with funding from KfW, BMZ, GEF, The World Bank, the United Nations Development Programme (UNDP), and The Nature Conservancy (TNC). This is channelled through national trust funds.

National governmental sources of funding (e.g. national budgets and environmental taxes) for natural resources management were extremely limited in comparison to ODA. This was partly due to the Caribbean region having experienced a slowdown in economic growth since 2009, constraining government spending in all sectors, including natural resources management. Also, natural resources management is generally a low priority within national budgets.

There is no data on the significance of direct private sector funding for biodiversity conservation in the Caribbean, although corporate social responsibility programmes and several private foundations do exist.



Figure 3a: Using a chainsaw to produce boards in the forest is an environmental friendly timber harvesting option on islands which are too steep for large scale logging operations. Figure 3b: This process is also efficient means of supplying building material from fallen trees after hurricanes. Photos: © Claus-Martin Eckelmann

## 4. Strategy development

Strategy development began by identifying key themes and possible programme areas, using the information gathered from the mapping exercises. These mirrored the themes and elements presented above in Table 2.2 and were presented at a regional validation workshop in March 2019 in Barbados. Participants at this workshop included regional and national FAO representatives along with representatives of national forestry departments from the five target countries. Participants provided feedback on the draft strategy via group exercises to refine and reorganise the draft themes, programmes and projects. They also proposed new themes, projects and programmes.

The workshop feedback was used to adjust the structure and content of the CSCRFRL. The strategy was then further reorganised by rewording and realigning the themes, programme areas and project elements to be as much in sync with potential donor funding streams as possible.

This included the use of the terminology that donors are currently favouring under their various funding initiatives. The CSCRFRL was also reorganised to best pull out discrete themes, programme areas and projects for small-scale community or national level projects but at the same time, still be used holistically for a large-scale multi-country investment portfolio. To further the strategy's potential use for a large-scale multi-country investment portfolio, the themes were organised scaling progressively upward and outward from a micro-scale focus on forest products, to larger scale forest ecosystems, to wider landscapes/cityscapes. This is followed by country and region-wide interventions to support disaster resilience and finally, the regional and national supporting frameworks, tools and mechanisms to action and advance all the smaller scale interventions under the previous themes. The final strategy is presented in Section 5 below.



Figure 4: Participants at the March 19<sup>th</sup> 2019 Regional Strategy Validation. Photo: © Caribbean Natural Resources Institute

## 5. FAO Strategy to build climate resilience of forest resources management and associated livelihoods in the Caribbean Forestry Sector (Caribbean strategy for climate-resilient forests and rural livelihoods).

### 5.1 Goal

To build the resilience of forest resources and associated rural livelihoods to climate change in the Caribbean.

### 5.2 Time frame

The strategy is intended as a ten-year strategy (2019–2029).

### 5.3 Strategy structure and organisation

The Strategy is organised into a series of themes and programmes outlined in Table 5.1 below. Under each programme, projects are suggested and summarised. A goal and specific objectives are put forward for each

theme. The tables end with specific implementation details in terms of alignment, partnerships and funding sources appropriate for each programme area. Apart from these targeted theme-specific implementation details, a general implementation overview is provided below in Section 5.4.

### 5.4 Strategy use and implementation

The intention of the CSCRFRL is to serve as an overarching programming and investment framework to build climate resilience of Caribbean forests and associated rural livelihoods. The strategy represents the collective vision of a wide group of stakeholders, having gone through

Table 5.1: Summary of themes, goals, objectives and programmes in the strategy

Theme	Goal	Objectives	Programme areas
1. Resilient forest products, livelihoods and local green enterprises	To support forest-based livelihoods and local green enterprises and ensure their resilience to climate change.	<ul style="list-style-type: none"> <li>a) To assess and share knowledge on the climate vulnerabilities of forest goods and services that support rural livelihoods.</li> <li>b) To identify, protect and sustainably use climate-resilient goods and services.</li> <li>c) To strengthen technical expertise, methodologies, processes and organisational capacity to support resilient forest livelihoods and enterprises.</li> </ul>	<ul style="list-style-type: none"> <li>a) Research, assessments and knowledge exchange</li> <li>b) Forest germplasm conservation</li> <li>c) Timber harvesting</li> <li>d) Non-timber forest products (ntfps)</li> <li>e) Climate-resilient livelihoods and local green enterprises.</li> </ul>
2. Resilient forest ecosystems	To manage Caribbean forest ecosystems for climate change adaptation and mitigation.	<ul style="list-style-type: none"> <li>a) To build the knowledge base and facilitate knowledge exchange on the impacts of climate change on Caribbean forest ecosystems.</li> <li>b) To conduct forest management that responds to the impacts of climate change on forest ecosystems.</li> <li>c) To plan for and manage threats to forest ecosystems that are exacerbated by climate change.</li> <li>d) To support forest-based climate change mitigation.</li> </ul>	<ul style="list-style-type: none"> <li>a) Research, assessments and knowledge exchange</li> <li>b) Planning and management for resilient forest ecosystems</li> <li>c) Carbon sequestration</li> </ul>

Table 5.1 continued: Summary of themes, goals, objectives and programmes in the strategy

Theme	Goal	Objectives	Programme areas
3. Forest ecosystem services for climate resilience	To use forest ecosystem services to facilitate climate change adaptation across rural, urban, upper watershed and coastal areas.	<ul style="list-style-type: none"> <li>a) To utilise forests to protect vulnerable upper watershed and coastal areas from the impacts of climate change.</li> <li>b) To build the climate resilience of agricultural and urban areas using trees as green infrastructure.</li> </ul>	<ul style="list-style-type: none"> <li>d) Stabilisation of steep slopes</li> <li>e) Wetland management</li> <li>f) Agroforestry</li> <li>g) Urban forestry</li> </ul>
4. Disaster resilience for the forestry sector	To build disaster resilience within the Caribbean forestry sector.	<ul style="list-style-type: none"> <li>a) To ensure forestry stakeholders are equipped with the knowledge, tools, equipment and capacity to prepare for, respond to and recover from disasters.</li> <li>b) To use risk transfer, social protection programmes and other relevant mechanisms to reduce the social and financial impact of disasters on forestry stakeholders.</li> </ul>	<ul style="list-style-type: none"> <li>a) Research, assessments and knowledge exchange</li> <li>b) Disaster management protocols, plans and frameworks</li> <li>c) Tools, equipment and capacity building</li> <li>d) Disaster risk reduction for forestry stakeholders</li> </ul>
5. Frameworks, tools and mechanisms for climate resilience	To create an enabling environment for building climate resilience in the Caribbean forestry sector.	<ul style="list-style-type: none"> <li>a) To develop or update forestry frameworks to be more climate-resilient.</li> <li>b) To strengthen the economic knowledge base to inform and advocate for funding for the sustainable management of forests.</li> <li>c) To enhance capacity to access climate finance.</li> <li>d) To utilise innovative economic tools for sustainable financing of climate resilience initiatives.</li> </ul>	<ul style="list-style-type: none"> <li>e) Climate-resilient plans and policies</li> <li>f) Innovative economic tools for climate resilience</li> <li>g) Sustainable financing and access to climate finance</li> <li>h) Research, assessments and knowledge exchange and management</li> </ul>

an extensive and robust data gathering, consultation and validation process. It serves as a roadmap to mobilise investment for priority initiatives for vertical and horizontal scaling of climate resilience actions for the forestry sector. While comprehensive in scope, it primarily outlines programmes and projects that replicate past successful initiatives and are otherwise suitable for scaling up and out based on stakeholder priorities, widespread geographic applicability and regional synergies.

The CSCRFRL is to be implemented by the FAO regional, sub-regional and national offices, working in partnership with national government agencies, civil society, academia and other key stakeholders. It is anticipated that the regional, sub-regional and national FAO offices will lead on the development of proposals. They will select what aspects to focus on, depending on what is the most relevant need or what is most timely or strategic in terms of funding streams and funding cycles. The entire strategy can be developed into a large-scale multi-country funding proposal.

However, large segments can also be extracted and further developed (e.g. each individual theme can be a funding proposal). Further, small-scale national or community level projects can also be developed, pulling from individual project elements. Several projects or programmes can be combined from within one theme or across several themes as suitable for national circumstances. Beyond the five target Caribbean countries, given the geographic replicability of the prioritised initiatives, the proposed programmes and projects can be applied to other countries in the FAO Caribbean sub-region.

Once funding is secured, project implementation will be led by the FAO sub-regional and national offices in partnership with the stakeholders outlined above. The forestry department in each country is expected to be the main government partner alongside key national CSOs or private sector entities working in forest resources management. Regional academic agencies, such as the University of the West Indies (UWI), are expected to play



Figure 5: Forestry officers overseeing timber harvest in Saint Vincent and the Grenadines. Photo: © Forestry Services, Saint Vincent

an important role especially on the research programme areas under the various themes. The CSCRFRL also has strong alignment with the environmental work programmes and strategies developed by regional inter-governmental agencies and regional CSOs. Thus, these entities will be key implementation partners, including the CARICOM Secretariat which recently developed the CARICOM Biodiversity Strategy and the OECS Commission, has developed the OECS-Biodiversity and Ecosystems Framework. Both these frameworks were developed with technical assistance from CANARI, another strong regional implementation partner, especially given its many years of work on forest resources management, often in conjunction with the FAO.

The entire strategy and individual themes are aligned with international frameworks such as the Sustainable Development Goals (SDGs) 1, 13 and 15, the Small Island Developing States Accelerated Modalities of Action (SAMOA) Pathway and the International Convention on Biodiversity's (CBD) Aichi Target 18. These synergies will be exploited in terms of partnerships with the frameworks' executing agencies and - utilise the funding modalities under these frameworks. Care will also be taken to avoid duplication of work, instead implementing the CSCRFRL in a way to build on related work already executed.

The implementation of the strategy will require focus on three aspects: 1) capacity building; 2) strengthening of relevant institutional frameworks; and 3) generating and managing relevant knowledge streams, both academic and indigenous. These aspects are addressed specifically within the themes (e.g. research on climate-resilient forest products, capacity building to support carbon sequestration activities and the climate proofing of forest policies). Apart from these specific areas, however, these three aspects are general requirements for successful project implementation. Capacity building among CSOs and government agencies is needed, for example, in terms of technical climate issues as well as organisational strengthening for strategy and project implementation. Information exchange and coordination is also needed among all stakeholders. Information exchange will be facilitated by, among other means, regional forestry fora, building on past fora like CANARI's regional forestry action learning groups. Each meeting can focus on a particular resilience topic. Existing online databases can be used to store and share information generated, packaged in suitable formats for different audiences.

Monitoring and evaluation of the strategy will be undertaken by the FAO national and sub-regional offices using standard FAO processes. In particular, the strategy will be evaluated against the FAO's Strategic Objectives (SOs) namely:

- SO1- Help eliminate hunger, food insecurity and malnutrition;
- SO2- Make forestry more productive and sustainable;
- SO3- Reduce rural poverty;
- SO4- Enable inclusive and efficient agricultural and food systems;
- SO5- Increase the resilience of livelihoods to threats and crises.

## 5.5 Caribbean strategy for climate-resilient forests and rural livelihoods

### 5.5.1 Theme 1: Resilient forest-based rural livelihoods and local green enterprises

Theme 1 of the CSCRFRL focuses on ensuring that forests can continue to provide the products that support rural livelihoods and local green enterprises. It also emphasises how these livelihoods and enterprises can adapt to anticipated climate change impacts on Caribbean forests. To begin to address these goals, Caribbean-specific research is needed. While general information is available on climate change impacts on forests, specific details are needed, for example, on Caribbean species migration, changes in phenology and shifts in wildlife feeding grounds in response to climate change. Apart from this biological research, social research is also needed, for example, assessments of how climate change affects the enterprises and livelihoods that depend on forest resources. Both indigenous and academic knowledge is needed, which in turn should be housed in easily accessible databases, packaged in suitable formats and disseminated to relevant audiences. Peer exchange mechanisms (e.g. regional fora) are also needed to support knowledge sharing.

Continued conservation and sustainable use of currently utilised forest raw materials (e.g. timber, fruits, nuts, vines used in handicraft etc.) is needed. As part of conservation efforts, the protection of forest germplasm is needed, incorporating lessons learnt from recent efforts (e.g. from

Haiti which has constructed a number of germplasm centres). To be more sustainable, once harvested and processed, forest products need to be marketed and branded properly to ensure maximum returns. Standardisation and quality control of forest products are also important aspects.

Individuals, communities and organisations engaged in forest-based livelihoods and enterprises also need support, not only in the development of appropriate technical capacity to sustainably harvest and develop their products but also core business capacities, including branding and marketing. Institutional support is also required, including scaling up of disparate forest enterprise projects into national programmes. These can be modelled after national rural development programmes in Saint Vincent and the Grenadines.

**Goal:** To ensure the resilience of forest-based livelihoods and local green enterprises to climate change.

#### Objectives:

1. To assess and share knowledge on the climate vulnerabilities of forest goods and services that support rural livelihoods.
2. To identify, protect and sustainably use climate resilient goods and services.
3. To strengthen technical expertise, methodologies, processes and organisational capacity to support resilient forest livelihoods and enterprises.

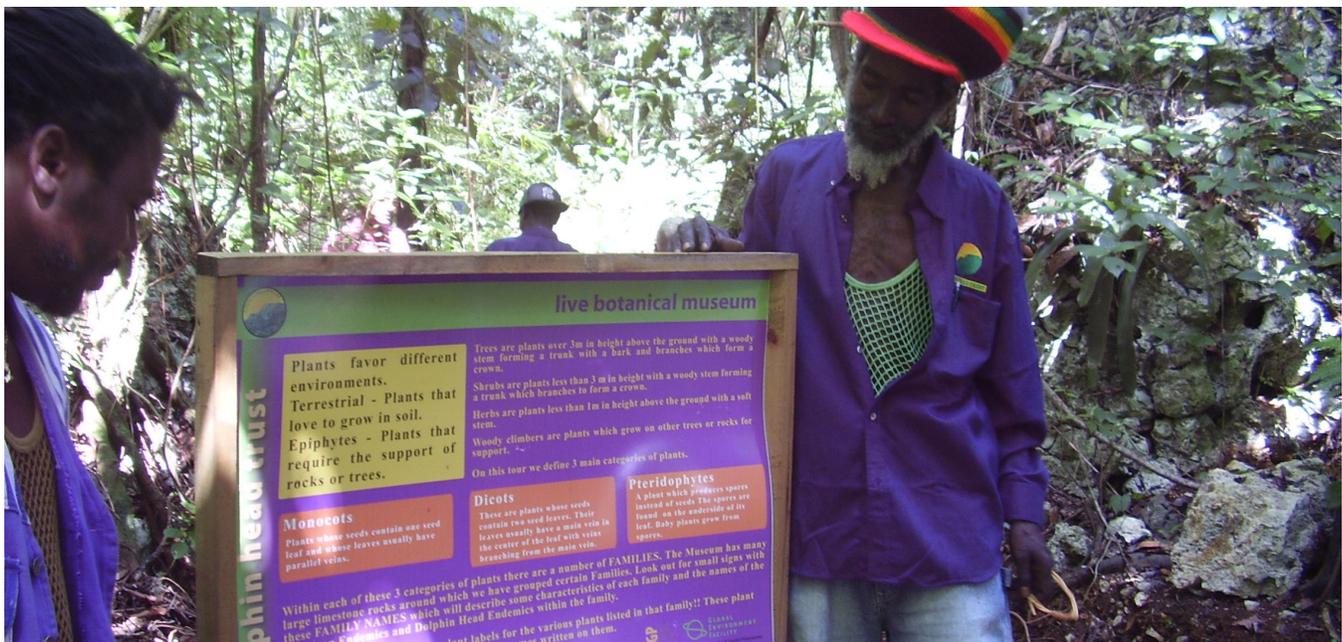


Figure 6: Forest-based community tourism in Jamaica. Photo: © Fitzgerald Providence

## Theme 1: Resilient forest-based livelihoods and local green enterprises

Programme	Research, assessments and knowledge exchange	Forest germplasm conservation	Timber harvesting	NTFPs	Climate resilient livelihoods and local green enterprises
<b>Proposed projects and key elements</b>	<p><b>a) Assessing the impact of climate change on forest-based livelihoods and enterprises:</b> Participatory vulnerability assessments will be conducted for key forest-based rural livelihoods. These assessments can use tools such as CANARI's climate proofing guidelines,<sup>4</sup> which examine the impacts of climate change along the value chain of an enterprise.</p> <p><b>b) Determining climate-resilient NTFPs and timber products:</b> This research will utilise both scientific/technical and local knowledge. It will identify species resilient to the hotter, drier conditions and more intense storms predicted for the Caribbean under regional climate change scenarios. Knowledge generated will be packaged in forms suitable to various stakeholder groups and disseminated via online platforms and other pathways accessible by the key stakeholders.</p> <p><b>c) Facilitating knowledge exchange and communities of practice:</b> Groups of forest users and managers will be established at the national and regional levels to facilitate peer sharing, testing and learning on climate change resilience</p>	<p><b>a) Protecting forest germplasm:</b> This initiative will establish national or regional forest germplasm centres, focusing on key timber and NTFP species. Efforts will also be made to consider the climate resilience aspect of any tree or forest germplasm bank, including resilience to disasters.</p>	<p><b>a) Developing methodologies and building capacity for timber harvesting and processing:</b> This project recognises the small scale of logging operations in Caribbean islands, thus focuses on suitably scaled technology and capacity development. This includes building capacity for using small portable sawmills to convert round timber into lumber. Procurement and maintenance of suitable portable mills will also be included as needed under this project.</p>	<p><b>b) Developing NTFP standards and certification:</b> This project will develop national or regional certification schemes or adopt/adapt international schemes; as feasible and appropriate, to support quality standards for harvesting and production of NTFPs. Certification can be used to support branding and marketing.</p>	<p><b>a) Adapting livelihoods and local enterprises to climate change:</b> This project will build the capacity of local entrepreneurs to develop and implement adaptation strategies to address identified vulnerabilities of their livelihoods/enterprises. The project will also include the exploration of alternative livelihoods where adaptation strategies are not practical. This will include livelihoods and enterprises based on timber, NTFPs and also ecotourism. Adaptation strategies for ecotourism initiatives will include carrying out capacity studies in response to climate change impacts on ecotourism sites as well as the exploration of alternative sites for ecotourism activities.</p> <p><b>b) Strengthening and sustaining livelihoods and local enterprises:</b> This project will support forest users, including timber and NTFP harvesters, as well as ecotourism operators, with:</p> <ul style="list-style-type: none"> <li>• developing business plans, conducting product marketing and promotion of products;</li> <li>• establishing forest product cooperatives/ user groups for enhanced trade and group negotiations, along with technical, business development and organisational development training for cooperative members;</li> <li>• building gender and cultural sensitivity into forest-based livelihoods, targeting youth and at-risk groups; and</li> </ul>

<sup>4</sup> Sandy, K., Edwards, A. & Leotaud, N. 2017. 'Climate-proofing' local green enterprises. Guideline Series No. 10. Port of Spain, CANARI. <https://canari.org/wp-content/uploads/2016/01/guidelines-10-climate-proofing-lges.pdf>

Theme 1 continued: Resilient forest-based livelihoods and local green enterprises

Programme	Research, assessments and knowledge exchange	Forest germplasm conservation	Timber harvesting	NTFPs	Climate resilient livelihoods and local green enterprises
	<p>of Caribbean forest-based livelihoods, enterprises, products and services. In person or virtual meetings of these groups will be executed. Online tools, including regional knowledge platforms, will be used for sharing and managing information generated.</p>				<ul style="list-style-type: none"> <li>enhancing delivery of economic, social and environmental co-benefits by local enterprises.</li> </ul> <p><b>c) Upscaling forest-based livelihoods and local green enterprises:</b> This project will embed sustainable livelihood and green enterprise programmes within the work programmes of the relevant national forestry, rural/community development and small business development departments.</p>
<p><b>Programme/ Project implementation:</b> Alignment, partnerships and potential funding sources</p>	<p><b>Alignment:</b> This programme area is strongly aligned to a number of regional and national frameworks. These include the CBD, especially targets 18 and 19, which focus on traditional and scientific knowledge on biodiversity. There is synergy also with CBD target 16 on the Nagoya Protocol concerning the fair and equitable access to and sharing of genetic resources.</p> <p><b>Partnerships:</b> This programme area is aligned with research themes under regional strategies like the CARICOM Biodiversity Strategy. Collaboration with the CARICOM Secretariat to jointly execute research highlighted in both strategies will be explored.</p>	<p><b>Alignment:</b> This initiative is strongly aligned to the CBD Aichi Target 13 which speaks to genetic diversity.</p> <p><b>Partnerships:</b> Genetic, species and ecosystem biodiversity are also key themes under the CARICOM Biodiversity Strategy thus partnering with the CARICOM Secretariat on joint funding proposals will be pursued.</p>	<p><b>Alignment:</b> These programmes are similar in terms of alignment, partnerships and potential funding sources. At the international level, all are aligned with The CBD Aichi Target 7 which speaks to the sustainable management of forest resources. Regionally, there are synergies with the OECS Growth and Development Strategy for the Environment (OGDS-e) which seeks to protect the environment while creating new economic opportunities as well as the OECS Green-Blue Economy Strategy and Action Plan which is in development.</p> <p><b>Partnerships:</b> The strong alignments outlined above suggest that the FAO should be exploring partnerships with the OECS Commission for implementation of projects and programmes on climate-resilient forest-based green enterprises.</p> <p>Similarly, CARICOM has developed a draft CARICOM Biodiversity Strategy which also focuses on biodiversity-based sustainable livelihoods and local green enterprises. Thus, partnerships with the CARICOM Secretariat are also worth exploring for the development and implementation of initiatives within these programme areas. Partnerships with institutes like CANARI will give access to existing tools and expertise in climate proofing nature-based livelihoods and enterprises. At the national level, partnerships between government departments responsible for forestry, rural/community development and small business development and engaging small business associations/cooperatives will be key.</p>		

Theme 1 continued: Resilient forest-based livelihoods and local green enterprises

Programme	Research, assessments and knowledge exchange	Forest germplasm conservation	Timber harvesting	NTFPs	Climate resilient livelihoods and local green enterprises
	<p>Given the research and knowledge exchange focus, partnerships with UWI and other research institutes, as well as CSOs and others with expertise in collecting local knowledge will be key.</p> <p>Engaging government departments responsible for forestry and private sector operators will also be important.</p> <p><b>Funding:</b> Given synergies with the Nagoya Protocol, funding through the Nagoya Protocol Implementation Fund (NPIF) is an avenue to consider. This fund, among other things, is geared towards furthering the knowledge and scientific base for the implementation of the Nagoya Protocol. The modality for accessing this fund for projects under this programme area is through GEF medium-sized projects.</p>	<p><b>Funding:</b> Biodiversity initiatives like the one proposed have traditionally been funded through the GEF.<sup>5</sup> The climate resilience thrust of this programme area can also facilitate GCF<sup>6</sup> or AF<sup>7</sup> finance. Bilateral funding can also be used (e.g. from Taiwan and Mexico which recently funded Haitian germplasm centres).</p>			<p><b>Funding:</b> Financing streams for entrepreneurship and innovation in the Caribbean can be explored (e.g. Compete Caribbean<sup>8</sup> and the Caribbean Climate-Smart Accelerator).<sup>9</sup> At the global level, the current thematic focus areas for funding under the International Climate Initiative (IKI)<sup>10</sup> includes reduction of climate risks for the private sector through ecosystem-based adaptation (EbA) and thus may be a suitable avenue for funding for the projects under these programme areas. A recent pooled investment fund through the FAO in partnership with AMEXCID is also applicable to these programme areas as it targets, among other areas, climate-resilient rural livelihoods.</p>

5 **Global Environment Facility (GEF)**. 2020. Documents. In Global Environment Facility. Washington, GEF. [Cited 29 July 2020]. <https://www.thegef.org/documents/brochure-nagoya-protocol-implementation-fund>

6 **Green Climate Fund (GCF)**. 2020. Green Climate Fund [online]. Incheon. [Cited 29 July 2020]. <https://www.greenclimate.fund/home>

7 **United Nations Framework Convention on Climate Change (UNFCCC)**. 2020. Adaptation Fund. In: *United Nations Framework Convention on Climate Change News* [online]. Bonn. [Cited 29 July 2020]. <https://unfccc.int/process/bodies/funds-and-financial-entities/adaptation-fund>

8 **Compete Caribbean**. 2020. Compete Caribbean [online]. Christ Church. [Cited 29 July 2020]. <http://competecaribbean.org/>

9 **Caribbean Accelerator**. 2019. Making the Caribbean the world's first climate-smart zone. In: Caribbean Accelerator. [Cited 29 July 2020]. <https://www.caribbeanaccelerator.org>

10 **Federal Ministry for the Environment, Nature Conservation and Nuclear Safety & International Climate Initiative (IKI)**. 2020. Thematic oriented selection procedure. In International Climate Initiative. Berlin. [Cited 29 July 2020]. <https://www.international-climate-initiative.com/en/project-funding/information-for-applicants/thematic-oriented-selection-procedure/>

### 5.5.2 Theme 2: Resilient forest ecosystems

Theme 2 focuses on building the resilience of forest ecosystems to climate change impacts and in turn, harnessing the carbon sequestration functions of forests for climate mitigation. This theme addresses forest ecosystems as a whole as opposed to Theme 1, which highlighted specific forest products and dependent livelihoods and enterprises. Like Theme 1, however, there is a strong research component, as per the needs expressed during stakeholder consultations and existing uncertainties as to Caribbean and local level forest ecosystem responses to climate change. Apart from research, a forum for discussion and information exchange on climate-resilient forest ecosystems has been repeatedly expressed by the region's foresters as a significant gap. Facilitating better understanding and exchange of ideas can, in turn, lead to better extrapolation of appropriate forest management interventions.

Management interventions are needed for forest ecosystem threats that are likely to be exacerbated by climate change (e.g. fires and invasive species). For example, islands such as Saint Vincent and the Grenadines are grappling with the impacts of invasives like lemon grass, feral pigs and the Cuban tree frog. Invasive monkeys are a concern in Saint Kitts and Nevis. Successful invasive species management initiatives, such as the management of lemon grass in Dominica, can be replicated to these and other target countries. Wildfires are also a regional threat, especially during the dry season. These fires kill wildlife and trees, degrade habitats or otherwise destroy entire ecosystems. Apart from these direct impacts to forest ecosystems, fires leave slopes bare of vegetation and thus more prone to soil

erosion in the rainy season. The subsequent lack of trees on hillsides also promotes surface runoff, exacerbating downstream flooding events. Many of these fires are set deliberately or accidentally by humans (e.g. by tossing cigarettes out of car windows). Apart from managing these specific threats, overall ecosystem level management and planning is needed. Planning for climate change adaptation in protected forested areas is a specific concern. This may include, for example, shifting protected area boundaries to reflect species shifts in response to climate change-induced temperature and moisture changes.

Overall mitigation planning is also needed, for example on enhancing carbon sequestration in the region. While total carbon emissions for the Caribbean region are relatively low, carbon sequestration projects and mitigation initiatives are still especially important given the other ecological benefits these type of projects generate. The goal and objectives of this theme are highlighted below.

**Goal:** To manage Caribbean forest ecosystems for climate change adaptation and mitigation.

**Objectives:**

- a. To build the knowledge base and facilitate knowledge exchange on the impacts of climate change on Caribbean forest ecosystems.
- b. To conduct forest management that responds to the impacts of climate change on forest ecosystems
- c. To plan for and manage threats to forest ecosystems that are exacerbated by climate change.
- d. To support forest-based climate change mitigation.



Figure 7: Deforestation by fire in Westphalia near the Blue Mountain Forest Reserve, Jamaica. Photo: © The Forestry Department, Jamaica

## Theme 2: Resilient forest ecosystems

Programmes	Research, assessments and knowledge exchange	Planning and management for resilient forest ecosystems	Carbon sequestration
<p><b>Proposed projects and key elements</b></p>	<p><b>a) Conducting research on climate change forest impacts:</b> Apart from core academic research, this project will incorporate civil society participation including documentation of traditional knowledge. Specific areas will include:</p> <ul style="list-style-type: none"> <li>• collection of up-to-date forest cover data, and standardised data sets;</li> <li>• downscaling of climate models to map specific forest ecosystem and site impacts;</li> <li>• assessing the impact of climate change on at-risk ecosystems (such as cloud forests and dry forests);</li> <li>• assessing the impact of climate change on small-range and endemic forest species, including species distributions and animal behaviour;</li> <li>• assessing how climate change will exacerbate existing threats such as invasive species and wildfires; and</li> <li>• conducting climate change vulnerability assessments of protected areas.</li> </ul> <p><b>a) Supporting national and regional knowledge exchange for climate-resilient forest resources and ecosystems:</b> Complementary options will include online knowledge hubs, online webinars/meetings and in person meetings/ regional fora. The same fora described in Theme 1 can be used with different meetings focusing on different topics as needed.</p>	<p><b>a) Enhancing the climate resilience of protected areas:</b> This project will conduct climate vulnerability assessments of protected areas, then develop or update management plans to address priorities, followed by implementation of the plans. Implementation may, for example, necessitate the shifting of protected area boundaries to cater to species shifts in response to climate change. Establishment of wildlife corridors to connect protected areas or buffers around protected areas may also be needed. Management interventions may also include ecotourism aspects (e.g. managing tourist numbers to adjust for the climate vulnerability of specific ecosystems and species). All planning and management interventions will be participatory including collaboration among government, civil society and private sector partners.</p> <p><b>b) Managing invasive plant and animal species in Caribbean forests:</b> This initiative will analyse lessons from successful initiatives, adapting and replicating them across other target countries. Invasive plant management will rely primarily on mechanical means (e.g. digging or cutting). Proper disposal of plants will also be emphasised (e.g. burning to prevent re-establishment). Invasive animal management strategies will include, as appropriate, trapping and hunting and campaigns for human consumption.</p> <p><b>c) Managing wildfires:</b> This initiative will include community engagement, awareness raising and technical training for firefighting. Communities will be sensitised to the impacts of forest fires and useful steps to prevent and manage fires. Relevant organisational structures and protocols for fire management will be also be set up.</p>	<p><b>a) Promoting participatory carbon sequestration in the Caribbean:</b> Project elements will include:</p> <ul style="list-style-type: none"> <li>• building government agency and CSO technical capacity to support carbon sequestration activities;</li> <li>• implementing systems for measurements and calculations for greenhouse gas (GHG) emissions, reporting on GHG emissions in national reports, mapping and assessment of carbon dioxide pools;</li> <li>• engaging CSOs in implementation of carbon sequestration projects (e.g. planting, nursery maintenance and fire prevention) in targeted areas; and</li> <li>• enhancing CSO and other stakeholder access to REDD+ readiness and implementation funding.</li> </ul>

## Theme 2 continued: Resilient forest ecosystems

Programmes	Research, assessments and knowledge exchange	Planning and management for resilient forest ecosystems	Carbon sequestration
<p><b>Programme/ Project Implementation:</b></p> <p>Alignment, partnerships and potential funding sources</p>	<p><b>Alignment:</b></p> <p>This theme is strongly aligned to SDG 15 which aims to protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss. It is also aligned to the CDB Aichi Target 9 on invasive species and Target 11 on protected areas. Further, the programmes and projects are relevant to the Convention on International Trade in Endangered Species (CITES) and the Convention on Migratory Species (CMS).</p> <p><b>Partnerships:</b></p> <p>Key research and knowledge exchange partners for this theme would include UWI and CANARI, the latter as it pertains to the re-establishment of regional Forestry Action Learning Groups. The Centre for Agriculture and Bioscience International (CABI) has been active in the Caribbean invasive species arena and is thus a possible partner for work under invasive species management initiatives. The United Nations Environment Programme-Caribbean Environment Programme (UN Environment-CEP), which administers the Protocol on Specially Protected Areas and Wildlife (SPAW), will be another central partner, given work programme synergies.</p> <p><b>Funding:</b></p> <p>Funding from the Intra-African, Caribbean and Pacific States (ACP) Global Climate Change Alliance Plus (GCCA+) Programme<sup>11</sup> is one possible funding source for regional forestry dialogues. Other possible funding avenues may be through networks like the United Nations Global Forest Financing Facilitation Network (GFFFN)<sup>12</sup> and the United Nations Forum on Forests (UNFF).<sup>13</sup> Recent regional and national invasive species and protected area projects have been funded through the GEF<sup>14</sup>. GEF remains a key source of funding for these types of interventions in the Caribbean region and a key development partner for the FAO. Specifically, with regards to the protected areas programme, the Biodiversity and Protected Areas Management Programme (BIOPAMA) has recently launched the BIOPAMA Action Component<sup>15</sup> which</p>		<p><b>Alignment:</b></p> <p>Given both the mitigation and adaptation angle of this programme area, there are strong linkages to SDG 13 on climate change, which recommends taking urgent action to tackle climate change and its impacts.</p> <p><b>Partnerships:</b></p> <p>Key national partners would include forestry departments and local CSOs. At the regional level, an organisation like CANARI would be a suitable partner, given its programming nexus between forestry and CSO engagement/capacity building.</p> <p><b>Funding:</b></p> <p>Potential climate-related funding sources include the REDD, and the successive REDD+. These utilise compensation schemes such as the “cap-and-trade” arrangement to deter deforestation and enhance carbon stocks.</p> <p>Other climate international financing mechanisms for forest conservation and mitigation efforts include the Kyoto Protocol Clean Development</p>

11 **Intra-ACP GCCA+ Programme**. 2018. About the Intra-ACP GCCA+ Programme. In *Intra-ACP GCCA+ Programme*. [Cited 29 July 2020]. <https://intraacpgccaplus.org/about/>

12 **United Nations Department of Economic and Social Affairs (UNDESA)**. Global Forest Financing Facilitation Network. In *UNDESA Capacity Building* [online]. New York. [Cited 27 July 2020]. <https://www.un.org/development/desa/capacity-development/tools/tool/global-forest-financing-facilitation-network/>

13 **United Nations Department of Economic and Social Affairs (UNDESA)**. Forests. In *UNDESA* [online]. New York. [Cited 29 July 2020]. <https://www.un.org/esa/forests/index.html>

14 **Global Environment Facility (GEF)**. 2020. *GEF* [online]. Washington. [Cited 30 July 2020]. <https://www.thegef.org>

15 **BIOPAMA**. 2020. BIOPAMA Action Component. In *BIOPAMA* [online]. [Cited 30 July 2020]. <https://action.biopama.org>

16 **United Nations Framework Convention on Climate Change (UNFCCC)**. 2020. About CDM. Clean Development Mechanism. In *UNFCCC* [online]. Bonn. [Cited 30 July 2020] <https://cdm.unfccc.int/about/index.html>

Theme 2 continued: Resilient forest ecosystems

Programmes	Research, assessments and knowledge exchange	Planning and management for resilient forest ecosystems	Carbon sequestration
	funds on-the-ground actions to promote the sustainable use of biodiversity in protected and conserved areas in ACP countries.		Mechanism <sup>16</sup> (reforestation and afforestation), the Forest Investment Programme (FIP) <sup>17</sup> and the Forest Carbon Partnership Facility (FCPF). <sup>18</sup> IKI funding can also be considered, especially given that carbon sequestration, through the restoration of forests and landscapes, is a focal area.



Figure 8a: Vetiver grass planted in rows along the contour lines reduces erosion and stabilises roads and river banks. Figure 8b: Vetiver grass can also be used to produce handicraft items thus supporting rural livelihoods. Photos: © FAO/Vonnie Roudette

17 **Climate Investment Funds (CIF)**. 2018. *CIF* [online]. [Cited 30 July 2020]. <https://www.climateinvestmentfunds.org/dedicated-grant-mechanism>

18 **Forest Carbon Partnership Facility**. 2018. *FCPF* [online]. [Cited 30 July 2020]. <https://www.forestcarbonpartnership.org>

### 5.5.3 Theme 3: Forest ecosystem services for climate resilience

Theme 3 addresses forest ecosystem services, emphasising forests as green infrastructure (GI) which can be defined as a “strategically planned network of high quality natural and semi-natural areas with other environmental features, which is designed and managed to deliver a wide range of ecosystem services and protect biodiversity in both rural and urban settings”. As a spatial structure providing benefits from nature to people, GI aims to enhance nature’s ability to deliver multiple valuable ecosystem goods and services, such as clean air or water. This theme thus focuses on aspects such as forest trees and other vegetation for slope stabilisation on steep hillsides and on riverbanks to prevent erosion. Both are regarded as critical watershed areas to manage to protect water quality and quantity in rivers. Conserving or re-establishing trees and vegetation along riverbanks, also known as riparian areas, also helps to filter out sediments and pollutants from the water entering the river. In so doing, riverine water quality is protected, which is especially important if the watercourse is used for water abstraction. Lower down in the watershed (e.g. at estuarine and other coastal sites), mangrove forests and other wetland vegetation provide critical protection against storm surges. Thus conserving, managing and if necessary, rehabilitating mangrove forests are vital, given the increased intensity of hurricanes the region is experiencing due to climate change.

The establishment of GI in urban areas also aids in climate adaptation. The shade provided by trees can ameliorate higher ambient temperatures due to climate change and also reduce air and noise pollution and stormwater runoff. In agricultural areas, agroforestry can also help ameliorate high temperatures as well as filter chemical pollutants like pesticides. Agroforestry refers to “land-use systems and technologies where woody perennials (trees, shrubs, palms, bamboos, etc.) are deliberately used on the same land-management units as agricultural crops and/or animals, in some form of spatial arrangement or temporal sequence.” Agroforestry also improves food security and income for farmers. From an ecological standpoint, agroforestry systems can serve as wildlife corridors between protected areas or buffers around protected areas, thus helping to conserve biodiversity. Apart from all the ecosystem



Figure 9: Mangrove planting in Haiti. Photo: © Foundation for the Protection of Marine Biodiversity

services listed above, any attempt to conserve, re-establish or increase the acreage of land under tree cover will also promote carbon sequestration, thus climate mitigation.

**Goal:** To use forest ecosystem services for climate change adaptation across rural, urban, upper watershed and coastal areas.

**Objectives:**

1. To utilise forests to protect vulnerable upper watershed and coastal areas from the impacts of climate change.
2. To build the climate resilience of agricultural and urban areas using trees as green infrastructure.

19 **European Commission.** 2013. *Building a Green Infrastructure for Europe.* Belgium, European Union. [Cited 30 July 2020]. [https://ec.europa.eu/environment/nature/ecosystems/docs/green\\_infrastructure\\_broc.pdf](https://ec.europa.eu/environment/nature/ecosystems/docs/green_infrastructure_broc.pdf)

20 **FAO.** 2015. Agroforestry. In *FAO* [online]. Rome. [Cited 30 July 2020]. <http://www.fao.org/forestry/agroforestry/80338/en/>

## Theme 3: Forests ecosystem services for climate resilience

Programmes	Stabilisation of steep slopes	Wetland management	Agroforestry	Urban forestry
<b>Proposed projects and key elements</b>	<p><b>a) Protecting hillsides for slope stabilisation and livelihood development:</b> This project will encourage stabilisation of steep hillslopes using suitable species and techniques to protect biodiversity both above and below ground. It will also support livelihoods (e.g. use of vetiver grass as a soil stabilising species, which also can be used as an NTFP for handicraft production). Stabilisation exercises will focus on the most critical, vulnerable areas within watersheds (e.g. high-risk landslide areas and water abstraction sites). These areas will be mapped in the early stages of any project if the information is not already available. The early stages of this initiative will also include research into the most appropriate mix of species for slope stabilisation. Suitability will not only be based on climate resilience aspects (e.g. drought tolerance) but also variables such as root depth and root volume for maximum stabilisation effectiveness.</p>	<p><b>a) Building the resilience of rivers and riparian zones for source water protection, biodiversity and livelihoods:</b> These areas will be mapped in the early stages of any project if the information is not already available. This project will include riverbank stabilisation utilising suitable climate-resilient plant species for both protection of water supply and water quality. There will be an emphasis on species that have enhanced water filtration capacity (e.g. those with extensive root networks to trap and filter sediments) and those which are known to be efficient at filtering out chemical pollutants. There will be a mix of species used in riverbank stabilisation to not only protect riverine water supply but also enhance biodiversity and improve food security and community livelihoods. The project will promote partnerships with water and electricity authorities which depend on forest ecosystem services for water and hydropower supplies.<sup>21</sup></p> <p><b>b) Managing estuarine and coastal wetlands for climate resilience:</b> This initiative will emphasise community-based approaches to managing coastal wetlands in particular mangrove forests. Wetland rehabilitation will be incorporated as needed. Sustainable harvesting practices will be emphasised (e.g. if the mangroves are being used for charcoal production).</p>	<p><b>a) Bridging protected areas using climate-resilient agroforestry:</b> This project will improve forest connectivity (especially among protected areas) to facilitate species migration. This could include the movement of animal species to cooler or wetter areas. Connectivity will be achieved by promoting agroforestry in agricultural areas between protected areas. It will also focus on agroforestry in protected area buffer zones and integrated plantations for maintaining some level of forest cover around protected areas. The emphasis will be on climate-resilient and indigenous species for use in agroforested areas and, where practical, also species that contribute to food security, sustainable livelihoods and local green enterprises. Technical training will be included in this initiative, focusing on identification of compatible tree and crop species combinations. It can also include identification of trees most suitable for silvipastoral systems. Getting maximum return from the agroforest species is also important (e.g. through marketing of fruits and other products from agroforest tree species).</p>	<p><b>a) Greening urban areas:</b> This project will include:</p> <ul style="list-style-type: none"> <li>• identifying suitable sites and species for urban green spaces;</li> <li>• building awareness and urban community engagement in planting and maintaining trees; and</li> <li>• establishing forest micro-patches in suitable urban sites across the target countries.</li> </ul>

<sup>21</sup> A model for possible regional replication is the "Adopt a River" Programme in Trinidad and Tobago. <http://www.adoptarivertt.com/archived/>

## Theme 3 continued: Forests ecosystem services for climate resilience

Programmes	Stabilisation of steep slopes	Wetland management	Agroforestry	Urban forestry
<p><b>Programme/ Project Implementation:</b></p> <p>Alignment, partnerships and potential funding sources</p>	<p><b>Alignment:</b></p> <p>This programme area is aligned to SDG 6 on water and sanitation, as well as Aichi Target 11 on inland water ecosystems under the CDB given the importance of slope stabilisation/reforestation and afforestation for protection of water supply and water quality. There is also synergy with the SAMOA Pathway.</p> <p><b>Partnerships:</b></p> <p>Key regional partners for this area of work include Caribbean Water and Wastewater Association (CWWA), and the Caribbean Disaster Emergency Management Agency (CDEMA), the latter in terms of disaster (landslide) management. At the national level the government forestry departments and national emergency management agencies would be relevant.</p> <p><b>Funding:</b></p> <p>GEF has been a key funding source for several watershed management projects including those with slope stabilisation aspects. Thus, GEF and also GCF funding streams are relevant to this programme area. Given the link to disaster management, funds under the Caribbean Development Bank's Caribbean Disaster Risk Reduction Fund are applicable as is the Canadian International Development Agency.</p>	<p><b>Alignment:</b></p> <p>As with the previous programme there is strong alignment to SDG 6. It is also linked to the Ramsar Convention on wetlands.</p> <p><b>Partnerships:</b> Key regional partners for this area of work include the CWWA and the Caribbean Institute for Meteorology and Hydrology (CIMH). CANARI's new strategic plan also has a river and watershed management focus and thus that organisation is another potential partner. CANARI also has a strong coastal management focus. At the country level, national water authorities will be key partners in addition to the forestry departments. Fisheries departments will be important in any coastal wetland initiatives. The UN-Environment-CEP is developing a Regional Strategy and Management Plan for mangrove forests and other coastal ecosystems, and thus is another significant partner for any coastal wetland work.</p> <p><b>Funding:</b></p> <p>There have been several GEF-funded watershed management projects in the region and the GEF remains one of the most viable funding streams for watershed and coastal management initiatives. The GCF or AF can also be considered as potential funding sources.</p>	<p><b>Alignment:</b></p> <p>Agroforestry initiatives are aligned to SDGs 1, 2, 13 and 15 as they pertain to reducing poverty, hunger, combatting climate change and protecting life on land respectively.</p> <p><b>Partnerships:</b></p> <p>Key regional partners for this area include the Caribbean Agricultural Research Development Institute (CARDI).</p> <p><b>Funding:</b></p> <p>GEF and GCF funding are applicable to this programme area, the latter as it pertains to climate change mitigation and adaptation.</p>	<p><b>Alignment:</b></p> <p>This programme is strongly aligned to SDG 11 on sustainable communities.</p> <p><b>Partnerships:</b> Key national partners would be the national forestry departments, city borough councils or regional corporations.</p> <p><b>Funding:</b> GCF funding is a strong possibility for these types of projects.</p>

22 **Community Disaster Risk Reduction Fund (CDRRF).** 2020. In *Caribbean Development Bank (CDB)* [online]. St. Michael, CBD. [Cited 30 July 2020]. <https://cdrf.caribank.org/>

23 **Government of Canada.** 2020. *Canada and the World*. In *Government of Canada* [online]. [Cited 30 July 2020]. <https://www.international.gc.ca/world-monde/index.aspx?lang=eng>

#### 5.5.4 Theme 4: Disaster resilience for the forestry sector

The previous themes address adaptation within the forestry sector to slow onset climate change impacts. However, forests are also affected by rapid onset events, specifically the high intensity storms and hurricanes which have been linked to climate change. For example, in Dominica in 2017, Hurricane Maria not only caused massive loss of human life and infrastructure but also island-wide loss of vegetation cover, due to high winds, storm surges, intense precipitation, and ensuing landslides and flooding events. Disaster resilience is therefore a key theme for the climate resilience of Caribbean forestry stakeholders. Disaster management practitioners speak to three stages within the disaster management cycle:

- Disaster preparedness and mitigation (readiness actions taken to plan, prepare for and reduce disaster risks prior to an event);
- Disaster response (actions taken directly before, during or immediately after the event; short term); and
- Disaster recovery and rehabilitation (after immediate response actions are taken; longer term).

Of the above stages, the region's forestry practitioners have indicated that the most relevant for intervention by the forestry sector is the disaster response stage. Specifically, in the days immediately after extreme weather events, forestry actors (forestry departments, CSOs and communities) are often called upon to assist with the removal of downed trees and debris to facilitate access to key infrastructure. Following this, timber salvage becomes important, in particular to provide materials for reconstruction efforts. These activities are generally coordinated by forestry departments and can also be utilised as a short-term employment mechanism for affected communities. Thus, it is important that national forestry departments and other stakeholders have the relevant capacity and access to tools and equipment to execute the activities outlined above.

In terms of the disaster preparedness stage, the development of protocols or plans is important, defining the roles and responsibilities of forestry actors, including coordination within broader national disaster management mechanisms. With regards to the longer-term recovery and rehabilitation stages, regional foresters have recommended that reforestation and rehabilitation programmes should be concentrated in critical areas to protect key infrastructure or vulnerable areas, like steep slopes or riverbanks to help



Figure 10a: Denuded forest in Dominica after the passage of Hurricane Maria in 2017. Figure 10b: Regenerating forest at the same site two years later. Photos: © Claus-Martin Eckelmann

cope with landslides, soil erosion and flooding. Other areas could be left to regenerate naturally<sup>24</sup> especially given that Caribbean forests have a long history of impact and recovery from hurricanes.<sup>25</sup> Any reforestation programmes must also utilise the most appropriate species suited to the geographic locale.<sup>24</sup> They should also be executed in a participatory manner, working with surrounding communities and forest resource users and enterprises to allow the reforestation programmes to serve as social protection programmes for persons whose livelihoods were affected by the hurricanes. Management of wildfires, pests and wildlife in the aftermath of hurricanes are also important. Wildfires are likely given the abundance of debris on the ground. Damaged trunks and branches are susceptible to pests and diseases. Displaced animals

are likely to enter towns and agricultural areas in search of food thus affecting residents and farmers. Measures outlined in Theme 2 would come into play in this scenario.

**Goal:** To build disaster resilience within the Caribbean forestry sector.

**Objectives:**

1. To ensure forestry stakeholders are equipped with the knowledge, tools, equipment and capacity to prepare for, respond to and recover from disasters.
2. To use risk transfer, social protection programmes and other relevant mechanisms to reduce the social and financial impact of disasters on forestry stakeholders.



Figure 11: Forest ecotourism infrastructure is vulnerable to natural disasters and decay and is costly to replace or maintain.

Photo: © Claus-Martin Eckelmann

24 CANARI. 2019. *Report of the regional validation workshop to build climate resilience in the Caribbean forestry sector and associated livelihoods*. Port of Spain, CANARI.

25 Zeng, H.; Chambers, J.Q. & Powell, M. D. 2009. Impacts of tropical cyclones on U.S. forest tree mortality and carbon flux from 1851 to 2000. *Proceedings of the National Academy of Sciences*.

## Theme 4: Forests for disaster resilience

Programmes	Research, assessments and knowledge exchange	Disaster management protocols, plans and frameworks	Tools, equipment and capacity building	Disaster risk reduction for forestry stakeholders
<p><b>Proposed projects and key elements</b></p>	<p>a) Strengthening the knowledge base on response and recovery interventions for the forestry sector: Key activities proposed under this initiative include:</p> <ul style="list-style-type: none"> <li>• holding regional and national fora for disaster management practitioners, foresters, CSOs and forest-based enterprises in target countries. These can be the same fora used for the other themes. Meetings will facilitate knowledge exchange on post disaster recovery practices vis-à-vis for example debris clearance, wildlife and wildfire management; and</li> <li>• synthesising outcomes and outputs of above and conducting additional desk study to produce targeted summary products for specific audiences on sector-specific disaster response and recovery actions.</li> </ul>	<p>a) Developing and updating disaster management frameworks for the forestry sector: Specific activities include:</p> <ul style="list-style-type: none"> <li>• developing a vision and principles for recovery and rehabilitation;</li> <li>• identifying stakeholder roles and responsibilities in response, recovery and rehabilitation;</li> <li>• documenting the role of forestry departments in broader national response and coordination mechanisms for disasters;</li> <li>• using integrated and participatory approaches to recovery and rehabilitation of priority forest sites;</li> <li>• developing and applying procedures for protecting forestry assets (e.g. buildings and equipment, nurseries, saplings); and</li> <li>• developing and applying procedures for mobilising and supporting response needs (e.g. initial repairs to damaged infrastructure, participation in provision of emergency services, clearing debris. etc.).</li> </ul>	<p>a) Building capacity and equipping forestry sector stakeholders with the tools and equipment to aid in post disaster responses: Key activities include:</p> <ul style="list-style-type: none"> <li>• conducting organisational and technical capacity needs assessments of relevant forestry stakeholders and using results to design and implement capacity building programmes for government, civil society and private sector stakeholders to effectively coordinate and implement sector-specific and appropriate disaster response and recovery;</li> <li>• based on assessment results and identification of gaps/needs, conducting technical strengthening of forestry departments and other key partners/ stakeholders; and</li> <li>• determining equipment needs and providing stakeholders especially forestry departments with the physical tools, equipment and materials and storage facilities for implementing practical actions especially during the response stage vis-à-vis:             <ul style="list-style-type: none"> <li>◦ clearing of debris and timber salvage;</li> <li>◦ managing wildfires; and</li> <li>◦ managing displaced wildlife.</li> </ul> </li> </ul>	<p>a) Supporting local forest-based enterprises and CSOs to manage disaster risk and rebuild and recommence their work after disaster events: Specific activities include:</p> <ul style="list-style-type: none"> <li>• devising a mechanism for improving access of CSO groups to insurance, low interest loans and other risk transfer mechanisms;</li> <li>• designing forest-based social protection programmes (e.g. community disaster recovery reforestation programmes focusing on stabilising key vulnerable slopes or riverbanks or windbreaks for agricultural sites); and</li> <li>• building capacity of affected local enterprises to engage in re-building and or exploration of alternate livelihood options/forestry value chains which are less susceptible to disaster impacts.</li> </ul>

## Theme 4 continued: Forests for disaster resilience

Programmes	Research, assessments and knowledge exchange	Disaster management protocols, plans and frameworks	Tools, equipment and capacity building	Disaster risk reduction for forestry stakeholders
<p><b>Programme/ Project implementation:</b> Alignment, partnerships and potential funding sources</p>	<p><b>Alignment:</b> In terms of alignment, the above programmes and projects are aligned at the international level to SDG 13: Take urgent action to combat climate change and its impacts. In particular, this project is aligned to SDG 13 target 13.1: Strengthen resilience and adaptive capacity to climate-related hazards and natural disasters in all countries. Apart from the SDGs these programmes and projects are in synergy with the Sendai Framework for Disaster Risk Reduction (SFDRR) and its priorities of 1) Understanding disaster risk; 2) Strengthening disaster risk governance to manage disaster risk; 3) Investing in disaster risk reduction for resilience and 4) Enhancing disaster preparedness for effective response and to “Build Back Better” in recovery, rehabilitation and reconstruction. In the Caribbean arena, the theme is also aligned with the Regional Comprehensive Disaster Management Strategy and Programming Framework 2014–2024, administered by CDEMA, and the Regional Framework for Achieving Development Resilient to Climate Change, administered by the CCCCC.</p> <p><b>Partnerships:</b> Partnerships with regional agencies coordinating implementation of these regional and international frameworks - i.e. CDEMA and CCCCC - should be considered as funding options for this theme as well as partnerships with these agencies for joint proposals to operationalise the projects under this theme. Other partners for consideration include at the national level: national disaster offices and local government authorities with responsibilities for local planning and disaster preparedness/mitigation, national Red Cross offices. Regionally, the Caribbean Development Bank is a potential partner and funding source (e.g. under the Caribbean Disaster Risk Reduction Fund).</p> <p><b>Funding:</b> Funding mechanisms under these regional and international frameworks should be considered as funding options for this theme as well as partnerships with these agencies for joint proposals to operationalise the projects under this theme. The Canadian International Development Agency is another potential source. Canada has also recently launched a CAD\$20 million Caribbean Resilience Facility initiative<sup>26</sup> to support recovery efforts after extreme weather events. Given the bent of this theme towards disaster “readiness” the theme is suited for a GCF readiness proposal<sup>27</sup>. There is also the Caribbean Catastrophe Risk Insurance Facility (CCRIF SPC) which is a regional insurance facility for which payments to governments are triggered by hurricane and storm-related phenomena (e.g. windspeeds). CCRIF also has smaller scale programmes suitable for resource users and one has been established for small scale fisherfolk that can be a model.</p>			

<sup>26</sup> **Global Facility for Disaster Reduction and Recovery (GFDRR)**. 2020. Canada-Caribbean Resilience Facility (CCRF). In *GFDRR* [online]. Washington. [Cited 30 July 2020]. <https://www.gfdrr.org/en/canada-caribbean-resilience-facility>

<sup>27</sup> **Green Climate Fund (GCF)**. n.d. Process for readiness support. In *GCF* [online]. Incheon. [Cited 30 July 2020]. <https://www.greenclimate.fund/gcf101/empowering-countries/readiness-support>

### 5.5.5 Climate-resilient frameworks, tools and mechanisms

Theme 5 acknowledges that in order to support Themes 1-4, relevant national and regional policies, frameworks, plans, tools and mechanisms are needed. Thus, this theme is focused on creating an enabling institutional environment to mainstream climate resilience into the forestry sector through developing and updating appropriate plans and policies, strengthening the forestry economic knowledge base for decision-making, enhancing capacity to access climate finance and utilising innovative economic tools for sustainable financing of climate resilience initiatives.

Several target countries have indicated the need to develop and update relevant national forestry policies and legislation. In particular, Haiti and Saint Vincent and the Grenadines have signalled interest in developing climate-resilient forest frameworks. These can build on recent work by the Grenada Forestry Department which, in 2018, updated that country's forest policy, strategy and legislation bringing in strong climate change elements into each framework. There is also the revised Jamaica forest policy and master plan which can also be used as a template. Frameworks and mechanisms to address sustainable forest management on private lands are also needed.

Decision-making for the forestry sector should be informed by the recognition of the value of forest resources and forest ecosystem services and conversely, the economic costs of forest degradation to the national economy. These economic values should be incorporated into national accounting processes to create what are termed "environmentally adjusted national accounts". As a first step towards this outcome, economic valuation studies of forest ecosystems are needed. Lessons in executing

these types of studies can be extracted from countries like Grenada, which is currently executing a country-wide national ecosystem assessment, which is, in essence, a nation-wide ecosystem valuation exercise. This Grenadian project also focuses heavily on incorporating the results of the assessment into national decision-making and policy formulation. Ecosystem valuation studies provide data to use when advocating for conservation of forest ecosystems or when seeking greater financial resources to better manage these ecosystems. They can be cited, for example, by forestry departments, to justify requests for larger portions of the national budget. Apart from national budgets, another key need in target countries is building capacity amongst forestry stakeholders to access international climate financing. Other creative ways to garner funding should also be explored, for example, using innovative financing tools like payments for ecosystem services (PES). Examples of PES can be drawn from countries like Haiti where several PES schemes have been designed and implemented, for example, during the first phase of Caribbean funding under the Critical Ecosystem Partnership Fund (CEPF).

**Goal:** To create an enabling environment for building climate resilience in the Caribbean forestry sector.

#### **Objectives:**

1. To develop or update forestry frameworks to be more climate-resilient.
2. To strengthen the economic knowledge base to inform and advocate for funding for the sustainable management of forests.
3. To enhance capacity to access climate finance.
4. To utilise innovative economic tools for sustainable financing of climate resilience initiatives.

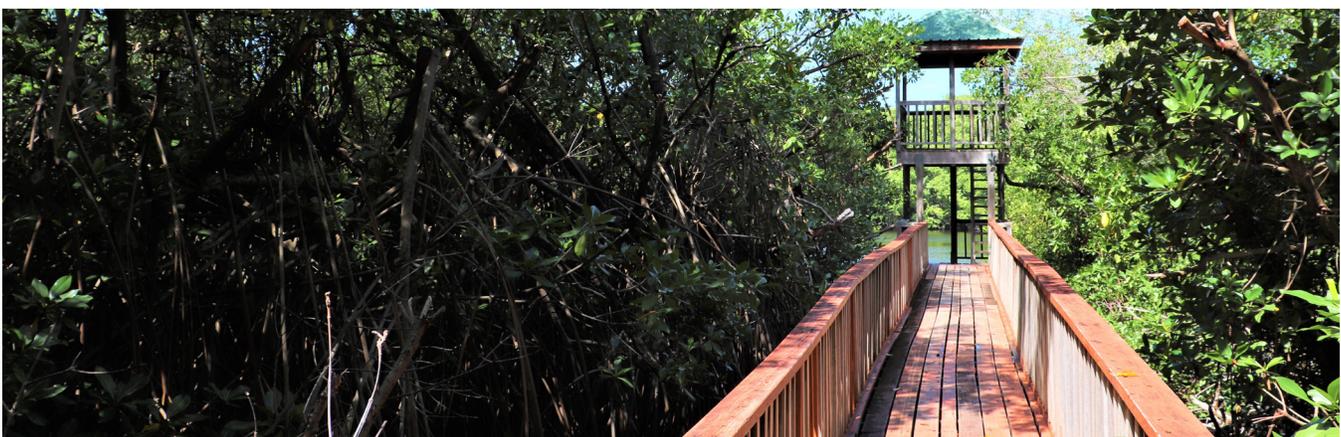


Figure 12: Levera Pond, a protected wetland in Grenada. Photo: © Natalie Boodram

## Theme 5: Frameworks, tools and mechanisms for forests in climate resilience

Programmes	Forestry frameworks	Economic tools and data	Sustainable financing and access to climate finance
<p><b>Proposed projects and key elements</b></p>	<p>a) Climate proofing national and regional forestry frameworks: This initiative will develop or update forest policies, legislation, management plans, etc. to integrate climate resilience and forest-based climate adaptation and mitigation considerations. This project can be applied across multiple countries or for select countries.</p> <p>b) Enhancing climate-resilient forest management on private lands: The technical aspects elaborated on under other themes would apply here. The specific issue addressed under this project will be to develop national mechanisms to extend these forest resilience best practices (from the other themes) to private lands.</p>	<p>a) Mainstreaming forest ecosystem values into national economic decision-making: This project will conduct forest ecosystem valuation studies using best practice methodologies, adapted for the Caribbean context. Apart from traditional scientific methods, this project will incorporate traditional knowledge and participatory approaches. The initiative will also focus on advocacy and mechanisms to integrate the data generated into national accounting processes.</p>	<p>a) Building capacity to access funding for climate resilience and sustainable forest resources management: This project will build the capacity of forestry departments and others in the forestry sector (including CSOs) to better advocate for forestry-based initiatives to be included as key elements in national and regional climate resilience projects and programmes. Capacity building is also needed for these stakeholders to be able to develop projects to access climate financing, including through development of core competencies in proposal writing and project management.</p> <p>b) Implementing innovative sustainable financing schemes: This initiative will replicate successful schemes such as PES. PES and other models that have already been implemented in target countries will be modified as needed for the new contexts. Other mechanisms for funding forest resources management will be examined (e.g. public/private partnerships).</p>
<p><b>Programme/ Project implementation:</b> Alignment, partnerships and potential funding sources</p>	<p><b>Alignment:</b> This programme is heavily aligned with SDG 15 on the sustainable use of terrestrial ecosystems. It is also in synergy with the CBD in particular Aichi Target 5 on forests.</p> <p><b>Partnerships:</b> At the national level, forestry departments would be key partners. Possible regional partners include CANARI which has been active in the natural resources policy, strategy and frameworks arena.</p>	<p><b>Alignment:</b> This programme is heavily aligned with Aichi Target 2 of the CBD, which aims to integrate biodiversity values (including forest biodiversity values into national and local development plans, poverty reduction strategies as well as national accounting and planning and reporting systems.</p> <p><b>Partnerships:</b> Potential partners to work with under this programme area include CARICOM, OECS, UWI, Association of Caribbean States (ACS), CANARI</p>	<p><b>Alignment:</b> There is strong alignment with the CBD Aichi target 20 on resources mobilisation for biodiversity conservation.</p> <p><b>Partnerships:</b> CANARI has been developing a GCF readiness proposal on CSO Access and Readiness for Climate Finance, thus can be a key partner in this capacity building area.</p> <p><b>Funding:</b> Partnerships with and access to funding through the GFFFN are options to consider.</p>

Theme 5 continued: Frameworks, tools and mechanisms for forests in climate resilience

Programmes	Forestry frameworks	Economic tools and data	Sustainable financing and access to climate finance
<p><b>Proposed projects and key elements</b></p>	<p><b>Funding:</b> Funding streams like the current EDF<sup>28</sup> are potential sources for forest policy support. However, it is noted that the current funding cycle (EDF 11) ends in 2020.</p>	<p>and the United Nations Economic Commission for Latin America and the Caribbean (UN ECLAC). These agencies have developed or are developing regional frameworks which speak to natural capital accounting.</p> <p><b>Funding:</b> Funding for ecosystem valuation projects can be channelled through avenues like the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES)<sup>29</sup>.</p>	

28 **Welcomeurope**. 2020. EDF (11th)- European Development Fund. In *Welcomeurope* [online]. Paris. [Cited 30 July 2020]. [https://www.welcomeurope.com/european-funds/edf-11th-european-development-fund-859+759.html#tab=onglet\\_details](https://www.welcomeurope.com/european-funds/edf-11th-european-development-fund-859+759.html#tab=onglet_details)

## 6. Glossary of terms

<b>Agroforestry</b>	Land-use systems and technologies where woody perennials (trees, shrubs, palms, bamboos, etc.) are deliberately used on the same land-management units as agricultural crops and/or animals, in some form of spatial arrangement or temporal sequence. Agroforestry can also be defined as a dynamic, ecologically based, natural resource management system that, through the integration of trees on farms and in the agricultural landscape, diversifies and sustains production for increased social, economic and environmental benefits for land users at all levels. <sup>1</sup>
<b>Biodiversity</b>	The variability among living organisms; this includes diversity within species (genetic diversity), between species and of ecosystems. <sup>2</sup>
<b>Civil society organisations</b>	Include all non-State, not-for-profit structures, non-partisan and non-violent, through which people organise to pursue shared objectives and ideals, whether political, cultural, social or economic. Operating from the local to the national, regional and international levels, they comprise urban and rural, formal and informal organisations. <sup>3</sup>
<b>Climate change</b>	Climate change refers to a change in the state of the climate that can be identified (e.g. by using statistical tests) by changes in the mean and/or the variability of its properties, and that persists for an extended period, typically decades or longer. Climate change may be due to natural internal processes or external factors, or to persistent anthropogenic changes in the composition of the atmosphere or in land use. <sup>4</sup>
<b>Climate change adaptation</b>	Adjustment in natural or human systems in response to actual or expected climatic stimuli or their effects which moderates harm or exploits beneficial opportunities. Basically, these are initiatives and measures to reduce the vulnerability of natural and human systems against actual or expected climate change effects. <sup>4</sup>
<b>Climate change mitigation</b>	The reduction of greenhouse gas emissions by limiting activities or mechanisms that release the gases and/or enhancing activities or mechanisms that remove them. <sup>4</sup>
<b>Climate resilience</b>	The ability of a system, community or society exposed to hazards to resist, absorb, accommodate to and recover from the effects of a hazard in a timely and efficient manner, including through the preservation and restoration of its essential basic structures and functions. <sup>4</sup>
<b>Conservation</b>	The management of human use of nature so that it may yield the greatest sustainable benefit to current generations while maintaining its potential to meet the needs and aspirations of future generations.
<b>Deforestation</b>	The conversion of forest to other land use. <sup>1</sup>
<b>Dry forests</b>	Forest found in dry locales, with a relatively open canopy and high light levels. The trees in this type of forest tend to be short in stature and often shed their leaves during the dry season. Given the location near the coastline, where many development activities occur, this forest type is often severely degraded. <sup>5/6</sup>
<b>Forest</b>	Land spanning more than 0.5 hectares with trees higher than 5 meters and a canopy cover of more than 10 percent, or trees able to reach these thresholds in situ. <sup>1</sup>
<b>Ecosystem</b>	Ecosystems are self-regulating communities of plants and animals interacting with each other and with their non-living environment – forests, wetlands, mountains, lakes, rivers, deserts and agricultural land-scapes.
<b>Enterprise</b>	An enterprise is an organisational unit producing goods or services which has a certain degree of autonomy in decision-making. <sup>7</sup>
<b>Horizontal scaling</b>	The replication of an initiative from one country across other Caribbean countries.
<b>Invasive species</b>	Invasive species are those that are introduced – intentionally or unintentionally – to an ecosystem in which they do not naturally appear, and which threaten habitats, ecosystems, or native species. These species become invasive due to their high reproduction rates and by competing with and displacing native species, that naturally appear in that ecosystem. Unintentional introduction can be the result of accidents (e.g. when species escape from a zoo), transport (e.g. in the ballast water of a ship); intentional introduction can be the result of, for example, importing animals or plants or the genetic modification of organisms.
<b>Livelihoods</b>	Livelihoods comprise the capabilities, assets and activities required for having a means of living. It is a person's means of securing basic necessities. Livelihoods include the concept of well-being and quality of life. <sup>8</sup>
<b>Local green enterprises</b>	Local green enterprises are a smaller niche within the wider grouping of micro and small enterprises. They seek to deliver economic, social and environmental benefits to the communities in which they are found. They are community-owned businesses that are socially conscious and strive to be socially inclusive and deliver benefits to the wider community. <sup>9</sup>

<b>Participatory process</b>	<p>A process that facilitates wide and effective stakeholder participation. Participation in the context of natural resource management can be described as a process that:</p> <ul style="list-style-type: none"> <li>• facilitates dialogue among all actors;</li> <li>• mobilises and validates popular knowledge and skills;</li> <li>• encourages communities and their institutions to manage and control resources;</li> <li>• seeks to achieve sustainability, economic equity and social justice; and</li> <li>• maintains cultural integrity.<sup>10</sup></li> </ul> <p>Various types of participation are distinguished, for example by considering the level of stakeholder involvement in decision-making as a measure of the depth of the participatory process<sup>11</sup> or by classifying types in relation to power issues.</p>
<b>Policy</b>	<p>Policy includes formal policy, laws and regulations and also includes informal policy which may be unwritten rules, guidelines or common practice.<sup>12</sup></p>
<b>Reforestation</b>	<p>Re-establishment of forest through planting and/or deliberate seeding on land classified as forest.<sup>1</sup></p>
<b>Species</b>	<p>A group of organisms capable of interbreeding freely with each other but not with members of other species.<sup>3</sup></p>
<b>Stakeholders</b>	<p>Stakeholders in natural resource management are the individuals, groups and organisations that are involved in or may be affected by a change in the conditions governing the management and use of a resource, space or sector.<sup>13</sup></p>
<b>Sustainable livelihoods</b>	<p>Livelihoods are sustainable when they:</p> <ul style="list-style-type: none"> <li>• Can cope with and recover from stresses and shocks</li> <li>• Do not depend on external support</li> <li>• Do not compromise the productivity of the natural resource base and</li> <li>• Do not undermine the livelihoods of others.<sup>14</sup></li> </ul>
<b>Vertical scaling</b>	<p>The institutionalisation or integration of a successful initiative into a national programme or policy.</p>
<b>Watershed</b>	<p>The land area that drains into a particular watercourse or body of water.<sup>15</sup></p>
<b>Wetland</b>	<p>Areas of marsh, fen, peatland or water, whether natural or artificial, permanent or temporary, with water that is static or flowing, fresh, brackish or salt, including areas of marine water, the depth of which at low tide does not exceed six metres.<sup>16</sup></p>
<b>Wildlife</b>	<p>Living, non-domesticated animals.<sup>3</sup></p>

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- 1 **FAO**. 2015. Agroforestry. In *FAO* [online]. Rome. [Cited 30 July 2020]. <http://www.fao.org/forestry/agroforestry/80338/en/>
  - 2 **Convention on Biodiversity Secretariat**. 2018. Biodiversity Glossary. [Cited 22 September 2018]. <https://www.cbd.int/cepa/toolkit/2008/doc/CBD-Toolkit-Glossaries.pdf>
  - 3 **European Commission**. 2020. Belgium, European Union. [Cited 30 July 2020]. [https://ec.europa.eu/europeaid/sectors/human-rights-and-governance/civil-society\\_en](https://ec.europa.eu/europeaid/sectors/human-rights-and-governance/civil-society_en)
  - 4 **Global Environment Facility (GEF)**. 2020. Documents. In *Global Environment Facility*. Washington, GEF. [Cited 29 July 2020]. <https://www.thegef.org/documents/brochure-nagoya-protocol-implementation-fun>
  - 5 **Beard, J.S.** 1944. The natural vegetation of the island of Tobago, British West Indies. *Ecological Monographs*, 14: 138-161.
  - 6 **Beard, J.S.** 1949. *The Natural Vegetation of the Windward and Leeward Islands*. Oxford, Clarendon Press.
  - 7 **European Commission**. 2019. Glossary: Enterprise. In *Eurostat Statistics Explained* [online]. Belgium. [Cited 22 September 2018]. <https://ec.europa.eu/eurostat/statistics-explained/index.php/Glossary:Enterprise>
  - 8 **Caribbean Natural Resources Institute**. 2011. *Facilitating Participatory Natural Resources Management: A Toolkit for Caribbean Natural Resource Managers*. Laventille, CANARI
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  - 10 **Renard, Y. & Valdés-Pizzini, M.** 1994. *Hacia la participación comunitarian: lecciones y principios guías en el Caribe*. Paper presented at the workshop "Community Participation in Environmental Management and Co-management in the Dominican Republic", 27-29 October 1994, Santo Domingo, CANARI Communication no. 55:8 pp.
  - 11 **Borrini-Feyerabend, G.** 1996. *Collaborative management of protected areas: tailoring the approaches to the context, Issues in Social Policy*. Gland, International Union for the Conservation of Nature (IUCN).
  - 12 **Bass, S., B. Dalal-Clayton & Pretty, J.** 1995. *Participation in strategies for sustainable development*. London, International Institute for Environment and Development.
  - 13 **Geoghegan, T.Y. R. & Brown, N.A.** 2004. *Guidelines for Participatory Planning: A Manual for Caribbean Natural Resource Managers and Planners*. Caribbean Natural Resources Institute Guidelines Series 4. Laventille, CANARI.
  - 14 **CANARI**. 2011. *Facilitating Participatory Natural Resources Management: A toolkit for Caribbean Natural Resource Managers*. Laventille, CANARI
  - 15 **Hassan, R., Scholes, R. & Ash, N.** 2005. Millennium Ecosystem Assessment: Ecosystems and Human Wellbeing. *Current State and Trends Volume 1*. Washington, Island Press.
  - 16 **Ramsar Convention**. 2020. In *Ramsar* [online]. Gland. [Cited 30 July 2020]. <https://www.ramsar.org/>

In 2017, the Food and Agriculture Organization of the United Nations (FAO) entered into a Strategic Alliance with the Caribbean Natural Resources Institute (CANARI) to build the climate resilience of the Caribbean sub-region's forest resources and associated rural livelihoods through the development of a FAO sub-regional strategy, titled the Caribbean Strategy for Climate-Resilient Forests and Rural Livelihoods. This initiative recognised the fact that forests provide critical ecological goods and services within Caribbean islands and that to build climate resilience into the management of Caribbean forests, a cohesive strategy was needed to serve as an overarching programming and investment framework. This document outlines that framework, geared towards mobilising investment for specific priority initiatives for vertical and horizontal scaling of climate resilience actions in the Caribbean forestry sector.