

Saint Lucia's Resilient Ecosystems Adaptation Strategy and Action Plan (REASAP) 2020–2028

Under the National Adaptation Planning Process



United States In-Country National Adaptation Plan (NAP) Support Program

Gift of the United States Government



Implemented by:



Initial funding for the Network also provided by:





Saint Lucia's Resilient Ecosystems Adaptation Strategy and Action Plan (REASAP) 2020–2028

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FOREWORD

Saint Lucia's National Adaptation Plan (NAP) has been defined as a ten year process (2018-2028), consisting of priority cross-sectoral and sectoral adaptation measures for eight key sectors/areas and a segment on the 'limits to adaptation', complemented, incrementally, with Adaptation Strategies and Action Plans for priority sectors/thematic areas. Priority sectors/thematic areas for adaptation action include: Water; Agriculture; Fisheries; Infrastructure and spatial planning; Natural resource management/Resilient Ecosystems (terrestrial, coastal and marine); Education; Health and Tourism. Other key sectors/thematic areas will be identified through a cyclical, iterative NAP process.

Saint Lucia's NAP process is spearheaded by the Sustainable Development and Environment Division (SDED) of the Department of Sustainable Development (DSD), currently housed within the Ministry of Education, Innovation, Gender Relations and Sustainable Development. The NAP process has benefitted from the inputs of multiple stakeholders, comprising public, statutory, academic and private sector bodies. Indeed, this process has involved State and non-State actors, such as media personnel, who play an important role in helping efforts to positively influence thinking, mould outcomes, change behaviour and instigate action across the populace, at all levels.

Saint Lucia's overarching NAP continues to be supplemented by several documents:

- *Saint Lucia's National Adaptation Plan Stocktaking, Climate Risk and Vulnerability Assessment Report*
- *Saint Lucia's National Adaptation Plan Roadmap and Capacity Development Plan 2018-2028*
- *Saint Lucia's Climate Change Communications Strategy*
- *Saint Lucia's Sectoral Adaptation Strategy and Action Plan for the Water Sector (Water SASAP) 2018-2028*
- *Saint Lucia's Sectoral Adaptation Strategy and Action Plan for the Agriculture Sector (Agriculture SASAP) 2018-2028*
- *Saint Lucia's Sectoral Adaptation Strategy and Action Plan for the Fisheries Sector (Fisheries SASAP) 2018-2028*
- *Saint Lucia's Resilient Ecosystems Adaptation Strategy and Action Plan (REASAP) 2020-2028*
- *Saint Lucia's Portfolio of Project Concept Notes for the Water Sector 2018-2028*
- *Saint Lucia's Portfolio of Project Concept Notes for the Agriculture Sector 2018-2028*
- *Saint Lucia's Portfolio of Project Concept Notes for the Fisheries Sector 2018-2028*
- *Saint Lucia's Portfolio of Project Concept Notes for Resilient Ecosystems 2020-2028*
- *Monitoring and Evaluation Plan of Saint Lucia's National Adaptation Planning Process*
- *Guidelines for the Development of Sectoral Adaptation Strategies and Action Plans: Saint Lucia's experience under its National Adaptation Planning Process*
- *Saint Lucia's National Climate Change Research Policy 2020-2030*
- *Saint Lucia's National Climate Change Research Strategy 2020-2030*
- *Saint Lucia's Private Sector Engagement Strategy under its National Adaptation Planning Process (2019)*
- *Saint Lucia's Climate Financing Strategy under its National Adaptation Planning Process (2019)*

This process also supported a climate change website, an animated video and training for government entities and journalists in communicating about climate change. A NAP Assembly and Donor Symposium were also all made possible under this process, through the support of several entities.

Specifically, the process has benefitted from the financial support of the United Nations Development Programme's (UNDP) Japan- Caribbean Climate Change Partnership (JCCCP). Technical and financial support for Saint Lucia's NAP process has also been provided through the United States In-Country NAP Support Programme, implemented by the International Institute for Sustainable Development (IISD). Technical support for the chapter on the 'limits to adaptation' in the NAP was provided under the IMPACT project, funded by the German Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety (BMUB), as part of the International Climate Initiative (IKI). The IMPACT project is jointly implemented by Climate Analytics, the Caribbean Community Climate Change Centre (CCCCC), Secretariat of the Pacific Regional Environment Programme (SPREP) and Charles and Associates (CAA) Inc. The Department extends its thanks to all of the foregoing and takes this opportunity to recognise the consultant, Ms. Clara Ariza, for her work in Saint Lucia's NAP process, under the guidance of SDED.

Saint Lucia looks forward to forging partnerships and alliances that will assist in developing additional adaptation strategies and action plans for key sectors/thematic areas and implementing the measures, programmes, projects and activities outlined in its NAP, adaptation strategies and action plans and other support documents.

Saint Lucia is prepared to welcome support, that is, finance, technology transfer and capacity building, from a variety of sources, including public, private, bilateral, multilateral and alternative sources, all in an effort to help the country build climate resilience and address the seemingly unsurmountable phenomenon of climate change.

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EXECUTIVE SUMMARY

Healthy ecosystems sustain life on Earth and offer goods and services (supporting, provisioning, regulating and cultural) that are essential for the well-being and prosperity of people and nations. These include clean air, fresh water, food, fertile and stable soils, crop pollination, raw materials, aesthetic value, recreational opportunities and protection against the impacts of natural hazards.

Scientific evidence has shown that biodiversity and the health and capacity of ecosystems to perform their functions and provide essential services are interlinked.¹ However, ecosystem degradation and the loss of habitats and species are occurring at an alarming rate worldwide due to human activities. This is a growing global concern, as it is expected that climate change will exacerbate current, and add new pressures to biodiversity and the environment, while heightening the risk of disasters.

In view of increasing climate variability and progressing climate change, investing in the protection, restoration and sustainable management of ecosystems and biodiversity, as part of an overall adaptation strategy, is recognised as a no-regrets, cost-effective resilience-building approach. Ecosystem based Adaptation strengthens the capacity of natural systems to respond to the impacts of climate hazards and allows communities, economic activities and development sectors to rely on ecosystem services to reduce underlying vulnerabilities and to anticipate, cope with and recover from climate impacts.

Saint Lucia's people, identity, culture and economy are very closely associated with the island's terrestrial, coastal and marine ecosystems. Meeting the nation's economic growth and development goals in the near, middle and long-term requires a thorough understanding of existing and emerging challenges to its natural environment. This includes the potential negative ripple effects that environmental damage, triggered by and in conjunction with climate change, can have across development sectors and society groups. It also requires the collaboration of all relevant stakeholders in strategically planning and implementing urgent actions to minimise environmental degradation and to restore, conserve and sustainably manage the country's natural capital to build resilience.

The Government of Saint Lucia recognises climate change as a major national challenge and has taken considerable measures to identify and address, to the extent possible, current and future climate risks at the policy and operational levels.

In 2017, the process of facilitating the integration of climate change adaptation considerations into relevant policies and programmes and into development planning gained impetus through focused efforts on Saint Lucia's National Adaptation Plan (NAP) process. Through the NAP process, initiatives to address critical climate change-related risks and development priorities will take place in an integrated and coordinated manner, utilising existing and future synergies.

Saint Lucia's NAP has been defined as a 10-year process consisting of key cross-sectoral and sectoral adaptation activities, and complemented with Adaptation Strategies and Action Plans for key

sectors/thematic areas, which detail adaptation objectives and priority measures, propose activities and timing for the execution of the measures, and offer project concept notes for implementation.

Saint Lucia's Resilient Ecosystems Adaptation Strategy and Action Plan 2020-2028 (REASAP), presented herein, is the fourth of the NAP's Sectoral Adaptation Strategies and Action Plans that were prioritised in 2017.* It has been designed on a similar temporal framework for the initiation of action to safeguard Saint Lucia's natural capital from the impacts of climate change, while harnessing the country's biodiversity, ecosystems and ecosystem services to reduce vulnerability and build resilience. The Resilient Ecosystems Adaptation Strategy and Action Plan is funded with the support of the U.S. In-Country NAP Support Programme and implemented by the International Institute for Sustainable Development (IISD) and builds on previous efforts and projects. It is the product of in-depth contextual analysis, supported by a multistakeholder consultative process, to define the most adequate and effective solutions to the country's biodiversity, ecosystems, and ecosystem management challenges under a changing climate.

The REASAP consists of 58 adaptation measures deemed critical for strengthening the resilience of natural systems and accelerating the implementation of ecosystem-based adaptation approaches to build climate resilience across Saint Lucia's society. The measures, endorsed by relevant stakeholders, offer solutions to information, technical, institutional, financial, regulatory and policy limitations hampering ecosystem-based adaptation and sustainable ecosystem and biodiversity management. In the REASAP, the adaptation measures are grouped under 6 strategic objectives and contribute to 3 major expected outcomes, namely:

Outcome 1. Enhanced enabling environment for ecosystem-based adaptation and sustainable natural resource management under a changing climate

Strategic objectives:

1. Strengthen the national policy, institutional, legal and regulatory framework (including incentives) to improve natural resource management for securing ecological resilience and ecosystem-based adaptation to climate change.
2. Strengthen environmental research, information generation, knowledge management and monitoring systems for adaptation to climate change.
3. Enhance public awareness and influence behavioural change on the importance of maintaining healthy ecosystems, their biodiversity and services for climate change adaptation and mitigation, while building capacity.

Outcome 2. Enhanced ecosystem integrity for the sustainable supply of essential ecosystem goods and services to society under a changing climate.

Strategic objectives:

1. Enhance the sustainable management (including the conservation, sustainable use and equitable sharing of benefits arising from the use of resources) of critical ecosystems for building resilience to climate change.

* In 2015, a National Adaptation Strategy and Action Plan for the Tourism Sector³ was developed.

2. Address the known drivers of ecosystem degradation.

Outcome 3: Strengthened Ecosystem-based Adaptation and Disaster Risk Reduction

Strategic Objective:

1. Accelerate the use of ecosystem-based solutions to climate change related hazards.

The REASAP provides direction on implementation and funding. In alignment with the NAP Climate Finance Strategy, funding is expected to be derived from national and international sources. Implementation is expected to mostly occur through the inclusion and execution of components and adaptation measures of the Strategy and Action Plan in individual, national and regional development and climate change-focused projects and programmes. The REASAP integrates indicative outputs to facilitate the planning and design of such projects and programmes. To further provide support (finance, capacity building and technology transfer), the document is complemented by various concept notes that are aligned with the outcomes, objectives and measures defined in the REASAP. The concept notes, which will continue to be developed well past the publication of the REASAP, are consistent with the prioritised measures and can be modified or amalgamated as needed, based on the requirements of available funding opportunities.

It is expected that the REASAP offers guidance to environment and development related decision-making processes in Saint Lucia. It targets policy makers and managers in the environment and natural resource-dependent sectors. However, it is highly recommended that during the REASAP's execution, efforts are made to coordinate and collaborate on those actions that directly or indirectly involve the management of ecosystems and biodiversity or natural resource-based value chains that are undertaken in other sectors, by other organisations or across different scales. This will allow for synergies, increase cross-sectoral adaptation benefits and accelerate adaptation action. It will also facilitate the identification and prevention of potential detrimental effects that development actions in other sectors could have on the country's ecosystems and biodiversity under a changing climate.

ACRONYMS

AOSIS	Alliance of Small Island States
CBD	Convention of Biological Diversity
CCAP	Climate Change Adaptation Policy
CITIES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
CO ₂	Carbon dioxide
CMS	Conservation of Migratory Species
CZMAC	Coastal Zone Management Advisory Committee
CZMSAP	Coastal Zone Management Strategy and Action Plan
CZMU	Coastal Zone Management Unit
DoF	Department of Fisheries
DSD	Department of Sustainable Development
EbA	Ecosystem-based Adaptation
EcoDRR	Ecosystem-based Disaster Risk Reduction
EEZ	Exclusive Economic Zone
EnGenDER	Enabling Gender-Responsive Disaster Recovery, Climate and Environmental Resilience
GCF	Green Climate Fund
GCM	Global Circulation Model
GDP	Gross Domestic Product
GIS	Geographic Information Systems
GMO	Genetically Modified Organism
GoSL	Government of Saint Lucia
IAS	Invasive Alien Species
IISD	International Institute for Sustainable Development
IPBES	Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services
IPCC	Intergovernmental Panel on Climate Change
ITPGRFA	International Treaty on Plant Genetic Resources for Food and Agriculture
M&E	Monitoring and Evaluation
MEAs	Multilateral Environmental Agreements
MMAs	Marine Management Areas
MTDS	Medium-Term Development Strategy
NAMAs	Nationally Appropriate Mitigation Actions
NAP	National Adaptation Plan
NAPSAP	National Action Plan and Strategic Action Plan for combating land degradation
NBSAP	National Biodiversity Strategy and Action Plan
NCCC	National Climate Change Committee
NCCPAP	National Climate Change Policy and Adaptation Plan
NDC	Nationally Determined Contribution
NEMS	National Environmental Management Strategy
NEP	National Environmental Policy
NGO	Non-Governmental Organisation
NLP	National Land Policy

NOG-C	National Oceans Governance Committee
RAMSAR	Convention on Wetlands
RCM	Regional Climate Model
REASAP	Resilient Ecosystems Adaptation Strategy and Action Plan
SASAP	Sectoral Adaptation Strategy and Action Plan
SDED	Sustainable Development and Environment Division
SDGs	Sustainable Development Goals
SGD	Saint George's Declaration of Principles for Environmental Sustainability
SIDS	Small Island Developing State
SLNT	Saint Lucia National Trust
SLR	Sea Level Rise
SLNT	Saint Lucia National Trust
SMMA	Soufriere Marine. Management Area
SPAW	Specially Protected Areas and Wildlife
SPCR	Strategic Programme for Climate Resilience
SRES	Special Report on Emission Scenarios
UNCCD	United Nations Convention to Combat Desertification
UNDP	United Nations Development Programme
UNFCCC	United Nations Framework Convention on Climate Change
USD	United States Dollars
WCR	Wider Caribbean Region
XCD	Eastern Caribbean Dollars

1. INTRODUCTION

Healthy ecosystems sustain life on Earth and offer goods and services that are essential for the well-being and prosperity of people and nations. These goods and services include clean air, fresh water, food, fertile and stable soils, crop pollination, raw materials, aesthetic value, recreation opportunities and protection against the impact of natural hazards.

Scientific evidence has shown that biodiversity and the health and capacity of ecosystems to perform their functions and provide essential services are interlinked. It is therefore impossible to have sustainable, productive ecosystems without maintaining biodiversity in the landscape.¹ It is also recognised that well managed and more diverse ecosystems are better able to cope with disturbances such as extreme events and the emergence of diseases. However, ecosystem degradation and the loss of habitats, species and consequently, biodiversity, are occurring at an alarming rate worldwide due to the direct and indirect effect of human activities, including among many others, agriculture and urban expansion; deforestation and forest fragmentation; unsustainable harvest and trade of natural resources (e.g. overfishing); air, land and water pollution and invasive alien species. This is a growing global concern as it is expected that climate change will exacerbate current, and add new, pressures to biodiversity and the environment. This will be to the detriment, not only of nature's intrinsic value, but also of the ecosystem services that people depend upon.

An assessment* that included Caribbean countries and among them Saint Lucia, concluded that under a 'business-as-usual' scenario, climate change will be the fastest growing driver negatively impacting biodiversity by 2050, becoming comparable to the pressures imposed by land use change in the geographic area covered⁴.

Halting and reversing biodiversity loss and ecosystem degradation processes are central to achieving the UN's Sustainable Development Goals (SDGs), the Paris Agreement, the Strategic Plan for Biodiversity 2011-2020, its Aichi Biodiversity Targets, and multiple other international and national development and economic goals and commitments. This can be achieved through the sustainable management of natural resources, guided by policies and investments that a) integrate and, to the extent possible, prioritise the conservation of nature and its benefits over short-term gains and, b) promote the application of nature-based solutions to solve pressing short-term priorities and long-term challenges.

The current prospect of an active 2020 hurricane season, amidst the COVID-19 pandemic offers a stark reminder of the global and local need to address environmental sustainability issues as a cost-effective means of adaptation to climate change. Healthy ecosystems support climate change adaptation and mitigation. Unsustainable ecosystem management (including wildlife management and use) increases the risk of having to address compound crises created by climate change and pandemics, zoonotic diseases and other environmental degradation effects.

* The Regional Assessment Report on Biodiversity and Ecosystem Services for the Americas, launched by the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) in 2018⁴

In view of increasing climate variability and progressing climate change, investing in the protection, restoration and sustainable management of ecosystems and biodiversity as part of an overall adaptation strategy, is recognised as a no-regrets, cost-effective resilience-building approach. Ecosystem-based Adaptation (EbA)* strengthens the capacity of natural systems to respond to the impacts of climate hazards and allows communities, economic activities and development sectors to rely on ecosystem services to reduce underlying vulnerabilities and to anticipate, cope with and recover from climate impacts. Ecosystem-based Disaster Risk Reduction (EcoDRR) and EbA measures can complement or substitute expensive hard infrastructure (such as dykes, dams and river stabilisation structures) while contributing to climate change mitigation and generating livelihood co-benefits. This is particularly beneficial for people whose livelihoods depend on climate-vulnerable ecosystems⁵, including the populations of many Small Island Developing States (SIDS). In Saint Lucia, a SIDS, various initiatives adopting EbA approaches have already been initiated**.

Saint Lucia is highly vulnerable to climate change due to three main conditions: (a) its small geographical area, which accounts for the fact that disasters take on country-wide proportions; (b) its location in an area of volcanic, seismic and cyclone activity; and (c) its dependency on economic sectors that are directly affected by climate variability and change. The vulnerability of the island is expected to increase with time as global temperatures rise, making adaptation to climate change an urgent national priority. Without adaptation, lives and livelihoods will be lost, and climate change could cost the country 12.1% of its Gross Domestic Product (GDP) by 2025, rising to 24.5% by 2050 and 49.1% by 2100⁶. A non-exhaustive list of potential climate change impacts on the country's ecosystems and biodiversity is presented in **Section 7.2**.

Recognising the challenges that climate change poses to its population, natural resources and economy, the Government of Saint Lucia (GoSL) has taken considerable measures to identify and address, to the extent possible, current and future climate risks at the policy and operational level. In 2015, Saint Lucia adopted a revised Climate Change Adaptation Policy (CCAP) and various sectoral

* EbA is defined by the Convention on Biological Diversity (CBD 2009) as “the use of biodiversity and ecosystem services as part of an overall adaptation strategy to help people to adapt to the adverse effects of climate change.

** The EbA is being utilised in a number of initiatives, including, among others listed in Annex 3: (1) The Adapt Action Project in the Organisation of Eastern Caribbean States (OECS), signed by the OECS Commission and “Agence Française de Développement” (AFD) in 2018, to be completed in 2020, inclusive of its EbA sub-component which includes: the elaboration of an OECS consolidated Climate Risk and Adaptation Profile; the elaboration of an OECS Climate Change Adaptation Strategy and Action Plan; the definition of a Monitoring and Evaluation tool for the implementation of the referenced Action Plan; (2) The “Increasing the climate change resilience and public awareness of the Pointe Sable Environmental Protection Area and Pigeon Island National Landmark ecosystems” Project, set to run for three years from 2020; a project of the Caribbean Biodiversity Fund (CBF), co-financed by the International Climate Initiative (IKI) of the German Federal Ministry for Environment, Nature Conservation, and Nuclear Safety through KfW; funded under the EbA Facility which was established in 2016, in support of the CBF, with a focus on supporting effective climate change adaptation measures in the marine and coastal zone.

adaptation strategies that address climate change and a wide range of interventions have been designed or established as adaptation measures through the National Adaptation Plan process, which has been largely facilitated or supported by international donors and development partners.

2. SAINT LUCIA'S NATIONAL ADAPTATION PLAN (NAP) PROCESS

The National Adaptation Plan (NAP) is a new and major government effort to facilitate the integration of climate change adaptation considerations into relevant policies and programmes and into development planning. Through the NAP process, initiatives to address critical climate change-related risks and development priorities will take place in an integrated and coordinated manner, utilising existing and future synergies. Saint Lucia's NAP has been defined as a 10-year process, consisting of priority cross-sectoral and sectoral adaptation activities outlined in the NAP document and complemented with Adaptation Strategies and Action Plans for key sectors/thematic areas (SASAPs). The SASAPs detail adaptation objectives and priority measures and propose activities and timing for the implementation of the measures and offer project concept notes for implementation. The formulation of the NAP and the elaboration of adaptation strategies and action plans for the water, agriculture and fisheries sectors and resilient ecosystems thematic area, have entailed consultations and focus group sessions with a multitude of national and local actors.* More details on the NAP process are presented in the overarching NAP document⁷.

3. THE RESILIENT ECOSYSTEMS ADAPTATION STRATEGY AND ACTION PLAN IN THE FRAMEWORK OF SAINT LUCIA'S NAP

The Resilient Ecosystems Adaptation Strategy and Action Plan (REASAP) has been designed under Saint Lucia's 10-year NAP. It offers a framework for action to reduce the expected impacts of climate change on Saint Lucia's biodiversity, ecosystems and ecosystem services, while promoting the use of EbA and EcoDRR approaches to protect lives, livelihoods and development gains from current and future climate hazards. The REASAP which is part of Saint Lucia's wider policy response to climate change, builds on previous efforts and projects and is the product of highly consultative processes on the NAP, which started in 2017. **The REASAP consists of 58 measures that respond to six strategic objectives and three major outcomes, all aligned with the CCAP's implementation elements (facilitation, implementation and financing).**

The overarching goal of the Resilient Ecosystems Adaptation Strategy and Action Plan is to drive the implementation of effective actions to safeguard Saint Lucia's natural capital from the impacts of climate change, while harnessing biodiversity, ecosystems and ecosystem services to reduce vulnerability and build resilience.

* In 2015, the GoSL developed an Impact Assessment and National Adaptation Strategy and Action Plan for the Tourism Sector³.

3.1 TARGET AUDIENCE

The REASAP will offer guidance to decision-making processes related to climate change adaptation across environment-relevant sectors/thematic areas in Saint Lucia during the next 10 years or so. This includes, among others, decisions on investments and activities on conservation, restoration, sustainable use, management and protection of ecosystems and biodiversity from human and climate-related threats. This is in an effort to promote awareness of ecological resilience and the long-term supply of essential ecosystem goods and services to Saint Lucians, as well as investments in EbA interventions, to employ nature-based-solutions to climate change-related challenges.

The REASAP targets policy makers, natural resource/environmental managers and all GoSL staff who, across sectors, make decisions and undertake projects that may benefit from or affect the country's biodiversity, ecosystems and ecosystem services. It is highly recommended that during the Strategy and Action Plan's execution, the various sectoral agencies coordinate their efforts and collaborate on actions that relate, directly or indirectly, to natural resource/environmental management; even if these are undertaken in specific sectors, by non-environmental organisations and across different scales. This will allow the Government to identify and take advantage of potential synergies and minimise duplication, while increasing cross-sectoral adaptation benefits and accelerating adaptation action. It will also permit identifying and preventing potential detrimental effects that decisions to build ecosystem resilience or to implement EbA could have on other sectors. It could also minimise the effects of other sectors' actions on Saint Lucia's ecosystems and biodiversity, under a changing climate.

As an opportunity for cross-sectoral coordination in adaptation, some measures in this REASAP are recognised as common priorities in the SASAPs for the water, agriculture and fisheries sectors (all launched in 2018). While these concept notes are not repeated here, cross-referencing between various thematic Strategies and Action Plans under the NAP process is recommended in the elaboration of project and programme concepts and proposals submitted to funding agencies.

3.2. SCOPE OF THE RESILIENT ECOSYSTEMS ADAPTATION STRATEGY AND ACTION PLAN

Saint Lucia's REASAP has been designed to:

- Enhance sensitivity and raise awareness about the importance of maintaining Saint Lucia's biodiversity, ecosystems and related services, under a changing climate.
- Reduce Saint Lucia's vulnerability and increase resilience to natural hazards.
- Enhance synergy-building, promote holistic thinking and facilitate informed decision-making across multiple environment-relevant sectors.
- Highlight the fundamental connection between socioeconomic prosperity in the country and environmental well-being.
- Include policy, regulatory and investment priorities that contribute to the REASAP's

overarching goal of safeguarding Saint Lucia's natural resources from the impacts of climate change, while harnessing biodiversity, ecosystems and ecosystem services to reduce vulnerability and build resilience.

- Facilitate a process for adaptation priorities to be defined through a transparent consultation process with the participation of national stakeholders.
- Be implementable by encompassing programmes and projects that are within the implementation and monitoring capacity of the GoSL.
- Be led (implemented and monitored) by identified and committed national institutions.
- Be aligned with national policy and complementary to existing baseline or planned initiatives to minimise duplication and increase efficiency.

Be composed of climate smart investments that can be funded with public resources or through international funding mechanisms. Given the difficulty of consistently monitoring investments by the private sector, civil society and academia, such investments are not included in the REASAP. However, the REASAP promotes projects and programmes that catalyse private-sector investments and increase private-sector participation, consistent with Saint Lucia's Private Sector Engagement Strategy⁸ under its NAP process.

4. METHODOLOGICAL APPROACH AND FORMULATION PROCESS OF THE RESILIENT ECOSYSTEMS ADAPTATION STRATEGY AND ACTION PLAN

Natural resource management (terrestrial, coastal and marine) was prioritised as a sector/area of focus for the development of a SASAP during cross-sectoral and multistakeholder consultations conducted for the formulation of Saint Lucia's NAP in 2017. The water, agriculture and fisheries (food security) sectors were ranked as the most important, leading to the elaboration of their SASAPs in 2018. Next in the ranking were natural resource management (terrestrial, coastal and marine), infrastructure and spatial planning, education and health. Natural resource management, renamed resilient ecosystems*, obtained a high ranking due to its national significance, the repercussions of non-action and the cross-sectoral nature of biodiversity, ecosystems, ecosystem services and their sustainable management.

The formulation of Saint Lucia's REASAP followed an inclusive, participative and interactive approach. It was possible due to the collaboration and inputs of several entities, including, among others: the Department of Sustainable Development (DSD), which leads the coordination of climate change adaptation efforts in Saint Lucia (climate change focal point); its Coastal Zone and Biodiversity Units, the Division of Forest and Lands Resources, in charge of forest and watershed management and the agencies managing issues in oceans, and marine and coastal ecosystems (Department of Fisheries, Department of Environmental Health, the Water Resources Management Agency and the Saint Lucia Air and Sea Ports Authority, SLASPA). The REASAP also used inputs from other institutions engaged in

* Consistent with GCF terminology

natural resource management, such as the Saint Lucia National Trust, the Soufriere Marine Management Association (SMMA) and those received from a broad range of stakeholders, inclusive of the multi-sectoral National Climate Change Committee (NCCC).

In accordance with the Guidelines for the Development of Sectoral Adaptation Strategies and Action Plans (SASAPs)⁹, launched as a complement to the overarching NAP in 2018, the steps followed in the elaboration of the REASAP included:

1. **Review of documentation related to development, natural resources (ecosystems and biodiversity) and climate change**, including policies, plans, strategies, legislation, academic studies and project reports.
2. **Identification of key adaptation measures** through the rigorous review of relevant national documentation, including, but not restricted to the sources presented in **Annex 1**.

An initial list of climate adaptation measures identified as critical to building the resilience of Saint Lucia's ecosystems and biodiversity, as well as for EbA, was compiled from national and international sources. The identified measures encompass technical solutions to current ecosystem and biodiversity-related challenges, as well as actions to close key knowledge, information, technology and policy gaps that hinder the implementation of nature-based solutions to overcoming climate change issues in the country. The identified measures were classified into facilitation, implementation and financing categories, with some also offering clear mitigation co-benefits. These categories and co-benefits align with, and are promoted by the CCAP, Saint Lucia's Nationally Determined Contribution (NDC) and by the NDC Partnership Plan.

3. **Prioritisation of adaptation measures.** The initial set of measures was presented to, refined and ranked by participants from various ministries, the private sector and CSOs, using a multi-criteria approach, during broad-based consultations that took place in September 2018 and online during the months of October, November and December 2018. Online consultations were necessary because a tropical storm on September 27 prevented many of the stakeholders from attending the initially scheduled consultation meeting. During the meetings and online sessions, the participants scored the level of implementation priority (urgency) of each adaptation measure from 1 (low) to 5 (high), according to the following 12 agreed criteria.

Ranking criteria:

1. Relevance and alignment with national and sectoral policies, strategies, plans and legislation
2. Upfront cost of the technologies
3. Implementation, operational and maintenance cost
4. Effectiveness and impact
5. Ease of implementation /feasibility
6. Social acceptability
7. Institutional capacity
8. Size of beneficiary group(s)

9. Potential environmental risks
10. Synergies with other initiatives
11. Sustainability
12. Scalability and replicability

It is worth noting that a weighting of 0.1 (least important) to 1.0 (very important) was attached to each criterion. Using an Excel tool developed by the Department of Sustainable Development, the final score of each adaptation measure was calculated by adding the total scores of the 12 criteria (obtained by multiplying the weighting of each criterion by the score assigned by the group in charge). The Excel tool then categorised the final scores into three groups that determined whether the implementation of each adaptation measure should start in the short-term (2020-2023), medium-term (2023-2026) or long-term (2026-2028), where short-term represents the most urgent.

Meetings with representatives of DSD were held after the broad-based consultation to finalise the wording of the adaptation measures, to incorporate comments received from the participants, and to clarify any inconsistencies. The final list of ranked adaptation measures was used to prepare the REASAP (**Section 10**).

4. **Preparation of the Project Concept Notes.** Participants to the consultation meetings and online consultations were also invited to submit concept notes of proposals relevant to the adaptation measures discussed and scored. The concept notes received were reviewed, and those deemed to be aligned to and fundable under the REASAP were further developed. Where appropriate, concept notes were merged to avoid duplication. The final set of concept notes is presented in **Section 11**.
5. **Formulation and preparation of the first draft document of the REASAP.** The overarching goal, main outcomes and strategic objectives included in the REASAP respond to the main environmental management, EbA and EcoDRR needs identified for Saint Lucia. These were discussed with and agreed by stakeholders during the first broad-based consultation. During the process of elaboration of the first draft of the REASAP, each adaptation measure was included under the most relevant strategic objective. Based on the discussions held, and on solutions presented in previous reports to the specific challenges addressed, activities with potential outputs associated with the prioritised adaptation measures were integrated into the document. The first draft document of the Adaptation Strategy and Action Plan was shared with stakeholders for review in advance of a focused group session to discuss the same. During the validation meeting of the first draft of this document, participants also had the opportunity to comment and, together, further refine the REASAP's main outcomes, strategic objectives and prioritised measures.
6. **Preparation of the second and final versions of the final REASAP document.** The second version of the REASAP document, which integrated the comments received during the validation workshop was submitted to stakeholders for final comments. These were integrated into the document's final version.

5. GENDER CONSIDERATIONS

The UNFCCC calls for gender mainstreaming across all activities involved in the NAP process, with the aim of decreasing gender-based vulnerabilities, promoting gender equality in decision-making and ensuring that the implementation of adaptation measures does not impose additional burdens to women in particular, and does not promote the domination of any gender over others. At the same time, the NAP is an inclusive process that places special attention on increasing the adaptive capacity of vulnerable groups for the planning and implementation of policy and actions to deliver resilience benefits across all levels of society.

There have been some gains in closing the gender gap in some sectors in Saint Lucia; however, gender disparities remain evident. Saint Lucia is doubling its efforts to measure and analyse these gender disparities in an effort to better gender-responsive processes as much in the NAP as in other processes in national development. In relation to gender disparities in employment and education: In 2010, unemployment was about 7% higher in women than men¹⁰; and in 2019, the gender disparities in unemployment rates decreased to 4% (18.9% female and 14.9% male)¹¹. The gender disparities in unemployment, however, do not reflect the gender disparities in educational attainment. In a country where there is equal access to education (Education Act, 1999), men register increasingly lower educational outcomes¹². Notwithstanding this gender disparity in favour of women in education, men are better represented in the labour force than women. Gender inequalities in unpaid family and social work also exist. A UNICEF and UN Women report¹³ revealed that in Saint Lucia, women who are not disabled often care for family members who are. Thus, increased opportunity for disabled people can facilitate and improve women's ability to pursue education and employment¹³.

Occupational sex segregation is another noteworthy challenge. Due to occupational gender stereotypes, men dominate the construction and manufacturing sectors, which incidentally, account for the largest proportion of the national budget (and economic recovery and resilient plan in response to the COVID-19 pandemic)¹⁴, and women are over represented in the service and social sectors, which account for the smallest proportion of the national budget (and economic recovery and resilient plan in response to the COVID-19 pandemic).

Many livelihood activities in the agriculture and fishing industries, such as fishing in the open sea, are dominated by men; however, it is well noted that there are critical roles played by women in the fisheries sector that do not receive due recognition. The development of a gender policy in the fisheries sector is ongoing and should increase women's participation and recognition in that sector. There is an increase in the presence and organisation of women in the agriculture sector, specifically in small-scale farming and agro-processing.

Gender-differentiation of responsibilities in combating biodiversity loss is not very stark in Saint Lucia. Women actively participate in decision making in policies pertaining to biodiversity and ecosystem services and they share access to and benefit from biodiversity. There is an increase in women's enterprises in biodiversity goods, such as sea moss cultivation and production and broom-making¹⁵. Notwithstanding this trend, land ownership continues to be passed on to men as opposed to women

in families and when a couple owns land, it is more frequently in the name of the man as opposed to the woman. This challenges the growth potential of women-owned businesses in agriculture and biodiversity.

Poverty, age, and level of educational attainment as drivers of vulnerability further intersect with gender, and greater attention must be placed on data disaggregation to facilitate a thorough understanding of vulnerability.

As in other Caribbean SIDS, the participation of women in non-elective politics and the civil service has increased in the past years; however, the rate of women in elective politics remains low, never surpassing 27% in recorded history¹⁶. Currently, four out of the 13 ministries in the country are headed by female Ministers, two of whom are elected. There are 13 female Permanent Secretaries and eight males and seven Deputy Permanent Secretaries. It is important to note that among the Ministries headed by women Ministers, most are in service-related fields, in keeping with the burden of care following women from the home into the workplace. The Ministry of Education, Innovation, Gender Relations and Sustainable Development, the Ministry of Tourism, Information and Broadcasting, Culture and Creative Industries with responsibility for Culture and Creative Industries and the Ministry of Health and Wellness are the women-led Ministries in Saint Lucia.

In a promising new observation, leadership in climate change-related policy falls mostly on women: the NAP process has been initiated under the leadership of the Sustainable Development and Environment Division (SDED) of the DSD, housed under the Ministry of Education, Innovation, Gender Relations and Sustainable Development, where the Minister, the Permanent and Deputy Permanent Secretary, the Chief of Department, the Deputy Chief of Department, the Chief Technical Officer and 14 out of 18 of the Division's technical officers are female. Incidentally, the Lead Climate Change Negotiator for Saint Lucia, who also serves as Thematic Coordinator for Loss and Damage for the Alliance of Small Island States (AOSIS) under the UNFCCC; and the SIDS representative on the Executive Committee of the Warsaw International Mechanism for Loss and Damage (currently co-chair), is a Saint Lucian female based within the Division.

In this context, to foster equality in adaptation benefits, Saint Lucia's NAP and associated Adaptation Strategies and Action Plans focus on vulnerable groups. Gender-disaggregated information will be collected and assessed. Although the NAP and SASAPs include activities focusing on women and men generally based on a number of vulnerability factors, they do not identify activities that are specific to either women or men, owing to the lack of data on differential needs. The need for planners and decision makers to understand gender as a dimension to be taken into account in the design, planning and implementation of every project/policy/programme that involves people cannot be overstated. People are not homogeneous, but often, projects/policies/programmes pay greater attention to the product rather than on who is impacted. The gender dimension allows planners and decision-makers to consider who will be impacted even before implementation, noting that who is impacted will determine how they are impacted and what provisions need to be made for their direct benefit.

It is worth noting that Saint Lucia is at a stage where its Gender Relations Department, in developing the national gender equality policy and strategic plan, is working diligently with stakeholders across agencies to better integrate gender considerations in all aspects of planning and implementation. Thematic priorities for the proposed policy identified to date include: Governance, Gender-Based Violence, Health and Climate Change, all geared toward capacity development, strengthening institutional architecture and greater accountability¹⁷. To this end, gender mainstreaming training was initiated (2019) to encourage more gender-responsive planning and budgeting in the country. Further, sector-specific gender assessments are underway, through the assistance of international partners. Efforts are also in the making for more effective gender equality communication and advocacy.

In 2019, a regional project benefitting nine Caribbean countries, including Saint Lucia was launched, entitled: *Enabling Gender-Responsive Disaster Recovery, Climate and Environmental Resilience in the Caribbean (EnGenDER)*. The objectives include:

- Advancing the gender-responsive implementation of National Adaptation Plans (NAPs) and Nationally Appropriate Mitigation Actions (NAMAs) at the sector-level according to national priorities, focusing on sectors that have the greatest beneficial impact for women and girls;
- Supporting the representation of the needs and perspectives of the most vulnerable populations in cross-sectoral, inclusive governance and national climate change planning;
- Building government capacity for gender-responsive inter-sectoral access to climate finance, through innovative solutions;
- Building on the work of other partners at the national level to assist countries develop/strengthen gender-responsive and inclusive national recovery mechanisms and plans.

The EnGenDER project is an ideal starting point for a more substantive gender integration in climate change and should act as a catalyst for the acceleration of gender equality initiatives in Saint Lucia in general.

6. MAIN ECOSYSTEMS IN SAINT LUCIA

Saint Lucia is home to about 1,300 plant species, 160 birds, 250 reef fish and 50 coral species¹⁸ that are distributed along a wide variety of terrestrial and coastal ecosystems. Three of the island's key sectors to the country's economy and livelihoods, tourism, fisheries and agriculture, rely heavily upon these ecosystems. Further, Saint Lucia is home to a number of endemic plant and animal species: 10 plant, 1 mammal, 5 bird, 7 reptile, 1 amphibian, 19 flies and 144 beetle species¹⁹. However, the island has also been colonised by more than 280 plant, 18 large animal and 39 insect invasive alien species¹⁹, some of which are affecting agricultural biodiversity and causing severe losses¹⁸.

At present, habitat modification and destruction and invasive alien species are among the main threats to Saint Lucia's biodiversity and ecosystems. Climate change is another major threat, exacerbating the aforementioned threats, with some already visible impacts on the country's natural resources (see **Section 7.2**) and associated livelihoods.

6.1. COASTAL AND MARINE ECOSYSTEMS

Beaches

Saint Lucia's numerous beaches are among the country's most valued tourism products. They also offer important recreational opportunities for local residents, act as buffers against high winds and waves and provide critical habitat for some species, such as for sea turtles' nesting sites²⁰. In recent years, Saint Lucia, like many of its neighbours, has been impacted by an influx of Sargassum seaweed, which has become a nuisance to residents, nearshore fishers and bathers and beach users. Studies undertaken to date have linked the influx to both climatic and non-climatic factors²¹. Efforts are underway to reap some entrepreneurial benefits from this menace.

Coral reefs, mangroves and seagrass beds along Saint Lucia's coastline form a highly interdependent and valuable coastal and marine ecosystem network that protects and stabilises the islands' shores, provides habitat for marine life, supports productive fisheries and hosts tourism activities.^{22,23} Physical, biochemical and ecological connections exist between these three ecosystems. For example, coral reefs dissipate wave and storm energy and create lagoons and sedimentary environments that are favourable for the growth of mangroves and seagrasses. In turn, mangroves and seagrasses help to bind marine and terrestrial sediments, reducing coastal erosion and also supporting clear offshore waters favourable to corals²⁴.

Coral reefs

About 44% of Saint Lucia's shoreline is protected by 90 km² of narrow fringing and a small number of patch coral reefs.^{22,25} Particularly extensive reefs are found off the south and east coasts of the island while in the west coast, reef communities grow as veneers on volcanic rock²⁵. Coral reefs protect shores, offer recreation opportunities and tourism income and are one of the most productive ecosystems in the Caribbean region²⁰. It is estimated that the potential fisheries yield from coral reefs

amounts to 10 tonnes per km² per year²⁰. However, coral reefs are also extremely delicate and sensitive biological systems, which are threatened in the Caribbean. In Saint Lucia, Tropical Storm Debbie (1994) and Hurricane Lenny (1999) caused extensive landslides, erosion and heavy siltation from runoff. Together, these events resulted in up to 50% coral mortality by sediment smothering on reefs close to Soufriere Bay. Saint Lucian reefs were also heavily affected and bleached by the sedimentation caused by Hurricane Tomas (2010) and by two other large-scale bleaching events recorded in 1998 and 2005. The latter damaged an average of 43.8% of the coral reefs (although less than 5% died)²⁵. Saint Lucia's corals scored 2.8 (out of 5) in the National Reef Health Index, calculated with data from 2011²³. The indicators used for the index show a good coral cover, a fair herbivorous fish biomass, abundant fleshy macroalgae in areas without herbivory (which could be reduced if herbivorous fish were protected) and low commercial fish biomass, although large-sized fish were found in protected areas²³. In terms of ecosystem health, 30% of Saint Lucia's reefs are in good condition and likely to be more resilient to disturbances; 35% of reefs are in 'fair' condition, but may recover if human impacts are minimised; 35% of reefs are in 'poor' condition and may not recover unless human impacts are reduced and key processes restored²³. Studies are still needed to assess the state of reefs in areas where no surveys have been performed²³.

Mangrove forests

Highly productive mangrove forests, consisting of red, black, and white mangroves and buttonwood are found in 14 areas of the island, including the Mankòté Mangrove and Savannes Bay Ramsar Sites, occupying 2.4 km² in total²³. Mangroves play a fundamental role in the Caribbean region's biodiversity and livelihoods. They provide habitat to a number of endangered mammals, reptiles, amphibians, and birds and spawning grounds for fish and shellfish, including many commercial species²⁰. Mangroves trap sediments and thus protect coral reefs, seagrass beds, and shipping lanes from siltation. They also improve water quality and guard shorelines, coastal populations and assets against the impact of water currents, waves, wind and hurricanes.^{20,23} However, mangroves themselves are not unaffected by the high winds and surges; and many mangrove shorelines around the world are subsiding and retreating inland due to development and unsustainable harvesting²².

Seagrass beds

Seagrass beds are common along Saint Lucia's coasts. They cover an estimated area of 37 km² and are more extensive on the eastern and southern coasts, though they exist in protected bays and patches on the west coast²³. In Saint Lucia, these ecosystems are composed mainly of indigenous turtle grass (*Thalassia testudinum*), manatee grass (*Syringodium filiforme*) and, to a lesser extent, shoal grass (*Halodule wrightii*) species²². A known invasive species of seagrass (*Halophila stipulacea*) has been observed in the north of the island, colonising areas that were not previously inhabited by seagrass²⁴. Seagrasses provide habitat to juvenile fish and important commercial species, such as conch and lobster; they are foraging areas for turtles and birds and play a very important role as primary producers in the food chain of reef communities. Seagrass beds actively fixate nitrogen, stabilise the seabed and lower sediment movement in nearshore waters, deterring beach erosion and protecting coastlines during storms. By reducing water turbidity, seagrasses also support recreational activities such as snorkelling²⁶.

Oceans

Saint Lucia's maritime area is extensive with an Exclusive Economic Zone (EEZ) covering 16,000 km², and provides important ecosystem goods and services to the country and beyond. The ocean absorbs heat and carbon dioxide₂, slowing down anthropogenic global warming and offering an invaluable climate regulation service. The ocean plays a pivotal role in Saint Lucia's development and economy. It sustains fisheries and fisheries-associated livelihoods (e.g. through the exploitation of commercially valuable species such as conch) and it is fundamental to the shipping, transportation and tourism (e.g. whale watching and sports fishing) industries. However, ocean biodiversity remains largely unexplored and its economic potential, from sustainable fishing and other uses (e.g. medicinal, commercial) untapped.

6.2. TERRESTRIAL ECOSYSTEMS

Nine natural forest classes and forest-tree plantations occupy approximately 35% of Saint Lucia's landmass²⁴. Forests are very important habitats for wildlife, including pollinators and seed dispersal agents, and offer a multitude of goods and additional services to the country. These include, among others, the provision, protection and regulation of water, including protection from flooding to populations; soil formation and nutrient recycling; prevention of soil erosion and landslides; physical protection against storms and high winds; recreation and tourism opportunities; and climate regulation and carbon capture²⁴. Estimates indicate that in 2009 Saint Lucia's forests stored 3 million tonnes of carbon, with 1.8 million tonnes sequestered within the Forest Reserve²⁷.

The area occupied by multi-purpose forests has grown from 1,700 ha in 1990 to 4,300 ha in 2015, which has caused slow-growing native tree species to be gradually replaced by faster-growth trees, both native and imported¹⁵. In contrast, canopy cover decreased by over 20% between 2000 and 2010 (FRA, 2015) as bare ground, scrub and eroded land expanded¹⁵. While three of the island's forest classes are still well represented (the Lower Montane Rainforest, Montane Rainforest and Cloud Montane Forest), declines have been reported in four forest classes (Semi evergreen Seasonal Forest, Deciduous Seasonal Forest, Mangrove Forest and Freshwater Swamp Forest)²⁴. It should also be noted that only one third of the island's forest area is included in the Government forest reserves, given that most forests are located on private land¹⁵.

6.3. PROTECTED AREAS

Protected areas play a major role for humankind. They maintain species, genetic resources, ecosystems and their services and help preserve cultural heritage. Well managed and connected protected areas can buffer catastrophic events both physically and ecologically and can offer corridors between landscapes that allow plants and animals to move more freely. Protected areas are therefore recognised as important tools for sustainable development, environmental management and climate change adaptation.

In Saint Lucia, there are 42 different protected areas under various national and international denominations, covering 117 km² (19%) of the country's land and 34 km² of its 15,560 km² total marine area²⁸. Among the protected areas, there is one Forest Reserve (the Castries and Dennery Waterworks Reserve and Marquis); one World Heritage Site (Pitons Management Area); two Wetlands of International Importance (RAMSAR sites); nine Marine Managed Areas (MMAs) established since 1973²³; three Protected Landscapes, and a series of Marine Reserves²⁸. Nine additional MMAs, covering 41 km² of ocean have been proposed²³ and, in 2009 a revised Systems Plan for Protected Areas in Saint Lucia was issued (that is still to be adopted). This is intended to create a framework for the designation, protection and effective management of the country's protected areas network²⁹. Protected areas are covered by legislation under the jurisdiction of a number of agencies, including entities with responsibility for fisheries, forests, physical planning, marine management areas, natural and cultural reserves and beaches. Currently, designating a status of protection for a specific area in Saint Lucia is possible under the legal instruments listed in **Box 1**. In addition, there are other draft pieces of legislation with that intention that have not yet been enacted, including the Forest Bill and the Draft Biodiversity Conservation and Sustainable Use Bill.

Box 1. Legal instruments for the designation of protected area status in Saint Lucia

- Forest, Soil and Water Conservation Ordinance Act (1946) with Amendments
- Wildlife Protection Act (1980)
- Fisheries Act (1984)
- National Conservation Authority Act (1999)
- Saint Lucia National Trust Act (1975)
- Revised Physical Planning and Development Act (2001)

6.4. ECOSYSTEM MANAGEMENT ARRANGEMENTS

Currently, there is no institutional coordinating mechanism under a single agency for protected areas management in Saint Lucia. Responsibilities for designating a status of protection for ecologically important areas are divided under various acts and amendments¹⁵. The Division of Forest and Lands Resources is the official body directly responsible for the management of Saint Lucia's Forest Reserves, for oversight of the management of all forests in Saint Lucia, and for the protection and management of Saint Lucia's terrestrial wildlife³⁰. Likewise, the Department of Fisheries is the official body directly responsible for the management of Saint Lucia's Marine Reserves.

The Department of Fisheries and the Forests and Lands Department both have some responsibility for the management of wetlands and mangroves³⁰. Some mangroves along the coast have been declared marine reserves under the Fisheries Act.

The Department of Fisheries, the Department of Environmental Health, the Water Resources Management Agency and Saint Lucia Air and Sea Ports Authority are responsible for different aspects of the management of oceans, marine and coastal ecosystems. Coastal and marine issues are also discussed and agreed by an inter-agency National Oceans Governance Committee (NOG-C), coordinated from the Coastal Zone Management Unit, currently integrated within the DSD.

Plans are underway for the formulation and enactment of environmental management legislation that seeks to include a body with a coordinating role for protected areas.

7. CLIMATE CHANGE CONTEXT

As recognised in Saint Lucia's CCAP³¹, and referenced earlier, the country is vulnerable to climate change due to three main conditions: (a) its small geographical area, which accounts for the fact that disasters take on country-wide proportions; (b) its location in one of the highest-risk areas of the planet, where risks include high volcanic and seismic activity, being situated in the tropical cyclone belts, and direct exposure to the forces of the oceans; and (c) its dependence on few sources of income (the agriculture and tourism sectors) for a substantial part of its GDP. These sources of income have been severely reduced for months on end by single climate-related disasters. Another critical indicator of Saint Lucia's vulnerability, is its limited capacity to reactivate the development process after a devastating extreme weather event³¹.

The cost of inaction on climate change in Saint Lucia has been calculated to be at 12.1% of GDP by 2025, rising to 24.5% by 2050 and 49.1% by 2100⁶. Recent extreme climate events have highlighted the vulnerability of the island to climate hazards and provided an indication of the additional costs that failing to prepare for climate change could represent to Saint Lucia in the future. For example, the impact of Hurricane Tomas (2010) had a total cost of 43.4% of the island's GDP³¹. It caused a total estimated USD 336 million in damage to housing, infrastructure and economic sectors, mainly agriculture and tourism, and claimed seven lives. Also, in 2013, an unseasonal low-level trough system passed over the island and produced greater than 224 mm of rainfall in a matter of 2 to 3 hours. The system impacted 2,600 persons directly, killed six, destroyed 47 homes and caused USD 89.2 million in damage. Additionally, Saint Lucia has experienced drought conditions each year since 2012, resulting from a decline in both the total annual and temporal distribution of rainfall. The entire island has been periodically placed on water rationing³². To facilitate the understanding of the climate challenges Saint Lucia can expect in the coming decades, the following sections present the country's current climate conditions, observed regional climate trends and future climate projections.

7.1. CLIMATE CHANGE PROJECTIONS FOR SAINT LUCIA

Several studies have developed climate change projections for Saint Lucia in recent years.* While using different models, emission scenarios, baseline periods and projection periods, **all projections indicate general trends of increasing mean annual temperatures and decreasing precipitation amounts with climate change in Saint Lucia.**^{32,22,33} For the sake of simplicity, the results of the climate projections produced by CARIBSAVE (2012)³³ for a high emissions scenario (Special Report on Emission Scenarios SRES A2) and relative to the 1979-2009 period, summarised below, indicate that the following could be expected in Saint Lucia:

Mean annual temperature increases in the order of:

0.3 to 0.8 °C by 2020; 0.9 to 1.7 °C by 2050 and 1.8 to 3.1 °C by 2080 (Global Circulation Model, GCM).
2.4 to 3.3 °C by 2080 (Regional Climate Model, RCM).

The frequency of hot days increases between 38 and 54% by 2050 and between 55 and 97% by 2080 (GCM).

The frequency of hot nights increases between 38 and 67% by 2050 and between 55 and 97% by 2080 (GCM).

Cold days and cold nights do not occur at all by 2050 and 2080 according to the GCM models.

Annual precipitation decreases in the order of:

-15 to 4mm by 2020; -19 to 4mm by 2050 and -37 to 6mm by 2080 (GCM).
-11% to -32% by 2080 (RCM).

Sea-surface temperature increases by 0.8 to 3°C by 2080s (GCM).

* In the National Adaptation Strategy and Action Plan for the Tourism Sector (2015),³ the 5Cs and the GoSL present the results of statistical and dynamic downscaling approaches using SRES scenarios (and where possible or available, the IPCC's RCP4.5) for projecting Saint Lucia's temperature and rainfall in the 2031-2040 and 2051-2100 periods relative to the 1961-1990 baseline.

The Third National Communication to the UNFCCC (2017) presents projections of temperature, precipitation and water excess and deficits (P-E) for the 2040-2069 and 2081-2100 periods relative to the 1981-2015 baseline. The projections were obtained using PRECIS-downscaled scenarios of two climate models (HadCM3 and ECHAM5) and one SRES scenario.

In 2012, the CARIBSAVE Partnership published *Climate Change Risk Profile for Saint Lucia*, the most comprehensive climate change projections for Saint Lucia to date. This study generated climate model projections of future scenarios using both a Global Climate Model (GCM) ensemble of 15 models and the Regional Climate Model (RCM), PRECIS downscaled. The RCM was used to provide projections at a finer spatial scale (and thus give a better physical representation of the local climate) than GCMs.

Wind speed increases by 2080 by up to 0.5 m/s (GCM); by up to 0.7 m/s (RCM)

The number of sunshine hours per day increases by roughly 1 hour by 2080 (RCM) due to a reduction in average cloud fraction.

Tropical storms and hurricanes become more intense, but not necessarily more frequent. North Atlantic hurricanes and tropical storms appear to have increased in intensity over the last 30 years. Observed and projected increases in sea-surface temperatures indicate the potential for continuing increases in hurricane activity, and model projections indicate that this may occur through increases in the intensity of events, but not necessarily through increases in the frequency of storms.

The proportion of total rainfall that falls in heavy events decreases, changing by -25% to +2% by the 2080s (GCM).

The rate of **Sea Level Rise (SLR)** is difficult to calculate as new evidence suggests that the contribution of ice sheet melting to global SLR will be greater than considered in the Intergovernmental Panel on Climate Change (IPCC) projections. This increases the range of potential mean SLR in the Caribbean from 0.18-0.56 m (IPCC for an SRES A2 scenario) **to up to 1.45 m by 2100**³⁴, relative to the 1989-1999 baseline. It has been established that in the northern Caribbean, SLR could be 25% higher than the global average due to physical factors affecting land elevation³⁵. The high level of uncertainty in SLR and hurricane intensity creates difficulties in estimating future changes in storm surge height or frequency³⁵.

Ocean acidification increases. It is estimated that under business as usual emission scenarios, the surface waters of the ocean could be nearly 150% more acidic by the end of this century, resulting in a pH that the oceans haven't experienced for more than 20 million years. Currently, ocean acidification is affecting all the world's oceans, including coastal estuaries and waterways³⁶. It could take tens of thousands of years to reverse this process and its implications on marine ecosystems, which are also unlikely to be reversible in the short to medium term (IPCC AR5)³⁷.

7.2. CLIMATE CHANGE IMPLICATIONS FOR SAINT LUCIA'S ECOSYSTEMS AND BIODIVERSITY

From its central mountainous region to the sea, Saint Lucia is rich in plant and animal species and ecosystems, which are interconnected and exposed to the impacts of climate change and human activities. These may impact individual species differently, altering their physiology, life cycles, distribution and the way they interact with other species, with obvious and invisible consequences on the composition, structure and function of ecosystems and on ecological linkages between ecosystems. Climate impacts on any given ecosystem may indirectly trigger changes in other ecosystems, their function and benefits to society.

Saint Lucia's biodiversity, ecosystems and ecosystem services have increasingly experienced the effects of extreme and slow onset climate events, many of which are expected to intensify or become

more frequent with climate change in the coming decades. For example, hurricanes and tropical storms have dramatic changes on the island's beaches and shorelines, with serious implications for coastal flora and fauna¹⁵. As indicated in **Section 6.1**, they have affected coral reefs through the deposition of heavy sediment loads brought by runoff.

In the future, more intense tropical storms, high winds, storm surges and intense rainfall could damage higher ground forests and reduce their ability to stabilise soil, exacerbating erosion, and leading to greater sediment loads reaching the sea, where reduced light intensity and algae overgrowth may reduce the coral reef's ability to cope with other climate change-related stressors.⁷ These include higher sea temperatures and ocean acidification.³⁵ Climate change-induced damage of coral reefs will also have negative impacts on fish nursery habitats²², and could seriously affect the abundance and diversity of reef fish that depend directly on the coral for food, protection, and breeding grounds.^{22,24} By 2050, coral reef damage due to climate change in Saint Lucia could represent a loss of between USD 1.7 and 3.4 billion³⁸.

Through higher temperatures and reduced annual precipitation, climate change is also expected to lead to drier conditions. In response, some ecosystems may shift to higher elevations as their species migrate in search of the climate conditions to which they are better adapted. In this process, the composition and structure of ecosystems may change. Drier and warmer conditions could also reduce forest productivity and cause phenological changes (i.e. early/late flowering, fruiting). These processes are expected to negatively affect biodiversity. Some wildlife species could go extinct while others struggle with the loss of habitat, foraging substrates, and nesting and roosting sites, and become more vulnerable to predation. In addition, drought would likely increase the risk of damaging forest fires, which further weaken the capacity of these ecosystems to deliver their services and recover from other climate and non-climate related pressures (e.g. pest and disease outbreaks and the expansion of invasive species).

Climate change could trigger many other cascading effects on and changes to Saint Lucia's ecosystems and biodiversity. If global climate change mitigation goals are not realised, the capacity of species to adapt to the accelerated change in habitat conditions could be exceeded, leading to increased species extinction and the collapse of ecosystems.* In view of climate change, sustaining healthy ecosystems, promoting the restoration of those that have been damaged and implementing EbA and EcoDRR approaches to build human resilience should be a priority. **Table 1** summarises the main potential impacts of climate change on the island's ecosystems and biodiversity.

* Chapter 15 of Saint Lucia's National Adaptation Plan provides further information on adaptation limits, i.e. the thresholds or tipping points that could be reached when despite best efforts, adaptation is unable to provide protection from climate change and impacts are unavoidable.

Table 1. Potential climate change impacts on Saint Lucia’s ecosystems (terrestrial, coastal and marine), ecosystem services and biodiversity.

Impacts	Repercussions
<p data-bbox="193 344 1102 421">Impacts of more frequent extreme weather events (intense rainfall events, hurricanes, high winds, storm surges)</p> <ul style="list-style-type: none"> <li data-bbox="193 427 1102 504">● Destruction and damage of unique terrestrial animal and plant habitats due to the direct impacts of extreme weather. <li data-bbox="193 504 1102 537">● Increased susceptibility of forest trees to breakage. <li data-bbox="193 537 1102 795">● Damaged and destroyed coral reefs and mangroves due to: <ul style="list-style-type: none"> <li data-bbox="220 577 1102 654">• The impact of high wind speeds and large waves during tropical storms/hurricanes <li data-bbox="220 654 1102 730">• Increased sedimentation/siltation resulting from heavy rainfall (exacerbating soil erosion) inland <li data-bbox="220 730 1102 795">• Contamination from industrial, domestic and farming activities reaching the sea (particularly during flooding and heavy rain events). <li data-bbox="193 795 1102 981">● Declining integrity and health of coral reefs and mangroves will also lead to: <ul style="list-style-type: none"> <li data-bbox="220 835 1102 869">• Loss of fish nurseries and breeding grounds. <li data-bbox="220 869 1102 981">• Reduced protection against extreme winds and storm surges as these ecosystems act as coastal defences for the protection of land-based resources, communities and infrastructure. <li data-bbox="193 981 1102 1057">● Exacerbated soil erosion resulting in increased sediment loads reaching watercourses and the sea, carrying agrochemical residues and other pollutants. <li data-bbox="193 1057 1102 1167">● Higher risk of algal blooms with increasing amounts of nutrients reaching the sea due to both agrochemical residues leaching during intense rains and to the overflow of sewage and greywater during flood events-. <li data-bbox="193 1167 1102 1249">● Increased risk of land slippage, particularly in areas with highly altered ecosystem structure, including those denuded of vegetation. 	<ul style="list-style-type: none"> <li data-bbox="1102 344 1401 1249">● The resilience of Saint Lucia’s natural ecosystems could be compromised with the direct and indirect impacts of climate change. Any decline in the health of the island’s ecosystems will affect the goods and services that they offer, and have a profound effect on the well-being, livelihoods and economy of Saint Lucians. Fresh water, clean air, fertile and stable soils, healthy fisheries, native forest foods, medicines, fibres and wildlife, all depend on healthy ecosystems. Changes in these services could lead to:
<p data-bbox="193 1249 1102 1326">Impacts of higher temperatures, prolonged and intense dry episodes and drought</p> <ul style="list-style-type: none"> <li data-bbox="193 1332 1102 1442">● Changes in ecosystem composition and structure take place as temperatures rise and species migrate in search of the climate conditions to which they are adapted. <li data-bbox="193 1442 1102 1476">● Species distributions change, and some species will be lost. <li data-bbox="193 1476 1102 1552">● Increased risk of forest fires, damaging ecosystems during long dry periods and further weakening their ability to recover. <li data-bbox="193 1552 1102 1957">● Wetlands, watersheds, riparian and freshwater ecosystems and species will be affected by warmer temperatures and reduced stream flows. Increased abstraction of river waters to cover growing freshwater demands could exacerbate the negative effects, which include among others: <ul style="list-style-type: none"> <li data-bbox="220 1704 1102 1780">• Reduced forest productivity and phenological changes (i.e. flowering, fruiting) are to be expected with water stress and higher temperatures. <li data-bbox="220 1780 1102 1856">• Loss of habitat, foraging substrates, nesting and roosting sites for wildlife, increasing their vulnerability to predation. <li data-bbox="220 1856 1102 1890">• Reduced water and food availability for wildlife. <li data-bbox="220 1890 1102 1924">• Alteration in species breeding periods. <li data-bbox="220 1924 1102 1957">• Increase in forest pest and disease outbreaks. 	<ul style="list-style-type: none"> <li data-bbox="1102 1359 1401 1435">● Increased health care costs. <li data-bbox="1102 1469 1401 1612">● Increased exposure to hydrometeorological hazards and risk of disasters. <li data-bbox="1102 1646 1401 1839">● Loss of land productivity and nutrient cycling (and agricultural yields/food security). <li data-bbox="1102 1872 1401 1957">● Reduced climate change adaptation

Impacts	Repercussions
<ul style="list-style-type: none"> ● Reduced vegetation cover will exacerbate soil erosion. ● Reduced stream flows will also facilitate the extension of saltwater intrusion (due to SLR) in low-lying watercourses, with salinity further affecting riparian ecosystems in these areas. ● Forest reserves may face increasing land-use conflicts as coastal populations and activities relocate. ● Reduced reproductive frequency of endangered turtles. Higher beach temperatures may also alter sex ratios in the developing eggs of these species. 	<p>and mitigation options (e.g. planting corals to establish protective reefs for coastlines may not be feasible under high ocean acidification and temperature levels).</p>
Higher sea temperature impacts	
<ul style="list-style-type: none"> ● Coral bleaching will be the most evident impact of increased sea temperature; with bleaching events occurring annually or bi-annually within the next 30 to 50 years, expected to become the key driver of reef decline.²⁶ ● Fish reproduction may be altered by: <ul style="list-style-type: none"> • Changes in breeding patterns • Skewed sex ratios, affecting the ability of fish species to sustain a balanced population ● Migration patterns could change ● Pelagic species may abandon the tropics in search of cooler temperatures. ● Disease transmission could increase with the proliferation of marine pathogens, endangering both sea life and human consumers ● Recent inundations of Saint Lucia's east coast with unprecedented amounts of pelagic Sargassum (<i>Sargassum natans</i> and <i>Sargassum fluitans</i>) 	<ul style="list-style-type: none"> ● Loss of biodiversity and biodiversity-dependent activities (e.g. fishing, honey production, ecotourism). ● Increased opportunities/ conditions for invasive alien species to spread.
Impacts of increased atmospheric carbon dioxide absorption by the ocean (ocean acidification)	
<p>With ocean acidification:</p> <ul style="list-style-type: none"> ● Sea carbonate levels drop, reducing the ability of organisms to form shells and skeletons and triggering other physiological alterations. ● Coral abundance may decrease ● Coral reefs may become too physically weak to sustain the impacts of more intense hurricanes ● The protective function that coral reefs offer to coastlines may be compromised, with serious implications for coastal infrastructure and tourism. ● Survival rates of clams, conch, squid, octopuses and other molluscs may decrease ● Growth rates of echinoderms (sea urchins, sea cucumbers and starfish) may decrease ● Crustaceans (e.g. lobster) may be affected ● The abundance of calcifying algae may be significantly reduced while that of fleshy algae may increase ● Food chains may be affected with the loss of plankton and other species. 	
Sea level rise impacts	
<ul style="list-style-type: none"> ● Inundation and resulting degradation of wetlands and other ecosystems in low-lying areas (e.g. low-lying dry forests). 	
<ul style="list-style-type: none"> ● Increasing seawater intrusion into coastal waterways will affect the composition of freshwater and riparian ecosystems. 	

Impacts	Repercussions
<ul style="list-style-type: none"> ● Beach erosion and the reduction of habitats for animal species, including the loss of turtle nesting sites (a 1 to 2 m increase in sea level could damage 6-10% of the nesting sites). ● Migration or loss of wildlife species from altered habitats. ● Corals that are not able to adapt to deeper depths will be lost. ● Loss of coastal fish breeding and nursery habitats if mangroves are lost due to sea level rise 	

8. ENABLING ENVIRONMENT FOR CLIMATE ADAPTATION ACTION IN SAINT LUCIA'S ECOSYSTEMS AND BIODIVERSITY

The REASAP offers guidance on key investments and capacity building activities (technical, institutional, and regulatory) that will be required to safeguard Saint Lucia's biodiversity, ecosystems and ecosystem services from the impacts of climate change. Furthermore, this will facilitate the implementation of EbA approaches to protect and build the adaptive capacity of Saint Lucia's population, livelihoods, economy and development sectors. The REASAP therefore supports the efforts made by the GoSL to build climate resilience within and across sectors and facilitates the integration of climate change, ecosystems, biodiversity and sustainable natural resource management considerations into development projects and programmes. To achieve this, the REASAP has been formulated in alignment with, and within the framework of, the relevant cross-sectoral and sectoral national development and climate policies, strategies and plans. The process also builds on the progress made in, and the lessons learned from, the implementation of sustainable natural resource management and EbA adaptation projects and programmes already completed in Saint Lucia.

8.1. NATIONAL DEVELOPMENT, CLIMATE CHANGE AND BIODIVERSITY AND ECOSYSTEM MANAGEMENT POLICY AND PLANNING FRAMEWORK

Saint Lucia's development agenda is guided by national policy imperatives and instruments, including the country's Medium-Term Development Strategy (MTDS), annual Budget Speeches, Annual Estimates of Expenditure (Budget) and corporate plans across various ministries³⁹.

In the field of climate change, the country became a party to the UNFCCC in 1993, submitted its Initial National Communication to the UNFCCC in 2001, its Second National Communication in 2012 and its Third National Communication in 2017. Saint Lucia also submitted its first Nationally Determined Contribution (NDC) under the UNFCCC in 2015 and ratified the Paris Agreement in 2016. An NDC Partnership Plan outlining a number of project concepts, was developed and was approved by the Cabinet of Ministers in 2019. Considerable progress has been made in the integration of climate change into national policies. Currently, the Saint Lucia CCAP of 2015 is the most prevalent policy and guidance document on adaptation at the national level. While focusing on adaptation, the CCAP recognises that adaptation actions can have climate change mitigation co-benefits and vice versa. It is

complemented by Saint Lucia's NAP: 2018–2028; Saint Lucia's Sectoral Adaptation Strategies and Action Plans (SASAPs) for Water, Agriculture and Fisheries (2018-2028); the Saint Lucia National Adaptation Plan Roadmap and Capacity Development Plan (2018-2028); the Saint Lucia Climate Change Communications Strategy and the Monitoring and Evaluation Plan of Saint Lucia's NAP process, all launched in 2018. Other important and complementary policy guidance documents are Saint Lucia's Strategic Programme for Climate Resilience (SPCR) of 2011 and the Climate Change Public Education and Awareness Strategy and Implementation Plan of 2014 under the Pilot Programme for Climate Resilience/Disaster Vulnerability Reduction Project.

In addition to being a party to the UNFCCC, Saint Lucia also has varying levels of participation in at least 16 other Multilateral Environmental Agreements (MEAs), which put national environmental protection efforts in sync with international policies and priorities²⁴. Among these are the Convention of Biological Diversity (CBD), the United Nations Convention to Combat Desertification (UNCCD), the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), the Convention on the Conservation of Migratory Species (CMS), the Convention on Wetlands (Ramsar), the International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA), the Convention Concerning the Protection of the World Cultural and Natural Heritage, the Specially Protected Areas and Wildlife (SPAW) Protocol, the Land Based Sources of Marine Pollution Protocol and the Oil Spills Protocol of the Convention for the Protection and Development of the Marine Environment in the Wider Caribbean Region (WCR), also called the Cartagena Convention. Saint Lucia also represents the Caribbean on the Bureau of the Intergovernmental Committee for the Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilisation to the Convention on Biological Diversity and is taking steps towards its ratification. At the national level, 46 laws and regulations define the legal framework for environmental management; and several policies and action plans exist for the protection, management and sustainable use of natural resources²⁴.

Since the adoption in 2002 of the National Climate Change Policy and Adaptation Plan (NCCPAP), the precursor of the CCAP, and of the Saint George's Declaration of Principles for Environmental Sustainability (SGD) in the Organisation of Eastern Caribbean States in 2001, and revised in 2006, Saint Lucia has made efforts to update national natural resource management plans with a focus on climate adaptation and resilience. Among the relevant policy documents and legislation are: the National Environmental Policy/ National Environmental Management Strategy (NEP/NEMS) of 2005, with a revised draft in 2014; the Coastal Zone Management Policy (2004), the draft Systems Plan for Protected Areas in Saint Lucia (2009); the Revised Second National Biodiversity Strategy and Action Plan for Saint Lucia (2nd NBSAP, 2018-2025) of 2019, the draft Saint Lucia Forests and Lands Resources Department Strategy 2015–2025 (2015), the adopted National Land Policy of 2018 and the draft National Ocean Policy and Strategic Action Plan of 2019. Key national development, biodiversity, ecosystems and climate policies, legislation and planning instruments of relevance to the REASAP are listed in **Table 2**. An outline of some of the key pieces can be found in **Annex 2**.

Table 2. Key policy, legislation and planning instruments for the Resilient Ecosystems Adaptation Strategy and Action Plan.*

Policies	
<ul style="list-style-type: none"> • The Saint Lucia CCAP (2015), an update to the National Climate Change Policy and Adaptation Plan (2002) • National Water Policy (2004); under revision • Saint Lucia’s Coastal Zone Management Policy (2004) • National Wastewater Policy and Strategic Plan (2017, awaiting adoption) • National Environmental Policy & National Environmental Management Strategy (NEP/NEMS) (2005, revised draft of 2014) 	<ul style="list-style-type: none"> • National Ocean Policy-Strategic Action Plan- NOP-SAP, (2020) • National Forestry Policy Revised draft (2008) • National Land Policy (2007 - Revised draft of NLP approved in 2018). • National Environmental Education Policy Revised draft (2010) • Agriculture Sector Policy (2009-2015) • Climate Resilient Integrated Watershed Management Framework and Plan for Specific Watersheds Prone to Flooding (2017)
Planning Instruments	
<ul style="list-style-type: none"> • National Vision Plan (2008) • MTDS (finalised in 2020), an update to the MTDS (2012-2016) Sectoral Action Plan • Agrochemical (Pesticide) Hazardous Wastes Management Plan • Revised Tourism Strategy and Action Plan (2020-2030) • National Action Plan and Strategic Action Plan to Combat Desertification and Drought in Saint Lucia (NAPSAP, 2008). • Strategic Programme for Climate Resilience (SPCR, 2011) 	<ul style="list-style-type: none"> • National Biodiversity Strategy and Action Plan (2020) • Saint Lucia’s Coastal Zone Management Strategy and Action Plan (draft of 2008) • Framework for Integrated Environmental Management in Saint Lucia (2005) • System of Protected Areas in Saint Lucia’ plan (1992 revised in 2009, awaiting adoption) • Saint Lucia National Invasive Species Strategy 2012–2021 (2011) • National Competitive Agenda (under development)
Legislation	
<ul style="list-style-type: none"> • Draft Environmental Management Bill (2008) Revised draft (2019) submitted for finalisation to AGs in 2019, awaiting enactment • Climate Change Bill (Revised draft) submitted for finalisation to AGs in 2019, awaiting enactment • National Conservation Authority Act (1999) • Physical Development and Planning Act (2001) • Saint Lucia National Trust Act (1975) • Revised Forest, Soil and Water Conservation Act (1946, amended in 2008) • International Trade in Wild Fauna & Flora Act (2007) • Water and Sewerage Act (2005, revised in 2008) • Water and Sewerage (Water Resource Management) Regulations (2009) • Waste Management Act (2004) • Pesticides and Toxic Chemicals Control Act (2001) • Saint Lucia Solid Waste Management Authority Act (1996) 	<ul style="list-style-type: none"> • Beach Protection Act (1967 and Amendment of 1987) • Land Conservation and Improvement Act (1992) • Wildlife Protection Act (1980) • Maritime Areas Act (1984) • Fisheries Regulations No.9 (1994) • Fisheries Act No.10 (1984) • Public Health Act Chapter 11.01 (1975 revised in 2001) • Public Health (Sewerage and Drainage) Act (Cap 11.02) (1975) • Public Health Regulation Act No.22 (1978) • Tourism Incentives Act (2005) • Tourism Industry Development Act (1982) • Disaster Management Act (2006) • Disaster Preparedness and Response Act (2005) • Saint Lucia Civil Code (2004 Amendment) • Biodiversity Conservation and Sustainable Use Bill (draft)

* This list is indicative only. Drafts have also been listed to give a more complete picture of what has been considered.

8.2. PROGRESS MADE IN THE IMPLEMENTATION OF CLIMATE CHANGE ADAPTATION ACTIVITIES

In addition to the progress made at the policy level, the GoSL has obtained international funding and technical support for the initiation and execution of a wide range of climate change adaptation initiatives (see **Box 2** below).

In the past years, various important projects focusing on or applying EbA approaches have also taken place, with some still ongoing and others approved, but not started. An indicative listing of such projects can be found in **Annex 3**.

The lessons learned from the initiatives implemented have been used to inform the REASAP formulation process.

Box 2. Most common adaptation initiatives undertaken in Saint Lucia between 2012 and 2020.

- Development of climate change legislation;
- Development of sectoral policies, strategies and plans to help build climate resilience;
- Budget reform to better integrate climate considerations;
- Adoption of modern technologies;
- Availability of financing schemes and insurance to increase resilience;
- Provision of incentives that seek to modify behaviour;
- Improved research, data collection and management;
- Development of tools for improved decision making;
- Capacity building in public agencies and specific target groups;
- Institutional strengthening and improved collaboration between agencies;
- Increased public education and outreach.

9. SAINT LUCIA'S RESILIENT ECOSYSTEMS ADAPTATION STRATEGY AND ACTION PLAN (2020-2028)

In the framework of Saint Lucia's NAP process, the REASAP offers guidance on key investments and interventions (technical, institutional, and regulatory) required between 2020 and 2028 to safeguard Saint Lucia's biodiversity and ecosystems from the impacts of climate change and to facilitate the implementation of EbA approaches to protect and build the adaptive capacity of its population, livelihoods, economy and development sectors.

The REASAP has been designed to support the efforts made by the GoSL to build climate resilience within and across sectors and to promote the integration of climate change and environmental considerations into existing and new development projects, programmes and policies. To achieve this, the REASAP has been formulated in alignment with, and in the framework of, the relevant cross-sectoral and sectoral development and climate policies, legislation and public documents. It builds on

the progress made in and the lessons learned from the implementation of ecological resilience, EcoDRR and EbA programmes, projects and activities in Saint Lucia.

This Strategy and Action Plan consists of 58 adaptation measures that are deemed critical to safeguarding Saint Lucia's natural capital from the impacts of climate change while harnessing biodiversity, ecosystems and ecosystem services to reduce vulnerability and build resilience. The measures, endorsed by relevant stakeholders through consultation, offer solutions to information, technical, institutional, financial, regulatory and policy limitations hampering EbA, EcoDRR and sustainable ecosystem management. In the REASAP, the adaptation measures and their indicative outputs are grouped under three major outcomes and six strategic objectives (that contribute to the achievement of the outcomes). All measures, strategic objectives and outcomes directly respond to the key challenges identified for EbA and climate-smart natural resource management. In addition, all measures correspond to one or more of the strategic elements of the CCAP (facilitation, implementation and financing). While it is recognised that some of the adaptation measures contribute to the achievement of more than one objective and more than one outcome, for the sake of simplicity, each measure has been included only once in the REASAP (see **Section 10**).

9.1. STRATEGIC GOAL, OBJECTIVES AND OUTCOMES

The overarching goal of the Resilient Ecosystems Adaptation Strategy and Action Plan is to drive the implementation of effective actions to safeguard Saint Lucia's natural capital from the impacts of climate change while harnessing biodiversity, ecosystems and ecosystem services to reduce vulnerability and build resilience.

To accelerate progress toward the achievement of this goal, the REASAP has defined 6 strategic objectives, grouped under three main outcomes, as follows:

Outcome 1. Enhanced enabling environment for ecosystem-based adaptation and sustainable natural resource management under a changing climate

Strategic objectives:

1. Strengthen the national policy, institutional, legislative framework (including incentives) to improve natural resource management for securing ecological resilience and ecosystem-based adaptation to climate change.
2. Strengthen environmental research, information generation, knowledge management and monitoring systems for adaptation to climate change.
3. Enhance public awareness and influence behavioural change on the importance of maintaining healthy ecosystems, their biodiversity and services for climate change adaptation and mitigation while building capacity.

Outcome 2. Enhanced ecosystem integrity for the sustainable supply of essential ecosystem goods and services to society under a changing climate

Strategic objectives:

1. Enhance the sustainable management (including the conservation, sustainable use and equitable sharing of benefits arising from the use of resources) of critical ecosystems for building resilience to climate change.
2. Address the known drivers of ecosystem degradation.

Outcome 3: Strengthened Ecosystem-based Adaptation and Disaster Risk Reduction

Strategic objective:

1. Accelerate the use of ecosystem-based solutions for climate change related hazards.

9.2. IMPLEMENTATION AND FUNDING OF THE RESILIENT ECOSYSTEMS ADAPTATION STRATEGY AND ACTION PLAN

The Department of Sustainable Development is the country's climate change focal point and also the institution in charge of coordinating, mobilising, supporting, enabling and facilitating efforts in environmental management in the country. In this role and in collaboration with key agencies, the Department of Sustainable Development has led the process of formulation of the REASAP, which will serve as a guide for the planning and implementation of programmes, projects and activities related to climate-smart and sustainable natural resource management and EbA, across the public sector, the private sector, civil society and academia, in an effort to reduce vulnerability and build resilience. The REASAP indicates the agencies with the relevant mandates to lead or co-lead each of the prioritised adaptation measures. Multi sectoral adaptation measures will be coordinated and led by one of the agencies with relevant mandates, working in collaboration with the other relevant agencies. When pertinent and/or necessary, the DSD will lead, coordinate or facilitate the implementation of cross-sectoral measures included in the Resilient Ecosystems Adaptation Strategy and Action Plan.

Among the institutions with relevant mandates for and expected to collaborate, partner and/or take leading roles in the implementation of the prioritised measures included in the REASAP are: the Department of Forests and Lands, the Department of Fisheries, the Water Resources Management Agency, agencies working on ecosystem and biodiversity-dependent sectors*, as well as the Ministry with responsibility for Physical Planning and Development, the Ministry with responsibility for Renewable Energy, the Ministry with responsibility for Infrastructure, the Ministry with responsibility for Agriculture, the Ministry with responsibility for Tourism, the Ministry with responsibility for Economic Planning and Development, and the Ministry with responsibility for Finance. In addition, strong communications and collaboration with the National Climate Change Committee (NCCC), the multisectoral institution in charge of overseeing the implementation of the NAP, will help support and track activities conducted by other public-sector agencies that are relevant and that contribute to

* These agencies include, among others, the Saint Lucia National Trust (SLNT) and the Soufriere Marine Management Association (SMMA).

achieving the objectives and outcomes of this Adaptation Strategy and Action Plan. It is the intention that, further to the collaborative process undertaken to date, this document will be shared and discussed with partner agencies and awareness will be raised on its objectives and planned activities to gain high level buy-in and facilitate the inclusion of the REASAP priorities in cross-sectoral and sectoral policies and budgets, as appropriate.

It is anticipated that the adaptation measures defined under each objective and outcome will start to be implemented during the 2020-2028 period, according to their degree of urgency (short, medium and long-term). However, it is also clear that their implementation will depend on funding, policy and other opportunities opening up during this time; opportunities will be seized for implementation as they arise, cross-sectorally or sectorally.

Given the broad scope of this REASAP, the execution of most of the specific measures is expected to occur as a consequence of their inclusion in projects and programmes funded from both national and international sources. The REASAP includes indicative outputs to facilitate the planning and design of such projects and programmes.

The execution of most actions included in the REASAP relies on the assumption that further to national budgetary efforts that are commensurate with national circumstances, the level of international support that Saint Lucia has received for the development of projects and programmes relating to the protection of its terrestrial, coastal and marine environment will be maintained and that additional climate finance for EbA will be attracted, for example, through the Green Climate Fund (GCF), Adaptation Fund and multilateral and bilateral arrangements. The execution of the REASAP will, nonetheless, require the proactive engagement and time of GoSL staff and potentially, the allocation of new public resources. It is also assumed that, as climate change action is better integrated over time, adaptation will become immersed in all new development projects in these sectors and that the institutions in charge of the country's ecosystems and biodiversity will be able to generate revenues from their regulatory functions (e.g. user fees, royalties, or licences) that can possibly be directed at their operations to help supplement other support received.

In view of the above considerations, it is the intention, in the coming years, and to the maximum extent possible, elements of the REASAP (see **Section 10**) may be integrated into the existing and proposed cooperation programmes of Saint Lucia's bilateral and multilateral partners. To ease this process and facilitate funding the implementation of the REASAP, **Section 11** presents a series of stand-alone project concept notes, which are aligned with specific objectives and measures of the REASAP. These can be presented either on their own or merged and included wholly or as part of broader programmes or projects, to various funding sources. The indicative outputs in the REASAP (**Section 10**) can also be grouped and included in the elaboration of specific programmes and projects, as funding opportunities arise.

9.2. MONITORING AND EVALUATION

The REASAP is a building block in Saint Lucia's NAP process. Therefore, the transparent reporting, monitoring and review of the implementation of adaptation measures in the REASAP are critical to measure and steer the progress of the NAP process. To achieve this, progress made in the implementation of the REASAP will be assessed using the NAP Monitoring and Evaluation Plan⁸, which was developed in 2018 as a supplement of the overarching NAP document for the M&E of the NAP process and associated Adaptation Strategies and Action Plans. This will help to determine corrective actions when changes, due to existing and new circumstances, occur, and facilitate reporting.

It is expected that on a yearly basis, the lead agency or agencies will report to the NCCC on the progress and revisions made to the implementation of the REASAP, for inclusion of the relevant information in the NAP M&E system.

10. ADAPTATION MEASURES

This section presents the adaptation measures for Saint Lucia's REASAP. It has been structured according to the main outcomes and strategic objectives provided in **Section 9**, and suggests the period of execution, or at least initiation, of each adaptation measure (short, medium and long-term) according to the level of urgency established by the stakeholders consulted, with the short-term being the most urgent. While many of the listed measures appear to be in the realm of routine management and development actions, it is noted that failure to implement them will only result in exacerbating the negative impacts of climate change. The REASAP also indicates the element(s) of the CCAP that most accurately correspond to each measure (i.e. facilitation, implementation or finance)* and the key institutions to be involved in the implementation of each adaptation measure. Institutional acronyms are presented in **Annex 4**. It is suggested that the indicative list of past, present and approved projects relevant to adaptation in the sector (in **Annex 3**) is consulted when planning

* Saint Lucia CCAP is supported by three types of adaptation processes (facilitation, implementation and finance).

Facilitation encompasses activities that provide the enabling environment and enhance adaptive capacity; for example, in awareness- and capacity-building, institutional and governance structures, policies and legislative frameworks, fiscal and economic incentives, knowledge management and dissemination and others, thereby improving conditions for the capacities and awareness at all levels of society.

Implementation encompasses activities geared towards building the resilience of households, communities, vulnerable groups, enterprises, sectors and, ultimately, the nation. Implementation measures will therefore be identified at the national and community levels, with regional and international support and backstopping provided through agreed modalities.

Financing options are linked to one or more of the following five categories: 1. Affordable climate change-related loan financing for civil society and the general public; 2. Economic Incentives; 3. Private Sector Financing; 4. International Funding; 5. Mechanisms to realise sustainable financing for climate change adaptation. These options will be supported by an enabling fiscal regime.

projects, programmes and activities to implement the adaptation measures contemplated in this REASAP, in order to ensure that they build on previous outputs and outcomes and facilitate synergy building across sectors and agencies.

OUTCOME 1. ENHANCED ENABLING ENVIRONMENT FOR ECOSYSTEM-BASED ADAPTATION AND SUSTAINABLE NATURAL RESOURCE MANAGEMENT UNDER A CHANGING CLIMATE

STRATEGIC OBJECTIVE 1. STRENGTHEN THE NATIONAL POLICY, INSTITUTIONAL, LEGAL AND REGULATORY FRAMEWORK (INCLUDING INCENTIVES) TO IMPROVE NATURAL RESOURCE MANAGEMENT FOR SECURING ECOLOGICAL RESILIENCE AND ECOSYSTEM-BASED ADAPTATION TO CLIMATE CHANGE

Strategic objective 1. Strengthen the national policy, institutional, legal and regulatory framework (including incentives) to improve natural resource management for securing ecological resilience and ecosystem-based adaptation to climate change					
Prioritised adaptation measures		Period	Indicative outputs	Alignment with the CCAP	Key institutions
1	Pursue the implementation of the National Biodiversity Strategy and Action Plan (NBSAP) to strengthen environmental management for climate resilience.	Short Term (2020 to 2023)	Implementation of the National Biodiversity Strategy and Action Plan initiated	Facilitation	DSD; MoA
2	Finalise, endorse and enact the Biodiversity Conservation and Sustainable Use Bill for securing ecological resilience under a changing climate.	Short Term (2020 to 2023)	Biodiversity Conservation and Sustainable Use Bill, inclusive of enforcement mechanisms, finalised, endorsed, enacted and enforced	Facilitation	DSD; MoA, including DoA, DoFL, DOF
3	Ratify the Nagoya Protocol on Access and Benefit Sharing as an incentive for biodiversity conservation and EbA.	Short Term (2020 to 2023)	Application and requests processed and approvals granted for the ratification of the Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilisation to the Convention on Biological Diversity - Competent National Authority assigned - Nagoya Protocol on Access and Benefit Sharing ratified - Preparation for the inclusion of provisions on Access and Benefit	Facilitation	DSD; MoA

Strategic objective 1. Strengthen the national policy, institutional, legal and regulatory framework (including incentives) to improve natural resource management for securing ecological resilience and ecosystem-based adaptation to climate change

Prioritised adaptation measures		Period	Indicative outputs	Alignment with the CCAP	Key institutions
4	Implement the National Invasive Species Strategy and enact the Invasive Alien Species (IAS) Bill to reduce the significant compounded risk that IAS and climate change pose to Saint Lucia's biodiversity	Medium Term (2023 to 2026)	<ul style="list-style-type: none"> - A plan designed to implement the National Invasive Species Strategy, including activities to: a) build capacities (within responsible institutions and communities), and, b) raise awareness on IAS prevention, eradication and control. The plan should also identify financial mechanisms for its implementation. - The IAS Bill integrating climate change considerations enacted and implemented. 	Facilitation	MoA, including DoA, DoFL, DOF
5	Implement the National Land Policy, inclusive of regulation, monitoring and enforcement of coastal and riverbank setbacks for all types of development to reduce the compound risks of environmental degradation and climate change.	Medium Term (2023 to 2026)	The revised National Land Policy, approved by Cabinet in 2018 is adopted and implemented. As part of the Policy's implementation, projects that prioritise the protection of infrastructure, natural resources and livelihoods from climate change impacts while encouraging the conservation and restoration of ecosystems as natural barriers against climate hazards should be undertaken. This includes, for example, the regulation, monitoring and enforcement of coastal and riverbank setbacks for all types of development.	Facilitation	MoP
6	Enforce the provisions of the Physical Planning and Development Act with penalties for infringement of the act to reduce the compound risks of environmental degradation and climate change.	Medium Term (2023 to 2026)	<p>Assessment of strengths and weaknesses in the enforcement of the Physical Planning and Development Act conducted, inclusive of recommendations for effectiveness.</p> <p>Active enforcement of the Physical Planning and Development Act including penalties for infringement of the Act.</p>	Implementation	MoP
7	Strengthen the implementation of the impact mitigation measures included in environmental and social impact	Short Term (2020 to 2023)	Monitoring and enforcement of impact mitigation measures included in development projects' environmental and social impact assessments (including those measures related to reducing	Implementation	MoP; authorised officers and law enforcement agencies

Strategic objective 1. Strengthen the national policy, institutional, legal and regulatory framework (including incentives) to improve natural resource management for securing ecological resilience and ecosystem-based adaptation to climate change					
Prioritised adaptation measures		Period	Indicative outputs	Alignment with the CCAP	Key institutions
	assessments through appropriate monitoring and enforcement by relevant agencies and developers to reduce environmental degradation and climate change compounded risks.		impacts on coastal ecosystems) strengthened by the relevant agencies and developers.		
8	Accelerate the implementation of the Forest and Land Resources Department Strategy 2015-2025 to strengthen ecological resilience and facilitate EbA actions.	Short Term (2020 to 2023)	Implementation of the Forest and Land Resources Strategy 2015-2025* accelerated, with ground level projects and activities designed and undertaken to implement the Strategy's measures. Emphasis should be placed on projects proposed for the areas/ecosystems prioritised in the third chapter of the Strategy, namely "Protecting water supplies, soils and coastal zones and ensuring resilience to climate change"	Implementation	DoFL
9	Revise, enact and enforce legislation to prohibit deforestation, beach and river sand mining and removal of river stones to protect soils and coasts from erosion under changing climatic conditions.	Medium Term (2023 to 2026)	- Legislation to prevent deforestation, beach and river sand mining revised, approved and enforced. The legislation should include severe penalties for sand mining and for the purchase of illegally mined sand. - Financial mechanisms to cover the costs of surveillance for the legislation enforcement identified, discussed and agreed upon.	Facilitation	DoFL; Mol
10	Develop environmental standards (and limits) for key terrestrial and marine ecosystems separately and establish criteria to guide, within acceptable limits, development	Short Term (2020 to 2023)	- Studies undertaken to identify environmental standards (and limits) for key ecosystems (including forests, beaches and marine ecosystems) and to establish strict criteria for development, restoration and management activities in each ecosystem. The criteria need to apply the precautionary principle (i.e. when in	Facilitation	DoFL; DoF

Strategic objective 1. Strengthen the national policy, institutional, legal and regulatory framework (including incentives) to improve natural resource management for securing ecological resilience and ecosystem-based adaptation to climate change

Prioritised adaptation measures		Period	Indicative outputs	Alignment with the CCAP	Key institutions
	(including economic) activities in these ecosystems to reduce the compounded risk of environmental degradation and climate change.		doubt of potential negative environmental effects, a certain type of development should not take place). - Environmental standards and strict criteria for development, restoration and management activities in Saint Lucia’s key ecosystems established, communicated to all GoSL agencies, developers, contractors and the public and applied.		
11	Regulate and monitor development activities in forests and beach transformation projects, including reforestation and beach nourishment and stabilisation planting projects to reduce the compounded risk of environmental degradation and climate change.	Short Term (2020 to 2023)	- Regulations established for monitoring all development, ecological restoration and management activities undertaken in key ecosystems (including forests, beaches and marine ecosystems). The regulations should specify that the monitoring will be based on the standards and criteria established for each key ecosystem (above). - Dredging, river desilting and riverbank stabilisation maintenance programmes revised, to increase cooperation and utilise synergies between the agencies involved. The revision of the programmes should allow for the incorporation of environmental standards and criteria for these activities (once these have been established).	Facilitation	DoFL; DoF; NCA; MoP
12	Revise dredging, river desilting and riverbank stabilisation maintenance programmes with a view to increasing synergies among relevant agencies, to create progress and to reduce the compounded risk of environmental degradation and climate change.	Short Term (2020 to 2023)		Facilitation	Mol; DoFL
13	Initiate the implementation of coastal management and planning processes that build	Short Term (2020 to 2023)	Implementation of coastal zone management and planning processes included in the NOP SAP initiated.	Facilitation	DSD; DoF

Strategic objective 1. Strengthen the national policy, institutional, legal and regulatory framework (including incentives) to improve natural resource management for securing ecological resilience and ecosystem-based adaptation to climate change

	Prioritised adaptation measures	Period	Indicative outputs	Alignment with the CCAP	Key institutions
	climate resilience and are included in the Strategic Action Plan of the National Oceans Policy (NOP SAP).				
14	Establish, create awareness of and enforce a series of beach use regulations for protecting beach and marine habitats and wildlife against pollution, disease and degradation and improve their ability to recover from climate impacts.	Medium Term (2023 to 2026)	<p>- Beach use regulations inclusive of enforcement provisions, formulated and approved. The regulations should include:</p> <ul style="list-style-type: none"> a) Conditions for the presence of domestic animals on beaches (dogs on leashes, faeces collection obligatory). b) Horse riding permission only at specified times on specified beaches. Absolutely no racing or farm animals allowed. c) Conditions for holding public events on beaches (whether or not they are for profit). 	Facilitation	NCA; DoF; DSD
15	Clarify, or establish where needed, the roles and responsibilities of the different agencies involved in beach management to reduce environmental degradation and improve collaboration for climate-resilient actions in these environments.	Short Term (2020 to 2023)	<ul style="list-style-type: none"> d) Detailed conditions for the placement of temporary structures e) Sand mining prohibition. f) Strict fines for littering and sand mining g) Prohibition of vehicular traffic on beaches, including motor bikes, scooters, ATVs. h) Conditions for the use of lights on beaches, especially during the marine turtle nesting season. <p>To facilitate the regulations enforcement, provisions could be made for:</p> <ul style="list-style-type: none"> a) Charging fees for the use of beaches for public events, whether or not they are for profit b) Creating the position of “beach warden”, and deploying wardens to patrol all beaches (giving varying emphasis per beach). c) Placing signage on the majority of the beaches, informing the public of beach regulations and fines. 	Facilitation	DoF; NCA

Strategic objective 1. Strengthen the national policy, institutional, legal and regulatory framework (including incentives) to improve natural resource management for securing ecological resilience and ecosystem-based adaptation to climate change

Prioritised adaptation measures		Period	Indicative outputs	Alignment with the CCAP	Key institutions
			<p>However, the regulations should also take into consideration the livelihoods of local communities and groups who depend on economic activities that take place at the beaches.</p> <p>- Clarify, agree on and communicate with all relevant agencies the roles and responsibilities of the different entities involved in beach management. This includes, among other issues, beach use and development and environmental monitoring (including data collection).</p>		
16	Finalise, endorse and initiate the implementation of the Systems Plan for Protected Areas in Saint Lucia to secure the sustainable provision of essential ecosystem services under a changing climate	Medium Term (2023 to 2026)	<p>-Systems Plan for Protected Areas in Saint Lucia (covering all habitat types in the country) finalised and approved by Cabinet.</p> <p>- Implementation of the Systems Plan for Protected Areas initiated.</p> <p>- Assessment to determine among various alternatives the best governance system for an island-wide network of protected areas (e.g. various agencies with clear roles and responsibilities, a single entity working in collaboration with partner agencies or an alternative system).</p>	Facilitation and implementation	NCA; DoF; DoFL; DSD; SLNT
17	Develop, approve and promulgate legislation to establish a network of protected areas island-wide under a clear and agreed governance system to secure the provision of essential ecosystem services under a changing climate	Medium Term (2023 to 2026)	<p>- Legislation to establish an island-wide network of protected areas covering all habitat types in the country developed based on:</p> <ol style="list-style-type: none"> a) The Systems Plan for Protected Areas; b) The suggestions provided in the Saint Lucia Forests and Lands Resources Strategy 2015-2025. 	Facilitation	DoF; DoFL; WRMA; MoP; NCA; SLNT, SMMA

Strategic objective 1. Strengthen the national policy, institutional, legal and regulatory framework (including incentives) to improve natural resource management for securing ecological resilience and ecosystem-based adaptation to climate change

Prioritised adaptation measures		Period	Indicative outputs	Alignment with the CCAP	Key institutions
			<ul style="list-style-type: none"> - Mandate for the entity/entities (identified in the governance assessment above) to lead the island-wide network of protected areas drafted and agreed by all relevant agencies and included in the pertinent legislation (above). - Legislation enacted and implemented. 		
18	Promote sustainable land use through incentives to restore, conserve the integrity of and build the resilience of natural ecosystems.	Short Term (2020 to 2023)	<ul style="list-style-type: none"> - The most effective incentives (e.g. compensation/benefit packages) for private and community-based ecosystem restoration and conservation programmes identified. - Incentives programme inclusive of a financial strategy (e.g. public-private partnerships with utility companies) designed, established, promoted and implemented under the coordination of the relevant GoSL agencies. 	Facilitation and Finance	MoP; MoA, including DoA, DoFL, WRMA
19	Regulate and enforce the protection of wetlands, including mangroves, in public and private land under the most appropriate and effective form of management and develop a Mangrove Management Strategy and Action Plan to ensure that these ecosystems continue providing essential services under a changing climate	Medium Term (2023 to 2026)	<ul style="list-style-type: none"> - Review of best practices on wetland management (institutional and operational) in the country and in other countries in the region undertaken to identify the most appropriate management scheme for Saint Lucia’s wetlands. - Review of the national legal and regulatory framework to identify gaps and obstacles for the protection of wetlands from development in Saint Lucia (both in private and public land). The review should provide suggestions for the formulation of wetland-specific regulations - Legislation and regulations (inclusive of enforcement mechanisms) formulated, enacted and approved for the unified management of wetlands, with provisions for their protection 	Facilitation and implementation	DoFL; DoF; MoP; DSD

Strategic objective 1. Strengthen the national policy, institutional, legal and regulatory framework (including incentives) to improve natural resource management for securing ecological resilience and ecosystem-based adaptation to climate change

	Prioritised adaptation measures	Period	Indicative outputs	Alignment with the CCAP	Key institutions
			<p>from being earmarked for development. The formulation of these documents should use the recommendations from the reviews proposed above.</p> <p>-A Wetlands/Mangroves Management Strategy and Action Plan, formulated and endorsed. The elaboration of this strategic and planning document should take into consideration the best practices identified in the review (above).</p> <p>-Implementation of the Wetlands/Mangroves Management Strategy and Action Plan initiated</p>		

STRATEGIC OBJECTIVE 2. STRENGTHEN ENVIRONMENTAL RESEARCH*, INFORMATION GENERATION, KNOWLEDGE MANAGEMENT AND MONITORING SYSTEMS FOR ADAPTATION TO CLIMATE CHANGE

Strategic objective 2. Strengthen environmental research, information generation, knowledge management and monitoring systems for adaptation to climate change					
Prioritised adaptation measures		Period	Indicative outputs	Alignment with the CCAP	Indicative lead institutions
20	Finalise and commence implementation of Saint Lucia's Climate Change Research Policy and Strategy, inclusive of research considerations pertaining to resilient ecosystems and EbA	Short-term (2020 to 2023)	Implementation of the environmental considerations included in Saint Lucia's Climate Change Research Policy and Strategy initiated	Facilitation and Implementation	DSD; other agencies with the mandate and authority for the particular thematic area of research
21	Map and zone all forests and marine ecosystems to enable the monitoring of changes due to climate change	Short Term (2020 to 2023)	Design, establish and initiate, in agreement with the relevant agencies, a program for the generation and centralised management of environmental data and information in Saint Lucia. The program components should encompass: a) the generation of detailed protocols and tools, including an adequate Geographic Information System (GIS) for mapping Saint Lucia's ecosystems (e.g. forests, wetlands, coastal and marine ecosystems), biodiversity (at the species level and including IAS), ecosystem goods and services, protected areas, management areas (e.g. fishing grounds), hazards (including climate change-related hazards). The GIS system should be able to accommodate layers with infrastructure, socioeconomic indicators and other information	Implementation	DoF; DoFL; MoP
22	Generate Biodiversity mapping tools for mapping species, vulnerable areas and hazards, including climate change-related hazards and accounting for species which are endangered, at risk, recovering and thriving.	Short Term (2020 to 2023)		Implementation	DSD; MoA; MoP

* Saint Lucia has developed a Climate Change Research Policy and Strategy, which includes research considerations pertaining to resilient ecosystems and EbA.

Strategic objective 2. Strengthen environmental research, information generation, knowledge management and monitoring systems for adaptation to climate change					
Prioritised adaptation measures		Period	Indicative outputs	Alignment with the CCAP	Indicative lead institutions
23	Elaborate detailed hazard maps, including meteorological hazard maps for forests and the coastal region	Short Term (2020 to 2023)	coming from individual projects and support monitoring and reporting efforts.	Implementation	DoF; DoFL; DSD; MoP; NEMO
24	Collect, standardise and centralise high quality biodiversity and ecosystem data (e.g. to monitor ecosystem changes due to climate and other factors)	Short Term (2020 to 2023)	b) the generation of data collection, standardisation and quality review protocols to enhance the quality of the data/indicators uploaded and processed on the GIS system (and other appropriate data and information storage infrastructure) to facilitate monitoring and assessment of changes in environmental parameters and over time (e.g. ecosystem degradation, change in species ranges). An effort should be made in the identification of adequate key indicators for monitoring individual key ecosystems, environmental processes (e.g. ecosystem health and other indicators), hazards and environmental vulnerability.	Implementation	MoA, including DoA, DoF, DoFL; DSD
25	Upload biodiversity and ecosystems information and data on the identified most suitable centralised data storage system(s) to monitor changes in the conservation status of individual species, enhance protection measures and support EbA and other climate adaptation efforts	Short Term (2020 to 2023)	c) the design, testing and implementation of monitoring and reporting protocols for each ecosystem, including a comprehensive integrated monitoring and reporting mechanism on the state of the environment within the country's marine jurisdiction d) the generation and uploading of updated biodiversity data (including missing baseline data) and information on the identified most suitable centralised system(s) for storing curated biodiversity and ecosystems data	Implementation	DSD
26	Use available data to develop decision making software/tools integrating climate change considerations, to inform national decisions.	Short Term (2020 to 2023)	e) generation of updated environmental hazard maps for forests and the coastal region	Implementation	DSD; MoA, including DoA, WRMA, DoF, DoFL

Strategic objective 2. Strengthen environmental research, information generation, knowledge management and monitoring systems for adaptation to climate change					
Prioritised adaptation measures		Period	Indicative outputs	Alignment with the CCAP	Indicative lead institutions
27	Map and digitise Saint Lucia's maritime jurisdiction	Medium Term (2023 to 2026)	f) the design, testing and training on the use and implementation of decision-making tools (including software-based tools) for the sustainable management of biodiversity, ecosystems and ecosystem services. The tools should include updated socio-environmental parameters (including climate change and other hazards affecting people and the environment) to guide the work of natural resource managers and inform national development and economic decisions.	Implementation	SLASPA, DSD, MoP, OECS-C
28	Design and implement a comprehensive integrated monitoring and reporting mechanism on the state of the environment within the country's marine jurisdiction in alignment with indications of the National Oceans Policy	Short Term (2020 to 2023)		Implementation	DSD; DoF
29	Increase capacity development in sustainable natural resource and EbA management (e.g. monitoring, reporting, data collection and analysis, education, conservation, research)	Short Term (2020 to 2023)	<p>- Capacity development programme on sustainable natural resource management and EbA for GoSL officers designed and implemented. The programme could be designed as a series of short courses and encompass, among other topics: Fundamentals on ecosystems, biodiversity, ecosystem services and their management; EbA and conservation notions; environmental monitoring, and data collection processes; community engagement and participation in EbA and sustainable natural resource management.</p> <p>- Sector specific messages to encourage community participation in natural resource management and EbA defined and disseminated, following the suggestions of Saint Lucia's Climate Change Communications Strategy (2018)</p>	Implementation	DSD; DoFL; DoF

Strategic objective 2. Strengthen environmental research, information generation, knowledge management and monitoring systems for adaptation to climate change

	Prioritised adaptation measures	Period	Indicative outputs	Alignment with the CCAP	Indicative lead institutions
			<ul style="list-style-type: none"> - Implementation of Saint Lucia’s Climate Change Adaptation Research Policy and Strategy initiated , in collaboration with the relevant agencies and addressing crucial environment-related knowledge gaps for adaptation decision-making. 		
30	<p>Improve and continue the monitoring and reporting water quality island-wide. This includes monitoring the quality of river waters, recreational waters, coastal surface waters (and the monitoring of sedimentation in outflowing rivers, wetlands and bays)</p>	<p>Short Term (2020 to 2023)</p>	<ul style="list-style-type: none"> - Plan for strengthening water resource monitoring in Saint Lucia formulated and including a) an analysis of existing technical, financial, infrastructural (equipment) and logistical and limitations in the Water Resource Monitoring Program; b) an analysis of the cost-effectiveness of re-establishing the Water Testing Laboratory vs. other alternatives and, c) implementation mechanisms (including funding sources) and timeline for action. - Capacity building activities to strengthen the identified technical weaknesses in water monitoring delivered. - Constant water quality assessments of all water bodies through continuous monitoring and reporting 	<p>Facilitation and implementation</p>	<p>WRMA; DoFL</p>
31	<p>Create water quality standards and monitoring protocols to guide mariculture projects and the development and expansion of the marine-related cottage industry taking climate change into consideration</p>	<p>Short Term (2020 to 2023)</p>	<ul style="list-style-type: none"> - Water quality standards and monitoring protocols for mariculture and the marine-related cottage industry developed and approved. - Standard enforcement mechanisms formulated and implemented. 	<p>Facilitation and implementation</p>	<p>WRMA; DoF</p>

Strategic objective 2. Strengthen environmental research, information generation, knowledge management and monitoring systems for adaptation to climate change					
Prioritised adaptation measures		Period	Indicative outputs	Alignment with the CCAP	Indicative lead institutions
32	Assess and determine the carrying capacity of forest reserves, beaches, reefs and offshore islands to guide decision making under a changing climate	Medium Term (2023 to 2026)	- Study undertaken to assess the carrying capacity of key ecosystems and areas of environmental importance (e.g. forest reserves, beaches, reefs and offshore islands) in Saint Lucia. The study should consider current use and climate change projections to provide medium and long-term management recommendations for those ecosystems/locations (e.g. regarding tourist activities).	Facilitation and implementation	DoF; DoFL; NCA; SLNT
33	Regulate tourism to reduce the risk of ecosystems exceeding their carrying capacity, suffering degradation, and becoming more vulnerable to and less able to deliver essential ecosystem services due to climate change	Medium Term (2023 to 2026)	- Regulations formulated, approved and enforced to restrict the use of ecosystems found in the study to be at risk of exceeding their carrying capacity and thus of being degraded and losing their services in the short to long term (e.g. regulating tourism and tourist activities, including sport fishing in areas at risk). - Alternative, profitable and environment-friendly/neutral tourism options (including eco-tourism) and their financing mechanisms (e.g. fiscal incentive programmes) identified and their implementation initiated.	Facilitation and implementation	
34	Promote and facilitate local, regional and international research within key ecosystems in Saint Lucia (e.g. mangroves) to monitor changes in their ecological functions, identify the contribution of different threats (including climate change) to those changes and take the necessary action.	Short Term (2020 to 2023)	- Research programme for improving ecological and environmental monitoring of key ecosystems in Saint Lucia designed by interested national and international research partners in collaboration with the GoSL for submission to external funding sources. The programme should focus, among other issues, on identifying the contribution of different threats (including climate change) to the changes experienced by the ecosystems and in identifying potential solutions to support their recovery and resilience. - Research Programme funded and initiated	Implementation	DSD; DOF; DOFL; VALIRI

Strategic objective 2. Strengthen environmental research, information generation, knowledge management and monitoring systems for adaptation to climate change

Prioritised adaptation measures		Period	Indicative outputs	Alignment with the CCAP	Indicative lead institutions
35	Develop protocols for the safe and environmentally friendly removal and utilisation or disposal of Sargassum	Short Term (2020 to 2023)	<ul style="list-style-type: none"> - Research conducted to identify and assess the feasibility of applying in Saint Lucia best regional/international practices for the removal, disposal and/or potential use of Sargassum. - Sargassum removal protocols, based on best and feasible practices formulated, tested and adopted. 	Implementation	MoA, including DoA, DoF; DSD
36	Assess the economic value of coastal and marine ecosystems and resources for promoting the adoption of EbA interventions to protect lives, livelihoods and development gains in Saint Lucia from climate change	Short Term (2020 to 2023)	<ul style="list-style-type: none"> - Study designed and conducted to establish the economic value of coastal and marine ecosystems, including their support and provision services. - Results of the study published and available for the GoSL to plan and make decisions on their conservation, restoration and use as buffers against climate impacts instead of, or along with, hard infrastructural solutions. 	Facilitation and finance	DoF; DSD
37	Evaluate the costs and benefits of hard infrastructure vs. various natural buffers on reducing exposure to climate impacts island-wide	Short Term (2020 to 2023)	<ul style="list-style-type: none"> - Program for restoring natural buffers designed, approved and initiated. 	Facilitation and implementation	DoF; DoFL; DSD; MoP; MoF

STRATEGIC OBJECTIVE 3. ENHANCE PUBLIC AWARENESS AND INFLUENCE BEHAVIOURAL CHANGE ON THE IMPORTANCE OF MAINTAINING HEALTHY ECOSYSTEMS, THEIR BIODIVERSITY AND SERVICES FOR CLIMATE CHANGE ADAPTATION AND MITIGATION WHILE BUILDING CAPACITY

Strategic objective 3. Enhance public awareness and influence behavioural change on the importance of maintaining healthy ecosystems, their biodiversity and services for climate change adaptation and mitigation while building capacity					
Prioritised adaptation measures		Period	Indicative outputs	Alignment with the CCAP	Indicative lead institutions
38	Increase public awareness of the functions, importance and fragility of the terrestrial, coastal and marine ecosystems and biodiversity under changing climatic conditions and of the legislation pertaining to land and coastal zone use, physical development, and environmental degradation practices by (e.g. deforestation, sand mining and inadequate waste disposal)	Short Term (2020 to 2023)	- Public awareness and outreach programme about the importance and value of healthy ecosystems and biodiversity for building human resilience with climate change designed and implemented, following the suggestions of Saint Lucia’s Climate Change Communications Strategy (2018) and merging information on legislation and sanctions pertaining to land and coastal zone use, physical development, and environmental degradation practices. Through various components, the Programme should target different audiences (and interest groups) and engage them in actions pertaining to ecosystem restoration, conservation and EbA.	Implementation	MoA, including DoA, DoFL, DOF, WRMA; DSD; Government Information Service; Education Unit of MEIGRSD; media
39	Develop outreach programmes to engage local interest groups and other stakeholders in actions pertaining to ecosystem conservation and restoration (e.g. encouraging charcoal makers to replant trees of the species they harvest in the forest to make coal) for improving ecosystem health and resilience to climate change)	Short Term (2020 to 2023)		Implementation	MoA, including DoA, DoFL, DOF, WRMA; DSD

OUTCOME 2. ENHANCED ECOSYSTEM INTEGRITY FOR THE SUSTAINABLE SUPPLY OF ESSENTIAL ECOSYSTEMS GOODS AND SERVICES TO SOCIETY UNDER A CHANGING CLIMATE

STRATEGIC OBJECTIVE 1. SCALE UP THE PROTECTION AND SUSTAINABLE MANAGEMENT (INCLUDING THE CONSERVATION, SUSTAINABLE USE AND EQUITABLE SHARING OF BENEFITS ARISING FROM THE USE OF RESOURCES) OF CRITICAL ECOSYSTEMS FOR BUILDING RESILIENCE TO CLIMATE CHANGE

Strategic objective 1. Scale up the protection and sustainable management (including the conservation, sustainable use and equitable sharing of benefits arising from the use of resources) of critical ecosystems for building resilience to climate change					
Prioritised adaptation measures		Period	Indicative outputs	Alignment with the CCAP	Indicative lead institutions
40	Increase investment in forest and marine management to enhance ecological resilience and ecosystem services with climate change	Medium Term (2023 to 2026)	<ul style="list-style-type: none"> - Study conducted to identify additional national and international funding sources to enhance forest and coastal management (in particular, to increase funding allocations to the management of the Forest Reserve and the Marine Management Areas (MMAs). - Identified national funding sources utilised and international sources approached and higher allocations disbursed to and managed by the relevant agencies. 	Finance	DoFL; DoF; DED; DSD; SLUNCF; NURC
41	Expand reforestation programmes, prioritising the reforestation of critical watersheds to minimise soil erosion and runoff and promote sustainable livelihoods with increasing climate variability	Medium Term (2023 to 2026)	<ul style="list-style-type: none"> - New or expanded existing reforestation programmes in critical watersheds (with selection of appropriate mixes of species for reforestation/ afforestation where needed) implemented and or planned 	Implementation	DoFL; WRMA
42	Establish river usage zoning and regulations to reduce water use conflicts and secure the integrity of riverine ecosystems and water quality with climate change.	Medium Term (2023 to 2026)	<ul style="list-style-type: none"> - Feasibility study establishing river usage zoning and required regulations/guidelines conducted. - Guidelines for river usage zoning formulated - River usage zoning initiated 	Facilitation	DoFL; WRMA

Strategic objective 1. Scale up the protection and sustainable management (including the conservation, sustainable use and equitable sharing of benefits arising from the use of resources) of critical ecosystems for building resilience to climate change					
Prioritised adaptation measures		Period	Indicative outputs	Alignment with the CCAP	Indicative lead institutions
43	Maintain and restore existing vegetation buffers – mangroves, coastal vegetation, river banks -, natural forests and water catchments through enforcement of regulations and voluntary partnerships with land owners, environmental clubs, NGOs, and community organisations and residents to reduce the compounded risk of environmental degradation and climate change	Long Term (2026 to 2028)	<p>- Programme for the protection, conservation and enhancement of ecosystems, ecosystem services and biodiversity designed, funded and implemented, in collaboration with the relevant agencies and with the participation of local communities, developers and other public and private stakeholders. Among others, the programme should include continuous and interlinked activities for:</p> <ul style="list-style-type: none"> a) The restoration and maintenance of wetlands and main vegetative buffers along riverbanks b) The restoration of important bird nesting and fish nursery habitats (e.g. by restoring mangroves and coral reefs and scaling-up existing and successful artificial reef programmes) c) Sustaining natural forests in private and public land a) Raising awareness about and enforcing regulations for the protection of critical ecosystems and their ecosystem services. 	Implementation	DOA; DoFL; WRMA; NCA
44	Enhance bird nesting and fish nursery habitats (e.g. through reforestation, mangrove and coral reef restoration and artificial reef programmes scaling-up) to enhance species resilience to climate change	Medium Term (2023 to 2026)		Implementation	DoA, DOF;DoFL
45	Enforce standards and codes relevant to the protection and conservation of biodiversity nationally to enhance natural resilience to climate change	Medium Term (2023 to 2026)	<p>- Awareness raising campaigns on biodiversity protection standards and codes conducted targeting local communities, developers, and other public and private sector stakeholders</p> <p>- Standards and codes relevant to the protection and conservation of biodiversity enforced by the pertinent authorities</p>	Implementation	DoFL; WRMA; DoF; DoPP; SLBS; Customs; Envi. Health

Strategic objective 1. Scale up the protection and sustainable management (including the conservation, sustainable use and equitable sharing of benefits arising from the use of resources) of critical ecosystems for building resilience to climate change

	Prioritised adaptation measures	Period	Indicative outputs	Alignment with the CCAP	Indicative lead institutions
46	Determine and initiate the implementation of appropriate habitat protection and rehabilitation measures for the most rapidly declining ecosystems to enhance their resistance to climate change-related impacts and to continue providing essential ecosystem services in the future	Short Term (2020 to 2023)	<p>Assessment of ecosystem and habitat degradation and risk of climate change and other current threats conducted.</p> <p>Appropriate habitat protection measures for the most degraded/vulnerable ecosystems/habitats identified (e.g. migratory corridors).</p> <p>Feasibility study for island-wide restoration of most degraded/vulnerable habitats and ecosystems conducted; including an analysis of potential funding sources for restoration activities (e.g. scaling-up and out of existing ecosystem restoration programmes).</p> <p>Restoration activities and other protection measures for the most vulnerable habitats initiated, using the measures identified in the study conducted for this purpose (above) and with funding from the identified sources.</p>	Implementation	DoFL; DoF; DoPP

STRATEGIC OBJECTIVE 2. ADDRESS THE DRIVERS OF CURRENT AND FUTURE ECOSYSTEM DEGRADATION.

Strategic objective 2. Address the drivers of current and future degradation					
Prioritised adaptation measures		Period	Indicative outputs	Alignment with the CCAP	Indicative lead institutions
47	Develop a plan to manage key sources of pollution to minimise harm on terrestrial, freshwater, marine and ocean ecosystems and protect their ability to cope with climate change.	Medium Term (2023 to 2026)	Plan to manage key forms and sources of pollution, including those related to water pollution in coastal areas designed, approved and implemented. The plan should encompass solutions to, among others, pollution from agrochemicals, sewerage systems, washroom and kitchen facilities; dumping of liquid waste by yachts in marinas, bays and other nearshore areas.	Implementation	WRMA, SLSWMA; SLASPA, Environ. Health; CARPHA; SLBS; SMMA; DoA; Customs and Excise; DSD
48	Pursue action to facilitate wastewater treatment plants being located above the design level for 1 in 25-year or 1 in 50-year storm surge events to reduce risks associated with more intense hurricanes expected with climate change.	Long Term (2026 to 2028)	<ul style="list-style-type: none"> - Guidelines elaborated for the handling, transportation and storage of chemicals and chemical waste; managing accidents and spills; and the use and disposal of chemicals. - Red-flagging procedure for pesticides and chemical products at customs implemented. - Formulation and implementation of a plan to ensure that wastewater treatment plants are located above the threshold of 1 in 50-year storm surge events designed, based on a feasibility study that includes budgetary considerations. 	Facilitation and Implementation	WRMA; WASCO; DoPP (DCA and Crown Lands); Environ. Health
49	Require full risk (including climate risk) and environmental impact assessments for approving the establishment of coastal infrastructure and for development projects in nearshore areas (such as over the water, or within mangroves)	Medium Term (2021 to 2024)	- All unauthorised infrastructure construction and business operations in permanent and semi-permanent infrastructure placed in vulnerable ecosystems and areas, including those along the coast, on the beach front or in marine reserves halted.	Facilitation	DoPP (DCA and Crown Lands); DoF; DSD

Strategic objective 2. Address the drivers of current and future degradation					
Prioritised adaptation measures		Period	Indicative outputs	Alignment with the CCAP	Indicative lead institutions
50	Enhance the monitoring of and halt all unauthorised and unplanned infrastructure construction (and operation) of houses, hotels, restaurants, farmlands, aquaculture farms and other developments in and near vulnerable ecosystems (including developments along the coast, on the beachfront or in marine reserves such as beach alterations by hotels, without appropriate permits)	Medium Term (2023 to 2026)		Implementation	DoPP (DCA); Env. Health; RSLPF; DOF; DoFL
51	Monitor and halt illegal disposal of solid waste island-wide to improve ecosystem health and resilience	Short Term (2020 to 2023)	- Solid waste regulations enforced - Monitoring of illegal solid waste disposal enhanced	Implementation	SLWMA
52	Manage the conversion of agricultural lands in areas where alternative forms of development will threaten the integrity of forests to secure forests continue providing essential ecosystem services under a changing climate - use the Iyanola project voluntary protection model as a guide	Medium Term (2023 to 2026)	- Forest protection from agricultural encroachment	Implementation	MoA, including DoA, DoFL; DoPP; Cabinet

Strategic objective 2. Address the drivers of current and future degradation					
Prioritised adaptation measures		Period	Indicative outputs	Alignment with the CCAP	Indicative lead institutions
53	Scale-up strategies in the National Invasive Species Strategy for the prevention, monitoring and control of invasive species, now and in the future with climate change	Short Term (2020 to 2023)	<ul style="list-style-type: none"> - Study conducted to identify ways to improve the prevention, control and monitoring of IAS in terrestrial, marine (e.g. lionfish) and coastal ecosystems. - The results of the study, which include clear management recommendations, are validated, communicated and disseminated. - Plan to improve control of invasive species elaborated for various IAS, (including communications campaign) and implemented. - Test projects for controlling specific IAS initiated - Studies conducted to identify appropriate risk management strategies for GMOs in Saint Lucia. The studies should provide specific management recommendations. - Test projects for the management of GMOs initiated. 	Implementation	MoA, including DoA, DoFL, DoF; DSD (Biodiv, PMA), Customs; Environ. Health; NEMO
54	Develop and implement appropriate risk management strategies and interventions for IAS and Genetically Modified Organisms (GMOs), integrating climate change considerations	Short Term (2020 to 2023)	<ul style="list-style-type: none"> - Risk management strategies developed for IAS and GMOs 	Implementation	MoA, including DoA, DoFL, DoF; DSD (Biodiv); Customs; Environmental Health; NEMO
55	Implement measures to reduce detrimental forms of hunting and fishing, either intentional (and illegal, e.g. poaching) or unintentional (e.g. ghost fishing) to	Short Term (2020 to 2023)	<ul style="list-style-type: none"> - Gear for reducing ghost fishing introduced and adopted - Fish pot management plan developed and approved 	Implementation	DoF, DoFL; RSLSPF

Strategic objective 2. Address the drivers of current and future degradation					
Prioritised adaptation measures		Period	Indicative outputs	Alignment with the CCAP	Indicative lead institutions
	enhance the resilience of natural populations to climate change				
56	Promote the development of marinas that consider their impacts on coral reefs, fishing grounds and nurseries, sea grass beds and water currents to enhance their ability to sustain healthy populations with climate change	Short Term (2020 to 2023)	<ul style="list-style-type: none"> - Guidelines for the establishment of marinas that take coastal and marine ecosystem health into consideration elaborated, approved, issued and followed. - Marine and coastal environmentally friendly marinas promoted, within Saint Lucia and abroad. 	Implementation	SLASPA; DoPP; DoF; DSD; CIP; InvestSLU; Dept. of Commerce

OUTCOME 3. STRENGTHENED ECOSYSTEM-BASED ADAPTATION AND DISASTER RISK REDUCTION

STRATEGIC OBJECTIVE 1. ACCELERATE THE USE OF ECOSYSTEM-BASED SOLUTIONS TO CLIMATE CHANGE RELATED HAZARDS

Strategic objective 1. Accelerate the use of ecosystem-based solutions to climate change related hazards					
Prioritised adaptation measures		Period	Indicative outputs	Alignment with the CCAP	Lead institutions
57	Re-establish, establish and maintain a clear high tide line and forest reserve boundaries with consideration of climate change	Medium Term (2023 to 2026)	- Established and clearly defined clear high tide line and forest reserve boundaries accounting for climate change		DoF; DoPP; DoFL; Met Services
58	Build and enhance natural coastal and terrestrial defence structures to protect land-based assets and populations from more intense tropical storms in the future	Medium Term (2023 to 2026)	Natural coastal and terrestrial defence structures constructed, enhanced and maintained		DoPP; MoI; DOA; DoF; DoFL

11. CONCEPT NOTES FOR ECOLOGICAL RESILIENCE BUILDING AND ECOSYSTEM BASED ADAPTATION IN SAINT LUCIA

The project concept notes outlined here are a reflection of the prioritised measures contained in Saint Lucia's NAP and REASAP. These are also represented, for ease of reference, in *Saint Lucia's Portfolio of Project Concept Notes for Resilient Ecosystems 2020-2028*. *The project concept notes are not presented in order of priority. They are meant to be indicative only and not meant to reflect the template of any one funding entity. They are expected to be enhanced and elaborated on a case-by-case basis, including the amalgamation of several into larger projects and programmes, as appropriate. Implementation of these projects/programmes will be based partially on funder interest and alignment with funding priorities and partially on urgency -short, medium and long-term, as elaborated in the REASAP. Given that these documents are living or organic, it is envisaged that additional project concept notes will be developed/added over time, reflective of priority measures identified. It is also worth noting that there are a number of project concept notes, relevant to EbA, EcoDRR and other topics covered in the REASAP that can be found in the SASAPs for Water, Agriculture and Fisheries. Cross referencing is recommended in the development of amalgamated projects and programmes, as appropriate. For ease of reference, these project concept note titles have been listed in Annex 5.*

PROJECT CONCEPT 1. ESTABLISHING THE BASIS FOR IMPROVED BEACH MANAGEMENT AND COASTAL EROSION CONTROL UNDER CHANGING CLIMATE CONDITIONS IN SAINT LUCIA

PROJECT CONCEPT 1	
Project title	Establishing the basis for improving beach management and coastal erosion control under changing climate conditions in Saint Lucia
Objective(s)	To build the ecological resilience of Saint Lucia’s beaches to combat coastal erosion and protect coastal livelihoods and economies.
<p>Rationale:</p> <p>With climate change, more intense tropical storms, sea level rise, warmer seawater temperatures, ocean acidification and other processes are expected to increasingly impact Saint Lucia’s coastal zone in the coming decades. Sea level rise and coastal erosion put important tourism properties, the island’s two airports, beaches and ports, public facilities, and the livelihoods of those employed in fisheries, water-sports operators, tour guides and other tourism-related activities at risk. In fact, over the years, the country’s coastal communities have progressively experienced severe erosion, beach loss, landward transgression and their associated damages and costs. This is a major social and economic concern, as climate change is also rapidly affecting the ecosystems that act as buffers and protect the country’s coastline.* Urgent attention must therefore be paid to addressing coastal stability and ecological resilience to the ongoing and anticipated impacts of climate change on noted vulnerable coastlines. This project addresses these issues through a series of interventions designed to cover key existing information and capacity gaps that impede the GoSL, coastal communities and other stakeholders from making appropriate management decisions to control erosion and ecological decline with climate change.</p> <p>The activities proposed include: designing and implementing a pilot project in which suitable and ecologically-sound beach stabilisation and restoration interventions for Saint Lucia will be identified, with the intention of scaling them up to other vulnerable beaches; establishing a demonstration site in Vigie Beach; completing the assessment of vulnerable beaches in the country; developing a National Beach Management Strategy and Zoning plan; elaborating guidelines for effective beach management and launching a program to encourage communities and the private sector to co-manage beaches sustainably.</p>	
<p>Beneficiaries: Coastal communities in Saint Lucia exposed to coastal erosion and other direct and indirect climate change-related impacts.</p>	
<p>Activities and Tasks:</p> <p>Short list:</p> <ul style="list-style-type: none"> • Establish a Project Advisory Committee (PAC). • Procure Coastal Engineering Contractor/ Consultant (6 months). • Conduct a comprehensive assessment of selected vulnerable beaches in Saint Lucia. • Develop a National Beach Management Strategy and Zoning Plan (including guidelines for effective beach management in Saint Lucia). • Develop a training programme, and facilitate training to improve capacity and allow representatives of public and private sector agencies, and communities to effectively monitor selected sites to measure the effectiveness of coastal stabilisation measures. • Design and facilitate the establishment and launch of an ‘Adopt a Beach’ programme in Saint Lucia to encourage community and private sector ownership and co-management of beaches. • Prepare a site restoration and rehabilitation plan for Vigie Beach. • Implement site restoration and rehabilitation plan. • Develop an appropriate environmental monitoring plan (to facilitate long-term monitoring and evaluation of beach management interventions). 	

* Peterson et al. (2002) cited in Murray, P.A. (2010) Adaptation for Climate Change in the Coastal Sector of Saint Lucia – a key sector analysis, UNDP

PROJECT CONCEPT 1	
Project title	Establishing the basis for improving beach management and coastal erosion control under changing climate conditions in Saint Lucia
Main outputs/products: <ul style="list-style-type: none"> • Comprehensive beach assessment of selected vulnerable beaches in Saint Lucia • National Beach Management Strategy and Zoning Plan established (including guidelines for effective beach management in Saint Lucia) • Improved capacity on beach profiling, monitoring, management effectiveness, coastal stabilisation measures, etc • 'Adopt a Beach' programme designed and launched in Saint Lucia • Improved community and private sector ownership and co-management of beaches. • Site Restoration and Rehabilitation Plan • Demonstration activities (Vigie Beach) • Environmental Monitoring Plan (to facilitate long-term monitoring and evaluation of beach management interventions) 	
Implementation: Leading agency: Department of Sustainable Development Partner institutions: SLASPA, SLNT, NCA and DoF Indicative cost: USD 2,550,000.00	
Duration: 4 years	
Additional information: This project is aligned with the REASAP's measures 8, 9, 13, 15, 16, 29, 30, 34, 35, 36 and 56 and can contribute to implementing measures 3, 4, 5, 6, 7, 11, 18, 20, 25, 40, 42, 43 and 46.	
*Through ecological restoration practices, tested and adopted, the project will have mitigation co-benefits	

PROJECT CONCEPT 2. ECONOMIC VALUATION OF COASTAL EROSION AND BEACH MANAGEMENT IN SAINT LUCIA

PROJECT CONCEPT 2	
Project title	Economic valuation of coastal erosion and beach management in Saint Lucia
Objective(s)	To improve ocean governance in Saint Lucia by providing new, reliable information key to decision makers on the value of goods and services associated with marine ecosystems and resources, and to build capacity at multiple scales (local, national, regional) to develop and use this information for climate change adaptation.
<p>Rationale:</p> <p>Saint Lucia is vulnerable to natural and anthropogenic hazards, which negatively impact development sectors and revenue, further affecting population, the economy and the natural environment. With the high dependence on ocean ecosystems, coastal attractiveness and associated infrastructure for socioeconomic growth, and with the vulnerability of systems being marked as high, urgent action is required to better manage coastal and marine ecosystems, to promote their ecological resilience and to benefit from their services for addressing negative climate impacts. Ocean governance and coastal zone management fall under the remit of Sustainable Development Goal (SDG) 14 and others, and require effective management, as the GOSL accepts the need to contribute to the global mitigation effort, but is aware of the fundamental significance of adaptation.</p> <p>Given the importance placed on ocean governance at the global and regional levels, and the priority given to ensuring the sustainable use of the oceans’ resources at the national level (including for maritime boundary delimitation; management of fisheries and other living marine resources; protection of the marine environment; marine scientific research; customs, immigration and maritime enforcement; maritime administration, etc.), the Government of Saint Lucia (GoSL) is aware of the need to continually spearhead work to effectively manage and conserve Saint Lucia’s marine resources. This has been demonstrated through commitments made by Saint Lucia to the international and regional development agenda, including those related to the Eastern Caribbean Regional Ocean Policy and Strategic Action Plan, the Small Island Developing States Accelerated Modalities of Action (SAMOA) Pathway, the Paris Agreement, and the SDGs.</p> <p>The project aims to improve ocean governance in Saint Lucia by providing new, reliable information key to decision makers on the value of goods and services associated with marine ecosystems and resources, and to build capacity at multiple scales (local, national, regional) to develop and use this information for climate change adaptation. This will guide management decisions and support priority setting and investment. It will also bolster the incentives for better coastal resource management by illustrating the economic losses resulting from poor management under changing climatic conditions and identify management solutions (strategies) based on these economic valuations. The project will be undertaken to achieve the following outcomes:</p> <p>Outcome 1: Increased capacity in the modelling of threats to oceans and coastal ecosystems and resources in Saint Lucia - Activities will include enhancing capacity in the collection, management, use and analysis of GIS data for economic valuation and, conducting training in spatial threat analysis using GIS.</p> <p>Outcome 2: Applied valuation of ecosystem goods and services and knowledge and use of economic valuation and its associated techniques - Activities will include conducting training in the concept; and direct use of economic valuation methodologies.</p> <p>Outcome 3: Integration of ecosystem values into policy decisions in Saint Lucia - Activities will include use of the methodology to estimate the value of the goods and services of oceans and coastal ecosystems and resources in Saint Lucia, with spatial threat analysis to map economic consequences of different scenarios. The methodology and results will be presented at meetings of policy makers.</p>	

PROJECT CONCEPT 2	
Project title	Economic valuation of coastal erosion and beach management in Saint Lucia
Beneficiaries: Main beneficiaries will be decision makers and natural resource managers in the country.	
Activities and Tasks: Short list: <ul style="list-style-type: none"> • Identify and bring together partners interested in researching and using the valuation of goods and services associated with Saint Lucia’s beaches and shoreline • Determine specific locations where the methodology and estimates can be implemented through meetings and collaborations with partners, where applicable • Assess the methodology to use for evaluating the economic values for coastal erosion and beach management • Provide targeted training in GIS techniques, spatial threat analysis, and economic valuation techniques to key stakeholders • Integrate economic data with the physical, social and environmental information in a GIS format, in order to interpret and extrapolate valuation estimates • Develop a short summary pamphlet and longer materials for the Internet summarising the project findings, including economic valuation methodology and results • Conduct targeted meetings with key stakeholders to disseminate the economic valuations and management recommendations in Saint Lucia • Guide global dissemination and uptake efforts through presentation of the economic valuation methodology and estimates at intergovernmental and international scientific and economic meetings 	
Main outputs/products: <ul style="list-style-type: none"> • Increased capacity of governments and NGOs in performing ecosystem valuation and using those estimates in planning and decision-making • Increased capacity of governments and NGOs in spatial threat analysis and the integration of economic valuation with spatial threat analysis • Increased awareness of the project findings, including economic valuation methodology and results and management recommendations in Saint Lucia • Improved capacity in the use of GIS techniques, spatial threat analysis, and economic valuation techniques 	
Implementation: Responsible agency: Department of Sustainable Development Potential partners: National Conservation Authority, the Department of Fisheries, and other key stakeholders.	
Indicative cost: USD 1,556,000 <i>Estimated total cost by Outcome:</i> Outcome 1: USD 375,000 (including USD 100,000 in-kind contribution) Outcome 2: USD 150,000 (including USD 125,000 in-kind contribution) Outcome 3: USD 200,000 (including USD 180,000 in-kind contribution) Evaluation: USD 250,000 (including USD 175,000 in-kind contribution)	
Duration: 3 years	

PROJECT CONCEPT 2

Project title	Economic valuation of coastal erosion and beach management in Saint Lucia
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Additional information:

This project is aligned with the REASAP's measures 8, 11, 16, 18, 20, 23, 32 and 35 and can contribute to implementing measures 3, 4, 5, 7, 9, 15, 19, 21, 22, 25, 26, 35, 36 and 54.

The project directly contributes to Ocean governance and coastal zone management, which fall under the remit of Sustainable Development Goal (SDG) 14.

PROJECT CONCEPT 3. BUILDING ECOLOGICAL AND LIVELIHOOD RESILIENCE IN SAINT LUCIA THROUGH THE ESTABLISHMENT OF THE IYANOLA PARK BIOSPHERE RESERVE

PROJECT CONCEPT 3	
Project title	Building ecological and livelihood resilience in Saint Lucia through the establishment of the Iyanola Park Biosphere Reserve
Objective(s)	To improve ecosystem integrity and enhance environmental health and livelihood resilience in the Iyanola region of Saint Lucia
<p>Rationale:</p> <p>Protected areas play major roles for humankind. They conserve species, ecosystems and genetic resources, provide essential ecological, social, and economic services – such as clean water, carbon storage, genetic reservoirs, disaster mitigation, and soil stabilisation – and help preserve our cultural heritage. Well managed and connected protected areas can buffer catastrophic events physically and ecologically, and can offer connections across landscapes that allow plants and animals to move. Protected areas are recognised therefore as important tools for sustainable development and climate change adaptation and their relevance is heightened in countries like Saint Lucia that are small, biologically rich and highly exposed and vulnerable to climate change impacts.</p> <p>The Iyanola region consists of varied ecosystems including tropical rainforest, deciduous forests, scrublands, marine and coastal areas, mangroves and coral reefs is one of the last strongholds for endemic species of plants, birds and reptiles in Saint Lucia. It is also historically important and a key site to the many species of migratory turtles that use the coastal areas for laying their eggs. Persons residing in the Iyanola region utilise the biological resources and cultural amenities to generate livelihoods through fishing, farming, craft making and touristic activities. Their reliance on these biological resources provides an independent source of income and niche services such as Latanye brooms, mangrove honey and essential oils.</p> <p>However, this region is increasingly exposed to drought, saltwater intrusion and extreme weather-related disasters (high winds, torrential rains) resulting from climate change. Long dry spell periods have seen an increased use of agro chemicals (pesticides and fertilisers) leading to a marked increase in surface runoff, which has affected both marine and riverine ecosystems, resulting in river pollution and negative impacts on coral reefs. Implementing a land use plan supported by the establishment of a biosphere reserve would ensure that the endemic and sensitive ecosystems and species found there are not adversely impacted by such activities.</p> <p>Through funding received by the Global Environment Facility during its fourth replenishment, significant advances were made to conserve and manage the unique biodiversity found in the Iyanola region. After widespread community consultations, there was an observed need to implement the Land Use Plan so that sensitive climate resilience crops could be conserved, livelihoods protected and valuable lands managed in an integrated and sustainable manner in the coming years, as climate change progresses.</p> <p>This initiative will establish a biosphere reserve responding to the recommendations of the Land Use Plan and the needs of residents and users of the natural resources. It will include an inventory of plant and animal species in the area, engagement with key stakeholders, development of management plans for the Iyanola region and operationalising of the Iyanola Biosphere reserve.</p>	
Proposed location: Northeast Coast Iyanola region	
Beneficiaries: Residents of the northeast coast, traditional knowledge holders and enthusiasts as well as ecotourists, ecologists and researchers and the future generations.	
<p>Activities and Tasks:</p> <p>Short list:</p> <ul style="list-style-type: none"> • Review the Iyanola Land Use Plan • Conduct assessments of biophysical resources in the area • Prepare a map of the policy areas and resources found therein 	

PROJECT CONCEPT 3	
Project title	Building ecological and livelihood resilience in Saint Lucia through the establishment of the Iyanola Park Biosphere Reserve
	<ul style="list-style-type: none"> • Draft an implementation plan for the management of the biosphere reserve • Review/develop indicators to monitor the implementation of the initiative • Develop a package of incentives to support of the recommendations from the Management Plan for Voluntary Protection proposed under the Iyanola Project
	<p>Main outputs/products:</p> <p>Environmental Monitoring Plan (to facilitate long-term monitoring and evaluation of beach management interventions)</p> <ul style="list-style-type: none"> • Management plan for Iyanola Biosphere Reserve • Implementation schedule for operationalising the Reserve • Communications plan for engaging stakeholders • Voluntary protection agreements between the Government and landowners who choose to voluntarily protect their private lands • Package of incentives for landowners who choose to voluntarily protect their private lands
	<p>Implementation:</p> <p>Potential partners: Main project partners include the Department of Sustainable Development, Ministry of Agriculture (Department of Agriculture, Fisheries Division, Forest and Lands Division, Marketing Unit) and the Department of Physical Planning. This initiative will also be supported by Biodiversity and Protected Areas Management Program (BIOPAMA) and IUCN.</p> <p>Responsible agency/partners: Department of Sustainable Development, Forest and Land Resources Division, Ministry of Agriculture, Department of Physical Planning.</p>
	<p>Indicative cost: USD 1,500, 000</p> <p>Management Plan development USD 50,000 Establishment of the Biosphere Reserve USD 250,000 Management of the Biosphere Reserve USD 400,000 Development and implementation of communication strategy including website USD 100,000 Finalisation of Voluntary Protection Agreement USD 25,000 Incentive packages for private sector partners USD 75,000 Monitoring and enforcement of the Management Plan USD 600,000</p>
	<p>Duration: 4 years</p>
	<p>Additional information:</p> <p>This project is aligned with the REASAP's measures 16, 34, 35, 37 and 49 and can contribute to implementing measures 3, 6, 8, 9, 14, 15, 18, 29, 39 and 43.</p> <p>* This project has clear mitigation co-benefits.</p>

PROJECT CONCEPT 4. ENVIRONMENTAL STEWARDSHIP FOR CLEANER, HEALTHIER AND MORE RESILIENT MARINE ECOSYSTEMS IN SAINT LUCIA

PROJECT CONCEPT 4	
Project title	Environmental stewardship for cleaner, healthier and more resilient marine ecosystems in Saint Lucia
Objective(s)	To promote environmental stewardship and good practices for reducing the negative effects of marine litter on Saint Lucia’s ecosystems and support ecological resilience
Rationale:	
<p>Marine physical, chemical and biological conditions are changing at a very fast and possibly irreversible pace due to ocean acidification, increased sea temperatures and changes in oxygen concentrations, among other climate change-related effects. These changes exacerbate the damage other human activities such as the indiscriminate littering of coastal zones have caused to marine biodiversity and ecosystems and reduces their capacity to survive and thrive in the future, with detrimental consequences for all of the livelihoods and activities that depend on them.</p> <p>Marine debris, or marine litter, has been touted as a global environmental problem that negatively impacts the coastal and marine environments, human and animal health, livelihoods, and economies, to name a few. In small island States like those of the wider Caribbean Region, marine litter has emerged as a significant pollution issue, as it damages valuable natural resources like wildlife and coastal habitats, affects the quality of life of inhabitants and visitors, and negatively affects the economies and sustainability of the developing nations (UNEP 2005^a; UNEP 2006^b). Other impacts include impairment of aesthetic beauty and enjoyment, and proliferation of health and safety hazards. Based on historical beach and underwater data collected across the Caribbean during the annual International Coastal Clean-up championed by the Ocean Conservancy, the predominant source of marine litter is attributed to land-based sources, with plastics being the leading material found^{c,d,e}.</p> <p>Saint Lucia acknowledges the many impacts resulting from marine litter, and, in the past, has successfully implemented public awareness initiatives, stakeholder consultations and clean-up activities (including the UNEP-supported pilot project for the Regional Action Plan for the Management of Marine Litter targeting Bananes Bay in 2008 (Economic Assessment of the Impact of Marine Litter on the Livelihood of Fishers)). Building on this, and other success stories, the Department of Sustainable Development, through the Coastal Zone Management Unit, is gearing up to face the continuing challenges and ameliorate the associated issues.</p> <p>Action taken must be taken in collaboration with several agencies responsible for environmental conservation initiatives, and many other civil society organisations that operate on the ground. Conservation of marine and terrestrial biodiversity significantly impacts the optimal performance of these key sectors and industries, which rely on a healthy supply of plants, animals and microorganisms, to generate economic activity and stimulate national Gross Domestic Product.</p>	

^a United Nations Environment Programme (UNEP). 2005. *Marine Litter, an analytical overview*

^b United Nations Environment Programme (UNEP). 2006: *Marine Litter in the Wider Caribbean*

^c <http://www.cep.unep.org/publications-and-resources/marine-and-coastal-issues-links/solid-waste-and-marine-litter> (Accessed March 4, 2015)

^d <http://marine-litter.gpa.unep.org/facts/facts.htm> (Accessed March 4, 2015)

^e *Ocean Conservancy, 1989-2005 ICC Data Reports*. [http:// www.oceanconservancy.org/ICC](http://www.oceanconservancy.org/ICC) (Accessed March 12, 2015)

PROJECT CONCEPT 4	
Project title	Environmental stewardship for cleaner, healthier and more resilient marine ecosystems in Saint Lucia
<p>As many of the environmental conservation initiatives are structured as projects, with a 2 to 5-year implementation timeframe, there is usually a decline in public interest upon closure of these projects, resulting in an eventual return to the destructive behaviours which threaten biodiversity and the ecosystems where they are found.</p> <p>The key to sustaining any progress made by these agencies through their conservation initiatives is the development of public education and awareness campaigns that aim to change mindsets and behaviours. It has been tested and proven that the most impactful initiatives first describe to the audience the status of biodiversity and local resources, the causes of stress that degrade the resources and the activities which can be taken to rectify the situation. This project aims to promote environmental stewardship and good practices through widespread sensitisation, education and on-the-ground actions.</p>	
Beneficiaries: Coastal communities and all marine-resource dependent actors	
<p>Activities and Tasks: Short list:</p> <ul style="list-style-type: none"> • Map hotspots • Select two hotspots • Conduct a Knowledge Attitudes and Practices (KAP) survey in two communities • Develop communication strategy • Implement pilot actions from the communication strategy with the communities at the hotspots • Undertake national coastal clean-up to collect, sort and analyse garbage using an approved methodology 	
<p>Main outputs/products:</p> <ul style="list-style-type: none"> • Selected hotspots of marine litter using stakeholder consultations and field assessments using Caribbean Public Health Agency methodology • Public awareness outreach programme • Media toolkit (Daily planner/ calendar /photo competition where students depict marine litter) • Education Toolkit (Curriculum development plan, active learning, field trips; demonstration to schools and other stakeholders- Infuse into primary and secondary schools) • Environmental Monitoring Plan (to facilitate long-term monitoring and evaluation of beach management interventions) • Media campaign (media coverage of pilot project activities, Public Service Announcements (PSAs), documentary, radio and television interviews, social media blasts; collaborations with Dive Saint Lucia and Calabash TV, call for footage of good and bad sites from divers, Saint Lucia Air and Sea Ports Authority (SLASPA), cruise ships, etc) • PSAs, news stories, and interviews 	
Implementation:	
Responsible agency/partners: DoF, SLSWMA, SMMA, SLHTA, DSD, DoFL, CYEN, NYC/NSC and SALCC (DASGS: Environmental Science and Biology students)	
Indicative cost: USD 296,000 (including USD 96,000 in-kind contribution)	
Duration: 24 months	
Additional information:	
<p>This project is aligned with the REASAP's measures 13, 34 and 48 and can contribute to implementing measures 11, 15, 18, 24, 25, 35 and 44.</p> <p>A detailed budget for this project is available.</p>	

PROJECT CONCEPT 5. EVALUATION OF SHORELINE STABILISATION TECHNOLOGIES IN SELECTED VULNERABLE COASTAL AREAS IN SAINT LUCIA

PROJECT CONCEPT 5	
Project title	Evaluation of shoreline stabilisation technologies in selected vulnerable coastal areas in Saint Lucia
Objective(s)	To identify and implement appropriate measures to stabilise the shorelines and reduce the rate of coastal erosion for selected vulnerable coastal areas in Saint Lucia through community involvement
<p>Rationale:</p> <p>With climate change, more intense tropical storms, sea level rise, warmer seawater temperatures, ocean acidification and other processes are expected to increasingly impact Saint Lucia’s coastal zone in the coming decades. Sea level rise and coastal erosion put important tourism properties, the island’s two airports, beaches and ports, public facilities, and the livelihoods of those employed in fisheries, water-sports operators, tour guides and other tourism-related activities at risk. In fact, over the years, the country’s coastal communities have progressively experienced severe erosion, beach loss, landward transgression and their associated damages and costs. This is a major social and economic concern, as climate change is also rapidly affecting the ecosystems that act as buffers and protect the country’s coastline.* Urgent attention must be therefore paid to enhancing coastal stability and ecological resilience to ongoing and anticipated impacts of climate change.</p> <p>In response to these concerns, this project will foster the assessment, adoption and implementation of small-scale infrastructure and ecosystem-based-adaptation solutions to reduce coastal erosion, build adaptive capacity, enhance the naturalness and attractiveness of the beach environment, protect coastal ecosystems and livelihoods and stabilise the shorelines.</p> <p>Sites will be selected based on their demonstrated coastal erosion and evidence of additional climate impacts, their availability to support livelihoods, easy access for monitoring and measurement, the frequent use by residents and visitors for recreational activities and the presence of adjacent residential and commercial infrastructure, among other criteria.</p> <p>In making progress toward coastal stabilisation, the success rates of the various measures will be explored. A study of the selected sites will be undertaken and will result in recommendations for the procurement and installation of soft engineering and ecosystem-based coastal stabilisation measures, such as replanting, sand fencing, dune improvement, use of geotextile sandbags to stabilise the coast and prevent further coastal erosion, which threatens infrastructure located in coastal areas, among others. In addition, the <i>Pterocarpus officinalis</i> species, noted for its ability to prevent shoreline erosion, may be propagated and transplanted upstream in a selected watershed, with requisite monitoring.</p>	
<p>Beneficiaries: Vulnerable coastal communities in Saint Lucia facing coastal erosion and other direct and indirect climate change-related impacts</p>	
<p>Activities and Tasks:</p> <p>Short list:</p> <ul style="list-style-type: none"> • Establish Project Advisory Committee (PAC) • Procure a Coastal Engineer • Assess the status of selected coastal areas (Anse Ger, Cul de Sac, Fond d’Or and Roseau) and identify specific areas for stabilisation • Assess options for stabilisation of Anse Ger, Cul de Sac, Fond d’Or and Roseau coastal ecosystems, including beaches, coastal wetlands, riverbanks and estuaries. 	

*Peterson et al. (2002) cited in Murray, P.A. (2010) Adaptation for Climate Change in the Coastal Sector of Saint Lucia – a Key Sector Analysis, UNDP.

PROJECT CONCEPT 5	
Project title	Evaluation of shoreline stabilisation technologies in selected vulnerable coastal areas in Saint Lucia
<ul style="list-style-type: none"> • Propagate <i>Pterocarpus</i> sp as a species for replanting along riverbanks and estuaries to stabilise coasts. • Design and publish a coastal stabilisation plan. • Design monitoring and evaluation plan. To observe and record effectiveness of the soft engineering stabilisation methods employed. • Conduct training sessions for community residents in monitoring and evaluation. • Procure and install soft engineering coastal stabilisation measures in collaboration with local residents/communities. • Conduct quarterly monitoring of the interventions, following the monitoring and evaluation plan. • Publish a report on the effectiveness of coastal protection measures (highlighting challenges, successes and adjustments made to the employed methods, among others). 	
Main outputs/products: <ul style="list-style-type: none"> • Climate resilience and disaster risk management activities • Small-scale infrastructure implemented to reduce climate change and disaster-induced losses 	
Implementation: <p>Responsible agency/partners: Coastal Zone Management Unit (CZMU), Sustainable Development and Environment Division (SDED), Department of Sustainable Development, Ministry of Education, Innovation, Gender Relations and Sustainable Development</p> <p>The Department of Sustainable Development will not be partnering with other organisations for the implementation of project activities. Instead, the Department expects to collaborate with a number of Governmental Departments, Statutory Bodies, Non-governmental Organisations and Community Organisations (including the Department of Fisheries, the Division of Forest and Lands Resources, the National Conservation Authority, the Saint Lucia National Trust, the Caribbean Youth Environment Network, etc)</p>	
Indicative cost: USD 373,000 (includes USD 111,000 in-kind contribution)	
Duration: 12 months	
Additional information: <p>This project is aligned with the REASAP's measures 5, 9, 17, 25, 33, 37, 39 and 58 and can contribute to implementing measures 3, 4, 7, 11, 15, 18, 19, 23, 34, 43 and 55.</p> <ul style="list-style-type: none"> • The Coastal Stabilisation Plan will use a community approach to test the various stabilisation options identified, and will detail the soft engineering methods to be used such as, but not limited to, replanting, sand fencing, dune improvement, use of sandbags and geotextiles. While no hard engineering structure will be erected or tested under this project, areas requiring hard engineering solutions will be identified in the stabilisation plan and recommendations for these areas will be included, including conceptual designs. Detailed engineering designs will not be included. • The report proposed on the effectiveness of coastal protection measures will clearly indicate which methodologies were effective and the characteristics of the areas where they were effective. The report will also detail lessons learnt and make recommendations for improvement and/or future/further deployment. <p>* This project provides mitigation co-benefits</p>	

PROJECT CONCEPT 6: WATER QUALITY MONITORING FOR GUIDING ECOLOGICAL, SOCIAL AND ECONOMIC RESILIENCE-BUILDING ACTION IN SAINT LUCIA

CONCEPT NOTE 6	
Project title	Water quality monitoring for guiding ecological, social and economic resilience building action in Saint Lucia
Objective(s)	<p>Main objective: To enhance the contribution to economic and social development of coastal and marine resources in Saint Lucia</p> <p>Specific objective: To implement a comprehensive Water Quality Monitoring and Analysis Programme (WQMAP) to improve management decisions under changing climatic conditions in Saint Lucia</p>
<p>Rationale:</p> <p>Saint Lucia’s coastal and marine ecosystems and associated waters have traditionally been important to coastal communities for economic development, culture and as a source of food and for recreation. In recent years, coastal tourism activities such as SCUBA diving and snorkeling and increased fishing effort to support the seafood activities now being held in a number of communities, have contributed significantly to the island’s economy. However, Saint Lucia’s coastal and marine natural systems, like those of most of the countries within the wider Caribbean Region, have suffered degradation due to a number of land-based pollutants that continue to compromise the quality of fresh and coastal waters and pose significant threats to human health.</p> <p>It is expected that with climate change, Saint Lucia’s coastal and marine ecosystem degradation processes will intensify, and the country’s fragile resources will dwindle, as recent climate projections indicate that with time, annual precipitation will decrease, evaporation will increase, and rainfall will become more erratic. With the prospect of water scarcity, accelerated environmental degradation and their combined impacts, the sustainable management of water resources and the reduction in current sources of water pollution are priorities for adaptation to the changing climate.</p> <p>Government agencies and non-government organisations have undertaken water quality monitoring initiatives in Saint Lucia over the years. However, the generated data were inadequately managed and used and the loss of sustained access to funds on project termination affected the sustainability of the programmes. Nonetheless, advances have been made to cover the need for a structured approach to water quality monitoring and in terms of the institutional and regulatory framework for the management of freshwater and marine water resources. This, along with the ratification of the LBS Protocol on land-based sources of marine pollution in 2008 (which seeks to respond to the protection of the marine environment from land-based point and non-point sources of marine pollution by outlining the types of control and management responses required for addressing land-based issues) and the development of Recreational Water Quality Standards in 2010, resulted in the design of a comprehensive Water Quality Monitoring and Analysis Programme (WQMAP) between 2014 and 2015. The WQMAP design involved a literature review of previous and ongoing initiatives and the design and delivery of a training and awareness component in water quality monitoring. However, the WQMAP programme still needs to be executed to initiate the continuous monitoring of water quality in the country, which is needed for decision making and action on the ground.</p> <p>Building on the progress made until now with external and national funding, this project intends to initiate the execution of WQMAP.</p>	
Beneficiaries:	Government Departments (Water Resources Management Authority), other government agencies, private sector entities and NGOs/community-based organisations
<p>Activities and Tasks:</p> <p>Short list:</p> <ul style="list-style-type: none"> • Develop training and capacity development interventions for data collection and analysis of water quality, including in relevant field operations, sampling and sample management 	

CONCEPT NOTE 6	
Project title	Water quality monitoring for guiding ecological, social and economic resilience building action in Saint Lucia
<ul style="list-style-type: none"> • Undertake hotspot assessments, sampling and analyses to identify sampling locations • Identify and procure consumables and the equipment required for water quality monitoring and analysis • Develop and implement data acquisition, storage, security and sharing modalities 	
Main outputs/products: <ul style="list-style-type: none"> • Capacity and capabilities for water quality management, data collection and analysis built • Sampling locations identified for water quality analysis in Saint Lucia • Equipment and resources identified, procured and allocated for effective water quality data collection and laboratory support • Water quality data available and accessible 	
Implementation: Responsible agency: Water Resources Management Agency (WRMA)	
Total indicative cost: USD 740,500 (including USD 250,000 in-kind contribution)	
This includes: Training and capacity development: USD 185,000 (including USD 74,000 in-kind contribution) Selection of sampling locations: USD 92,500 (including USD 74,000 in-kind contribution) Procurement of consumables and equipment: USD 370,500 (including USD 74,000 in-kind contribution) Design and development of secure storage mechanism: USD 92,500 (including USD 28,000 in-kind contribution)	
Duration: 60 months	
Additional information: <ul style="list-style-type: none"> • This project is aligned with the REASAP's measures 10, 14, 24, 25, 26, 28, 29, 30 and 31 and can contribute to implementing measures 9, 11, 12, 15, 19, 21, 32, 33, 34, 37, 38, 39, 41, 43, 45 and 46. • The design of the WQMAP was funded by the Inter-American Development Bank and the United Nations Environment Programme, under the Global Environment Facility Caribbean Revolving Fund for Wastewater Management 	

PROJECT CONCEPT 7: OCEAN ASSESSMENT AND ECONOMIC VALUATION TOWARD CLIMATE RESILIENCE AND SUSTAINABLE BLUE ECONOMY EXPLORATION IN SAINT LUCIA

CONCEPT NOTE 7	
Project title	Ocean assessment and economic valuation toward climate resilience and sustainable blue economy exploration in Saint Lucia
Objective(s)	To reduce vulnerability to climate change in Saint Lucia’s Exclusive Economic Zone (EEZ) by building adaptive capacity and resilience in all sectors and at all levels and fostering a transition toward a ‘blue economy’ economic model by 2030.
<p>Rationale:</p> <p>Saint Lucia’s socioeconomic development heavily depends on its coastal and marine resources. However, the long-term sustainability of these resources and their benefits under a changing climate, require knowledge of ecosystem processes and well-planned and effective governance and management structures.</p> <p>Saint Lucia has joined other States in collectively recognising that oceans and seas face tremendous challenges, and pledged to protect and restore the health, productivity and resilience of their ecosystems, as well as maintain their associated biodiversity. As a party to the United Nations Convention on the Law of the Sea (UNCLOS), the country has progressed in the delimitation of its Exclusive Economic Zone (EEZ) and other maritime zones to facilitate, <i>inter alia</i>, border protection, living and non-living marine resource management, fisheries regulation, exploration of energy sources, and the regulation of shipping. In 2017 and applying the principle of equidistance, Saint Lucia signed Maritime Boundary Delimitation (MBD) agreements with Barbados and Saint Vincent and the Grenadines.</p> <p>Having formally agreed to maritime boundary delimitation with neighbouring States, Saint Lucia can now better plan and contribute to the successful implementation of Sustainable Development Goal 14 (Conserve and sustainably use the oceans, seas and marine resources for sustainable development), and the associated activities aiming at reducing climate change impacts on ocean and marine resources within its EEZ. However, this requires, strengthening the country’s information on its ocean and marine resources, improving its ocean governance capabilities, raising awareness, and initiating concrete actions to foster a transition towards a ‘blue economy’ economic model, to preserve biodiversity and ecosystem services while unlocking the economic potential of Saint Lucia’s marine space. To advance in this direction, this project will work on five areas that seek to:</p> <ol style="list-style-type: none"> 1. Ensure the legal formality, demarcation and communication (to stakeholders at all levels of involvement and decision making) of Saint Lucia’s maritime boundaries. To this aim, the project will build on the preliminary work of the Commonwealth Secretariat and use marine spatial plans developed under the OECS Caribbean Regional Oceanscape Project (CROP). 2. Conduct an ocean habitat assessment (including coastal, marine and offshore biodiversity) within the marine space under national jurisdiction. 3. Estimate the value of the goods and services of oceans and coastal ecosystems and resources under Saint Lucia’s jurisdiction and conduct spatial threat analysis to map economic consequences of plausible scenarios. To this aim training will be conducted on economic valuation and associated techniques for Government officials and, the results of the analyses will be communicated to policy makers. 4. Conduct an ocean-environment associated livelihood assessment to identify new and appropriate livelihoods, as well as strengthen current sustainable livelihoods in Saint Lucia. 5. Pilot-test new sustainable livelihood options, set up demonstration projects and provide training, continuous technical support and equipment to Saint Lucians interested in engaging in them. 	

CONCEPT NOTE 7	
Project title	Ocean assessment and economic valuation toward climate resilience and sustainable blue economy exploration in Saint Lucia
Beneficiaries:	Resource users (fishers, tour guides, households and communities dependent on the ocean ecosystem and resources)
Activities and Tasks: Short list:	<ul style="list-style-type: none"> • Demarcate boundaries • Assess habitats • Undertake economic valuation • Assess sustainable livelihoods • Pursue demonstration projects / livelihood support through capacity development and training and provision of technical support and equipment • Promote public awareness • Undertake project administration and management
Main outputs/products: Short list:	<ul style="list-style-type: none"> • Maps • Signage • Reports • Tools • Legislative instruments • Training/capacity building • Public service announcements, advertisements, etc.
Implementation:	
Responsible agency/partners:	Department of Sustainable Development, SLASPA, Fisheries Department
Indicative cost:	USD 7,885,000 (including USD 2,160,000 in-kind contribution)
<i>Estimated total cost by outcome:</i>	<p>Outcome 1: USD 1,825,000 (including USD 325,000 in-kind contribution)</p> <p>Outcome 2: USD 3,150,000 (including USD 875,000 in-kind contribution)</p> <p>Outcome 3: USD 650,000 (including USD 300,000 in-kind contribution)</p> <p>Outcome 4: USD 160,000 (including USD 60,000 in-kind contribution)</p> <p>Outcome 5: USD 1,100,000 (including USD 100,000 in-kind contribution)</p> <p>Project Management and Administration: USD 1,000,000 (including USD 500,000 in-kind contribution)</p>
Duration:	60 months
Additional information	This project is aligned with the REASAP's measures 25, 27, 32, 33 and 36 and can contribute to implementing measures 7, 10, 13, 14, 21, 22, 24, 25, 28, 29, 30, 37, 55 and 56.

PROJECT CONCEPT 8: ENABLING ECOSYSTEM RESTORATION AND MANAGEMENT FOR CLIMATE RESILIENCE-BUILDING

PROJECT CONCEPT 8	
Project title	Enabling ecosystem restoration and management for climate resilience-building
Objective(s)	To rehabilitate and establish the basis for improving the management of critical forests and wetlands to ensure the provision of ecosystem services under a changing climate
<p>Rationale:</p> <p>More intense tropical storms, longer dry periods, higher temperatures, ocean acidification, sea level rise and other climate change-related processes threaten Saint Lucia’s biodiversity and the invaluable goods and services the country’s ecosystems provide. This is of great concern as Saint Lucians depend on healthy ecosystems for their lives and livelihoods.</p> <p>The country’s forests are key habitats for wildlife, including pollinators and seed dispersal agents. They protect and regulate water sources; protect populations from flooding; support soil formation and nutrient cycling; store carbon, thus supporting climate change mitigation, and prevent soil erosion and landslides. At the same time, coastal zone ecosystems, including wetlands, are the backbone of Saint Lucia’s culture and fisheries. Terrestrial and coastal natural systems offer physical protection against climate hazards, including storms, high winds and storm surges. They also provide recreation and tourism opportunities.</p> <p>The restoration and rehabilitation of degraded forests and wetlands enhance their resilience to climate shocks. It also helps ensure these ecosystems will continue to sustainably provide the services Saint Lucia relies upon under a changing climate and promotes sustainable livelihoods. This project seeks to restore, protect and improve the management of prioritised critical ecosystems on the island to minimise soil erosion, reduce the risk of landslides and halt the degradation of freshwater resources. The project also aims to establish a comprehensive management plan for the country’s wetlands, which is a critical missing element.</p>	
<p>Beneficiaries: Local communities, farmers, fishers, the business community – (small, medium and large), hoteliers, and public institutions</p>	
<p>Activities and Tasks:</p> <p>Short list:</p> <ul style="list-style-type: none"> • Rehabilitate degraded riverbanks within priority watersheds • Undertake surveillance activities to protect upper catchments, especially above current and future reservoirs. • Undertake rehabilitation activities to protect slopes in vulnerable areas especially where important infrastructure is located. • Establish and maintain forest corridors and treescapes through urban and developed areas. • Promote and initiate sustainable agroforestry initiatives to support livelihoods and conservation • Demarcate and in some instances re-align forest reserve boundaries • Continue assessments and develop a management plan for wetlands, including marine reserves 	
<p>Main outputs/products:</p> <ul style="list-style-type: none"> • Restored and rehabilitated critical ecosystems • A comprehensive management plan for wetlands 	
<p>Implementation:</p> <p>Responsible agency/partners: Division of Forest and Lands Resources, with technical support from the Water Resources Management Agency and the Department of Fisheries.</p>	
<p>Indicative cost: USD 1.5 million</p>	

PROJECT CONCEPT 8

Project title	Enabling ecosystem restoration and management for climate resilience-building
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Duration: 3.5 years

Additional information:

This project is aligned with the REASAP's measures 8,11,18,21,29,30,32,36,38,39,40,41,43,44,45,46,52 and 68 and can contribute to implementing measures 5,6,10,12,19,26,27,33,42,47,50 and 51.

* This project provides mitigation co-benefits

PROJECT CONCEPT 9: BUILDING CLIMATE RESILIENCE AND ENHANCING LIVELIHOOD OPPORTUNITIES THROUGH IMPROVED FOREST MANAGEMENT IN SAINT LUCIA

PROJECT CONCEPT 9	
Project title	Building climate resilience and enhancing livelihood opportunities through improved forest management in Saint Lucia
Objective(s)	<ul style="list-style-type: none"> • To strengthen institutional capacity to adequately manage the island’s forest reserves • To enhance the capacity for production of biodiversity friendly goods and services for sustainable livelihoods • To strengthen local and national understanding and support for forest biodiversity conservation
<p>Rationale:</p> <p>Saint Lucia’s forests offer goods and essential services to the country. They protect water sources and play a major role in the regulation of water flows and thus, in reducing the risk of flooding. Forests support soil formation and nutrient cycling. These ecosystems store carbon, contributing to climate change mitigation, and stabilise soils, reducing the risk of soil erosion and landslides. Forests represent a physical barrier to tropical storms and high winds, are major habitats for wildlife and are an important source of livelihoods, recreation and tourism opportunities.</p> <p>In view of climate change, the long-term provision of ecosystem services by Saint Lucian forests depends on the protection, restoration, rehabilitation and appropriate management and use of forest areas. It is the intention of the Government of Saint Lucia to expand its forest reserves, which currently include around one third of the island’s forests. In this effort, the Government has acquired parcels of land that it plans to incorporate as part of forest reserve, together with forested Crown lands. However, the effective management of the reserves requires permanent and visible boundary markers. This is necessary for the new areas to be incorporated and for existing boundary markers to be restored where these markers existed, but were destroyed during the past ten years by landslides and land slippage caused by extreme weather events.</p> <p>With the understanding that a purely protectionist regime for all forests is impractical, the Division of Forest and Lands Resources has a policy to work with partners to enable regulated and sustainable use of defined forest areas for supporting local livelihoods and economies, while maintaining forest biodiversity environmental services. To this aim, the Division will develop and promote carefully designed and monitored sustainable use programmes, based on sound science and participatory principles, in defined areas of the Forest Reserve and on privately owned forests.</p>	
<p>Beneficiaries: Local communities, farmers, fishers, the business community – (small, medium and large), hoteliers, and public institutions</p>	
<p>Activities and Tasks:</p> <p>Short list:</p> <ol style="list-style-type: none"> 1. To increase areas of natural forest for maintaining the integrity of the Government Forest Reserves, securing watersheds for increasing the country’s freshwater supplies, protecting biodiversity, and preserving ecosystem functions and services: <ul style="list-style-type: none"> • Establish several hectares of plantation forest through restoration efforts • Maintain these plantation forests • Survey and demarcate lands that have been recently acquired • Build capacity to enhance surveillance and enforcement • Conduct appropriate research and monitoring to capture carbon emissions • Develop forest management plans • Strengthen the Forest, Soil and Water Conservation Act • Restore access routes • Increase habitat for wildlife 	

PROJECT CONCEPT 9	
Project title	Building climate resilience and enhancing livelihood opportunities through improved forest management in Saint Lucia
<p>2.To enhance the capacity for production of biodiversity friendly goods and services for sustainable livelihoods:</p> <ul style="list-style-type: none"> • Continue and extend the current project on sustainable lansan tree harvesting • Work with local groups in the design and implementation of projects that promote and enable sustainable use of other products (e.g. latanye, mauby, cut flowers, mushrooms, essential oils). <p>3. Strengthen local and national understanding and support for forest biodiversity conservation:</p> <ul style="list-style-type: none"> • Conduct pre and post awareness surveys • Develop and execute an environmental awareness plan 	
<p>Main outputs/products:</p> <ul style="list-style-type: none"> • Extension of forest reserves • Boundaries demarcated for recently acquired lands • Marketing assessment for biodiversity friendly goods and services • New projects for the sustainable and participatory use of forest goods and services • Enhanced institutional capacity for surveillance and enforcement • Environmental awareness plan 	
<p>Implementation:</p> <p>Responsible agency/partners: Division of Forests and Lands Resources.</p>	
<p>Indicative cost: USD 2.2 million</p>	
<p>Duration: 4 years</p>	
<p>Additional information:</p> <p>This project is aligned with the REASAP's measures 8,11,18,19,22,25,29,38,39,40,41,43,44,46,50,52 and 68 and can contribute to implementing measures 5,6,10,21,24,26,32,33,34,36,42,47,51 and 55.</p> <p>* This project provides mitigation co-benefits</p>	

PROJECT CONCEPT 10: SOLVING THE DIE-BACK OF THE LARGEST MANGROVE IN SAINT LUCIA TO STRENGTHEN THE COUNTRY'S CLIMATE RESILIENCE

PROJECT CONCEPT 10	
Project title	Solving the die-back of the largest mangrove in Saint Lucia to strengthen the country's climate resilience
Objective(s)	To identify the cause of and to implement solutions to the die-back that progressively affects the Mankòté Mangrove, to ensure it continues providing critical ecosystem services under a changing climate.
<p>Rationale:</p> <p>Mangroves play a fundamental role in sustaining biodiversity and livelihoods and in fighting climate change in the Caribbean region. These ecosystems offer spawning grounds for fish and shellfish, including many commercial species; they are habitat to a number of endangered mammals, reptiles, amphibians, and birds; they trap sediments and thus protect coral reefs, seagrass beds, and shipping lanes from siltation and improve water quality. Mangroves sequester carbon and also guard shorelines, coastal populations and assets against the impacts of water currents, waves, wind and hurricanes, which are expected to grow in intensity with climate change.</p> <p>Stretching over 40 hectares, the Mankòté Mangrove is the most important and largest remaining mangrove in Saint Lucia. It is a Ramsar site and also a marine reserve, used by nearshore fishers, and tour operators for bird-watching tours. However, this mangrove and the ecosystem services it provides are currently threatened by a progressive die-back, which affects approximately 12 acres (about 10 percent of the mangrove area). Although recent attempts have been made to restore the die-back area with upwards of 4,000 plants being planted, the problem persists.</p> <p>In view of the limited success of the reforestation efforts conducted thus far, research is urgently needed to determine the cause of the die-back and to suggest appropriate measures to avoid its spread into other areas, which could result in the widespread deterioration of the mangrove.</p> <p>The implementation of immediate remedial action after the problem is diagnosed, along with monitoring, is expected to prevent the destruction of the island's largest mangrove system and to help restore it. Saint Lucia needs a healthy Mankòté Mangrove to protect its communities, livelihoods and infrastructure from climate change impacts.</p>	
<p>Beneficiaries: Community groups that use the Mankòté Mangrove (fishers, tour operators, sustainable charcoal producers) and the country's population at large.</p>	
<p>Activities and Tasks:</p> <p>Short list:</p> <ul style="list-style-type: none"> • Conduct the necessary research to identify the causes of and solutions to the die-back • Prepare a plan to implement the solutions identified to the cause of the die-back • Implement the identified solutions • Prepare a rehabilitation plan for the mangrove areas affected by the die-back • Prepare nursery material to rehabilitate the areas affected by the die-back • Establish baselines and a monitoring and evaluation plan for biodiversity and carbon sequestration in the mangrove • Develop and execute an environmental awareness plan for the mangrove, including pre and post awareness surveys. 	
<p>Main outputs/products:</p> <ul style="list-style-type: none"> • Research project report with a diagnostic of the cause of the die-back and solutions • Mangrove area affected by the die-back rehabilitated • Increased carbon sequestration • Strengthened awareness of the importance and value of the mangrove to Saint Lucia 	

PROJECT CONCEPT 10

Project title	Solving the die-back of the largest mangrove in Saint Lucia to strengthen the country's climate resilience
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Implementation:

Responsible agency/partners: Division of Forest and Lands Resources, in partnership with Fisheries Department, the Saint Lucia National Trust, the Department of Sustainable Development and community groups which currently utilise the mangrove.

Indicative cost: USD 500,000

Duration: 3 years

Additional information:

Initial research and restoration were attempted under the Eastern Caribbean Marine Managed Areas Network (ECMMAN) project. However, more in-depth research is needed for effective and lasting solutions.

This project is aligned with the REASAP's measures 8,18,21,22,25,29,32,34,36,38,39,40,41,43,44,46 and 68 and can contribute to implementing measures 5,6,10,11,14,19,24,26,27,28,33,37,45,47,50,51 and 52.

* This project provides mitigation co-benefits

12. CONCLUSION

Saint Lucia is highly vulnerable to climate change. Urgent action is required to protect the rich biodiversity and ecosystems it is endowed with and the essential services they provide to the people and economy of the country, both now and in future decades in this era of climate change. The REASAP, a building block of Saint Lucia's NAP process, provides a framework for guiding this action and initiating the continuous and coherent process of integrating climate change and ecological considerations into policies, programmes, projects, activities and investments in the country's development sectors, all while facilitating EbA; in other words, the management of ecosystems as natural shields and insurances against climate impacts. The implementation of the REASAP will require a concerted effort by all stakeholders from private and public sectors and civil society. Financing the REASAP will require the mobilisation of national, bilateral and international resources, consistent with the Climate Financing Strategy and the Private Sector Engagement Strategy under the NAP process. High level political buy-in and commitment will contribute to the REASAP's implementation success, and to the achievement of the greater adaptation goals that Saint Lucia has endorsed in its CCAP and in its various ecosystems and biodiversity-specific or -relevant policies, strategies and plans.

13. REFERENCES

1. Grace, J.B. et al. (2016). Integrative Modelling Reveals Mechanisms Linking Productivity and Plant Species Richness. *Nature* 529: 390–393. Available online at: <https://www.nature.com/articles/nature16524>
2. Thomas, A. and Benjamin, L. (2017). Management of Loss and Damage in Small Island Developing States: Implications for a 1.5 °C or Warmer World. *Regional Environmental Change*. 10.1007/s10113-017-1184-7
3. Caribbean Community Climate Change Centre and Government of Saint Lucia. (2015). Impact Assessment and National Adaptation Strategy and Action Plan to Address Climate Change in the Tourism Sector of Saint Lucia (Vol I and II). European Union Global Climate Change Alliance (EU-GCCA) Caribbean Support Project.
4. Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES). (2018). The IPBES Regional Assessment Report on Biodiversity and Ecosystem Services for the Americas. Rice, J., Seixas, C. S., Zaccagnini, M. E., Bedoya-Gaitán, M., and Valderrama N. (eds.). IPBES Secretariat, Bonn. Available online at: https://www.ipbes.net/system/tdf/2018_americas_full_report_book_v4_pages_0.pdf?file=1&type=node&id=29404
5. Swiderska, K, King-Okumu, C. and Monirul Islam, M. (2018). Ecosystem-Based Adaptation: A Handbook for EbA in Mountain, Dryland and Coastal Ecosystems. International Institute for Environment and Development (IIED). Available online at: <http://pubs.iied.org/pdfs/17460IIED.pdf>
6. Bueno, R. et al. (2008). *The Caribbean and Climate Change: The Costs of Inaction*. Stockholm Environment Institute - US Center and Global Development and Environment Institute, Tufts University.
7. GoSL. (2018). Saint Lucia's National Adaptation Plan (NAP): 2018–2028. Department of Sustainable Development, Ministry of Education, Innovation, Gender Relations and Sustainable Development.
8. GoSL. (2019). Saint Lucia's Climate Financing Strategy under the National Adaptation Planning Process. Department of Sustainable Development, Ministry of Education, Innovation, Gender Relations and Sustainable Development.
9. GoSL. (2018). Guidelines for the Development of Sectoral Adaptation Strategies and Action Plans (SASAPs): Saint Lucia's Experience under the National Adaptation Planning Process. Department of Sustainable Development, Ministry of Education, Innovation, Gender Relations and Sustainable Development.
10. GoSL. (2010). Population and Housing Census Preliminary Report, updated April 2011. Central Statistics Office.
11. GoSL. Main Labour Force Indicators: Annual data 1994 to 2019. Central Statistics Office. Online Resource Available at: stats.gov.lc (Accessed on July 2020).
12. GoSL. (2018). Educational Digest 2018. Corporate Planning Unit of the Ministry of Education, Human Resource Development and Labour.

13. Xavier, J. V. (2015). Gender Aware Beneficiary Analysis of Saint Lucia's Public Assistance. UN Women and UNICEF. Available online at : <https://www2.unwomen.org/-/media/field%20office%20caribbean/attachments/publications/2016/social%20safety%20net/16012809gaba%20saint%20lucias%20public%20assistance%20programmelnr.pdf?la=en&vs=1538>
14. GoSL. (2020). Saint Lucia Economic Recovery and Resilience Plan, Moving from Pandemic to Recovery with Collective Action. Available online at: <http://www.govt.lc/publications/saint-lucia-economic-recovery-and-resilience-plan.pdf>
15. GoSL. (2018). Revised Second National Biodiversity Strategy and Action Plan. Second NBSAP (2018 – 2025) for Saint Lucia. Department of Sustainable Development.
16. Economic Commission for Latin America and the Caribbean (ECLAC). (2019). Regional Report on the Review of the Beijing Declaration and Platform for Action in Latin American and Caribbean Countries, 25 years on. Available online at: https://repositorio.cepal.org/bitstream/handle/11362/44960/1/S1900911_en.pdf
17. Economic Commission for Latin America and the Caribbean (ECLAC). (2020). Report of the Assessment of the Implementation of Gender Equality Frameworks and Practices in Saint Lucia.
18. Convention on Biological Diversity. Saint Lucia Country Profile. Online resource available at: <https://www.cbd.int/countries/profile/default.shtml?country=lc#measures> (accessed on June 2019)
19. Daltry, J. (2009). Biodiversity Assessment of Saint Lucia's Forests with Management Recommendations. National Forest Demarcation and Bio-Physical Resource Inventory Project. FCG International Ltd in association with AFC Consultants International GmbH. Technical Report 10.
20. Lorde, T. et al. (2013). An Assessment of the Economic and Social Impacts of Climate Change on the Coastal and Marine Sector in the Caribbean. Economic Commission for Latin America and the Caribbean (ECLAC). Available at: <https://repositorio.cepal.org/bit>
21. Wang et al. (2019). The great Atlantic Sargassum Belt. *Science* 365: 83-87.
22. GoSL. (2017). Third National Communication on Climate Change for Saint Lucia. Department of Sustainable Development, Ministry of Education, Innovation, Gender Relations and Sustainable Development.
23. The Nature Conservancy. (2016). Saint Lucia Coral Reef Report Card. Available online at: http://www.agrra.org/wp-content/uploads/2016/06/STL-Report-Card_2016_WebLowRes.pdf
24. GoSL (2015). State of the Environment Report 2015. Sustainable Development and Environment Division, Ministry of Sustainable Development, Energy, Science and Technology.
25. Australia Caribbean Coral Reef Collaboration. Saint Lucia. Online resource available at: <http://climateandreefs.org/st-lucia/> (accessed in June 2019).
26. Birchenough S.N.R. (2017). Impacts of Climate Change on Biodiversity in the Coastal and Marine Environments of Caribbean Small Island Developing States (SIDS). Caribbean Marine Climate Change Report Card: Science Review 2017. Available online at https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/605072/5._Biodiversity.pdf

27. van Eynde, K. (2009) Forest Management Guidelines. Technical Report No. 8 to the National Forest Demarcation and Bio-Physical Resource Inventory Project, FCG International Ltd, Helsinki, Finland.
28. Protected Planet. (2019). Saint Lucia – dataset. Online resource available at: <https://www.protectedplanet.net/country/LCA> (accessed in June 2019)
29. Haffey, D. (2009). A Systems Plan for Protected Areas in Saint Lucia. OECS Protected Areas and Associated Livelihoods Project. Available online at: <https://www.cbd.int/doc/pa/tools/A%20Systems%20Plan%20for%20Protected%20Areas%20in%20Saint%20Lucia.pdf>
30. Saint Lucia Forests and Lands Resources Department (2015) Strategy 2015–2025. Saint Lucia Forests and Lands Resources Department.
31. Ministry of Sustainable Development, Energy, Science and Technology. (2015). The Saint Lucia Climate Change Adaptation Policy: Adapting One Individual, One Household, One Community, One Enterprise and One Sector at a Time.
32. GoSL. (2017). Third National Communication on Climate Change for Saint Lucia. Department of Sustainable Development, Ministry of Education, Innovation, Gender Relations and Sustainable Development.
33. The CARIBSAVE Partnership. (2012). The CARIBSAVE Climate Change Risk Atlas (CCRA): Climate Change Risk Profile for Saint Lucia.
34. Rahmstorf, S. (2007). A Semi-Empirical Approach to Projecting Future Sea-Level Rise. *Science* 315: 368–370.
35. Commonwealth Marine Economies Programme (CMEP). (2017). Caribbean Marine Climate Change Report Card 2017. (Eds. Buckley, P. et al.). CMEP.
36. National Oceanic and Atmospheric Administration (NOAA). Ocean Acidification. Ocean and Coasts Education Resources. Online resource available at <https://www.noaa.gov/education/resource-collections/ocean-coasts-education-resources/ocean-acidification>
37. Hoegh-Guldberg, O. et. al. (2014). The Ocean. In: *Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part B: Regional Aspects. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change*. Available online at: https://www.ipcc.ch/site/assets/uploads/2018/02/WGIIAR5-Chap30_FINAL.pdf
38. Economic Commission for Latin America and the Caribbean (ECLAC), (2011). An Assessment of the Economic Impact of Climate Change on the Agriculture, Health and Tourism Sectors in Saint Lucia. ECLAC Project Documents Collection.
39. Thomas-Louis, M. L. (2014). Saint Lucia: Country Document for Disaster Risk Reduction, 2014. National Emergency Management Organisation (NEMO).

ANNEX 1. MAIN SOURCES OF ADAPTATION MEASURES FOR THE REASAP

1. The Saint Lucia Climate Change Adaptation Policy (2015)
2. Second National Communication on Climate Change for Saint Lucia (2011)
3. Third National Communication on Climate Change for Saint Lucia (2017)
4. Revised Second National Biodiversity Strategy and Action Plan for Saint Lucia (2nd NBSAP) 2018 – 2025 (2020)
5. Revised draft National Environment Policy (NEP) and National Environmental Management Strategy (NEMS) (2014)
6. State of the Environment Report (2015)
7. Saint Lucia Forests and Lands Resources Department Strategy 2015–2025 (2015)
8. Impact Assessment and National Adaptation Strategy and Action Plan to Address Climate Change in the Tourism Sector of Saint Lucia (2015)
9. Report on the national stakeholder consultation for the development of an Integrated Coastal Zone Management Plan for Saint Lucia (2015)
10. Saint Lucia’s National Adaptation Plan (2018-2028) (2018)
11. Saint Lucia’s Sectoral Adaptation Strategy and Action Plan for the Water Sector (Water SASAP) 2018-2028 (2018)
12. Saint Lucia’s Sectoral Adaptation Strategy and Action Plan for the Agriculture Sector (Agriculture SASAP) 2018-2028 (2018)
13. Saint Lucia’s Sectoral Adaptation Strategy and Action Plan for the Fisheries Sector (Fisheries SASAP) 2018-2028 (2018)
14. SASAP 2018-2028 (2018)
15. Saint Lucia National Ocean Policy (NOP) (2020)
16. Saint Lucia Strategic Action Plan (SAP) (2020)

ANNEX 2. KEY NATIONAL DEVELOPMENT, BIODIVERSITY, ECOSYSTEMS AND CLIMATE POLICIES, LEGISLATION AND PLANNING INSTRUMENTS OF RELEVANCE TO THE REASAP

The **National Environmental Policy and National Environmental Management Strategy (NEP/NEMS)**, is considered the overarching environmental instrument for integrated national development planning. Originally issued in 2005, the NEP provides the GoSL with a broad framework for environmental management and establishing links with policies and programmes in relevant sectors of economic and social development. The NEMS offers the specific directions and mechanisms for more effective policy implementation, including specific results expected and actions to realise the NEP's objectives.

In the draft **updated NEP/NEMS (2014)** document, policy and strategic objectives are aligned with, and seek to contribute to, a long-term goal of environmentally sustainable development in Saint Lucia. The NEMS is a results-based operational strategy and action plan detailing objectives, activities and specific modalities for interventions by national agencies as well as by regional and international development partners between 2014 and 2019. The draft updated NEP/NEMS focuses on: a) strengthening the integration of environmental considerations into the country's policy, institutional and regulatory framework for sustainable development; b) revising and implementing policies and regulations that seek to maintain the diversity and productivity of ecosystems and ecological processes; c) improving the management of the natural and built environment with due attention to adaptation and mitigation and disaster risk reduction; d) improving waste management and controlling pollution; e) generating and managing scientific data for establishing a knowledge platform to underpin environmental management initiatives; f) improving environmental knowledge, attitudes and behaviours among all sectors of society.

Saint Lucia's Coastal Zone Management Policy (2004) guides the integrated management of coastal resources in the country by outlining institutional and management strategies and actions to address region-specific coastal development issues. It includes nature-based solutions to existing coastal problems and focuses on the restoration/rehabilitation; conservation and protection; and enhancement of physical and spatial planning of the country's coastal systems. The Policy created the inter-agency Coastal Zone Management Advisory Committee (CZMAC)*, which is responsible for, amongst other issues, proposing and formulating coastal zone related policies. The Coastal Zone Management Unit (CZMU, established in 2005) serves as the Committee's secretariat, coordinating joint efforts between the various agencies that share responsibilities in the management of oceans, marine and coastal ecosystems. Each agency also has a range of different policies, laws, regulations and established practices. By extension, the draft Coastal Zone Management Strategy and Action Plan (CZMSAP, 2006) was prepared to facilitate the implementation of coastal zone management actions in Saint Lucia.

The draft Systems Plan for Protected Areas in Saint Lucia, originally formulated in 1992 and comprehensively revised in 2009 -although not yet approved by the Cabinet of Ministers-, is the most

*The CZMAC has been replaced by the NOG-C

significant policy document to integrate protected areas on a national scale. It creates a framework for the designation, protection and effective management of a comprehensive network of protected areas across Saint Lucia. The Plan recognises climate change as a direct threat facing protected areas.

The Revised Second National Biodiversity Strategy and Action Plan, 2nd NBSAP (2018-2025) is a living document that provides strategic direction and a framework for the management of biological resources for sustainable development in Saint Lucia. The Revised Second NBSAP responds to the country's commitments to the Convention of Biological Diversity (CBD) and other international biodiversity-related agreements, and builds on the experience gained from implementing the First NBSAP. This includes the establishment of a Biodiversity Unit to coordinate and regularly follow-up on the country's biodiversity-related activities, as well as to steer the approach to scale-up actions to tackle the root causes of biodiversity loss. The Revised Second NBSAP promotes the effective implementation of the CBD and a shared vision, mission and strategic goals and targets that are aligned to the Aichi Biodiversity Targets.

The Revised Second NBSAP includes sets of measures and strategic actions to a) implement necessary field interventions (transformative measures), b) create a policy/regulatory/institutional enabling environment (catalytic/facilitation measures) and, c) to secure the financial resources needed to implement transformative and facilitation measures (sustainable financing measures). It also includes a Communication, Education and Public Awareness Strategy to raise awareness, aid wider integration of biodiversity values, facilitate resource conflict resolution and stakeholder management, and package biodiversity information suited to each of the various publics (including economists, political leaders and policy makers,) who impact on or are impacted by biodiversity and ecosystem goods and services. The elaboration of the Revised Second NBSAP also promotes synergies in the implementation of other Multilateral Environmental Agreements (MEAs). Therefore, it shares various cross-cutting activities proposed initially by the GoSL as a means of addressing other global challenges, including climate change, such as activities included in the Strategic Programme for Climate Resilience (SPCR), the Climate Change Adaptation Policy (CCAP), and the National Action Plan and Strategic Action Plan for combating land degradation (NAPSAP).

The Saint Lucia Forests and Lands Resources Department Strategy 2015–2025 (issued in 2015) establishes a framework for the sustainable management of forest resources, placing special emphasis on preserving and recovering ecosystem health and protecting ecosystem services for building ecological and human resilience. From the five strategies outlined in the document, Strategy 3 aims at strengthening the Department's actions for "Protecting water supplies, soils and coastal zones and ensuring resilience to climate change". To this aim, the Department will work in partnership with other stakeholders to establish integrated programmes that sustain and enhance the vital regulating services provided by Saint Lucia's forests and other ecosystems and that contribute to:

- The Department's active engagement in global and regional initiatives to address climate change and its impacts.
- Setting up management strategies and plans for priority watersheds.
- Implementing effective measures for forest protection, restoration and management.

- Establishing effective protection and sustainable management schemes for coastal wetlands and mangroves.

The National Ocean Policy (NOP) of 2019 provides a framework for the integrated planning and management of Saint Lucia's marine space and the associated activities occurring within it. In its guiding principles, the NOP highlights the importance of environmental stewardship, EbA and access and benefit sharing. It establishes, among others, goals for maintaining and improving ecosystem integrity and for the management of coastal hazards through adaptation planning and implementation actions. The Policy also offers decision-making considerations on these issues, as part of a wider island management approach. Supplementing the NOP is a Strategic Strategic Action Plan (SAP) with concrete measures to be implemented between 2020 and 2035 for the achievement of the goals set in the Policy. Whilst the responsibility for delivering the NOP sits across all relevant government departments, it is overseen and monitored by a National Ocean Governance Committee (NOGC).

ANNEX 3. FEATURES OF SIGNIFICANT PAST, PRESENT AND PLANNED PROJECTS CONTRIBUTING TO BUILDING ECOLOGICAL RESILIENCE AND ECOSYSTEM BASED ADAPTATION TO CLIMATE CHANGE

Features of significant past, present and planned projects contributing to building ecological resilience and ecosystem-based adaptation to climate change				
Project	Total Investment Cost	Donor/Sponsor	Responsible Institutions	Direct Beneficiaries targeted
Integrated Ecosystem Management and Restoration of Forests on the South East Coast of St. Lucia Regional Project Project Approved Period 2016-2021 Status: Ongoing	USD 19,190,124	GEF Trust Fund	Ministry of Sustainable Development, Energy, Science, and Technology	South east region of Saint Lucia
Consultancy services to develop a National Wastewater Management Strategic Plan National Project Period: 2015-2016 Status: Completed	USD 228,740	World Bank	WRMA	Entire Population
Coastal Stabilization of Pigeon Island to Prevent and Mitigate Coastal Erosion Caused by Climate Change Regional project Status: Completed	USD 1,718,963	German Development Bank (KfW)	Saint Lucia National Trust	Pigeon Island
Ridge to Reef Ecosystem Rehabilitation, Climate Change Adaptation, Improvement in Fish Biomass In two Coastal Communities in Saint Lucia Regional project Status: Completed	USD 99,966.54	German Development Bank (KfW)		
Multi-hazard early warning system. National Project	USD 96, 831	UNDP	NEMO	The Dennery Village

Features of significant past, present and planned projects contributing to building ecological resilience and ecosystem-based adaptation to climate change

Project	Total Investment Cost	Donor/Sponsor	Responsible Institutions	Direct Beneficiaries targeted
Period: 2016-2017 Status: Completed				
Caribbean Aqua-Terrestrial Solutions (CATS) Programme Geographic context: Regional Period of implementation: 2013-2019 Status: Ongoing	USD 11,390,000 (shared between 8 CARICOM countries)	GIZ	Department of Fisheries, Soufriere Marine Management Area (SMMA), CARPHA	Fishers, Recreational Reef Users
Reducing Risks to Human and Natural Assets Resulting from Climate Change (RRACC) National Project Duration: 18 months Period: 2012 - 2014 Status: Completed	USD 288,548	OECS Secretariat/ USAID/ WASCO/ SDED- MSDEST		
Pilot Programme for Climate Resilience-Disaster Vulnerability Reduction Project –PPCR-DVRP Global Project Period: 2014-2021 Status: Ongoing	USD 68,000,000	World Bank/CIF/ PCU-MOF/ SDED-MSDEST/, MIPSAT	Department of Economic Development	Entire Population
Development of guidelines for watershed management plan preparation and development of one watershed management plan for a critical watershed. National Project End date: 2017 Status: Completed	USD 350,277	World Bank	WRMA	Entire Population
Climate Proofing the Laborie Community Regional Project Duration: 3 years Status: Approved	USD 245,000	TBD/ Laborie Community will provide up to 25% in in-kind contributions	Laborie Development Foundation	The coastal community of Laborie and its coastal area

Features of significant past, present and planned projects contributing to building ecological resilience and ecosystem-based adaptation to climate change

Project	Total Investment Cost	Donor/Sponsor	Responsible Institutions	Direct Beneficiaries targeted
Sustainable Financing and Management of Eastern Caribbean Marine Ecosystems National Project Period: 2011-2016 Status: Complete	USD 8,750,000	GEF/World Bank/ Nature Conservancy	Department of Economic Development Department of Fisheries	Island-wide
Iyanola natural resource management of North East Coast Project. National Project Period: February 2014 -2020 Status: Ongoing	Approx. USD 8,914,483	Bal Environmental Facility (GEF) / GoSL/ Co-funding	Division of Forest and Lands Resources	Island-wide
Optimisation of meteorological and hydrological monitoring network through procurement of hydrological and meteorological equipment. National Project Period: 2017 – 2021 (18 months) Status: Ongoing	USD 1,077,689	World Bank	WRMA	Island-wide
Climate Change Adaptation (CCA) and Sustainable Land Management (SLM) in the Eastern Caribbean National Project Period: 2014-2020 Status: Ongoing	EURO 149,643	EU GCCA/OECS	Division of Forest and Lands Resources	Farmers
Integrating water, land and ecosystems management in Caribbean Small Island Developing States (IWECO) National Project Period (2017-2020)	USD 2,205,446	GEF / GoSL	Division of Forest and Lands Resources	Soufrière

Features of significant past, present and planned projects contributing to building ecological resilience and ecosystem-based adaptation to climate change

Project	Total Investment Cost	Donor/Sponsor	Responsible Institutions	Direct Beneficiaries targeted
Status: Ongoing				
Eastern Caribbean Marine Managed Areas Network (Ecmman) Project National Project Period: 2013 –2017 Status: Complete	EURO 4,000,000 Shared between 6 OECS SIDS	The German Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety (BMUB)		Island-wide
EU-Global Climate Change Alliance-GCCA Organisation of Eastern Caribbean States (OECS) National project Period: November 2013-2019 Status: Completed	EURO 10,600,000 for 9 OECS member states	OECS/Physical Development and SDED- MSDEST		
Consultancy to develop a watershed management plan for Vieux Fort. National Project Period: March 2018 – November 2018 Status: Approved	USD 150,000	Caribbean Development Bank (CDB)/ GoSL	WASCO	Vieux Fort and environs
Coastal Protection for Climate Change Adaptation Project (CPCCA) in the Small Island States in the Caribbean National Project Period of implementation: 2014-2019 Status: Completed	EURO 12,900,000 (Shared among 5 SIDS)	German Ministry for Economic Cooperation and Development		
Special Programme on Adaptation to Climate Change (SPACC) National Project Period: 2007-2013 Status: Complete	XCD 1,560,115	GEF/WB/CCCCC		Island-wide

Features of significant past, present and planned projects contributing to building ecological resilience and ecosystem-based adaptation to climate change

Project	Total Investment Cost	Donor/Sponsor	Responsible Institutions	Direct Beneficiaries targeted
<p>Activities to raise awareness of the negative effects of marine litter (especially single-use plastics) on the marine and coastal environment</p> <p>National Project Period: Status: Partially Approved (2 activities)</p>	XCD 15,000	Saint Lucia National Conservation Fund	Department of Sustainable Development (DSD)	Coastal communities
<p>Adapt'Action project</p> <p>Global and Regional Project Period: 4 years Status: Ongoing</p>	EURO 30,000,000 15 countries	Agence Française de Développement (AFD)		Island-wide
<p>Increasing the climate change resilience and public awareness of the Pointe Sable Environmental Protection Area and Pigeon Island National Landmark ecosystems</p> <p>National project Period: 3 years Status: Approved</p>	USD 1,079,345 Co-financed	Ecosystem-based Adaptation (EbA) Facility / Saint Lucia National Trust (SLNT)	Saint Lucia National Trust (SLNT)	

ANNEX 4. KEY TO MAIN INSTITUTION ACRONYMS

CARPHA	The Caribbean Public Health Agency
CYEN	Caribbean Youth Environment Network
DCA	Development Control Authority
DED	Department of Economic Development
DoA	Coastal Zone Management Strategy and Action Plan
DoF	Department of Fisheries
DoFL	Division of Forest and Lands Resources
DoPP	Department of Physical Planning
DSD	Department of Sustainable Development
Env. Health	Department of Environmental Health
MoA	Ministry of Agriculture
MoH	Ministry of Health and Wellness
Mol	Ministry of Infrastructure, Port, Energy and Labour
MoP	Ministry of Planning
NCA	National Conservation Authority
NEMO	National Emergency Management Organisation
NURC	National Utilities Regulatory Commission
OECS-C	Organisation of Eastern Caribbean States
PMA	Piton Management Area
RSLPF	Royal Saint Lucia Police Force
SLASPA	Saint Lucia Air and Sea Ports Authority
SLBS	The Saint Lucia Bureau of Standards
SLNT	Saint Lucia National Trust
SLSWMA	Saint Lucia Solid Waste Management Authority
SLUNCF	Saint Lucia National Conservation Fund
SMMA	Soufriere Marine Management Association
VALIRI	The Vaughan A. Lewis Institute for Research and Innovation
WASCO	Water and Sewerage Company Inc.
WRMA	Water Resources Management Agency

ANNEX 5. PROJECT CONCEPT NOTES IN EXISTING SASAPS DIRECTLY RELATED TO MEASURES IN THE REASAP

Project concept notes in existing SASAPs directly related to measures in the REASAP	
WATER SASAP	
Project concept 1. Guiding wastewater interventions under a changing climate and enhancing ecosystem resilience: Saint Lucia’s Wastewater Master Plan (WMP) and guidelines	This project is aligned with the REASAP's measures, 20, 26 and 44 and can contribute to implementing measures 3, 4, 5, 16, 18, 19, 20, 23, 42, 45, 52 and 54.
Project Concept 2. Developing Sea Level Rise-appropriate coastal wastewater management systems: The Canaries village pilot project	This project is aligned with the REASAP's measure 34 and can contribute to implementing measures 3, 4, 5, 15, 20, 42, 44 and 45.
Project Concept 3. Study for the introduction of climate resilient and sustainable domestic greywater management systems	This project is aligned with the REASAP's measures 34 and 44 and can contribute to implementing measures 5 and 52.
Project Concept 4. Piloting low cost individual climate resilient sanitation systems in coastal areas	This project contributes to implementing REASAP's measures 44,45 and 52
Project Concept 5. Pig farms’ wastewater and manure management: Piloting solutions to reduce water pollution under a changing climate	This project is aligned with the REASAP's measures 44 and 52 and can contribute to implementing measures 3, 5, 16, 34 and 45.
Project concept 6. Improvement of existing and development of new faecal sludge treatment plants to reduce climate-related health and environmental risks	This project is aligned with the REASAP's measures 44, 45, 48 and 52 and can contribute to implementing measures 3, 4, 5, 6, and 46.
Project Concept 7. Strengthening wastewater management and health under a changing climate: The development of an Industrial Wastewater Ordinance (IWO) for Saint Lucia	This project is aligned with the REASAP's measures 28, 44 and 52 and can contribute to implementing measures 26 and 45.
Project Concept 8. Characterisation of river water-quality zones in Saint Lucia: Laying the foundation for the sustainable use of watersheds and river waters under a changing climate	This project is aligned with the REASAP's measures 3, 6, 26, 27, 30 and 38 and can contribute to implementing measures 4, 5, 6, 7, 8, 10, 18, 39, 42, 44 and 52.
Project concept 14. Public sensitisation towards improving the management, conservation and protection of water resources under a changing climate	This project is aligned with the REASAP's measures 34 and 35 can contribute to implementing measure 27.
FISHERIES SASAP	
Project concept 2. Expanding sustainable financing in Saint Lucia for the provision of marine ecosystem services under a changing climate	This project is aligned with the REASAP's measures 12, 18, 21, 24, 25, 32, 36 and 40 and can contribute to implementing measures 1, 8, 11, 14, 15, 20, 22, 23, 26, 33, 34, 39, 42, 43, 44, 48, 52, 53 and 56.

Project concept notes in existing SASAPs directly related to measures in the REASAP	
Project concept 4. Development and implementation of a national coral reef and seagrass bed management and enhancement policy and action plan to reduce the impacts of climate change	This project is aligned with the REASAP's measures 8, 9, 13, 14, 19, 20, 21, 22, 23, 34, 35, 36, 30, 40, 42, 43, 47 and 53 can contribute to implementing measures 1, 3, 6, 7, 11, 14, 17, 28, 30, 31, 35, 44, 46, 48, 50, 51, 52 and 54.
Project concept 9. Coastal adaptation blueprint for Saint Lucia	This project is aligned with the REASAP's measures 21, 22, 23, 24, 25, 32, 34, 40 and 43 and can contribute to implementing measures 1, 2, 6, 8, 15, 18, 19, 20, 26, 29, 30, 35, 42, 49, 50, 51, 52 and 54.
AGRICULTURE SASAP	
Project concept 1. Production and marketing of alternative and biological pesticides for the scaling up of climate resilient agriculture in Saint Lucia	This project is aligned with the REASAP's measures 10, 29 and 38 and can contribute to implementing measures 4, 8, 39, 46, 47 and 53.
Project concept 9. Undertaking key policy and regulation updates to enable climate change adaptation in the agriculture sector	This project is aligned with the REASAP's measures 10, 18, 41, 50 and 52 and can contribute to implementing measures 5, 6, 38, 39 and 41.

ANNEX 6. LIST OF PARTICIPANTS TO ACTIVITIES RELATED TO THE RESILIENT ECOSYSTEMS ADAPTATION STRATEGY AND ACTION PLAN



DEPARTMENT OF SUSTAINABLE DEVELOPMENT

**Saint Lucia's National Adaptation Plan (NAP) Process
Resilient Ecosystems Adaptation Strategy and Action Plan**

Multi-Stakeholder Consultations

Thursday, September 27, 2018

Orchid Garden Conference Room, Union, Castries

ATTENDANCE REGISTER

	NAME OF ORGANISATION	DESIGNATION	NAME
	OFFICE OF THE PRIME MINISTER		
1	Office of the Prime Minister	Programme Manager	Josette Maxwell Dalsou
	MINISTRY OF AGRICULTURE, FISHERIES, PHYSICAL PLANNING, NATURAL RESOURCES AND COOPERATIVES		
	Department of Agriculture, Fisheries, Natural Resources and Cooperatives		
2	Division of Forest and Lands Resources	Forestry Officer	Feria Gaston
3		Forestry Officer	Jeremiah Edmund
4	Department of Fisheries	Fisheries Officer	Vaughn Serieux
5	Water Resources Management Agency (WRMA)	Acting Director	Miguel Montoute

	NAME OF ORGANISATION	DESIGNATION	NAME
	MINISTRY OF EDUCATION, INNOVATION, GENDER RELATIONS AND SUSTAINABLE DEVELOPMENT		
	Department of Sustainable Development (DSD)-Lead Agency		
6		Chief Technical Officer	Caroline Eugene
7		Deputy Chief Sustainable Development & Environment Officer (Ag.)	Dawn Pierre-Nathoniell
8		Sustainable Development and Environment Officer	Maier Sifflet
9		Sustainable Development & Environment Officer (Climate Change)	Shanna Emmanuel
10		Sustainable Development and Environment Officer (Coastal Zone)	Lavina Alexander
11		Sustainable Development and Environment Officer (SDGs)	Jeanel Volney
12		Sustainable Development and Environment Assistant	Peter St. Marie
13		MEA Project Manager	Teshia Jn. Baptiste
14		Professional Cadet (Climate Change)	Snaliah Mahal
15		Sustainable Development and Environment Officer (Biodiversity)	Jannel Gabriel
16		Iyanola NRM of the North East Coast Co-ordinator	Francillia Solomon
17	Department of National Security	Marine Police Unit	Sergeant Wilbur Etienne
18	Saint Lucia Solid Waste Management Authority (SLSWMA)	Education and Public Information Officer	Emlyn Jean
19	Sir Arthur Lewis Community College (SALCC)	Lecturer	Marie Louise-Felix
20	International Institute for Sustainable Development (IISD)	Consultant	Clara Ariza



DEPARTMENT OF SUSTAINABLE DEVELOPMENT
Saint Lucia's National Adaptation Plan (NAP) Process
Resilient Ecosystems Adaptation Strategy and Action Plan Consultations
Golden Palm Conference Room, Rodney Bay, Gros-Islet
Wednesday April 17, 2019

ATTENDANCE REGISTER

	NAME OF ORGANISATION	DESIGNATION	NAME
	OFFICE OF THE PRIME MINISTER		
1	National Emergency Management Organisation (NEMO)	Maintenance Officer	Malcolm Job
	MINISTRY OF AGRICULTURE, FISHERIES, PHYSICAL PLANNING, NATURAL RESOURCES AND COOPERATIVES		
	Department of Agriculture, Fisheries, Natural Resources and Cooperatives		
2	Department of Agriculture	Crop Protection Officer	Cletus Alexander
3	Forests and Land Resources Department	Environmental Education Officer	Feria Narcisse-Gaston
4	Water Resources Management Agency (WRMA)	Acting Director	Jason Ernest
5	Department of Fisheries	Fisheries Biologist	Allena Joseph

	NAME OF ORGANISATION	DESIGNATION	NAME
6	Department of Physical Planning	Senior Cartographer	Suzanna Aurelien
7		Physical Planning Officer	Magdalene Fontenelle-Henry
	MINISTRY OF EDUCATION, INNOVATION, GENDER RELATIONS AND SUSTAINABLE DEVELOPMENT		
8	Department of Sustainable Development (DSD)-Lead Agency	Acting Permanent Secretary	Caroline Eugene
9		Acting Deputy Permanent Secretary	Silka Tobias
10	Sustainable Development and Environment Division (SDED)	Chief Sustainable Development and Environment Officer	Annette Rattigan-Leo
11		Deputy Chief Sustainable Development and Environment Officer	Dawn Pierre-Nathoniell
12		Sustainable Development and Environment Officer	Shanna Emmanuel
13		Sustainable Development and Environment Officer	Maier Sifflet
14		MEA Project Manager	Teshia Jn. Baptiste
15		Sustainable Development and Environment Officer	Jannel Gabriel
16		Science and Technology Officer	Eulampius Frederick
17		Environment Technician	Jurina Constantine
18		Protected Areas Management (PAM)	Manager
19	Saint Lucia National Trust (SLNT)	Programme Officer	Craig Henry
20	Castries Fishermen Cooperative	President	Thaddeus Augustin
21	International Institute of Sustainable Development (IISD)	Consultant	Clara Ariza