GOVERNMENT OF SAINT LUCIA

Ministry of Sustainable Development, Energy, Science and Technology

Fifth National Biodiversity Report for Saint Lucia

FIFTH NATIONAL BIODIVERSITY REPORT

SAINT LUCIA

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Executive Summary

Biodiversity is important to Saint Lucia for food, shelter, medicines, and other ecosystem services, sustainable livelihoods, agriculture, tourism industries and future untapped industries.

Notwithstanding its small size, the island possesses a high degree of biological diversity. It is found not only in the ecosystems and habitats on the island, but also in the variety of resources which sustain life. Some of these biological resources are endemic to the country with more than 200 species occurring nowhere else, including 7 per cent of the resident birds and an incredible 53 per cent of the reptiles. (http://www.fauna-flora.org/explore/saint-lucia/)

Though Saint Lucia's rugged, volcanic interior remains thickly forested and healthy coral can still be found offshore, its flatter land areas have long been cleared for agriculture. The island's coastal dry forests, especially in the North East Coast, are increasingly destroyed for tourism development. Depletion of biological diversity, particularly in the NE Coast of the island (including the extinction of rare and endangered species such as the endemic iguana and other important animal species such as the white breasted thrasher and rare plant species), are occurring but the exact rates at which they occur are not known.

Saint Lucia's biodiversity is also threatened by over 300 alien invasive species (including rapacious mongooses and opossums) and over-exploitation. At least 69 native species have already disappeared. (Saint Lucia national Invasive Species Strategy 2012 – 2021, 2011)

Saint Lucia's biodiversity and ecosystems provide ecosystem services which provide inputs into the production of key sectors in the Saint Lucian economy. Such ecosystem services include water, soil fertility, pollination, pest control, growth and reproduction of food species, storm mitigation, climate regulation, waste assimilation, among others.

As a Small Island Developing State (SIDS) with a vulnerable economy, the forest; wildlife and marine resources of Saint Lucia are particularly important for the variety of products and services which they provide and that support the spectrum of social and economic activities[1] of the island. Forest resources are not only crucial to maintaining key ecosystem functions such as the conservation of water and soil resources, and key habitat protection of biological diversity; but, forests also support the local demand for timber and many non-timber forest products (NTFPs) and is further becoming an increasingly important contributor to the tourism sector through ecotourism, catering to both foreign and local visitors. Moreover, in these challenging economic times, for Saint Lucia to reverse the recent trends in poor

[1]UNDP, 2010.Importance of biodiversity and ecosystems in economic growth and equity in Latin America and the Caribbean: an economic valuation of ecosystems.

economic growth and to persist in its poverty reduction efforts, it has become even more dependent on its natural assets for production of innovative goods and services.

Marine and coastal resources are also very important to Saint Lucia. Saint Lucia's coastal zone and marine ecosystems are characterized by mangroves, seagrass beds, coral reefs and beaches, which play an increasingly important role in tourism and are also an integral component in natural coastal defense. Coastal and marine resources are also vital for livelihoods relating to fisheries in several rural communities, and for recreation, sports and enjoyment, and an overall source of employment for many people. It is estimated that coral reef associated tourism contributes more than 11% of GDP and fisheries provides employment for over 3,000 persons (Burke et al, 2008).

There is no doubt that biodiversity and its ecosystem services are very important in Saint Lucia. Most Saint Lucians can identify the benefits from ecosystem services as being cash, food and employment. The role of ecosystem services in poverty alleviation is however much less understood. Most data that is available on direct use of provisioning services is patchy and very rarely relates specifically to poor, vulnerable or marginalised sections of society.

A Study on Poverty conducted in 2006, for instance, does not show how ecosystem services can contribute towards poverty alleviation. In other studies there are some, but limited suggestions of how payments for environmental services, marine protected areas or community-based natural resource management may provide benefits. However, no systematic or comprehensive analysis exists to adequately guide policy in Saint Lucia.

Part I: An update on biodiversity status, trends, and threats and implications for human well-being

This part of the report provides an update on biodiversity status, trends, and threats and implications for human wellbeing in Saint Lucia.

Changes in Status and Trends of Biodiversity

The current review of the status of biodiversity on the island reveals continuing trends from the 4th Biodiversity Report of *"loss of forests, declining population size and range of major species, threatened species due to the perverse economics of habitat conversion to facilitate socio-economic development"*.

Anecdotal evidence speaks to a decline in the timber inventory with regard to some tree species, particularly since the damage wreaked by Hurricane Tomas in 2010. Hurricane Tomas occurring in October 2010 caused severe damage to the island's forest. It is estimated that about 37% of the forests were damaged (UNECLAC, 2011).

Increasing incidence of wildfires is also a concern for forest biodiversity. The Department of Forestry reported a total area of 10.9 hectares (25.9 acres) burnt in the Millet range on the west coast of the island, and a total area of 5 hectares (12.4 acres) in Canaries affected (Charles, 2010). Most of the wildfires were related to agricultural production systems of slash and burn to clear land for planting, or accidently set by lit cigarette butts, foreign objects in the dry grass, or intentionally set by pedestrians.

Reports indicate that there are a number of species that are considered threatened, including the white breasted thrasher, Saint Lucia Racer Snake, Saint Lucia Iguana, Leatherback turtle, and fat poke plant.

Despite species decline since the 4th national Biodiversity report, there are now more emerging tree species recognized for potential economic opportunities, such as dye making and other sustainable livelihoods. For example, the L'encens tree is a globally threatened rainforest tree whose valuable resin is used for incense in religious ceremonies, with also added value for its aromatic properties in the production of body creams.

The Saint Lucia fer-de-lance or pitviper, *Bothrops caribbaeus*, has also drawn some attention due to its medical importance and the unusual effects of its venom. Presently, *Bothrops caribbaeus'* venom is available from the Kentucky Reptile Zoo at a price of US$250 per gram.

Coral reefs and wetlands remain under threat from developmental pressures and poor land use practices. Much of Saint Lucia's coastline is bordered by nearshore, fringing reefs. According to the World Resources Institute, about 44 percent of Saint Lucia's coastline is classified as protected by coral reefs. In July 2011, an Ecological Survey was conducted in Saint Lucia to assess reef communities and concluded that Saint Lucian reefs are characterized by large boulders which provided refuge to a diversity of fish, of which a large proportion were larger individuals. The report indicates that the reefs were some of the healthiest recorded by the survey team in the Caribbean. Fish communities were highly diverse and high in both abundance and occurrence of larger individuals. The Soufriere Marine Reserve appeared to be very valuable, containing reefs with highest complexity and fish diversity. However, a study conducted in 2013 by the Australian Great Barrier Reef Authority, in collaboration with the Soufriere Marine Management Association, discovered that the reefs in Soufriere are under extreme pressure from tourism and fisheries related activities. Such stresses, exacerbated by the impacts of climate change, have led to an increased disease and die off of vital coral reefs. Declining fisheries, especially reef fish, is also being reported. Notably, there is also concern over declining stock of high value species, such as lobster and conch.

Agro-ecosystems continue to be under threat from changes in land use. Declines are reported in the populations of major species, such as bananas and plantains, largely from pest and disease, especially the black sigatoka disease. Other crop species recording population

declines include coconuts, paw-paw, dasheen and tomatoes. Loss in honey production, due to varroa mite disease which affects the queen bee is also reported.

There appears to be an increase in the cultivation of traditional crops, such as cocoa and breadfruit by farmers and householders. Of particular note is the introduction of new varieties of crops such as sweet potato, sorrel, pineapples, as well as ornamentals such as orchids, with the increasing use of biotechnology (tissue culture) for propagation. Back yard gardening is also being heavily promoted by the Ministry of Agriculture. Commercial natural herbal remedies businesses are using a wide range of local plant biological resources in their preparations.

A significant increase in the number and incidence of Invasive Alien Species impacting all forms of biodiversity on the island has been confirmed in recent studies undertaken by the Department of Forestry. To this end, the department spearheaded the formulation of the Saint Lucia National Invasive Species Strategy (NISS): 2012-2021.

A revised Systems Plan for Protected Areas (SPPA 2) is being driven by the Saint Lucia National Trust and is aimed at creating a framework for the designation, protection and effective management of a network of protected areas that are key to securing a sustainable environmental, social and economic future for Saint Lucia. The SPPA 2 has not yet been endorsed by the Cabinet of Ministers.

Invest Saint Lucia, the agency charged with the responsibility to develop business and investment activities, seeks to encourage businesses to invest in new and existing green technologies and strive to conduct operations that are beneficial not only to their operations in terms of profit, but also contribute to sustainable development as a whole. The agency particularly highlights biodiversity in its portfolio of investment opportunities for the island with special emphasis being placed on medicinal products from herbal medicines.

Main Threats to Biodiversity

The main threats to biodiversity in Saint Lucia have been identified as: habitat loss and fragmentation, overharvesting, pollution (including noise), climate change and introduction of invasive species.

According to the Critical Ecosystem Partnership Fund (2010) Report, the diverse ecosystems and biodiversity of the Caribbean region are subject to many immediate and long-term threats including tourism development, mining, land development and agriculture, over-exploitation of resources and the impacts of climate change, among others. For Saint Lucia, the economy is heavily reliant on tourism, and further growth will demand more land and will consume more resources, such as energy and water. Growth of mining and its often negative impacts on human and environmental health is also a concern. Infrastructure developments and agriculture are taking a toll on coastal and marine resources that are important as a food source and for the tourism industry. Invasive species and infectious diseases also threaten

habitats. Over-exploitation of resources continues to take a toll on biodiversity and further compound the impacts of climate change.

There appears to be a low level of appreciation for the importance of ecosystem services and costs of their loss, and areas important for these services, such as wetlands, forest reserves and other protected areas, are undervalued. Policy and law in the island tend not to address the major underlying causes of environmental issues, such as population increase. In addition, enforcement of existing laws by government and nongovernmental organisations charged with protecting the environment is hampered by a lack of capacity, especially for monitoring and regulating.

Part II. The NBSAP: Its implementation and mainstreaming of biodiversity

This part of the report provides an update on the Draft 2nd NBSAP with respect to implementation and achievements.

The Revised Draft 2nd NBSAP and Biodiversity Targets

The Revised Draft 2nd NBSAP gives due cognizance to the alignment of the country's national strategic goals and biodiversity targets with that of the 2011-2020 Strategic Plan for Biodiversity, ensuring that the 20 Aichi targets are particularly well embedded with a well-defined suite of activities that can be effectively monitored for impact. National goals and targets are outlined in the Table A below:

Table A: Saint Lucia Revised National Strategic Goals and Targets for Biodiversity Management

Goal 1: To internalize and integrate biodiversity values into decision making and national accounting to stimulate/advance national development.	***Goal 3: To encourage and effect sustainable management and use of biodiversity and genetic resources.***
Targets	**Targets**
• 1.1 All relevant sectors and publics (communities, schools, judiciary, politicians, businesses, resource users, financial institutions etc.) are well aware of biodiversity including goods and services, and how it can be sustainably managed to derive benefits. • 1.2 The NBSAPs rationale, objectives and insights of values of nature are well embedded into other policy areas and sectors and plans to enable the contribution of biological resources to national socio-economic development. • 1.3 Improved legal and fiscal measures to support more effective biodiversity management are identified, implemented and enforced. • 1.4 Mechanisms and measures for cooperation are formalized and harmonized plans and activities across sectors, agencies and stakeholders are in place for sustainable production and consumption, and ensuring that the impacts of use of resources are well within ecological limits. • 1.5 Traditional knowledge, innovations and practices of local communities relevant for the conservation and sustainable use of biodiversity are integrated into	• 3.1 The rate of natural habitat loss is reduced and degradation and fragmentation, especially of forest, land and water is minimized. • 3.2 Overfishing is minimized through the use of sustainable management and harvesting practices • Current and potential adverse impacts of climate change on threatened stocks, depleted species and vulnerable terrestrial, marine and fisheries ecosystems are reversed through ecosystem based approaches. • 3.3 Pollution from excessive use of fertilizers and harmful chemicals is reduced to levels that are not detrimental to ecosystem function and biodiversity loss. • 3.4 A Systems plan for Protected Areas for the conservation of important terrestrial and inland water, coastal and marine biodiversity and ecosystem services is formally established and designated PAs effectively and equitably managed and integrated into other area-based (landscapes and seascapes) conservation measures. At least 15% of terrestrial and inland water and 10% of coastal and marine areas are conserved. • 3.5 Agriculture, fisheries including aquaculture and forestry biological resources are conserved, restored

relevant decision making processes such as national and sectoral plans, programmes, policies with full and effective participation of local communities at all relevant levels	and sustainably managed and the GMOs/Living Modified Organisms (LMOs) are effectively managed to minimize genetic erosion and safeguard genetic diversity. • 3.6 Appropriate systems and mechanisms for prevention and management of priority invasive alien species are strengthened and operational.
Goal 2: To generate benefits for all citizens from biodiversity and ecosystem services for improved human well being **Targets**	***Goal 4: To engender behavioural change through knowledge management and capacity building for sustained implementation.*** **Targets**
• 2.1 Critical ecosystems that contribute to water sanitation and livelihoods for improved social welfare, particularly health, poverty reduction and well-being, especially of women, youth and other vulnerable groups are being restored and safeguarded. • 2.2 Ecosystem resilience is enhanced through synergistic collaboration in the implementation of MEAs and other relevant fiscal measures including PES/CES and the reform of perverse incentives. • 2.3 By 2015, appropriate systems to make the Nagoya Protocol on Access to Genetic Resources operational and the Fair and Equitable Sharing of Benefits Arising from their Utilization, for all citizens, especially for women, youth and other vulnerable groups are established and functional.	• 4.1 The updated NBSAP is endorsed by cabinet and systems are in place and operational for effective implementation using participatory and collaborative approaches. • 4.2 Data management systems for biodiversity management are improved, particularly with regard to systems for data gathering and widespread dissemination. The International Platform for Biodiversity and Ecosystem Services (IPBES) is engaged by the country to help monitor and assess the conservation of its biological resources • 4.3 The National Clearing House Mechanism (CHM) is made operational and functional as the means for development of systems for policy, scientific and technological knowledge sharing, transfer, and application for effective management of biodiversity. • 4.4 Appropriate systems and measures for the documentation and protection of traditional knowledge, practices and innovations related to biological resources are in place and subject to national legislation for societal use. • 4.5 Mobilisation of sustainable financial resources for effective implementation of the NBSAP activities and overall biodiversity management, in accordance with the agreed processes in the Strategy for Resource Mobilisation in the updated NBSAP.

The Revised Draft 2nd NBSAP gives due cognizance to the alignment of the country's national strategic goals and biodiversity targets with that of the 2011-2020 Strategic Plan for Biodiversity, ensuring that the 20 Aichi targets are particularly well embedded with a well-defined suite of activities that can be effectively monitored for impact.

The goals of the Revised Draft 2nd NBSAP are four-fold and build on the guiding principles and priority areas identified for the country at this time, with the National Targets ordered under the appropriate goal. The targets are time-bound (by 2020), consistent with the 2011-2020 Strategic Plan, and the various interventions to meet these targets are to be undertaken within a strategic framework with short, medium and long term interventions.

The targets will be further honed through the development and implementation of annual work plans that will comprise the details of interventions, actions, time frames and beneficiaries. The broad indicators for measuring progress towards targets are provided in

the Monitoring and Evaluation Plan for the Revised Draft 2nd NBSAP, and these too will be similarly detailed during the preparation of work plans.

The revised Vision for the updated 2nd NBSAP for Saint Lucia thus promotes the complete use of biodiversity in all aspects of life.

Vision for Revised 2nd NBSAP

"Biodiversity is vital for better living: *By 2050, the valuation of biodiversity and ecosystem services is firmly embedded in all the island's efforts at creating* ***resilient livelihoods, social systems and ecosystems*** *for* ***improved human-well-being*** *in pursuit of its sustainable development agenda"*

The Revised 2nd NBSAP will be delivered through 3 components or strategic areas of intervention:

Component 1: Transformative Interventions focuses on the implementation of tangible economic, social and ecosystems' resilience-building measures at the community and national levels. This component delivers through a number of activities across various sectors aimed at securing investment in proven and innovative measures to sustainably use and manage biodiversity resources. The use of pilot demonstrations is espoused to support the catalytic and replication dimension of the NBSAP.

Component 2: Facilitation/Catalytic Interventions seeks to create an enabling environment to catalyse and/or facilitate the implementation of transformative interventions in Component 1. Actions entail the review and enhancement of the existing policy, legislative, institutional and fiscal framework; targeted capacity building for specific groups; improved knowledge management through the CHM; and broad education and outreach.

Component 3: Financing Interventions focuses on the development of mechanisms for securing more sustainable financing for effective biodiversity management. This entails the development of mechanisms to effectively generate, channel and manage potential funding sources for activities relating to the management of biological resources.

Actions Taken to Implement Convention

The Draft 2ndNBSAP was not submitted for national endorsement by the Cabinet of Ministers due to unfinished business, which did not permit its structured and coordinated implementation. However, the Biodiversity Unit continued to operate within the Ministry with the responsibility for Agriculture, and more recently within the Ministry with responsibility for Sustainable Development. The Unit, comprising 2 staff, used a participatory approach with various sectors, agencies and communities to promote biodiversity management enabling activities. As a result, a number of initiatives of relevance to

biodiversity management in Saint Lucia have been undertaken since the formulation of the Draft 2nd NBSAP and the 4th National Biodiversity Report to the COP.

Many of these actions have significantly impacted the national landscape for biodiversity management, foremost of which was the establishment of a Ministry of Sustainable Development, Energy, Science and Technology in 2011. This resulted in the consolidation of the range of allied departments, including the Sustainable Development and Environment Division, which has the mandate for the coordination of multilateral environmental agreements.

Biodiversity enabling activities being undertaken across a range of sectors and agencies, and currently are not directly recorded within the framework for biodiversity management and NBSAP implementation. However, since the 4th National Report, several changes have occurred at various levels of biodiversity management and are reported on in this document. For example, there have been revisions to the national framework for conventions and agreements for Saint Lucia, new inclusions to the policy environment for biodiversity management across a range of thematic areas and newly revised legislation.

Various outcomes in light of positive changes in biodiversity have been realised and reported on, including the success story of recovery of threatened animal species (**Box 3.1**) and the outcomes of the OECS Protected Areas and Associated Livelihoods (OPAAL) Project which involved the establishment of the Eco South Tours; a private company in the south of the island whose members provide ecotourism tours.

Biodiversity Mainstreaming

For the most part, mainstreaming of biodiversity appears to have been largely incidental to the implementation of the NBSAP, as the implementation of the Draft 2nd NBSAP could not have been actively pursued. However, there were several interventions undertaken across sectors, and the broad spectrum of national agencies, the outcomes of which reflected some measure of integration of biodiversity considerations into instruments and processes of these agencies (**Table 3.3** and **Table 3.4**).

Since the 4th National Report, a new Ministry for Sustainable Development, Energy, Science and Technology has been established and this is now home to the Biodiversity Unit. Consequently, biodiversity management now forms an integral part of the sustainable development agenda for the country, and is well embedded within the strategic plan of the Ministry. More importantly, biodiversity principles and insights are also being more deeply ingrained in national development planning through the Medium Term Strategy and Plan and National Development Plan. Hence biodiversity considerations are actually becoming a key attribute in the consideration of poverty reduction and other socio-economic development strategies.

Further there appears to be a direct correlation between many of the actions taken to implement the NBSAP and the Convention on a national scale (**Table 3.5**).This may be attributed to the fact that a fully participatory approach across a broad range of stakeholders was utilised in the development of the Draft 2nd NBSAP, and this meant that the objectives and insights of these various stakeholders and agencies would have been well integrated into the NBSAP and *vice versa*.

The success story of the Soufriere Marine Management Association (**Box 3.3**) epitomises the concept of effective mainstreaming of biodiversity issues across a wide range of sectors.

The process towards the formulation of this 5th National Report further identified improvements needed in the key mechanisms and tools used for integrating biodiversity concerns into sectoral and cross-sectoral strategies and plans, *inter alia*:

- Legislative Mandate
- Knowledge and Information/CHM
- Functional collaboration/Inter-sectoral Committees/Networking
- Integrated development planning/Spatial Planning
- EIA/SEA
- Ecosystem Approach.

Part III. Progress towards the 2020 Aichi Biodiversity Targets and contributions to the relevant 2015 targets of the Millennium Development Goals

This section of the document undertakes an assessment of the progress of Saint Lucia towards achievement of biodiversity targets and MDGs.

Progress towards 2020 Aichi Biodiversity Targets and MDGs

Data available from relevant sources (government agencies and NGOs, as well as online sources) which demonstrated a potential means to measure changes in national biodiversity status in the context of proposed Biodiversity Indicators identified for the Revised 2nd NBSAP, were used for understanding and assessing biodiversity. Based on these sources, an updated assessment of progress made by Saint Lucia towards the implementation of the Convention and the Strategic Plan for Biodiversity 2011-2020 and its Aichi Biodiversity Targets and contributions to the relevant 2015 targets of the Millennium Development Goals (MDGs) was presented in Part III this report.

Several examples are provided to show how Saint Lucia is responding to MDGs of relevance to the NBSAP, namely MDGs 1 and 7, which refer to linkages between biodiversity and poverty eradication and environmental sustainability, respectively. The NBSAP is one of the instruments that will be used by Saint Lucia to ensure that mainstreaming of biodiversity insights and principles promote sustainable livelihoods and contribute to poverty reduction. Environmental sustainability and the implementation of actions aimed at reducing the loss of

environmental resources, including biodiversity resources, are also addressed through various initiatives under the NBSAP.

Initiatives contributing to implementation of the Convention and MGDs include the preparation of the revised SPPA2; a framework for climate resilience building (SPCR); National invasive Species Strategy (NISS); management plan for protected areas (e.g. SMMA – **Box 3.3**); and management plan for threatened species (white breasted thrasher– **Box 4.3**.Direct interventions, such as forest restoration and rehabilitation and the establishment of germplasm banks have also contributed to implementation of the Convention and MGDs.

Undoubtedly, the consultative process for the elaboration of the NBSAP continues to ensure participation from all levels and foster the full, effective contribution of women, local communities, civil-society organisations, private sector, and other stakeholders for the implementation of the objectives of the Convention and its Strategic Plan for Biodiversity (2011-2020), including its Aichi Biodiversity Targets.

Lessons Learned from Implementation of Convention

Significant strides are reported towards the achievement of the objectives of the Convention, with regard to promoting and improving conservation and sustainable use of biodiversity and the fair and equitable sharing of benefits arising out of the utilization of genetic resources. Some of the major achievements include initiatives for conservation and restoration, such as the revised SPPA2; a framework for climate resilience building; a National Invasive Species Strategy (NISS); management plans for some protected areas (e.g. SMMA – **Box 3.3**) and species (e.g. white breasted thrasher – **Box 4.3**); forest restoration and rehabilitation; and the establishment of germplasm banks. Also notable, has been the increasing use of an ecosystems approach, especially with regard to species restoration and sustainable production and use. At the local, regional and international level, financial resources have been mobilised and progress has been made in developing mechanisms for research, monitoring and scientific assessment (Case Study L'encens – **Box 4.1** and Species Recovery highlighted in **Box 4.3** and **Box 4.4**).

However, there are still a number of areas where progress has been slow and challenges continue to be encountered, as has been alluded to in previous sections and case studies. **Box 4.5** highlights some less successful actions undertaken.

Gaps and Future Priorities

Saint Lucia has made noteworthy progress in the implementation of the Draft 2nd NBSAP and the Convention, as indicated by accomplishments and activities related to biodiversity and ecosystems management undertaken at the various levels of society since preparation of the Draft 2nd NBSAP. However, the process for revision of the Draft 2nd NBSAP was purposed to identify any pertinent issues that have remain unaddressed in terms of gaps and limitations of the Draft 2nd NBSAP.

One of the major gaps in the Draft 2nd NBSAP which needed to be addressed because the document was drafted prior to the adoption of the Strategic Plan in 2010, was the incorporation of the requirements of the Global Strategic Plan for Biodiversity (2011-2020) and it's Aichi Targets. Further, the principal gaps and limitations emanating from a review of the Draft 2nd NBSAP and detailed in Part II of this report, indicated the need for an improved construct for the revised 2nd NBSAP to ensure a results-based framework that established a more holistic vision, with clearly defined goals and specific, measurable, attainable, realistic and timely (SMART) targets that were aligned with the Aichi Targets, to enable effective monitoring and review.

To effectively address the threat of habitat destruction as it relates to land use changes, it will be necessary to incorporate more binding requirements for land use planning and physical development initiatives with regard to biodiversity management. In this regard, adequate enforcement and compliance will be critical. Stronger and more formal linkages with key entities such as the Ministries with responsibility for National Development, Physical Development and entities such as the Development Control Authority (DCA) will also be required to foster a development agenda imbued with requisite biodiversity values and insights.

The review in Part II highlighted that, in as much as the Draft 2nd NBSAP has been devised and supported by other programmes relating to conservation and sustainable use of biodiversity, it has not yet fully embraced the potential opportunities associated with a now emerging and important value of biological resources and natural capital: The Green Economy.

Some elements of the biodiversity management framework have been deemed critical for ensuring that biodiversity values and insights become well embedded into the national planning agenda. These elements include, *inter alia*, appropriate governance systems and processes to guide biodiversity management and to ensure inter sectoral and inter agency coordination; creation of appropriate partnerships between the public sector, private sector and civil society; a sustained communication, education and awareness programme on biodiversity issues and the NBSAP; and tools and platforms necessary for creating a repository on information and knowledge on the various aspects of biodiversity in Saint Lucia.

Recommendations

Framework for Governance: The framework for governance for biodiversity management ought to be anchored within the environmental management framework as this will promote the integrated development planning process, thereby cementing the link between biodiversity management, environmental management and sustainable development at all levels. The National Environmental Commission which already establishes the foundation for enabling effective inter-agency collaboration on environmental planning and management, should be enhanced with the National Biodiversity Coordinating Committee (NBCC) serving

as a subcommittee specifically focused on ensuring that biodiversity insights and values are incorporated into this level of planning.

Ownership: The implementation framework must further seek to obtain ownership of the Revised 2nd NBSAP at the Ministerial level in an effort to secure better political buy-in than was achieved for previous Plans. Given the spread of Ministerial mandates, an implementing entity which straddles three key portfolios of (i) Finance, (ii) National Development and (iii) Sustainable Development, Energy, Science and Technology (MSDEST) will need to be considered. Ministerial lobby of other critical Ministries such as Agriculture, and Fisheries, Tourism, and Commerce will be undertaken through the National Environment Commission (NEC), a Cabinet appointed body comprising key policy makers in public and private sector, and civil society organisations.

Institutional Arrangements: Existing institutional arrangements will need to be further enhanced. The Biodiversity Unit which now resides in the Ministry of Sustainable Development should be established as a separate and distinct unit within the Ministry, supported by the other departments within the Ministry, including the Sustainable Development and Environment Division, Forestry Department, Water Resource Management Agency and the Accounting Section of the Ministry. The Unit would serve as the secretariat for the various coordinating mechanisms. Memoranda of Understandings and other agreements, with roles and responsibilities clearly defined, could also be utilized for collaboration and cooperation, once the requisite support (legal, financial) is in place to ensure adherence.

Monitoring and Evaluation: Effective Monitoring and Evaluation (M&E) of the Revised 2nd NBSAP should be an on-going process that is well coordinated and utilizes participatory approaches. The monitoring and evaluation (M&E) framework also needs to be inextricably linked to the existing Clearing House Mechanism (CHM) for research and systematic observation and concomitant data and information acquisition, and knowledge management and sharing.

Capacity: Capacity strengthening is required at all levels: policy, institutional, sector, community, and individual level. Institutional capacity for systematic monitoring needs to be upgraded in terms of equipment and skills to be able to provide the necessary follow-up on decisions taken and identify gaps and constraints as they arise. Existing programmes need to be upgraded or new programmes established where necessary, to create a national network for research and systematic observation to effectively monitor biodiversity and ecosystems, especially with regard to the emerging issues of invasive species, climate change biotechnology, and intellectual property.

The participation of the country in the processes of, and related to the Convention, such as the International Platform on Biodiversity and Ecosystem Services, should be supported and encouraged.

Moreover, specific groups will need to be empowered with knowledge and skills on business opportunities for biodiversity friendly goods and services, paying special attention to the creation of sustainable livelihoods for vulnerable groups.

Communication and Outreach: Resources should be made available for the design and implementation of a Communication and Outreach Strategy targeting policy makers and other decision-makers, the general public and specific groups, including the vulnerable persons. The existing draft Biodiversity Education and Awareness Strategy needs to be enhanced into a broader CEPA Strategy. The Strategy must aim to equip the various publics with the necessary knowledge and tools to take meaningful action to accrue the potential benefits of biodiversity and genetic resources in Saint Lucia.

Finance: Financing Interventions will need to focus on activities that will generate sustainable financing options to implement the NBSAP. In this regard, the soon to be established National Conservation Fund can be used as one of the mechanisms for mobilizing funding from external sources. Additional funding for biodiversity management related interventions will need to be sought through available and on-going projects and programmes.

List of Acronyms

ABS	Access and Benefit Sharing
ACP	African, Caribbean and Pacific
ACS	Association of Caribbean States
AGBRA	Australian Great Barrier Reef Authority
APD	Air Passenger Duty
AusAID	Australian Agency for International Development
AWP	Annual Work Plan
BIN	Biodiversity Information Network
BIP	Biodiversity Indicator Partnership
BPoA	Barbados Plan of Action
CALF	Climate Adaptation Lending Fund
CANARI	Caribbean Natural Resources Institute
CARICOM	Caribbean Community
CBD	Convention on Biological Diversity
CDB	Caribbean Development Bank
CEPA	Communications, Education and Public Awareness
CEPF	Critical Ecosystem Partnership Fund
CIRAD	French Agricultural Research Centre for International Development
CITES	Convention on International Trade in Endangered Species of Fauna and Flora
CMS	Convention on the Conservation of Migratory Species
CHM	Clearing House Mechanism
COP	Conference of the Parties
CREWS	Coral Reef Early Warning System
CRFM	Caribbean Regional Fisheries Mechanism
CPACC	Caribbean Planning for Adaptation to Climate Change
CSA	Critical Situation Analysis
CSME	CARICOM Single Market and Economy
CZMAC	Coastal Zone Management Advisory Committee
DCA	Development Control Authority
DRR	Disaster Risk Reduction
DVRP	Disaster Vulnerability Reduction Project
EIA	Environmental Impact Assessment
EMF	Environmental Management Framework
EMS	Environmental Management Systems
EU	European Union
EUREP-GAP	Euro-Retailer Produce Working Group-Good Agricultural Practices
EEZ	Economic Exclusive Zone
FAO	Food and Agriculture Organisation
FFI	Fauna & Flora International
GAPs	Good Agricultural Practices
GCCA	Global Climate Change Alliance
GIS	Geographic Information Systems
GOSL	Government of Saint Lucia

GMO	Genetically Modified Organism
KAP	Knowledge, Attitudes and Practices
KRZ	Kentucky Reptile Zoo
IAS	Invasive Alien Species
ICT	Information and Communications Technology
ICRAN	International Coral Reef Action Network
IDP	Integrated Development Planning
IICA	International Institute for Cooperation on Agriculture
IMO	International Maritime Organisation
INTERPOL	International Police Organisation
IPBES	International Platform on Biodiversity and Ecosystem Services
ITPGRFA	International Treaty on Plant Genetic Resources for Food and Agriculture
IUCN	International Union for Conservation of Nature
IWCAM	Integrated Watershed and Coastal Area Management
IWEco	Integrating Water, Land and Ecosystems in Caribbean Small Island States
LAC	Limits of Acceptable Change
LBS	Land-based sources of marine pollution
LMO	Living Modified Organism
LEAP	Leadership Enhancement in Agriculture Programme
MACC	Mainstreaming Adaptation for Climate Change
MARPOL	Cartegena Protocol, International Convention for the Prevention of Pollution from Ships
MAT	Mutually Agreed Terms
MDG	Millennium Development Goal
M&E	Monitoring and Evaluation
NAPA	National Adaptation Programme of Action
NBCC	National Biodiversity Coordinating Committee
NBME	National Biodiversity Management Entity
NBTC	National Biodiversity Technical Committee
NBSAP	National Biodiversity Strategy and Action Plan
NCF	National Conservation Fund
NEC	National Environmental Commission
NEDS	National Export Development Strategy
NEMAC	National Emergency Management Advisory Committee
NEP/NEMS	National Environmental Policy and National Environmental Management Strategy
NETS	National Eco-tourism Strategy
OPAAL	OECS Protected Areas and Associated Livelihoods Project
OUV	Outstanding Universal Value
PIC	Prior Informed Consent
PMA	Pitons Management Area
PSEPA	Point Sable Environmental Protection Area
RAMSAR	Convention on Wetlands of International Importance Especially as Waterfowl Habitat
REDD	Reduced Emissions from Deforestation and Forest Degradation
RFNSP	CARICOM Regional Food and Nutrition Security Policy
RSO	Research and Systematic Observation

SCP	Sustainable Consumption and Production
SDED	Sustainable Development and Environment Division
SEA	Strategic Environmental Assessment
SEEA	UN System of Environmental Economic Accounting
SFM	Sustainable Forestry Management
SIDS	Small Island Developing State
SLNT	Saint Lucia National Trust
SLM	Sustainable Land Management
SMMA	Soufriere Marine Management Area
SMART	Specific, measurable, attainable, realistic and timely
SNC	Second National Communication on Climate Change
SPAC	Special Programme for Adaptation to Climate Change
SPCR	Strategic Plan for Climate Resilience
SPPA	Systems Plan for Protected Areas
STI	Science, Technology and Innovation
TEEB	The Economics of Ecosystems and Biodiversity
TNC	The Nature Conservancy
UN	United Nations
UNCCD	United Nations Conference to Combat Desertification
UNCLOS	United Nations Convention on the Law of the Sea
UNEP	United Nations Environment Programme
UNESCO	United Nations Educational, Scientific, and Cultural Organisation
UNFCC	United Nations Framework Convention on Climate Change
USAID	United States Agency for International Development
UWI	University of the West Indies
V&A	Vulnerability and Adaptation Assessments
VAT	Value Added Tax
VCA	Vulnerability and Capacity Assessment
WAVES	Wealth Accounting and Valuation for Ecosystem Services
WHC	World Heritage Centre (UNESCO)
WIDECAST	Wider Caribbean Sea Turtle Network
WRI	World Resources Institute
WRMA	Water Resources Management Authority

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1.0 Introduction

1.1 Country Profile

Saint Lucia, is a small volcanic island located at latitude 13^{o} 59' N, and 61^{o} W within the Lesser Antillean Arc of the Caribbean Archipelago (**Figure 1.1**). The island is characterised by steep, rugged landscapes with deep valleys and fast flowing rivers (**Figure 1.2**). Like many of its neighboring islands, Saint Lucia is of volcanic origin, evident by the island's rugged interior. Surrounded by the Atlantic Ocean and the Caribbean Sea, the island's tropical location has endowed it with a number of habitats, and rich terrestrial and marine biodiversity. Geologically, this island is young, not exceeding 50 million years. Its tallest peak, Mount Gimie, extends 959 meters above sea level.

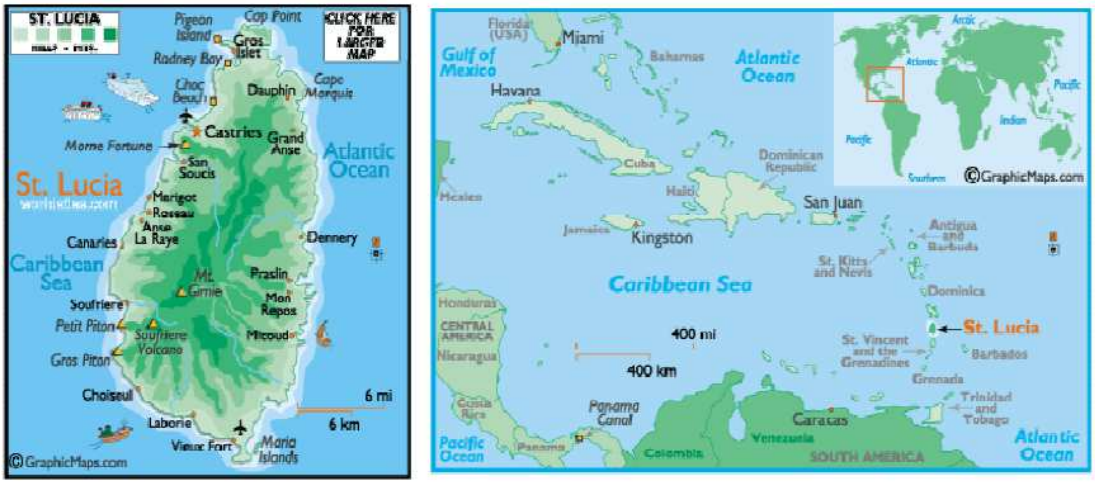


Figure 1.1: Saint Lucia Geographic Location

The island has a total land area of approximately 616 sq km and a coastline of approximately 158 km. Saint Lucia experiences a tropical maritime climate with two climatic seasons, a wet season (June to November) and dry season (December to May). Tropical disturbances (waves, depressions, storms, hurricanes) account for the greater amount of the recorded rainfall during the rainy season

Figure 1.2: Saint Lucia's rugged topography
Credit: ttdigital.com

Notwithstanding its relatively small size, Saint Lucia possesses a high degree of biological diversity. It is found not only in the ecosystems and habitats on the

island, but also in the variety of resources which sustain life. Some of these biological resources are endemic to the country: more than 200 species occur nowhere else, including 7 per cent of the resident birds and an incredible 53 per cent of the reptiles.[2]

Though Saint Lucia's rugged, volcanic interior remains thickly forested and healthy coral can still be found offshore, its flatter land areas have long been cleared for agriculture. The island's coastal dry forests are increasingly destroyed for tourism development. Saint Lucia's biodiversity is also threatened by over 300 alien invasive species (including rapacious mongooses and opossums) and over-exploitation. At least 69 native species have already disappeared.[3]

Saint Lucia's population is approximately 170,000; with large segments of the island's population located along the coastal belt, where agriculture and coastal resources are important sources of livelihood. The coastal areas are also where most of the tourism related and other infrastructure are located.

Population centres and economic activities are concentrated along the coast and this is largely due to the country's biological diversity. Both the tourism and agricultural sectors rely heavily on the country's biological resources for their sustainability. However, both sectors also adversely impact on these resources adversely. The principal tourism product is inextricably linked to coastal and marine habitats such as beaches and coral reefs, the extensive use of which results in ecological change and sometimes degradation and loss of capacity for productive use. Current systems of farming involve the exploitation of land resources and terrestrial biodiversity to maximize economic output, inevitably at the expense of the biological resources and environment.

Biodiversity is important to Saint Lucia for food, shelter, medicines, and other ecosystem services, sustainable livelihoods, agriculture, tourism industries and future untapped industries.

Employment opportunities generated by the growth of beach oriented high density, high impact tourism, and the rapid urbanisation of many rural areas have resulted in rural-urban drift with a consequential 60% of the island's population residing along the north-west corridor. This rural-urban drift has resulted in denser populations living in unplanned or informal settlements around the Castries Basin. Further, due to the nature of land tenure in the country, unplanned settlements[4] have also arisen in rural areas.

1.2 Poverty

Country data for 2011, show good social indicators, including low levels of maternal and infant mortality, universal primary and secondary education, low fertility, and increasing life

[2]Fauna and Flora International.http://www.fauna-flora.org/explore/saint-lucia/. Accessed on March 1 2014.
[3]*Ibid.*
[4]These are residential areas where housing units have been constructed on land to which the occupants have no legal claim or areas where housing is not in compliance with the current building and planning regulations.

expectancy. However, these exist alongside high and increasing levels of poverty: 25.1% in 1995 and 28.8% in 2005/06[5].

Figure 1.3: Flooding in Dennery in 2010

Notably, a positive correlation has been observed with increasing incidence of poverty and increased vulnerability to impacts of disasters, in particular rainfall changes (floods and drought) and climate change impacts such as sea level rise and increased storm surge.[6]The impact of Hurricane Tomas in 2012 was felt most in those areas that had been determined as areas of high poverty in the earlier mentioned studies. During Hurricane Tomas, for instance about 500 households in the community of Dennery were severely affected by flood waters; 400 had their houses severely damaged[7] (**Figure 1.3**). The 2005/2006 Poverty Study[8] identified 34.2% of the population in this community to be poor.

1.3 Gender and Unemployment

Over 40% of households in Saint Lucia are headed by women who have the main responsibility for the economic welfare of their families. Women's participation in the various economic sectors is generally as farmers, fishers, agro-processors and small business operators, all of which are inextricably linked to biodiversity management and use.

In general, unemployment among women and youth is much higher, than the corresponding level for men, especially those with a primary school education and few marketable skills, which limits their potential to enjoy a reasonable standard of living. It is imperative therefore, that due consideration is given to ensuring increased opportunities for the overall participation of women and youth in biodiversity benefits, within the context of vulnerable groups in the society.

1.4 Economic Sectors

A number of externalities have impacted and continue to impact the island's economy, including changing trade regimes, rising fuel prices and the international financial crisis. The economy has consequently undergone significant adjustment from being agrarian-based to service-based, with the services sector, in particular tourism, leading economic growth.

[5]Caribbean Development Bank. Poverty Assessment Report – St. Lucia (2005/06).Prepared by Kairi Consultants Ltd.

[6] UNISDR Global Assessment Report 2011: Revealing Risk, Redefining Development. Geneva, Switzerland.

[7] Report of the International Federation of Red Cross and Red Crescent (IFRC) Disaster Relief Emergency Fund (DREF).http://www.ifrc.org/docs/appeals/10/MDRLC001do.pdf

[8] The Poverty Assessment (2005/06) identified the ripple effect of decline in banana earnings into other areas of the economy, spreading poverty beyond the agricultural sector and contributing to increased poverty and vulnerability in rural communities.

Currently, Saint Lucia's economy is thus based primarily on tourism and the remnants of agriculture, with other contributing sectors including construction and manufacturing. The potential for large-scale agricultural and food production for domestic consumption is growing limited, as more agricultural land is being converted into other uses and the number of persons working in the sector has shown a steady decline. It is interesting to note that the tourism industry offers considerable potential for expanding consumption of locally-produced agricultural products since Saint Lucia receives approximately 500,000 cruise passengers and 200,000 stay-over visitors annually[9].

1.4.1 Tourism

Over the past decade and a half, tourism has become the leading foreign exchange earner, contributing significantly to Gross Domestic Product (GDP) and total exports of goods and services (**Figure 1.4**). In 2012, tourism contributed US$169 million directly to the GDP of Saint Lucia, representing a 13% contribution to the economy9. Tourism is also an important employer, representing 18.6% of employment. Tourism therefore, plays an important role in the economic, socio-cultural and environmental welfare of Saint Lucia. However, the tourism sector continues to be challenged by the continued sluggish global economic recovery and loss of airlift particularly from the United States (the main source market) and the impact of the Air Passenger Duty (APD) on United Kingdom arrivals.

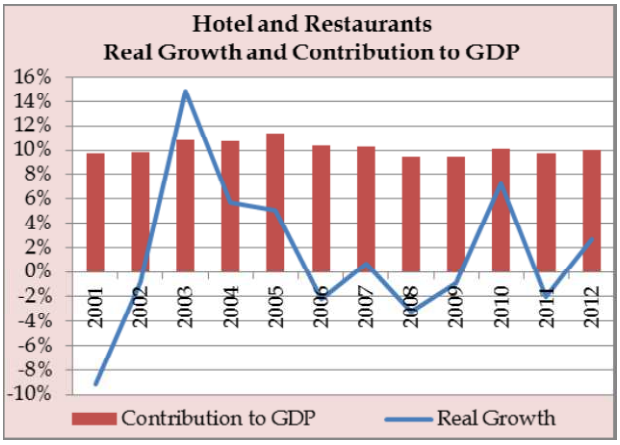


Figure 1.4: Trends in the tourism sector
Source: Saint Lucia Social and Economic Review, 2012.

Saint Lucia's ability to derive long-term benefits from tourism is clearly dependent on the sustainable use of its natural resources and the control of the negative impacts that tourism can have on the environment. Traditionally, tourism has been seen to be destructive of the environment, inclusive of the tendency to build properties on beach fronts. However, the tourism sector has begun to contribute to the protection, preservation and enhancement of natural and cultural heritage in Saint Lucia. The sector has been involved in numerous sustainable tourism initiatives focusing on greening the industry, such as the establishment and use of various environmental management programmes and systems including Green Globe 21, Blue Flag, ISO 14000 and Quality Tourism for the Caribbean. The Saint Lucia Heritage Tourism Programme was also instituted on the island to further advance the sustainable agenda at the community level by building capacity to sustainably use their physical, cultural and heritage assets for tourism development, resulting in better stewardship of those assets whilst enhancing livelihoods.

[9] WTTC Country Report, 2012

Further, there is now a growing trend in ecotourism and community based tourism in Saint Lucia. Rainforest Adventures, for instance has established a "tranopy" zip-lining park for adventure tourists and an "aerial tram" canopy tour that makes the rainforest accessible to non-hikers; for example the elderly, young children and typical cruise ship passengers. This 1,250 acre eco-tourism attraction was built within the Castries Waterworks Reserve with minimal damage to trees and now brings revenue to the rural communities around the facility. Another example of the growing trend of the sustainable management of the environment for tourism is the Sangkofa Roots Rainbow Farm agro tourism tour. The farm is open to tours and managed by a group of Rastafarians who practice organic agriculture and permaculture. Other examples worth mentioning are the Fond Latisab Creole Park and the Fond D'Or Nature and Historical Park. All these tourist attractions are maintained and managed by community groups.

1.4.2 Agriculture

In terms of agriculture, the average farm size is relatively small, hindering economies of scale in production. The last Agricultural Census, undertaken in 2007, revealed that the number of holdings was the lowest in the 46year period analysed.[10]Furthermore, there was a decline of 41% in agricultural landholdings between 1996 and 2007, with the greatest loss observed in large farms; that is, more than 70% of the farms operating more than 100 acres in 1996 disappeared in 2007; while a small increase was observed in the number of farms under 1 acre in size.

The status of biodiversity in the agricultural sector has been characterized by ongoing declines in crop production. (**Figure 1.5**) This is attributed largely to the decline in traditional crop enterprises, in particular permanent tree crops and bananas. It should be noted though that alongside the decline in acreages of the banana monocrop, an increase in production of other crop commodities was recorded. Notably, this increase continued, even following the passage of Hurricane Tomas which severely affected crop and livestock production.

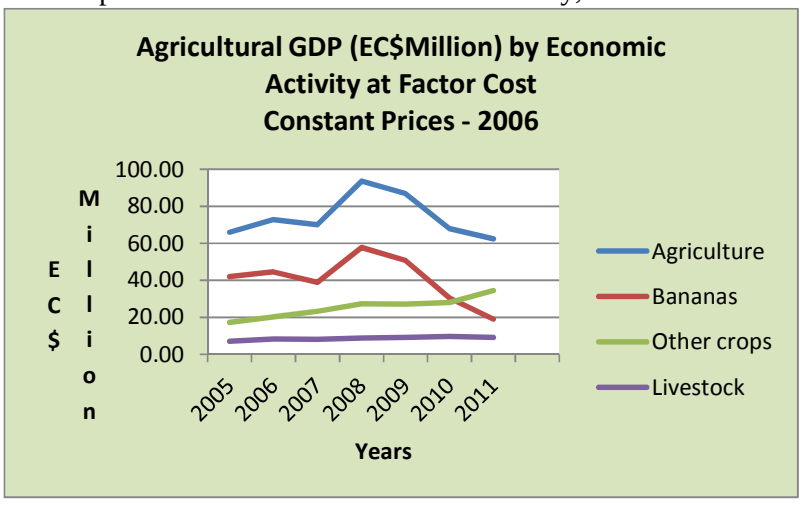


Figure 1.5: Agriculture Contribution to Saint Lucia's Economy
Source: Saint Lucia Social and Economic Review, 2011

The general decline in banana crop production has been due to global trade issues such as dismantling of the preferential access to the European Union (EU) for African, Caribbean and Pacific (ACP)

[10]GOSLU, 2007. 2007 Saint Lucia Census of Agriculture, Final Report

bananas, increase in cost of inputs, limited access to credit, the passage of Hurricane Tomas and outbreaks of diseases. The most recently introduced and devastating disease has been the Black sigatoka which is caused by the fungus *Mycosphaerella fijiensis*, and has undermined farmer confidence in the industry and contributed to the abandonment of farms. Farm acreage and number of producers decreased from approx. 2900 hectares (1500 farmers) in 2010 to less than 2000 hectares (950 farmers) in 2012. Most of the abandoned agricultural lands have been left to fallow. The return to fallow of some farms may be considered a positive consequence, especially for water resources, given the resultant reduced pollution from agrochemicals. However the abandonment of farms may have had negative impacts on terrestrial resources including agricultural biodiversity. In some cases, agricultural land was converted to non-agricultural uses leading to fragmentation of habitats, and clearing of trees and ground cover with potential adverse impacts on species and ecosystems.

Sustainably managed fisheries are viewed as a cornerstone of the national economy. Fisheries provide jobs, food security and business opportunities, particularly for persons that live in coastal communities who have traditionally derived sustenance and livelihood from the sea. In addition, the fishery sector is the number one provider of nationally produced protein, important for food and nutrition security.

1.4.3 Manufacturing

Saint Lucia does not have a large manufacturing sector mainly because its domestic market is small and it lacks competitive advantages over other Caribbean Community (CARICOM) Member States, particularly Trinidad and Tobago, which has large reserves of oil and natural gas. The food sub-sector has recorded steady growth over the last five years with the value of manufacturing output growing from EC$49.8 million to EC$59.3 million[11]. Despite these developments, growth in the sub-sector was hampered by the closure of the coconut oil factory in the last quarter of 2011 and higher fuel prices[11].

However, the sector has an evolving micro, small and medium enterprise (MSME) sector, which could be further developed by:

- Harvesting and processing natural raw materials for producing condiments, seasoning and preserves.
- Developing a competitive regional export strategy based on an understanding of the terms and conditions of the CARICOM Single Market and Economy (CSME).
- Establishing linkages with the tourism industry to supply the needs of that industry.[12]

1.4.4 Construction

According to the Economic and Social Review for Saint Lucia[13], the construction sector rebounded from the steep downturn in 2009. The report notes that while construction activity by statutory bodies declined, central government's construction expenditure increased by 4.1

[11]Saint Lucia Social and Economic Review, 2012
[12]CANARI, 2010.The Status of Sustainable Consumption and Production in Saint Lucia Report.
[13]Saint Lucia Social and Economic Review, 2010

percent to $105.6 million. The report attributes this increase to heightened activity in the last quarter, largely associated with rehabilitation works on damaged infrastructure caused by Hurricane Tomas and notes that central government's construction featured the intensification of work on the EU funded new national hospital, alongside continuation of work on road infrastructure, including the East Coast Road and a number of other smaller scale projects.

Part 1: An update on biodiversity status, trends, and threats and implications for human well-being

2.0 Biodiversity status, trends, and threats and implications

This part of the report provides an update on biodiversity status, trends, and threats and implications for human wellbeing in Saint Lucia. The section is structured to answer a number of questions that have been provided in the "Guidelines for the Fifth National Biodiversity Report" prepared by the Secretariat of the Convention on Biological Diversity (CBD):

- Why is biodiversity important for your country?
- What major changes have taken place in the status and trends of biodiversity in your country?
- What are the main threats to biodiversity?
- What are the impacts of the changes in biodiversity for ecosystem services and the socio-economic and cultural implications of these impacts?
- Optional question: What are possible future changes for biodiversity and their impacts?

2.1 Importance of Biodiversity to Saint Lucia

The island's biological resources are in the main used for food, livelihoods, industry and other ecosystem services (**Figure 2.1**) and are therefore critical for human well-being and socio-economic development as registered in the 4th National Report. As a Small Island Developing State (SIDS) with a vulnerable economy, the forest, wildlife, freshwater and marine resources of Saint Lucia are particularly important for the variety of products and services which they provide and that support the spectrum of social and economic activities[14] on the island. In addition, Saint Lucia's biodiversity and ecosystems provide ecosystem services, which directly provide inputs into the production of key sectors in the Saint Lucian economy; particularly water, soil fertility, pollination, pest control, and growth and reproduction of food species, as well as storm mitigation, climate regulation, waste assimilation, and many other functions. Nevertheless, for Saint Lucia to reverse the recent trends in poor economic growth and to persist in its poverty reduction efforts, it needs to take advantage of its natural assets for production of innovative goods and services. One major

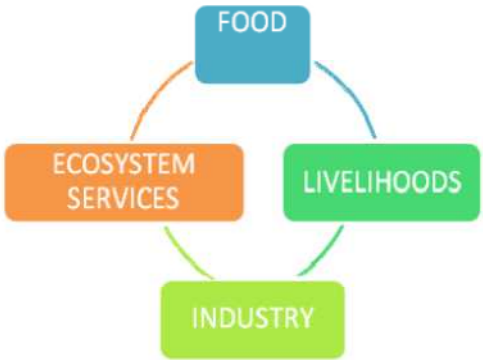


Figure 2.1: Importance of Biodiversity to Saint Lucia. Source: 4th National Report

[14]UNDP, 2010.Importance of biodiversity and ecosystems in economic growth and equity in Latin America and the Caribbean: an economic valuation of ecosystems.

asset for the country is its variety of ecosystems, well endowed with high levels of biodiversity.

Agro-ecosystems are the primary source of food provisioning. Biological diversity in this regard, is critical for ensuring food security and sustaining other key ecosystem services including regulating services, such as crop pollination and pest and disease control.

Figure 2.2: Marine resources with economic value
Credit: celebrationsinternationaltravel.com

Within the agricultural sector, fisheries contribute about 20% to the GDP and provides employment for over 3000 persons[15]. In 2012, however, the fisheries sector recorded its third consecutive year of negative growth albeit at a decelerated rate. The island continues to experience strong currents and rough seas which affect the quantity of fish landings.

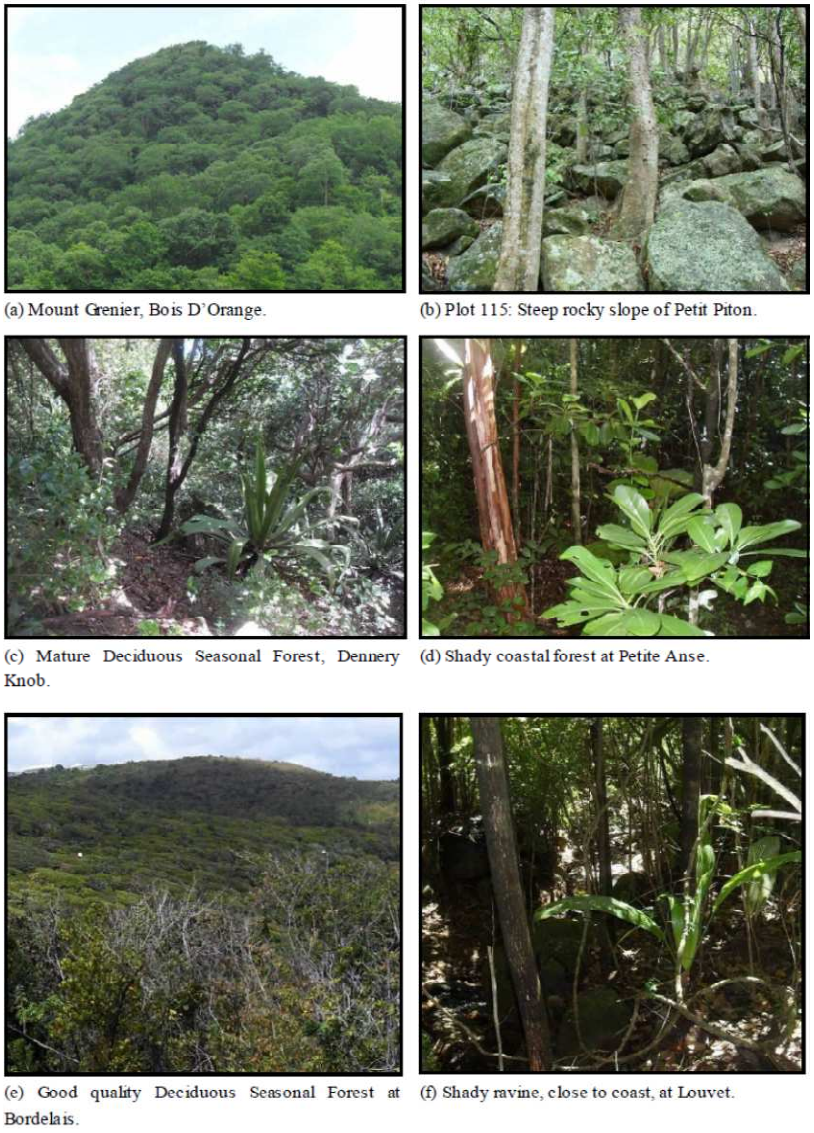
Fishing in Saint Lucia is a largely artisanal sector, where the majority of fisherfolk operate on a small scale basis, concentrating on mostly primary production, utilising small boats and limited technology which is comprised of traps, nets, and hook and line. Approximately 90% of the fishers are artisanal and most operate exclusively in coastal waters, seldom venturing beyond 50 miles of the coast. High value fisheries include the lobster (**Figure 2.2**) and conch fisheries. By not fully utilising the Economic Exclusive Zone (EEZ), parts of it are being utilized by third party states to conduct illegal fishing[16].

Annual Benefits from coral reefs were estimated as follows. For St. Lucia, tourism and recreation: $160–194 million; fisheries: $0.5 – 0.8 million; Shoreline Protection: $28 - 50 million; Consumer surplus :$2.3 million.[17]

[15]James, Christopher (N.D.) National report for Saint Lucia. FAO
[16] Caribbean Agribusiness, 2011; http://www.agricarib.org/primary-dropdown/fisheries

[17] Burke, L., S. Greenhalgh, D. Prager, and E. Cooper. 2008. Coastal capital: economic valuation of coral reefs in Tobago and St. Lucia. World Resource Institute, Washington, DC. 76 pp

Forest resources are not only crucial to maintaining key ecosystem functions such as the conservation of water and soil resources, but they provide key habitat protection for a number of species. Forests also act to ameliorate impacts of shocks to the environment (e.g. torrential rains associated with tropical storms and hurricanes). In addition, the forest sector supplies some of the local demand for timber and many non-timber forest products (NTFPs) and is an increasingly important contributor to the tourism sector through ecotourism, catering to both local and foreign visitors.



(a) Mount Grenier, Bois D'Orange. (b) Plot 115: Steep rocky slope of Petit Piton.

(c) Mature Deciduous Seasonal Forest, Dennery Knob. (d) Shady coastal forest at Petite Anse.

(e) Good quality Deciduous Seasonal Forest at Bordelais. (f) Shady ravine, close to coast, at Louvet.

Figure 2.3: Forest Vegetation Types
Credit: R. Graveson (2009)

The forests in Saint Lucia cover more than 20,000 hectares [18], approximately one third of the island's land area. Almost half are within the network of government Forest Reserves, with a total area of 9,196 hectares[19]. Much of this forest is mature but secondary, including extensive tracts of deciduous seasonal forest that are reclaiming abandoned banana plantations at lower elevations (**Figure 2.3**). Most forest areas have also been modified by human activities, such as grazing, cutting for charcoal and planting of exotic trees. Natural disturbances, such as landslides and hurricanes,

[18] FAO (1996) registered 20,073 hectares of natural forest, or 35% of Saint Lucia's land area. Definitions, and therefore published measurements, of Saint Lucia's forests vary, however, with some authors measuring only the rainforest areas or areas with an unbroken forest canopy

[19]Daltry, J.C .(2009) Biodiversity Assessment of Saint Lucia's Forests, With Management Recommendations. Technical Report No. 10 to the National Forest Demarcation and Bio-Physical Resource Inventory Project, FCG International Ltd, Helsinki, Finland.

also explain why relatively few of the forest areas display a classic climax structure in that they are constantly changing.[20]

> ***There is a much greater biodiversity outside the "rainforest" than within. Important to note is that the number of naturalized species declines with elevation and at the highest elevations the flora is totally native. In addition there is a dramatic increase in the percentage of Lesser Antillean and Caribbean endemicity moving inland from the coast, through the vegetation classes. (Graveson, 2013)***

The forests have been relied upon for this stream of NTFPs since the pre Columbian era. These NTFPs, in many instances, reflect cultural history rooted in the use of Saint Lucia's biodiversity. Some of these resources serve as foods in the form of spices and essences (e.g. mauby, vanilla). In other instances, NTFPs provide material for the traditional craft sector (e.g. calabash, sisal, latanye, roots). Various tree barks, flowers and resins are used to extract tannins or dyes. NTFPs also feature in various cultural and religious practices in Saint Lucia (e.g. incense, gommier sap) and there is growing interest in traditional herbal remedies. Many of the rural poor have earned subsistence level income from harvesting such products, selling them either in the raw form or as processed or manufactured goods. The most important NTFPs for Saint Lucia are (i) medicinal and aromatic plants[21]; (ii) edible products (mainly exotic and natural fruits, wild meat and bee products)[22]; (iii) ornamentals[23], utensils, handicrafts; and (iv) construction material[24].

The importance of NTFPs is undisputed in Saint Lucia. However, given their importance primarily to rural communities and largely informal marketing systems, they remain an under assessed sector of economic activity that is relatively unreported in the country. Given the restructuring of the banana sector and its subsequent impact on the island's economy, many rural households have had to seek either alternative or diverse strategies to generate income. Testimonies from NTFP producers who were involved in banana production revealed the difficulties that the restructuring of the banana industry had imposed on them and the importance of the supplemental income through NTFPs (e.g. broom making)[25].

Marine and coastal resources are also very important to Saint Lucia. Saint Lucia's coastal zone and marine ecosystems are characterized by mangroves, seagrass beds, coral reefs and

[20]Graveson, R. (2009). The Classification of the Vegetation of Saint Lucia. Technical Report No. 3 to the National Forest Demarcation and Bio-Physical Resource Inventory Project, FCG International Ltd, Helsinki, Finland

[21] Medicinal plants (e.g. leaves, bark, roots) used in traditional medicine

[22]Vegetal foodstuff and beverages provided by fruits, nuts, seeds, roots,(e.g. *balata, pomme de lienne*, *grisgris*); vertebrates such as mammals, birds, reptiles

[23]Entire plants (e.g. orchids, ferns, philodendron) and parts of the plants (e.g. pots made from roots) used for ornamental purposes

[24]Thatch, bamboo, fibers

[25] Lyndon, John (2005). The Potential of Non-Timber Forest Products (NTFPs) to Contribute to Rural Livelihoods in the Windward Islands of the Caribbean. CANARI

beaches, all of which not only play an increasingly important role in tourism, but form an integral component in fisheries and natural coastal defense. Coastal and marine resources also provide for livelihoods in fisheries in several rural communities, and for recreation, sports and enjoyment, and an overall source of employment for many people.

Saint Lucia's biodiversity (such as forests, waterfalls and freshwater systems, beaches and coral reefs) are an important part of the tourism product. It is estimated that coral reef associated tourism[26] contributes more than 11% of GDP[27]. Although statistical data is not available for the other eco-tourism niches, the growth of the tourism sector based on the country's natural resources is very noticeable. These enterprises range from rainforest rides, zip lining, wind and kite surfing, tracking and cycling through the rainforest and bird watching, among others (**Figure 2.4**). Although most of these enterprises are capitalised from outside of the communities where the tours take place, many persons from rural communities benefit directly or indirectly from the tours and the presence of visitors.

Figure 2.4: Aerial tram and bike riding tours http://www.tripadvisor.com/

There is no doubt that biodiversity and its ecosystem services are very important in Saint Lucia and most Saint Lucians can identify the benefits from ecosystem services as being cash, food and employment. However, the role of ecosystem services in poverty alleviation is much less understood. Most data that is available on direct use of provisioning services is patchy and very rarely relates specifically to poor, vulnerable or marginalised sections of society. The Poverty Study in 2006, for instance, does not show how ecosystem services can contribute towards poverty alleviation. In other studies there are some, limited, suggestions of how payments for environmental services, marine protected areas or community-based natural resource management may provide benefits, but no systematic or comprehensive analysis exists to adequately guide policy in Saint Lucia. There are many assumptions about the co-benefits of conserving ecosystem services and the potential knock-on effects on poverty alleviation, but few concrete instances from which lessons can be learned or practices transferred. In many cases, there may be a conflict between income generation for poverty alleviation and sustainability of resources.

[26] Scuba diving, snorkelling, operation of day charters and the operation of glass bottom boats

[27] Inter-American Biodiversity Information Network and the Organisation of American States (N.D.).Economic Valuation of Goods and Services derived from Reefs in the Soufriere Marine Management Area (SMMA), Saint Lucia.

2.2 Major Changes in Status and Trends of Biodiversity

The current review of the status of biodiversity on the island reveals continuing trends from the 4th Biodiversity Report of "*loss of forests, declining population size and range of major species, threatened species due to the perverse economics of habitat conversion to facilitate socio-economic development"*.

2.2.1 Terrestrial Biodiversity

Graveson (2013)[28] reports a general increase in the identification of plant species since the 2009 Forest Inventory. Graveson currently records 1958 species of vascular plants in Saint Lucia, of which 697 species are cultivated. There are 496 ornamentals, 166 comestibles and 88 medicinals. Plants are classified in more than 1 category, for example, soursop is a medicinal and comestible. 185 wild and cultivated species have local medicinal uses. **Table 2.1**shows a general increase in the number of species identified on the island.

Table 2.1: Comparison of Species Diversity 2009 versus 2012

	2009	2012
Flowering Plants	1288	1320
Species of fern	144	143
Gymnosperms	3	3
Indigenous species	945	1171
Naturalised/Escaped	276	295

Source: Graveson 2009 and 2012

The 1466 species reported in the wild, include three species of gymnosperms, 143 species of fern and 1320 species of flowering plants. Of the 1320 wild flowering plants, 1171 are native species and 295 species are naturalized or escaped. Two hundred and twenty five (225) Caribbean endemics, including 123 Lesser Antillean endemics and including 9 Saint Lucian endemics have now been identified. However, the data further confirms that around 65 species have not been seen since 1939. The Technical Report on the Management of Critical Species [29] identified 4 trees: *Zanthoxylum flavum*(Arkokwa – **Figure 2.5**), *Guaiacum officinale*(Gayak – **Figure 2.6**), *Juniperus barbadensis* var. *Barbadensis*(pencil cedar) and *Carapa guianensis*(acajou gwanbwa), as critically endangered.

Figure 2.5: Arkokwa – trunk (top); compound leaves and immature fruits (bottom).
Credit:© R. Graveson

[28]Graveson R. and M. Smith (2013). Plants of Saint Lucia.www.saintlucianplants.com/

[29] Morton, M. N. (2009) Management of Critical Species on Saint Lucia: Species Profiles and Management Recommendations. Technical Report No. 13 to the National Forest Demarcation and Bio-Physical Resource Inventory Project, FCG International Ltd, Helsinki, Finland.

Graveson's 2013 data shows more specific distribution of Saint Lucia flora, and indicates **709** non-weedy species being found outside the main "rainforest", while **311** non-weedy species are found inside (**Table 2.2**)

Forestry continues to be approached from a conservation standpoint where forest is used more for protection than production and selective felling of timber continues to be promoted, as opposed to clear felling.

Figure 2.6: Gayak – compound leaves and seed pods
Credit :© R. Graveson

The National Forest Demarcation and Bio-Physical Resource Inventory (2009) indicated that 60% of the timber volume is contained in 10 species, with 17% contained in *Sterculia caribaea*, mainly in smaller size classes, and an additional 10% contained in *Dacryodes excelsa*, mainly in large size classes. Fully 4% of the timber volume in the forests of Saint Lucia is contained in large *Dacryodes excelsa* trees, amounting to a total resource of approximately 120,000 cubic metres.

Table 2.2: Species Distribution for Saint Lucia Flora[30]

	Total	Native	Naturalized	%LA Endemics	%Carib.Endemics
DSF	480	395 (82%)	85 (18%)	15 (3.1%)	52 (10.8%)
SESF	310	252 (81%)	58 (19%)	22 (7.1 %)	56 (18.1%)
LMF	277	261 (94%)	16 (6%)	68 (24.5%)	108 (39%)
MF	75	75 (100%)	0	28 (37.3%)	42 (56%)
CMF	56	56 (100%)	0	25 (44.6%)	36 (64.3%)
ES	25	25 (100%)	0	11 (44%)	16 (64%)

DSF Deciduous Seasonal Forest (including coastal vegetation classes)
SESF Semi-evergreen Seasonal Forest (including lowland riparian vegetation)
LMF Lower Montane Rainforest; **MF**Montane Rainforest
CMF Cloud Montane Rainforest; **ES** Elfin Shrublands

[30] Floral data including tree ferns have been analysed, but omitting other ferns for which distribution data insufficient. Weedy species are not included in the statistics and some species are found in 2 or more vegetation classes. Allocation to a vegetation class is based on the author's personal field work and projects, and numbers are only approximate.

No recent update has been available since 2009, but anecdotal evidence speaks to a decline in the timber inventory with regard to some trees species, particularly since the damage wreaked by Hurricane Tomas in 2010. Hurricane Tomas occurring in October 2010 caused severe damage to the island's forests. It is estimated that about 37% of the forests were damaged [31]. The majority of the damages in the forest were due to widespread landslides, snapped and wind thrown trees and crown damage and defoliation. The surrounding peaks of the upper area of the community of Fond St Jacques on the west coast of the island was shown to have had much of the natural forest cover on these slopes removed and, in many cases, large tracts of land appear untended and bare (**Figure 2.7**).

Figure 2.7: Damage caused to forests by Hurricane Tomas, 2010
Credit:©UNECLAC

Increasing incidence of wildfires is also a concern for forest biodiversity loss. A Report prepared by the Department of Forestry[32] indicates that the total area that was burnt in the Millet range on the west coast of the island was 10.9 hectares and a total area of 5 hectares in Canaries was also burnt. In general, the other areas affected were smaller patches of land between 0.5 and 2.5 hectares. Most of the wildfires were related to agricultural production systems of slash and burn to clear land for planting, or set by lit cigarette butts, foreign objects in the dry grass, or intentionally set by pedestrians. Notable in all the locations were the presence of species like Bamboo, Razor Grass and Heliconia, Leucaena, Gliricida and Coconut trees, all species of high calorific content and similar type of foliar structure.

Unfortunately, the hazard maps for the country do not include the risks from the effects of vegetative cover type or other characteristics such as naturally deforested area, prone to bushfires, previously cultivated, or cleared/grubbed for proposed development. This is seemingly a call for better integration of biodiversity issues into national development planning, especially in terms of risk mitigation and resilience building.

Interestingly, there are more emerging species recognized for potential economic opportunities[33]: jiquilete (*Indigofera suffruticosa Mill.)*has been historically cultivated and

[31]UNECLAC. 2011. Saint Lucia - Macro Socio-Economic and Environmental Assessment of the Damage and Losses caused by Hurricane Tomas: A Geo-Environmental Disaster; Towards Resilience.
[32]Charles, A. 2010. *Status report on Wildfire Impact in the Millet in 2010. Department of Forestry.*
[33]F. Prescott and Laurent Jn Pierre. 2012 (Personal communication).

used for dyes. Laurent Jn Pierre (2013)[34] also detailed the following species that are used for making dyes in Saint Lucia:

- Jagua (*Genipa americana* L.)
- Bija (achiote) (*Bixaorellana* L.)
- Campeche (*Haematoxylum campechianum* L.)
- Rubia de Tintes o Granza (madder) (*Rubiatinctorum* L.),
- Henna, *Lawsonia inermis*
- *Renealmia alpinia* used to dye red plant fibres

The Saint Lucia fer-de-lance or pitviper, *Bothropscaribbaeus*, has also drawn some attention due to its medical importance and the unusual effects of its venom. There have been some published articles on the clinical effects and treatment of Saint Lucia fer-de-lance bites, including Numeric et al. (2002) and Gutiérrez et al. (2008).Presently, *Bothrops caribbaeus'* venom is available from the Kentucky Reptile Zoo (KRZ) at a price of US$250 per gram. KRZ also has a captive breeding programme for venomous snakes and has bred *B. caribbaeus* from specimens captured in Saint Lucia[35].

Figure 2.8: The L'encens Tree
Credit:©GlobalTrees

The Forestry Department and Fauna and Flora International (FFI) are helping local communities to develop a sustainable harvesting programme for the L'encens tree, a globally threatened rainforest tree whose valuable resin has been traditionally used for incense in religious ceremonies (**Figure 2.8**). This involves researching technologies for the extraction of incense from the bark of the L'encens tree without killing the tree. There are also added value uses for the

Figure 2.9: A member of the Superior Brooms producers.
Credit: ©CANARI

Figure 2.10: Aupicon Charcoal Producers Group.
Credit:©CANARI

[34] Personal Communication

[35] http://www.kyreptilezoo.org/?Venom_Extraction:Venom_Price_List

incense such as production of body creams.

The Latanye palm tree which was once overharvested to make the Latanye brooms continues to be cultivated and sustainably harvested by farmers (**Figure 2.9**). Several Latanye broom producers have also come together as a commercial enterprise, Superior Broom Producers. Mangrove trees used for charcoal are also sustainably harvested according to the diameter of the tree (**Figure 2.10**).

Reports indicate a number of threatened species including the White Breasted Thrasher, Saint Lucia Iguana, Leatherback turtle, Racer Snake and fat poke plant(***Chrysobalanus icaco***).

Figure 2.11: Saint Lucia Racer
Credit: ©FFI

In response to a local request, the FFI is also developing a new initiative to save the little-known Saint Lucia racer, which is now claimed to be the world's rarest snake due to predation by Asian mongooses and other alien predators (**Figure 2.11**).

Current activities in the North East Coast of the island including unregulated sand mining, seriously affect nesting iguanas and marine turtles; extensive loss of marine turtles (specifically *Dermochelys coriacea)* as a result of slaughters for meat and eggs; significant forest degradation by slash-and-burn for charcoal production and/or short cycle crops.

Due to their low numbers and restricted geographic area, the Saint Lucia iguana is considered as being critically endangered, meaning "at extremely high risk of extinction in the wild" (**Figure 2.12**). Now restricted to an area in the North East of the island, threats such as habitat loss, introduced predators (cats, dogs, rats, mongoose), introduced competitors, and loss of genetic integrity, have made survival of the Saint Lucia iguana, a primary conservation concern for the Saint Lucia Forestry Department,[36] which has formed a partnership with the UK-based Durrell Wildlife Conservation Trust (Durrell) to work on the recovery of this unique population. [37] An Invasive Species Project

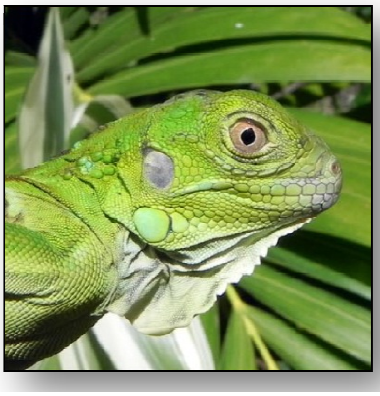


Figure 2.12: The Saint Lucian Iguana
Credit: ©CIASNET

[36]Field research initiated in 2002 represents the first stage in developing conservation strategy.
[37]http://www.ciasnet.org/2013/01/03/

examined the impact of the alien iguana on the population of this endemic species and tried to reduce the population of the alien iguana.

With the institution of good agricultural practices such as EUREP-GAP (Euro-Retailer Produce Working Group-Good Agricultural Practices), attempts continue to be made to manage agriculture sustainably. However, agro-ecosystems continue to be under threat from changes in land use. Particular declines are reported in population size of major species such as bananas and plantains, largely from pest and disease, especially black sigatoka disease (**Figure 2.13**). Other crop species recording population declines include coconuts, paw-paw, dasheen and tomatoes.

Loss in honey production due to the varroa mite disease which affects the queen bee is also reported. However, there appears to be an increase in the cultivation of traditional crops such as cocoa and breadfruit by farmers and householders. Backyard gardening activity is heavily promoted by the Ministry of Agriculture and is promoted as Jardin Keywol by the Folk Research Centre. Commercial natural herbal remedy businesses are using a wide range of local plant biological resources in their preparations.

Figure 2.13: Black Sigatoka Infection on bananas
Credit: agripinoy.net

Figure 2.14: Orchids being propagated at Plant Tissue Culture Unit in Saint Lucia
Credit: @ Plant Tissue Culture Unit

Of particular note is the introduction of new varieties of crops such as sweet potato, sorrel, pineapples, as well as ornamentals such as orchids (**Figure 2.14**). The increasing use of biotechnology (e.g. tissue culture technology) in root crops and orchids is also noted and has implications for efforts at managing agro-biodiversity. Reported increases in production of livestock species such as pigs, poultry and small ruminants (sheep and goat) are of similar concern.

2.2.2 Coastal and Marine Biodiversity

Coral reefs and wetlands remain under threat from developmental pressures. Much of Saint Lucia's coastline is bordered by nearshore, fringing reefs. According to the World Resources Institute, about 44 percent of Saint Lucia's coastline is classified as protected by

coral reefs[38].An Ecological Survey of Saint Lucia conducted in July 2011 under The FORCE project[39]assessed reef communities at10-15m depth in eight locations in Saint Lucia during July 2011: i)Vigie Beach, ii) Anse Cochon, iii) Anse Labet, iv) Turtle Beach, v) Malgretoute, vi) Superman's Flight, vii)Coral Garden, and viii)Blue Hole. The survey concluded that Saint Lucian reefs are characterized by large boulders which provide refuge to a diversity of fish, of which a large proportion were larger individuals. The reefs were some of the healthiest recorded by the FORCE team in the Caribbean. Fish communities were highly diverse and high in both abundance and occurrence of large individuals. The Soufriere Marine Reserve appears to be very valuable, containing reefs with the highest complexity and fish diversity compared to other reefs surveyed in Saint Lucia (**Figure 2.15**).

Figure 2.15: Coral Reef in SMMA
Credit: ©AGBRA

However, in 2013 a study conducted by the Australian Great Barrier Reef Authority (AGBRA) in collaboration with the Soufriere Marine Management Association (SMMA) discovered that the reefs in Soufriere are under extreme pressure from tourism and fisheries related activities. Such stresses, exacerbated by the impacts of climate change have led to increase disease and die off of vital coral reefs.

Figure 2.16 shows the distribution of fish landings in Saint Lucia. Regional research studies reported on by Sumaila *et al.* (2013)[40] provide an indication of the status of the country's fisheries resources. The study compared Maximum Sustainable Yield (MSY)[41] with actual landings to arrive at estimates of lost catch by mass. The catch loss, that is, catches foregone due to fishing beyond sustainable levels, is

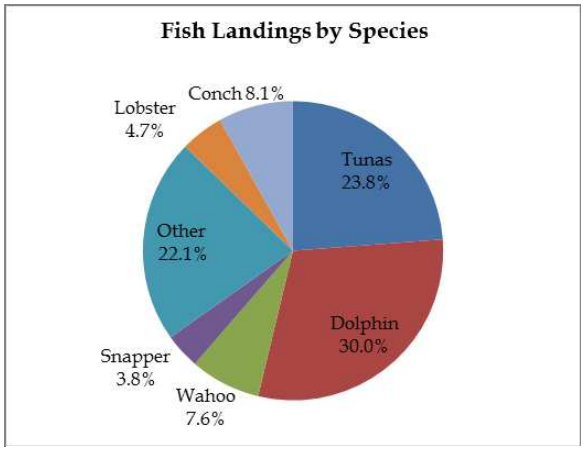


Figure 2.16: Distribution percentage of fish landings for 2012
Source: Saint Lucia Social and Economic Review, 2012

[38]http://www.wri.org/resources/maps/coral-reefs-st-lucia Accessed on March 3, 2014.
[39]The FORCE (Future of Reefs in a Changing Environment) project uses an ecosystem approach that links the health of the ecosystem with the livelihoods of dependent communities, and identifies the governance structures needed to implement sustainable development.
[40]U. Rashid Sumaila, Andrew Dyck and William W.L. Cheung Fisheries subsidies and potential catch loss in SIDS Exclusive Economic Zones: food security implications. Environment and Development Economics, Available on CJO 2013 doi:10.1017/S1355770X13000156
[41]In population ecology and economics, MSY is, theoretically, the largest catch that can be taken from a species' stock over an indefinite period. The MSY is considered by many fisheries scientists as a good target for fisheries catch because it captures the attractive idea of taking the maximum catch possible that can be sustained by the natural growth and life history of the fish.

calculated by combining MSY data with current catch reported in the *Sea Around Us* project database[42]. This study showed a loss of an estimated half of the potential catch. Subsidies that reduce the cost of fisheries operations and those that enhance revenues make fishing enterprises more profitable than they would be otherwise and could be contributing to overexploitation of fishery resources.

2.2.3 Invasive Alien Species

A significant increase in the number and incidence of Invasive Alien Species (IAS) impacting all forms of biodiversity on the island has been confirmed in recent studies undertaken by the Department of Forestry. To this end, the Department spearheaded the formulation of the Saint Lucia National Invasive Species Strategy (NISS): 2012-2021[43]. The NISS considers Saint Lucia's current context in managing IAS issues and sets out recommendations concerning suitable institutional, policy and legislative needs to address this threat. It notes that IAS management merits a proactive response that places the emphasis on prevention by establishing the necessary political will; promoting public and media awareness of environmental impacts of invasive alien species; addressing the fragmented or outdated legislation that does not cover the full range of agricultural, environment, marine and public health concerns; establishing a strategic approach and effective coordination among key departments and agencies; and building the necessary human, equipment and technical capacity to respond to IAS threats.

Figure 2.17: Feral Pigs

Pigs (*Sus scrofa)*, as a species are not protected by Saint Lucian law. They are a highly valued source of food and kept in pens by farmers. Feral pigs are invasive and widespread in the Forest reserve, threatening some rare birds and reptiles, and interfering with tree recruitment and livelihoods by destruction of home gardens (**Figure 2.17**).

The African Snail (**Figure 2.18**) is widely believed to be one of the most serious pests in the world. Ministry officials seem to think that it was introduced into the northern part of the island in 2000. Initially, fruit trees in Saint Lucia were targeted, including papaya, mango, breadfruit, and some ornamentals.

[42] http://seaaroundus.org/.

[43]Chase, Vasantha et al. Saint Lucia National Invasive Species Strategy 2012 – 2021. Ministry of Agriculture, Lands, Forestry, and Fisheries.

2.2.4 Protected Areas

The Pointe Sable Environmental Protection Area (PSEPA) contains a mosaic of rare and important coastal forest habitats, including mangroves. It is an Important Bird Area because more than 20,000 seabirds nest here[44].Within the PSEPA are the Maria Islands, a Wildlife Reserve, already under strict protection. Because the islands are free of alien mammals, they are critically important for endemic reptiles, including the world's last remaining population of Saint Lucia Racer (*Liophisornatus*), the largest populations of Saint Lucia whiptail (*Cnemidophorus vanzoi*) (**Figure 2.19**), Saint Lucia thread snake (*Leptotyphlops bruilei*) and Antilles leaf-toed gecko (*Hemidactylus palaichthus*), and probably the only populations of the Maria Islands pygmy gecko (*Sphaerodactylus microlepisthomasi*) and Maria Islands worm lizard (*Gymnophthalmus pleiinesydrion*). Maria Islands are also a very important seabird nesting area with the nesting birds including a regionally important colony of red-billed tropicbirds (*Phaethon aethereus*).

Figure 2.19: Saint Lucia Whip Tail
Credit: © Saint Lucia National Trust

Adoption and implementation efforts related to the revised Systems Plan for Protected Areas (SPPA 2)[44] is being driven by the Saint Lucia National Trust. The SPPA 2 seeks to create a framework for the designation, protection and effective management of a network of protected areas that would play a major role in securing a sustainable environmental, social and economic future for Saint Lucia. However, the SPPA2 has not yet been endorsed by the Cabinet of Ministers.

The SPPA 2 examines the current status of protected areas, both existing and proposed and recommends categories for protected areas. The Systems Plan notes that processes used to implement effective management are strong in the SMMA, but weak in the Pitons Management Area (PMA). The Systems Plan informs on potential funding available under the Sustainable Financing and Management of Eastern Caribbean Marine Ecosystems Project through the establishment of a National Conservation Fund. However the plan notes that this fund will be established as an incentive fund and that other funding mechanisms should be identified. Potential Funding mechanisms to generate financing for protected areas include protected areas user fees; hypothecated tourism taxes and levies; and direct fund raising over and above those used for the sustainable financing initiative.

[44] Haffey, D. (2009). A Systems Plan for Protected Areas in Saint Lucia.105pp. http://www.cbd.int/doc/pa/tools/A Systems Plan for Protected Areas in Saint Lucia.pdf.

The SPPA 2 states that while a network of 24 Marine Reserves (two of which are (Convention on Wetlands of International Importance Especially as Waterfowl Habitat (RAMSAR) sites) exists, many of these are not managed by effective means. The principal protected areas identified in the SPPA 2 with existing management systems in place include the Forest Reserve and Protected Forests; Pitons Management Area (also a World Heritage Site);PSEPA; and the SMMA (**Figure 2.20**).

Despite the fact that the PMA and SMMA are viewed as good examples of established management regimes and attempts at managing the resources have produced some measure of success; there are also converse reports of the biodiversity being compromised from anthropogenic and natural sources. For example, while the Rapid Reef Health Assessment Report: Soufriere Saint Lucia, 2013, states that coral cover is deemed to be moderate on Soufriere when compared to other sites in the Caribbean, it also states that coral diseases, an indicator of stress, and issues associated with land-based sources of marine pollution were observed.

Figure 2.20: Coral Reef on West Coast of Saint Lucia
Credit: scubastlucia.com

2.3 Main Threats to Biodiversity

The main threats to biodiversity in Saint Lucia have been identified as: habitat loss and fragmentation; overexploitation; pollution (including noise); climate change; and introduction of invasive species.

According to the Critical Ecosystem Partnership Fund (CEPF) 2010 report[45], the diverse ecosystems and biodiversity of the Caribbean region are subject to many immediate and long-term threats including tourism development, mining, land development and agriculture, over-exploitation of resources and the impacts of climate change, among others. For Saint Lucia, the economy is heavily reliant on tourism, and further growth will demand more land and will consume more resources, such as energy and water. Growth of quarrying and its often negative impact on human and environmental health is also a concern. Infrastructural developments and agriculture are taking a toll on fishing areas that are important as local food source, tourism, employment and foreign exchange earnings. Invasive species and infectious diseases also threaten species and habitats. Over-exploitation of resources,

[45]Critical Ecosystems Partnership Fund. 2010. Ecosystem Profile: The Caribbean Islands Biodiversity Hotspot.

including hunting and collection of turtle eggs, continue to take their toll. The island is also vulnerable to the impacts of climate change.

Compounding the risks from threats is the low level of appreciation for the importance of ecosystem services and the associated cost of their loss. Policy and regulatory frameworks tend not to address major underlying causes of environmental issues, such as population increase. In addition, enforcement of existing environmental laws by responsible agencies is often hampered by a lack of capacity.

2.3.1 Habitat Loss and Fragmentation

Habitat change through inappropriate land use and uncontrolled development is occurring at a rapid rate at present and is expected to increase even further in the future, with the proposed increase in hotel plants, marinas and golf courses earmarked for coastal regions, and the proposed increase in housing and infrastructure, such as roads, which may impact dry forest areas. There have been at least two proposals for a road through the NE coast; also multiple unsustainable extractive uses such as unregulated charcoal production has led to habitat fragmentation and loss of forest understorey impacts (**Figure 2.21**). It is also noteworthy that "dry bushlands" were the habitat least valued (out of six wildlife habitats) during a 2001 survey on attitudes towards wildlife and hunting amongst Saint Lucians who, on the whole, regarded conservation of wildlife and habitats a high priority (John 2001[46]). Thus, awareness-raising of the value of the dry forests in Saint Lucia's will have to go hand in hand with biophysical and policy interventions.

Figure 2.21: Localized forest clearance for charcoal production in gòjblan habitat at Caille Des; photo © M. Morton

Many of transboundary species aggregate in certain sites and are particularly vulnerable to overharvesting and poaching. The issue of threats to transboundary migratory species requires special consideration, as ensuring their survival requires extensive international collaboration. In most cases national laws are in place; however, a single country alone cannot secure the survival of a transboundary migratory species. Continued loss of habitats, as well as the construction of barriers such as roads, or intensive traffic or shipping along migration corridors, cannot be managed by any single country for a transboundary migratory, species. Thus, reducing threats to these species requires international collaboration on the

[46] John, L. (2001). Attitudes towards Hunting and the Development of a National Wildlife Policy in St. Lucia. Forestry Department, Union, St. Lucia, pp. 31.

protection, management and law enforcement. The rapid rise in the international illegal trade in live animals, horns, tusks, bones, fur, wool and other products will also need a dedicated enforcement effort, including from INTERPOL (international police organisation) and its member countries. Recommendations to establish alert systems to notify both parties and non-parties alike of particular emerging threats, such as planned development projects or exploitation practices that endanger major critical populations or locations, are noted.

2.3.2 Over exploitation and Pollution

Over exploitation is another threat that impacts certain biological resources used for livelihoods, such as medicinal herbs, Latanyé, tree species used for lumber and/or charcoal; with increasing costs of fuel for domestic use, the latter is poised to increase. Over-fishing and nutrient pollution affect freshwater aquatic species and marine life and is another area of concern (GOSL, 2009)[47] that has not abated since the 4th National Report.

2.3.3 Climate Change

Climate change has impacted biodiversity. For example, observations relating to changes in flowering seasons for agricultural crops have affected farmers and bleaching of coral reefs have resulted in a decline in coral cover, impacting nearshore fisheries. Increasing intensity of tropical storms associated with the impacts of climate change, have also contributed to the destruction of coral reefs due to sedimentation and physical damage; and loss of forest cover due to landslides. Further, the situation of declining water resources is also likely to deteriorate and will be further exacerbated by the impacts of climate change and climate variability.

Biodiversity and Climate Change

Two large-scale bio-geological processes, carbon and water cycles that are crucial for life on Earth, are known to depend on biodiversity that can help enhance resilience to impacts of changing climate conditions.

Figure 2.22: The Vulnerable Pitons ecosystem
The distribution of these three plants in Saint Lucia suggests they have escaped from cultivation as ornamentals and are not indigenous. The Wandering Jew is invasive around the trail on Gros Piton, replacing native ground flora. Moses in the Cradle and the Basket Plant are potentially serious invasives of the dry rocky slopes of the Pitons, threatening the native ground flora. These plants must not be cultivated in that area and should be removed from it. An awareness programme is required for the community of Fond Gens Libres.
Source: Chase, *et al.*[1]

2.3.4 Invasive Species

Globally, IAS are recognised as the second most important threat to biodiversity and impose enormous costs on agriculture, forestry, fisheries and other enterprises, and on human and animal health, as well as ecosystem services. Rapidly accelerating trade, tourism, transport and travel over the past century have

GOSL.(2009). Saint Lucia's Fourth National Report to the Convention on Biological Diversity. Saint Lucia.

dramatically enhanced the spread of invasive species, allowing them to surmount natural geographic barriers. (**Figure 2.22**).[48]

The invasive species project "Mitigating the Threats of Invasive Species in the Insular Caribbean" was recently implemented in Saint Lucia (2009-2013). The Project's activities included an assessment of the status of invasive species in the country, the development of a National Invasive Species Strategy and conduct of public awareness initiatives to reduce the introduction of IAS and to improve management of invasive species.

The Project found that IAS in Saint Lucia occur in all taxonomic groups, including animals, plants, fungi and micro-organisms, and can affect all types of ecosystems. Recent invasive alien species include Black Sigatoka (*Mycosphaerella fijiensis*) in Musa species, against which the Government has launched an aggressive management campaign (**Figure 2.23**). This campaign includes the introduction and assessment of tolerant and resistant cultivars from French Agricultural Research Centre for International Development (CIRAD). Lionfish, now a permanent addition to Saint Lucia reefs, poses a potential threat to native reef fishes as both a predator and a competitor. Indirect effects of lionfish predation may be even more severe, by reducing the herbivory that normally helps to prevent seaweeds from outcompeting corals and/or interfering with coral recruitment (Albins and Hixon, 2013)[49], given that populations of their natural predators have been reduced due to over-fishing.

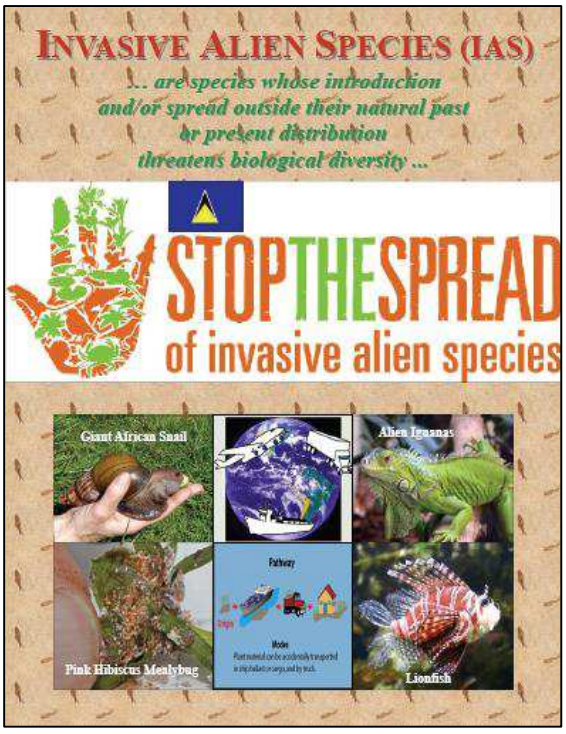


Figure 2.23: Public awareness poster on Invasive species

The emerging concern of the potential impact of Genetically Modified Organisms (GMOs) on local biological resources is also receiving attention by national government and international agencies. A biosafety project is currently being implemented in the country.

[48] Krauss, Ulrike (2010) Critical Situation Analysis (CSA) of Invasive Alien Species (IAS) Status and Management, Saint Lucia, 2010 carried out under the project Mitigating the Threats of Invasive Alien Species in the Insular Caribbean Project No. GFL / 2328 – 2713-4A86, GF-1030-09-03. Forestry Department Ministry of Agriculture, Lands, Forestry and Fisheries (MALFF) Union, September 2010.

[49] Albins, M.A., and M.A. Hixon. 2013. Worst case scenario: potential long-term effects of invasive predatory lionfish (*Pterois volitans*) on Atlantic and Caribbean coral-reef communities. Environmental Biology of Fishes 96:1151-1157.

This project is establishing systems for biosafety management including the legislative framework and improving national capacity for detection of GMOs.

2.4 Impacts of the Changes in Biodiversity

Deforestation outside the government reserve and inappropriate liquid and solid waste disposal have contributed to water shortages, soil erosion, flash flooding and reductions in agricultural yields and fish landings.

Work is in progress to reforest damaged areas. Nevertheless, forest trail visitation which is used as a system for obtaining revenue from forests, has suffered a drastic reduction in revenue in recent years and this has been further reduced with the passage of Hurricane Tomas.

Reported decline in some fisheries has been attributed in part to over-fishing and habitat destruction due to pollution of receiving waters (sediment and pesticides). There is also concern over declining high value stocks, such as lobster and conch. Seamoss farmers also report declining edible marine algae stocks. At the same time, aquaculture is being promoted and is increasingly practiced as a farming method for tilapia and shrimp.

An analysis of the fish landings by species revealed declines in the volume of tuna (18.4 percent), king fish (23.1 percent) and flying fish (83.7 percent). On the other hand, increases were recorded in the volume of dolphin, black fish and other species landed. The volume of flying fish landed has been declining steadily in the last five years and in 2012 dropped further to 4.0 tonnes from a 22.0 tonnes in 2011. This trend is partly attributed to changing climatic conditions which have influenced the migration patterns of flying fish. In 2012, Vieux Fort and Dennery remained the two largest fish landing sites on the island, accounting for 22.9 percent and 17.9 percent of total fish landings respectively. Fish landings at Vieux Fort declined by 1.4 percent to 530.9 tonnes, while fish landings at Dennery grew by 8.9 percent to 306.4 tonnes. Landings at Gros-Islet which comprise roughly 6.2 percent of the total fish landings, recorded an increase of 44.0 percent to 110.5 tonnes. Declines were recorded at all of the smaller landing sites in 2012[50].

Reports of the SMMA indicate that sedimentation levels in the coastal waters are high because of construction in some of the tourism plants in and around the watershed. Additional pollution also comes from poorly managed treatment facilities in a number of the hotels. Yachts also discharge their sewage into the moorings. This pollution has impacted on the health of the reef. Turtle Reef and the reefs off Anse Chastanet are dying. Fish stocks have declined, as have the number of snorkelers.

[50] Government of Saint Lucia (2012) Economic and Social Review

From the aforementioned, it is clear that negative impacts on biodiversity are beginning to affect the benefits being derived from biodiversity, including economic benefits.

2.5 Possible Future Changes for Biodiversity and Their Impacts

It is clear that if the current threat of habitat change and destruction is not addressed, the destruction to biodiversity will worsen and could even become irreversible. However, if adequate investments in biodiversity and ecosystems are undertaken to address the gaps, which still exist at the national, institutional and individual levels, more effective implementation of the Convention will be realised. Successful implementation of the Convention will ultimately require continued closer collaboration of the many and varied stakeholders, the availability of a wide range of skills, supported by adequate technology and financial resources. Establishing a fully conducive environment will not only result in a more effective national response to biodiversity management but will, in many ways, set the stage for the pursuit of the national goal of sustainable development with biological resources used more integrally for socioeconomic development.

Lyndon John, in the Vulnerability and Adaptation (V&A) Assessment for Forest Biodiversity for the Second National Communications on climate change (SNC)[51] notes that the range of natural life zones in Saint Lucia displays heterogeneity and rich diversity typical of the tropics. Under the climate change scenarios, Global Circulation Models are largely indicating less rainfall for Saint Lucia in the future ranging from -25 mm in the 2030s to possibly -56 mm in the 2090s (Peterson *et al,* 2002)[52]. Given a scenario with predicted reduction in rainfall coupled with increased temperatures, Saint Lucia can expect to lose its diversity in ecosystems and also expect increasing homogeneity in habitats. This may result as areas of current microclimatic conditions are lost and large scale ecosystem shifts occur.

The projected scenario also indicates a likely substantial increase in the tropical dry forest lifezones, replacing much of the current tropical moist forest areas and resulting in the possible loss of the subtropical rainforest lifezone, which is the highest rainfall ecozone in Saint Lucia. This scenario would likely have a significant impact on wildlife habitat[51].

Further, issues contributing to biodiversity changes, such as increases in tourist arrivals and exceeding environmental carrying capacity limits, are compounded by the weak capacity of the country to effectively monitor and enforce relevant standards and regulations. For instance, there has been expressed concern by the World Heritage Committee about proposed hotel development that may compromise the superlative natural beauty of the property and ongoing development that will lead to significant loss of the outstanding universal value of the PMA if not addressed[53].

[51] Lyndon, J. 2010. Vulnerability and Adaptation Assessment for Forest Biodiversity. Saint Lucia's Second National Communications on Climate Change.

[52] Peterson *et al.* (2002) cited in Taylor 2009. Scenario Generation for the Caribbean from Climate Models - Reflections from the Climate Studies Group, Mona (CSGM). Presentation at the Second Caribbean Climate Change Conference, Castries, Saint Lucia, 23 -24 March 2009.

[53] UNESCO (2013).State of Conservation – Pitons Management Area (2013).http://whc.unesco.org/en/soc/1937.

Part II. The NBSAP: Its implementation and mainstreaming of biodiversity

This part of the report provides an update on the Draft 2nd NBSAP with respect to implementation and achievement of mainstreaming of biodiversity. The section is structured to answer a number of questions that have been provided in the "Guidelines for the Fifth National Biodiversity Report" prepared by the CBD Secretariat:

i. *What are the biodiversity targets set by the country?*
ii. *How has the NBSAP been updated to incorporate these targets and to serve as an effective instrument to mainstream biodiversity?*
iii. *What actions has the country taken to implement the Convention since the last report and what have been the outcomes of these actions?*
iv. *How effectively has biodiversity been mainstreamed into relevant sectoral and cross-sectoral strategies, plans and programmes?*
v. *How fully has the NBSAP been implemented?*

3.0 The Revised 2nd NBSAP and Biodiversity Targets

A process for the revision of the first NBSAP was undertaken in 2008 and produced what was referred to as the Draft 2nd National Biodiversity Strategy and Action Plan (Draft 2nd NBSAP). The Draft 2nd NBSAP sought to address many biodiversity critical issues by focusing on re-orienting and scaling up actions to tackle the root causes of biodiversity loss. Nevertheless, subsequent to the formulation of the Draft 2nd NBSAP in 2008, there have been new and emerging issues at the international front. These include the twenty (20) Aichi Target of Conference of the Parties (COP) 10 in 2010, the Nagoya Protocol on Access and Benefit Sharing (ABS) and the need for synergies amongst Rio Conventions and the related biodiversity conventions such as Convention on International Trade in Endangered Species of Fauna and Flora (CITES) and RAMSAR. This resulted in the production of the draft Revised 2nd NBSAP.

The Revised 2nd NBSAP gives due cognizance to the alignment of the country's national strategic goals and biodiversity targets with that of the 2011-2020 Strategic Plan for Biodiversity, ensuring that the 20 Aichi targets are particularly well embedded with a well-defined suite of activities that can be effectively monitored for impact.

The goals of the Revised 2nd NBSAP are four-fold and build on the guiding principles and priority areas identified for the country at this time, with the National Targets ordered under the appropriate goal. The targets are time-bound (by 2020), consistent with the 2011-2020 Strategic Plan, and the various interventions to meet these targets are to be undertaken within a strategic framework with short, medium and long term interventions.

The targets will be further honed through the development and implementation of annual work plans (AWPs) that will comprise the details of interventions, actions, time frames and beneficiaries. The broad indicators for measuring progress towards targets are provided in the Monitoring and Evaluation Plan for the Revised 2nd NBSAP, and these too will be similarly detailed during the preparation of work plans.

3.1 National Biodiversity Targets

Saint Lucia's National Targets for each of the Goals defined in the Revised Draft 2nd NBSAP, and aligned with the Strategic Plan for Biodiversity (2011-2020) and its Aichi Biodiversity Targets are outlined in **Table 3.1**. These Targets are prioritized in terms of a logical sequence of activities based on (i) the level of priority accorded by the participants during the stakeholder consultation process, and (ii) the ability to be readily assimilated within the programmes of the agencies that are currently involved in biodiversity management, in particular members of the NBSAP Steering Committee. Notably, targets are not mutually exclusive and may have concomitant actions that span across goals.

Table 3.1: Aichi Aligned National Strategic Goals and Objectives/Targets for Saint Lucia

Aichi Goals/Targets	National Strategic Goals/Targets for 2020
Goal A: Address the underlying causes of biodiversity loss by mainstreaming biodiversity across government and society. **1. By 2020, at the latest, people are aware of the values of biodiversity and the steps they can take to conserve and use it sustainably.** **2. By 2020, at the latest, biodiversity values have been integrated into national and local development and poverty reduction strategies and planning processes and are being incorporated into national accounting, as appropriate, and reporting systems.** **3. By 2020, at the latest, incentives, including subsidies, harmful to biodiversity are eliminated, phased out or reformed in order to minimize or avoid negative impacts, and positive incentives for the conservation and sustainable use of biodiversity are developed and applied** **4. By 2020, at the latest, Governments, business and stakeholders at all levels have taken steps to achieve or have implemented plans for sustainable production and consumption and have kept the impacts of use of natural resources well within safe ecological limits.** ***Goal E: Enhance implementation through participatory planning, knowledge management and capacity building.*** **18. By 2020, the traditional knowledge, innovations and practices of indigenous and local communities relevant for the conservation and sustainable use of biodiversity, and their customary use of biological resources, are respected, subject to national legislation and relevant international obligations, and fully integrated and reflected in the implementation of the Convention with the full and effective participation of indigenous and local communities, at all relevant levels.**	***Goal 1: To internalize and integrate biodiversity values into decision making and national accounting to stimulate/advance national development.*** • 1.1 All relevant sectors and publics (communities, schools, judiciary, politicians, businesses, resource users, financial institutions etc.) are well aware of biodiversity including goods and services, and how it can be sustainably managed to derive benefits. • 1.2 The NBSAP's rationale, objectives and insights of values of nature are well embedded into other policy areas and sectors and plans to enable the contribution of biological resources to national socio-economic development. • 1.3 Improved legal and fiscal measures to support more effective biodiversity management are identified, implemented and enforced. • 1.4 Mechanisms and measures for cooperation are formalised, and harmonised plans and activities across sectors, agencies and stakeholders are in place for sustainable production and consumption, and ensuring that the impacts of use of resources are well within ecological limits. • 1.5 Traditional knowledge, innovations and practices of local communities relevant for the conservation and sustainable use of biodiversity are integrated into relevant decision making processes such as national and sectoral plans, programmes, policies with full and effective participation of local communities at all relevant levels
Goal D: Enhance the benefits to all from biodiversity and ecosystem services. ***14.*** **By 2020, ecosystems that provide essential services, including services related to water, and contribute to health, livelihoods and well-being, are restored and safeguarded, taking into account the needs of women, indigenous and local communities, and the poor and vulnerable.**	***Goal 2: To generate benefits for all citizens from biodiversity and ecosystem services for improved human well being*** • 2.1 Critical ecosystems that contribute to water, sanitation and livelihoods for improved social welfare, particularly health, poverty reduction and well-being, especially of women, youth and other vulnerable groups are being restored and

Aichi Goals/Targets	National Strategic Goals/Targets for 2020
15. **By 2020, ecosystem resilience and the contribution of biodiversity to carbon stocks has been enhanced, through conservation and restoration, including restoration of at least 15 per cent of degraded ecosystems, thereby contributing to climate change mitigation and adaptation and to combating desertification.** ***16.*** **By 2015, the Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization is in force and operational, consistent with national legislation.**	safeguarded. • 2.2 Ecosystem resilience is enhanced through synergistic collaboration in the implementation of multilateral agreements (MEAs) and other relevant fiscal measures including PES/CES and the reform of perverse incentives. • 2.3 By 2015, appropriate systems to operationalize the Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization, for all citizens, especially for women, youth and other vulnerable groups are established and functional.
Goal B: Reduce the direct pressures on biodiversity and promote sustainable use. **6. By 2020, the rate of loss of all natural habitats, including forests, is at least halved and where feasible brought close to zero, and degradation and fragmentation is significantly reduced.** **7. By 2020 all fish and invertebrate stocks and aquatic plants are managed and harvested sustainably, legally and applying ecosystem based approaches, so that overfishing is avoided, recovery plans and measures are in place for all depleted species, fisheries have no significant adverse impacts on threatened species and vulnerable ecosystems and the impacts of fisheries on stocks, species and ecosystems are within safe ecological limits. By 2020 areas under agriculture, aquaculture and forestry are managed sustainably, ensuring conservation of biodiversity.** **8. By 2020, pollution, including from excess nutrients, has been brought to levels that are not detrimental to ecosystem function and biodiversity** **9. By 2020, invasive alien species and pathways are identified and prioritized, priority species are controlled or eradicated, and measures are in place to manage pathways to prevent their introduction and establishment.** ***10.*** **By 2015, the multiple anthropogenic pressures on coral reefs, and other vulnerable ecosystems impacted by climate change or ocean acidification are minimized, so as to maintain their integrity and functioning.**	***Goal 3: To encourage and effect sustainable management and use of biodiversity and genetic resources*** • 3.1 The rate of natural habitat loss is reduced and degradation and fragmentation, especially of forest, land and water is minimised. • 3.2 Overfishing is minimised through the use of sustainable management and harvesting practices • Current and potential adverse impacts of climate change on threatened stocks, depleted species and vulnerable terrestrial, marine and fisheries ecosystems are reversed through ecosystem based approaches. • 3.3 Pollution from excessive use of fertilisers and harmful chemicals is reduced to levels that are not detrimental to ecosystem function and biodiversity loss. • 3.4 A Systems plan for Protected Areas for the conservation of important terrestrial and inland water, coastal and marine biodiversity and ecosystem services is formally established and designated PAs effectively and equitably managed and integrated into other area-based (landscapes and seascapes) conservation measures. At least 15% of terrestrial and inland water and 10% of coastal and marine areas are conserved. • 3.5 Agriculture, fisheries including aquaculture and forestry biological resources are conserved, restored and sustainably managed and the GMOs/Living Modified Organisms (LMOs) are effectively managed to minimise genetic erosion and safeguard genetic diversity. • 3.6 Appropriate systems and mechanisms for prevention and management of priority invasive alien species are strengthened and operationalised.

Aichi Goals/Targets	National Strategic Goals/Targets for 2020
Goal C: Improve the status of biodiversity by safeguarding ecosystems, species and genetic diversity. **11. By 2020, at least 17% of terrestrial and inland water, and 10% of coastal and marine areas, especially areas of particular importance for biodiversity and ecosystem services, are conserved through effectively and equitably managed, ecologically representative and well-connected systems of protected areas and other effective area-based conservation measures, and integrated into the wider landscapes and seascapes.** **12. By 2020 the extinction of known threatened species has been prevented and their conservation status, particularly of those most in decline, has been improved and sustained.** ***13.* By 2020, the genetic diversity of cultivated plants and farmed and domesticated animals and of wild relatives, including other socio-economically as well as culturally valuable species, is maintained, and strategies have been developed and implemented for minimizing genetic erosion and safeguarding their genetic diversity.**	
Goal E: Enhance implementation through participatory planning, knowledge management and capacity building. **17. By 2015 each Party has developed, adopted as a policy instrument, and has commenced implementing an effective, participatory and updated national biodiversity strategy and action plan.** ***18.* By 2020, the traditional knowledge, innovations and practices of indigenous and local communities relevant for the conservation and sustainable use of biodiversity, and their customary use of biological resources, are respected, subject to national legislation and relevant international obligations, and fully integrated and reflected in the implementation of the Convention with the full and effective participation of indigenous and local communities, at all relevant levels.** **19. By 2020, knowledge, the science base and technologies relating to biodiversity, its values, functioning, status and trends, and the consequences of its loss, are improved, widely shared and transferred, and applied.** ***20.* By 2020, at the latest, the mobilization of financial resources for**	***Goal 4: To engender behavioural change through knowledge management and capacity building for sustained implementation.*** • 4.1 The updated NBSAP is endorsed by cabinet and systems are in place and operational for effective implementation using participatory and collaborative approaches. • 4.2 Data management systems for biodiversity management are improved, particularly with regard to systems for data gathering and widespread dissemination. The International Platform for Biodiversity and Ecosystem Services (IPBES) is engaged by the country to help monitor and assess the conservation of its biological resources • 4.3 The National Clearing House Mechanism (CHM) is made operational and functional as the means for development of systems for policy, scientific and technological knowledge sharing, transfer, and application for effective management of biodiversity. • 4.4 Appropriate systems and measures for the documentation and protection of traditional knowledge, practices and innovations related to biological resources are in place and subject to national legislation for societal use. • 4.5 Mobilisation of sustainable financial resources for effective implementation of the NBSAP activities and overall biodiversity management, in accordance with the agreed processes in the Strategy for Resource Mobilisation in the updated NBSAP.

Aichi Goals/Targets	National Strategic Goals/Targets for 2020
effectively implementing the Strategic Plan for Biodiversity 2011-2020 from all sources, and in accordance with the consolidated and agreed process in the Strategy for Resource Mobilization should increase substantially from the current levels. This target will be subject to changes contingent to resource needs assessments to be developed and reported by Parties.	

3.2 Incorporation of Targets in NBSAP Updating

This subsection provides a brief description of the updated NBSAP, in terms of how it differs from the older version. That is how this latest version incorporates actions to achieve targets detailed above; how it contributes to the implementation of the Strategic Plan for Biodiversity 2011-2020; how it addresses threats identified in Part I; and how it addresses the guidance provided in COP Decision IX/8.

The Draft Revised 2nd NBSAP sought to address the gaps and limitations identified in the previous version and was in response to the requirements for implementation of the Strategic Plan for Biodiversity 2011-2020 and guidance provided in COP Decision IX/8. Specific requirements are articulated in the following priority areas:

- A revised Vision to provide a clear commitment to incorporating the contribution of biodiversity and ecosystem services to human well-being, including poverty eradication, national development,and the economic, social, cultural and other values of biodiversity.
- More measurable targets and indicators within a clearer monitoring and evaluation plan.
- Revised legislation espousing principles of the Nagoya Protocol and relating to community empowerment for biodiversity access and benefits.
- Deepening of biodiversity mainstreaming efforts towards more harmonized and holistic policies to guide development planning with respect to issues such as climate change and climate variability; disaster risk reduction (DRR); foreign and local investment; sustainable land management (SLM); human health; and cultural values.
- More formal mechanisms to facilitate improved coordination and collaboration in implementation by the full range of societal groups who may have interests, stakes or rights (technical, political and functional)with regard to biodiversity; and to seek complementarity with the existing framework for environmental management through the National Environmental Commission (NEC).
- Further strengthening of agency and community capacities for managing biodiversity, in areas such as appropriate technology for sustainable consumption production (SCP), research and systematic observation (RSO), monitoring and evaluation (M&E), among others.
- Broadening of the Communication, Education and Public Awareness (CEPA) Strategy to ensure sustained awareness to evoke desired behavioural change.
- Strengthening the Biodiversity Clearing House Mechanism (CHM) so that knowledge and information on biodiversity is available and easily accessible for national, sectoral and community planning.
- Continuing to identify and secure support for sustainable financing to effectively manage biodiversity in country.
- Ensuring that the strategic environmental assessment process is formalised, so that a systematic and comprehensive process of identifying and evaluating environmental

consequences of proposed policies, plans or programmes is fully included and appropriately addressed at the earliest possible stage of decision-making, on a par with economic and social considerations.

Proposed Vision for Revised 2nd NBSAP for Saint Lucia

"Biodiversity is vital for better living: *By 2050, the valuation of biodiversity and ecosystem services is firmly embedded in all the island's efforts at creating* ***resilient livelihoods, social systems and ecosystems*** *for* ***improved human-well-being*** *in pursuit of its sustainable development agenda"*

The vision for the Draft Revised 2nd NBSAP combines the core elements of the vision of the 2011-2020 Biodiversity Strategic Plan with outcomes of deliberations and recommendations emanating from island wide stakeholder consultations.

During the process for the updating of the NBSAP, it was clearly noted that barriers to effective implementation of the previous NBSAP could not be overcome simply by preparing a new document. It was agreed that what was required was an NBSAP development and implementation process that builds the capacity of all stakeholders, including communities to effectively participate in monitoring, implementation and reporting.

The Revised 2nd NBSAP gives focus to particular issues of national importance such as economic resilience; food and nutrition security; sustainable livelihoods; poverty reduction; sound management of natural resources (especially forests, land and water); environmental management; climate change and climate variability; and disaster risk management.

Taking into account recommendations emanating from the stakeholder consultations, the 4 strategic goals define 4 concomitant strategic outcome areas, which in turn establish 3 strategic areas (components) for intervention to achieve the planned outputs.

The 3 strategic areas of intervention or components are (i) Transformative Interventions; (ii) Catalytic/Facilitating Interventions and (iii) Financing Interventions. Each component will be delivered by a suite of activities. The activities detailed under each strategic area of intervention represent the actions required to deliver the outputs for achieving the strategic goals. The 4 strategic goals will be measured based on the relevant monitoring and evaluation (M&E) indicators ascribed to the national targets that are aligned to each goal.

The implementation modality involves the strategic interventions being organized using an iterative management hierarchy with transformative interventions supported by the facilitating interventions which create the enabling environment, and further supported by financing interventions. The scope of each area of intervention is presented below, along with a summarized Schema which highlights the planned outputs that will emanate from implementation of the revised Strategic Action Plan (**Figure 3.1)**

Component 1: Transformative Interventions

Component 1 focuses on the implementation of tangible economic, social and ecosystems resilience-building measures at the community and national levels. This component will be delivered through a number of activities across various sectors, aimed at securing investment, in proven and innovative measures, to sustainably use and manage biodiversity resources. Pilot demonstrations will be utilized to support the catalytic and replication dimensions of the NBSAP. This component will be delivered primarily through the following broad actions:

- Development and implementation of a Natural Capital Accounting System for the incorporation of biodiversity and ecosystem services values into budgetary process.
- Enhancement of business interventions in biodiversity friendly goods and services, including expansion of rural development initiatives in arts and craft, eco-tourism and other opportunities that use traditional knowledge within cultural pathways and human health, such as natural medicines, herbal remedies, neutraceuticals and spa treatments.
- Investment in (i) the protection and conservation of species by maintaining and restoring critical habitats, including migratory corridors, through the establishment of protected areas; and (ii) application of sustainable agricultural production practices that ensure economic viability while minimising risks to ecosystems.

Component 2: Facilitation/Catalytic Interventions

Component 2 seeks to create an enabling environment to catalyse and facilitate the implementation of transformative interventions in Component 1. The actions therein will be supported by an implementation mechanism that would enable the revised NBSAP to achieve as far as possible, the integration of biodiversity considerations into relevant national strategies, plans, policies and programmes. Actions will include:

- Revision and enhancement of the existing policy, legislative institutional and fiscal framework with particular regard to biodiversity management, the ABS and the Nagoya Protocol. This will also include, among others, developing the relevant tools and guidelines for the application of science, technology and innovation (STI) in planning and development for biodiversity management; public awareness and sensitisation; and capacity building and training.
- Building on the existing CHM framework for research and systematic observation and for data and information acquisition, knowledge management and sharing. In particular, data capture systems to support the process of natural capital accounting will be pursued.
- Conduct targeted capacity building at the community and sector level for specific groups, to empower them with knowledge and skills on business opportunities for biodiversity friendly goods and services, and within a SCP context. Special emphasis will be placed on creating sustainable livelihoods for vulnerable groups, in particular, women and youth.

- Design and implementation of a Communication and Outreach Strategy[54], targeting policy makers and other decision-makers, the general public and specific groups, including the vulnerable persons, about biodiversity management and sustainable consumption and production. The Strategy will aim to equip the various publics with the necessary knowledge and tools to take meaningful action to accrue the potential benefits of biodiversity and genetic resources in Saint Lucia.

Component 3: Financing Interventions

Component 3 will focus on the development of mechanisms for securing more sustainable financing for effective biodiversity management. This will entail the development of mechanisms to effectively generate, channel and manage potential funding sources for activities relating to the management of biological resources.

National government revenue will be geared towards efforts in using biodiversity and genetic resources to build economic, social and ecosystem resilience in national development planning, through an integrated cross-sectoral approach. The scale and/or efficiency of many of the proposed interventions typically undertaken by the Government of Saint Lucia (GOSL) will also be enhanced through engagement with the private sector. The country will therefore be pursuing all opportunities for public-private partnerships, as well as other private sector partnerships with communities and vulnerable groups. Hence, appropriate fiscal and economic incentives will be formulated and implemented to support and promote private sector and civil society involvement.

The Cabinet approved National Conservation Fund (NCF) will be used as one of the mechanisms for mobilizing funding from external sources. The NCF is to secure funding from alternative sources (new financing options) as co-funding that will allow draw down from the Caribbean Biodiversity Fund which will in turn be funded from external sources. Additional funding for biodiversity management related interventions will be sought through available new and on-going projects and programmes with the help of donor agencies.

[54] This strategy is separate and distinct from the Communications, Education and Public Awareness (CEPA) activities of the NBSAP.

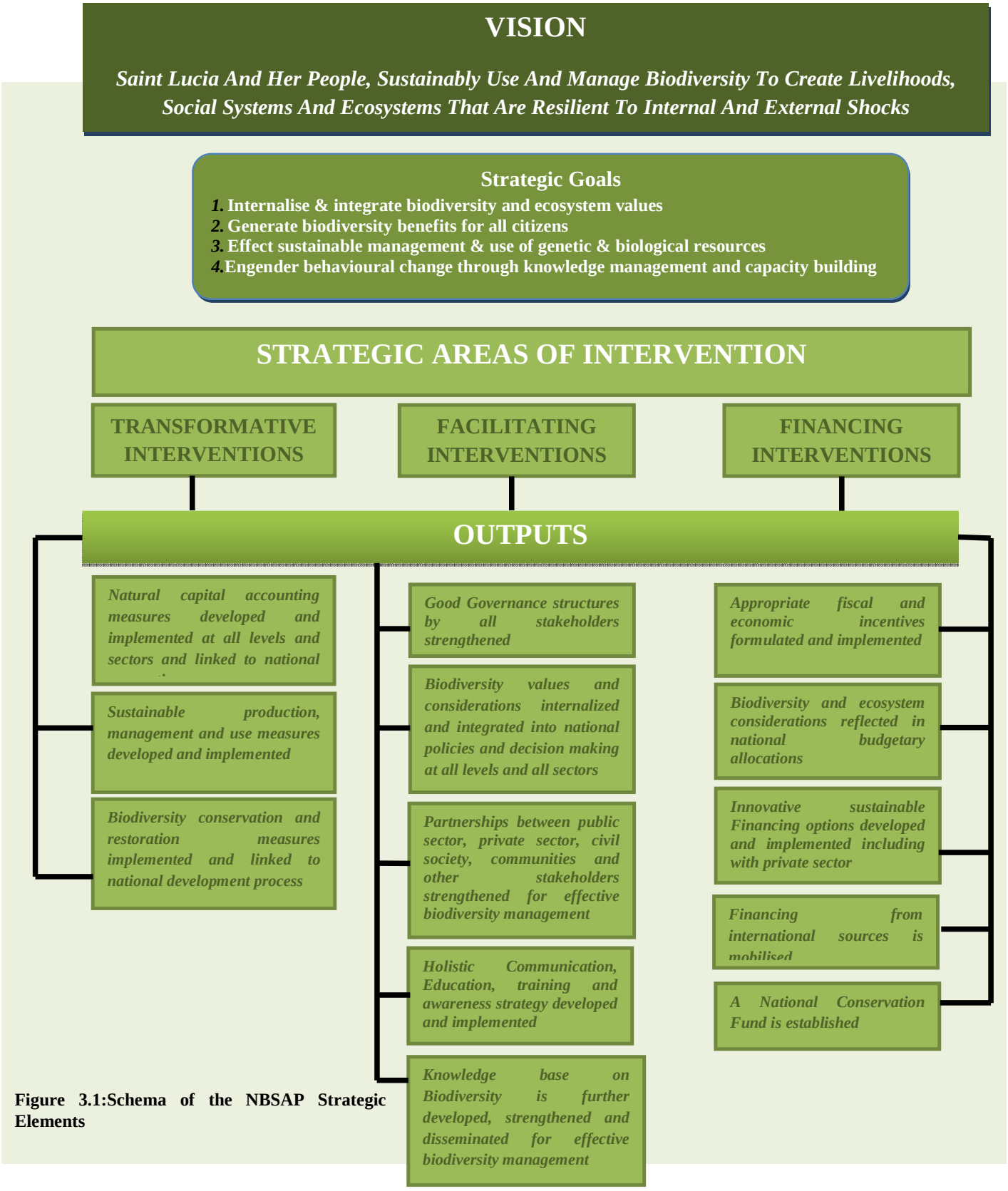


Figure 3.1:Schema of the NBSAP Strategic Elements

3.3 Actions Taken to Implement Convention

This subsection identifies the actions implemented and/or outcomes of these actions, as well as issues faced, across the key sectors of the national economy in the implementation of the convention since the last report.

The initial Draft 2nd NBSAP was not submitted for national endorsement by the Cabinet of Ministers due to unfinished business, which did not permit structured and coordinated implementation. However, the Biodiversity Unit continued to operate within the Ministry with the responsibility for Agriculture, and more recently within the Ministry with responsibility for Sustainable Development. The Unit, which comprised 2 staff members, collaborated using a participatory approach with various sectors, agencies and communities to promote biodiversity management enabling activities. As a result and otherwise, a number of initiatives of relevance to biodiversity management in Saint Lucia, both intended and unintended, have been undertaken since the formulation of the Draft 2nd NBSAP and the 4th National Biodiversity Report to the COP.

Many of these have significantly impacted the national landscape for biodiversity management. Foremost, is the establishment of a Ministry of Sustainable Development, Energy, Science and Technology (MSDEST) in 2011, with the advent of a new administration for the government of Saint Lucia. This resulted in the consolidation of the range of allied departments including the Sustainable Development and Environment Division (SDED), Department of Forestry, Energy Portfolio, Biodiversity Unit, and Water Resources Management Agency. The mandate for the coordination of multilateral agreements (MEAs) and other such conventions and agreements within the Ministry and policy interventions on environmental management lies with the SDED. Work of departments such as Forestry is considered more operational in nature and demonstrative of measures for integrated interventions in the 3 dimensions of sustainable development: economic, social and environmental.

The Biodiversity Unit has a mandate for coordinating and promoting biodiversity management for the country. The work of the unit is thus inextricably linked to that of all of the other allied departments of the Ministry. Unfortunately, although it is beneficial that many biodiversity enabling activities are being undertaken across a range of sectors and agencies, they are currently are not directly recorded within the framework for biodiversity management and NBSAP implementation.

Table 3.2 outlines the extent of revisions to the national framework for conventions and agreements for Saint Lucia that have occurred since the 4th National Report.

Table 3.2: National Framework for Conventions and Agreements for Saint Lucia

Conventions and Agreements		Non-binding Agreements
Recent	**Continuing**	
• Party to the Sustainable Tourism Protocol under the Association of Caribbean States (ACS). • Party to the Land Based Sources of Marine Pollution (LBS) Protocol • Preparation to being a Party to Nagoya Protocol on Access and Benefit Sharing • Nagoya Liability and Redress protocol specifics - Not a party as yet, under consideration • Representative for the Caribbean on the Bureau of the Intergovernmental Committee for the Nagoya Protocol since June 2011.	• Rio MEAs – CBD, UNFCC, United Nations Convention to Combat Desertification (UNCCD) • Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) • Observer at Convention on the Conservation of Migratory Species (CMS) • RAMSAR Convention on Wetlands (RAMSAR) • International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA) • Convention Concerning the Protection of the World Cultural and Natural Heritage	• United Nations Conference on Environment and Development 2012 • Barbados Plan of Action (BPOA)+20 • Mauritius Strategy for Implementation +5 • MDG's [Goals 1 &7] • UN Post 2015 Agenda

Table 3.3 describes the new inclusions to the policy environment for biodiversity management since the 4th National Biodiversity Report, across a range of thematic areas.

Table 3.3: Policies, Plans and Strategies of Relevance to Biodiversity Management

Thematic Area	Biodiversity Related Policies, Strategies, Plans
Sustainable Development	• Draft Strategic Plan for Ministry of Sustainable Development, Energy, Science and Technology • Draft Energy Policy • Sustainable Energy Plan • Renewable Energy Plan of the Ministry of Agriculture • Revised Climate Change Adaptation Policy • Strategic Plan for Climate Resilience (SPCR), 2010 • A national position on the concept of the Green Economy (GE) within the national economy is being pursued since 2011, to determine how the GE can be used to promote green jobs and improve the overall output of businesses. • Draft Health Sector Policy • National Vision Plan under development
Economic Development	• Draft Medium Term Development Strategy Paper (MTDSP) • National Development Plan (work in progress) • Agriculture Sector policy (2009-2015) stresses conservation of the natural resource base. • OECS Common Tourism Policy (2011) • Preliminary Strategy and Best Practices (2013) for the Saint Lucia Tourism sector - Sustainable Tourism • National Eco-tourism Strategy (NETS)

Thematic Area	Biodiversity Related Policies, Strategies, Plans
	• Draft Cultural Tourism Development Strategy • National Investment Policy (2013) • National Export Development Strategy (NEDS) • Value Added Tax (VAT)
Management of Natural Resources	• Systems Plan for Protected Areas (completed in 2009) incorporated into national development plan; however, has not been endorsed by Cabinet of Ministers • Saint Lucia National Fisheries Plan (2013) • Integrated Development Plan for the PMA, also known as the Hyder Report • Integrated Watershed and Coastal Zone Management Plan • Coastal Zone Management Strategy and Action Plan Saint Lucia. • National IAS Strategy (2012-2021) has been finalized and awaiting endorsement. It is expected to inform legislation, optimization of institutional arrangements as well as public education. • Strategic Plan for Water Resources Management Agency
Environmental Management	• National Environmental Commission (NEC) launched officially in 2008 to perform an integral role in facilitating inter-agency collaboration and coordination has recommenced (one quarterly meeting held in 2014). • Implementation of a Framework for Environmental Management (Caribbean Development Bank (CDB) funded) under development
Disaster Management	• Revised Disaster Management Plan, including the Fire Management Plan and Biosafety Management Plan. Biosafety Management Plan being implemented under a GEF Project
Other	• CARICOM Regional Food and Nutrition Security Policy (RFNSP) 2010

Table 3.4 below provides a summary of new and revised legislation since the 4th National Biodiversity Report. The Table also identifies the main agencies that have formal mandates relevant to biodiversity management and the status of the legislation.

Table 3.4: New and Revised Biodiversity Enabling Legislation

Enabling Legislation	Mandated Agency	Status
Draft Biodiversity Conservation and Sustainable Use Bill. • *Gives effect in domestic law to the Convention on Biological Diversity as well as provides for the conservation and sustainable use of biological resources generally and for access and benefit sharing resulting from utilization of genetic resources and related matters.* Draft Regulations for Biodiversity Bill	Current Ministry of Agriculture, Food Production, Fisheries & Rural Development– Formerly the Ministry of Agriculture, Lands Forestry and Fisheries.	ABS clauses in draft biodiversity conservation and sustainable use bill are to be fine-tuned to take into consideration specifics of Nagoya Protocol and bill is now to be administered by MSDEST.
OECS Harmonized Frame Environmental Legislation	Ministry of Sustainable Development, Energy, Science and	The National Environmental Management draft Bill is being

Enabling Legislation	Mandated Agency	Status
Draft National Environmental Management Bill	Technology (MSDEST)	fine-tuned to include Climate Change issues
Water and Sewerage Act (2005) • *Provides for the management of water resources and to regulate the delivery of water supply services and sewerage services throughout Saint Lucia.*	Current Ministry of Agriculture, Food Production, Fisheries & Rural Development– Formerly the Ministry of Agriculture, Lands Forestry and Fisheries	Water Resources Management Authority (WRMA) established in 2008. Water and Sewerage Commission operationalised in 2012 to assist in administering Act, to be subsumed under proposed Regulatory Commission for Water and Electricity. Act is now administered by MSDEST
Revised Forest, Soil and Water Conservation Act (25/1946) (Amended, 2008) • *Management of forest resources* • *Establishment of forest reserves and protected forests* • *Protection of forests, soils, water and wildlife resources* • *Management of water catchments* • *Payment for environmental services*	Department of Forestry	Revised legislation submitted to the Attorney General's Chambers for review in 2009 and is still pending approval.
Wildlife Protection Act, (9/1980) • *Conservation and management of wildlife* • *Designation of wildlife reserves*	Department of Forestry	Revised legislation submitted to the Attorney General's Chambers for review in 2009 and is still pending approval.
International Trade in Wild Fauna & Flora Act (GOSL, 2007) • *Makes provision for setting up the infrastructure to implement the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) with a view to ensuring that no species of wild fauna and flora become or remain subject to unsustainable exploitation.*	Department of Agriculture	Act is not yet enforced since a date of commencement has not been issued. Regulations are still to be drafted for the Act with help from a possible identified funding source. Question of whether MSDEST or Agriculture will administer the act to be determined.
Invasive Alien Species Bill (IAS Bill) needs Regulations • *Management of the potentially harmful non-endemic species*	Ministry of Agriculture, Food Production, Fisheries & Rural Development	Bill was harmonised with Plant Protection Act, (1988) and supporting Regulations (1995): • *Control of pests and diseases injurious to plants* • *Prevention of the introduction of potentially harmful exotic species* • *To be changed to administration by MSDEST*
Physical Planning and Development Control Act (2001)	Ministry of Physical Development, Environment and Housing	Draft Regulations to be approved.

Enabling Legislation	Mandated Agency	Status
• *Land use planning, development control, formulation and implementation of housingpolicy, environmental management, establishment and management of protected areas.* Draft Regulations		
Containers Act (Draft) *Control of the disposal of plastic containers both imported and locally produced.*	Ministry of Commerce and Consumer Affairs	Draft Bill pending approval
Tourism Incentives Act,No. 7 of 1996 amended by Act. No 36 of 2001 • *Provision for the orderly development of the tourism industry.*	Ministry of Tourism	A preliminary Strategy and Best Practices (2013)[55] prepared for the Saint Lucia Tourism sector promotes a Sustainable Tourism development agenda which ensures economic feasibility for host communities, socio-cultural equity, ecological quality and tourist satisfaction.
Yachts Licence Act, No. 5of 1971 amended by Acts No. 7 of 1972 and No. 33 of 2001 • *Control of the operations, movement etc. of yachts and pleasure craft in Saint Lucia's waters.*	Ministry of Tourism	Yachting Sector Legislative and Regulatory Reform [56] has been defined and establishes a legislative framework that will affect the institutionalization of the management of the yachting sector in Saint Lucia into a restructured, responsive industry agency focusing on policy, planning, standards, and the monitoring of a decentralized service delivery system.
Water and Sewerage Company Act (2005). • *Production and supply of freshwater* • *Maintenance of water production and supply infrastructure*	Water and Sewerage Company Inc. (WASCO)	Water Management Plan for Drought Conditions approved 2009 and actively used in 2010 and 2014.

Table 3.5 provides a summary of institutions and mechanisms established; funding and other investments for implementation of programmes and projects implemented; and activities and initiatives conducted since the 4th National Report. The Table is categorized by resource type across broad thematic areas and reflects actions taken (and outcomes achieved) by

[55]Tourism Leisure and Sports europraxis. 2013.Preliminary Strategy and Best Practices : *Saint Lucia Tourism Benchmarking and Competiveness Assessment.*

[56] Stephen-Dalton, K., King-Joseph, A. and Vincent Hippolyte.(2009). Yachting Sector Legislative and Regulatory Reform.120 pp.

relevant sectors in implementing their respective strategies, plans and programmes related to biodiversity, and the contributions to the implementation of thematic programmes of work and cross-cutting issues under the Convention. Several mechanisms that promoted funding and other investments for implementation of programmes, projects, activities and initiatives have also been established since preparation of the 4th National Report and are included in **Table 3.5**.

Table 3.5: Biodiversity Enabling Activities since 4th National Report

BIODIVERSITY RESOURCE	General Biodiversity	Agro - Biodiversity	Forest and Land and Water Resources	Coastal and Marine Biodiversity	Cross Cutting Activities – All resources
THEMATIC AREA					
Resource Management Systems	• Revised draft Second NBSAP and Prepared 5th National Report on Biodiversity (UNEP) • Implementing Biosafety Framework Project (UNEP) • Pronounced decade of Biodiversity 2011-2020at national level • Saint Lucia to participate in projects under the Economics of Ecosystems Services for Biodiversity (TEEB)(included in Revised NBSAP) • Biodiversity Unit head is now a Sustainable Development and Environment Officer III	• Revised Agricultural Sector Policy	• Capacity Building and Mainstreaming of SLM in Saint Lucia • Integrating Water, Land and Ecosystems in Caribbean Small Island Developing States Project (UNEP/CAR/RCU) • Caribbean Public Health Agency/German Government Land and Water Resources Management Project interventions in the CARICOM region	• Sustainable Financing for Marine Ecosystems Project • Marine protected areas project ongoing such as the Global Environment Facility (GEF)Coral Reef Early Warning System (CREW) and Eastern Caribbean Marine Protected Area Network Project (German Government/The Nature Conservancy) • Small Scale Funding Agreement Project : "Capacity Building for	• Established Ministerial portfolio for National Development with Framework for National Development Planning being elaborated in Ministry of Finance • Pilot programme for Climate Resilience (PPCR) to implement an adaptation framework to enhance climate change resilience at various levels of society through tangible interventions, capacity building, education and awareness,

BIODIVERSITY RESOURCE	General Biodiversity	Agro - Biodiversity	Forest and Land and Water Resources	Coastal and Marine Biodiversity	Cross Cutting Activities – All resources
THEMATIC AREA					
				Wastewater Management in Saint Lucia" • Northwest Coast Water Quality Demonstration Project	research and knowledge management, efficient resource allocation and the mainstreaming of climate risk management into development policies at the national and local scale.[57] • Continued phasing out of Ozone Depleting Substances – Montreal Protocol Project(UNEP) • Enabling

[57] PPCR Phase 1: Project preparation arrangements for:

a. Coral Reef Early Warning Systems – CREWS; joint Fisheries/SMMA intervention – current administrative hiccups
b. Watershed and Slope Stabilisation Project – Dept. of Forestry and Min. of Infrastructure
c. Demand analysis for Climate Adaptation Lending Fund (CALF) to determine projects for lending.
d. Sea Level Rise simulation; instrumentation under CPACC now being replaced under MACC; only anecdotal evidence available.
e. EU GCCA Project
f. Cocoa project – emphasis on reforestation with productive species while ensuring carbon sequestration
g. Vulnerability and capacity assessments (VCA) for vulnerable groups esp. women; how climate change impacts interlinks with resources for livelihoods.

BIODIVERSITY RESOURCE	General Biodiversity	Agro - Biodiversity	Forest and Land and Water Resources	Coastal and Marine Biodiversity	Cross Cutting Activities – All resources
THEMATIC AREA					
					Activities for the Preparation of the Third National Communications (TNC) (UNEP) • Review of implementation framework for environmental management (to include review of National Environment Policy and National Environment Management Strategy, Environmental Management Bill, etc.) – Caribbean Development Bank (CDB) funded project commenced 2013 • Saint Lucia to participate in WAVES Project –

BIODIVERSITY RESOURCE	General Biodiversity	Agro - Biodiversity	Forest and Land and Water Resources	Coastal and Marine Biodiversity	Cross Cutting Activities – All resources
THEMATIC AREA					
					• Wealth Accounting and Valuation of Ecosystem services – World Bank initiative to move beyond accounting with GDP • Espousal of SEEA led by Central Statistics Office – UN System of Environmental Economic Accounting
Resource Production and Use	• Green Economy Regional Project – Saint Lucia with a National level component – concept of Triple Bottom Line; • Invest Saint Lucia formulating a new National Investment Policy which incorporates biodiversity considerations - biodiversity products	• Food and Agriculture Organisation (FAO) Assistance to Agricultural Diversification • Upgrading of Agro-processing Facilities • Establishment of National Marketing Infrastructure Clearing House • National Standards and Certification	• Sustainable Management of L'encens tree: Fauna and Flora International support to solve problem of destructive tapping practices to harvest the resin • Save Saint Lucian Racer from Mongoose	• Fish Aggregating Devices • Fisheries Development Programme • Mariculture Development Programme	• Commenced restoration, rehabilitation of eco-tourism facilities and re-alignment of forest trails • Established beach parks and facilities • Improving the Competitiveness of the rural economy

BIODIVERSITY RESOURCE	General Biodiversity	Agro - Biodiversity	Forest and Land and Water Resources	Coastal and Marine Biodiversity	Cross Cutting Activities – All resources
THEMATIC AREA					
	and services especially medicinal herbs, proposed as potential areas of opportunity for investment	System for Major Agricultural Products • Expansion of Praedial Larceny Programme • Youth Agri Entrepreneurial Project • Livestock Sector Repositioning Programme • Coconut replanting initiative • Developed agro-forestry products	Project • Water Sector Improvement Project • Vieux Fort Water Supply Redevelopment Project • Water Sector Rehabilitation and Improvement Project North West Coast Water Project		through Community Based Eco/Agro Tourism • Provided technical assistance for Eco/Agro Tourism Sector Programme • Engaged in industrial development assistance • Established Trade Information System • Implemented Business Incubation Programme • Proposals for enterprise development in indigenous natural dyes and pigments
Resource Conservation	• Revised the Systems of Protected Areas for	• Development and implementation of	• Restoration and conservation of	North west coast recreational	• Enhancing Management of

BIODIVERSITY RESOURCE	General Biodiversity	Agro - Biodiversity	Forest and Land and Water Resources	Coastal and Marine Biodiversity	Cross Cutting Activities – All resources
THEMATIC AREA					
	Saint Lucia – the 2009 Plan seeks to conserve natural and cultural resources for continued livelihoods support, socio-economic and recreational benefit of current and future generations of Saint Lucia, and its visitors. Plan to be submitted for approval of Cabinet of Ministers in 2014-2015 • Completed OECS Protected Areas and Associated Livelihoods Project (OPAAL) • Saint Lucia's priority is to intercept pathways of IAS introduction. Saint Lucia's IAS pathways have been analyzed by Mathurin, G. (2010) Invasive Alien Species (IAS) Pathways: Saint	Strategy and Systems for Management for Black Sigatoka • Rehabilitation of food and fruit crop sub-sector • Disposal of obsolete pesticides and waste chemicals	threatened parrots with Association for Conservation of Tropical Parrots • Undertook slope stabilization interventions	water quality project, "Mainstreaming Saint Lucia's National Plan of Action through a North West Coast Water Quality Demonstration Project". Involves the characterisation of hot spots, pollution and environmental degradation in riverine and coastal areas. • Special Planning for Adaptation to Climate Change (SPACC) Project funded by GEF • Case Study on mangroves – Fond d'or(2011)	the Water Network and Capacity for Climate Change and Climate Variability (USAID) • Chemicals Management Project (UNEP) • SLNT/FFI Islands without Aliens Project

BIODIVERSITY RESOURCE	General Biodiversity	Agro - Biodiversity	Forest and Land and Water Resources	Coastal and Marine Biodiversity	Cross Cutting Activities – All resources
THEMATIC AREA					
	Lucia. Consultancy reports under the project "Mitigating the Threats of Invasive Alien Species in the Insular Caribbean", Project No. GFL / 2328 – 2713-4A86, GF-1030-09-03, pp. 40. This report will soon be up-loaded on www.ciasnet.org • A critical analysis of the current status of IAS and their management in Saint Lucia prepared and up-loaded on the website: www.ciasnet.org • Krauss, U. (2010) Critical Situation Analysis of Invasive Alien Species Status and Management, Saint Lucia. Consultancy reports under the project "Mitigating the				

BIODIVERSITY RESOURCE	General Biodiversity	Agro - Biodiversity	Forest and Land and Water Resources	Coastal and Marine Biodiversity	Cross Cutting Activities – All resources
THEMATIC AREA					
	Threats of Invasive Alien Species in the Insular Caribbean", Project No. GFL / 2328 – 2713-4A86, GF-1030-09-03, pp. 103. This report also includes a priority list of species for prevention/preparedness. • Two IAS species originating from the pet trade were prioritized for GEF-funded pilot projects: The Indo-Pacific lionfish for capacity building on prevention and preparedness; and the alien invasive iguana for early detection and rapid response in an attempt to eradicate it. • Limits of Acceptable Change(LAC) study				

BIODIVERSITY RESOURCE	General Biodiversity	Agro - Biodiversity	Forest and Land and Water Resources	Coastal and Marine Biodiversity	Cross Cutting Activities – All resources
THEMATIC AREA					
	for PMA (2013)				
Disaster Management and Disaster Risk Reduction (DRR)	• Disaster Recovery Programme (MCWTPU) • Second Disaster Mitigation Project (Ministry wrf Finance, Economic Affairs and National Development)	• Enhanced capacities for disaster risk mitigation in agriculture, fisheries and forestry (FAO Project) • FAO Project - Assistance to Improve Local Agricultural Emergency Preparedness in Caribbean Countries Highly Prone to Hurricane-related Disasters	• Under took forest restoration and rehabilitation post Hurricane Tomas • Ongoing desilting of rivers and drains • Undertook Early Warning System and Hydrological Monitoring for Water Management and Disaster Risk Reduction Initiative	• Undertook sea defense and coastal management initiatives	• Community Risk Reduction Initiatives in the OECS Programme - provision of harmonised protocol for disaster assessments, a hazard analysis data base system and disaster risk management training and sensitisation;Disaster Vulnerability Reduction Project (DVRP) currently in the design phase with potential for accessing up to USD 10-15M from the IDA. (Ministry wrf Finance, Economic Affairs and National Development)
Research and Systematic	Conducted a Knowledge,	To Establish a National	• Assessment of	• Beach	• Implemented

BIODIVERSITY RESOURCE	General Biodiversity	Agro - Biodiversity	Forest and Land and Water Resources	Coastal and Marine Biodiversity	Cross Cutting Activities – All resources
THEMATIC AREA					
Observation	Attitudes and Practices Survey relating to IAS (2010) Saint Lucia participated in IPBES establishment	Diagnostic Facility	L'encens Tree and Save Saint Lucia Racer initiatives • Conducted studies on wildfire mitigation	Monitoring Programme – (2002-2012 Study)	Islands without Aliens Project • • Conducted study on natural dyes in Saint Lucia
Knowledge Management	• National Sustainable Development through Data Collection and Reporting • Biodiversity Information Network upgrading re CHM • Draft Procedures Manual for Guiding Biodiversity Research	• Studies on banana cultivars tolerant and resistant to Black sigatoka	• Wildfire Hazard Zone Map • Studies on REDD+ [58] conducted for forest sector	• Coastal habitat mapping of south and west coast of island	• Commenced upgrading of the Geographical Information Systems (GIS) in the Ministry of Physical Development
Public Education and Outreach	• Sustainable Energy Promotion Programme (Sustainable Energy from Concept to Action) • Implemented	• Undertook backyard gardening campaign • Conducted outreach on management of Black sigatoka • Weekly "Agriculture	• Conducted iguana public awareness campaign • Conducted public awareness campaign for IAS	• Trained teachers to increase student awareness and understanding of the importance of marine	• Promoted community tourism • Implemented the Saint Lucia National Trust (SLNT) Islands

[58] REDD+ stands for countries' efforts to **r**educe **e**missions from **d**eforestation and forest**d**egradation, and foster conservation, sustainable management of forests, and enhancement of forest carbon stocks.

BIODIVERSITY RESOURCE	General Biodiversity	Agro - Biodiversity	Forest and Land and Water Resources	Coastal and Marine Biodiversity	Cross Cutting Activities – All resources
THEMATIC AREA					
	Disaster Risk Reduction Community Public Awareness programme for Agriculture, Forestry and Fisheries (FAO Project component) • Heightened awareness of biodiversity with biosafety public awareness campaign • Ongoing biosafety public awareness program • In late September 2010 staged a street Biodiversity Fair in the downtown City Centre with the theme "Biodiversity for Development and Poverty alleviation" • In June 0f 2010 hosted a Biodiversity Symposium to present new findings on the biodiversity of the country by public	on the Move" TV program • Ongoing broadcast of "Agriculture in Focus" radio programmes, including biodiversity focus • Pioneering training of media/developmental journalist from the Agriculture Information Unit of the Public Sector in modern biotechnology under a Cochran Fellowship by the United States Department of Agriculture (USDA)	• Public engaged in efforts to eliminate alien iguana	protected areas" - Part of the Caribbean Marine Protected Areas Management Project	Project (Community approach to Climate Change Sensitization and Awareness for Adaptation) • My Island/My Community Campaign conducted in collaboration with PCI Media Impact on Biodiversity and Climate Change) as a collaborative venture of several public sector and NGOs • Ongoing Saint Lucia National trust (SLNT) Youth Environment Forum • Appointed new Environmental Education Officer in SDED of

BIODIVERSITY RESOURCE	General Biodiversity	Agro - Biodiversity	Forest and Land and Water Resources	Coastal and Marine Biodiversity	Cross Cutting Activities – All resources
THEMATIC AREA					
	sector officials • The OECS Proteced Areas And Livelihood Project trained journalists from various media houses in biodiversity reporting with field trips and produced a media kit on biodiversity that was distributed to all media houses on the island • The Protecting Eastern Caribbean Biodiversity Project (PERB) funded by USAID produced posters and booklets on biodiversity that were distributed across the various islands				MSDEST • Developed a strategic plan for environmental education for MSDEST

3.3.1 Outcomes achieved in light of positive changes in biodiversity

There are reports on improved conservation practices and the impact this can have on ecosystem services as illustrated in **Box 3.1** (Recovery of Threatened Species on Maria Island).

Box 3.1: Success Story – Recovery of Threatened Animal Species

Two of Saint Lucia's most threatened animal species are endemic reptiles: the Saint Lucia racer snake *(Liophisornatus*) and the Saint Lucia whiptail lizard *(Cnemidophorusvanzoi*). Both reptiles have been extirpated from the mainland by IAS and, in the 1960s, their global range was restricted to the two Maria Islands, which cover just 12 ha and are extremely vulnerable to stochastic events. A combination of concerted actions has helped to recover populations of the whiptail and to reduce risk to this species:

- Maintaining the Maria Islands IAS free
- Eradication of predatory IAS on Praslin and Rat Islands, subsequent monitoring and keeping them IAS free
- Relocation of whiptail to Praslin and Rat Islands
- Management of metapopulations to maintain genetic integrity and avoid inbreeding depression

OECS Protected Areas and Associated Livelihoods Project (OPAAL) resulted in the establishment of the Eco South Tours (**Figure 3.2**). This is a private company in the South of the island whose members provide ecotourism activities including (i) hiking the Mankòtè Mangrove Trail; (ii) cultural activities/entertainment at Mankòtè Mangrove; (iii) study trips/tours of the Maria Islands Nature Reserves; (iv) Native Fishing Tour; (v) handicraft production, demonstration and sales; (vii) horse-back riding; and (viii) seamoss harvesting.

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Figure 3.2: Livelihood opportunities practiced by Eco South Tours.

3.3.2 Obstacles to implementation

The main obstacle to implementing the earlier draft 2nd NBSAP was financial constraints. Due to these constraints, the draft was not subjected to the necessary strategic environmental assessment (SEA) and therefore it could not be considered thorough and worthy of submission to the Cabinet of Ministers for endorsement as an official national document.

Despite the lack of formal national endorsement of the draft 2nd NBSAP by the Cabinet of Ministers to authorise a structured and coordinated implementation, a Biodiversity Unit continued to operate within the Ministry with the responsibility for Agriculture, and now within the Ministry with responsibility for Sustainable Development. The Unit with 2 staff members used a participatory planning approach and collaborated with various sectors, agencies and communities to undertake biodiversity management enabling activities. Consequently, a number of initiatives of relevance to biodiversity management in Saint Lucia, both intended and unintended, have been undertaken since the formulation of the earlier draft 2nd NBSAP and the 4th National Biodiversity Report to the COP.

3.4 Biodiversity Mainstreaming

Box 3.2: Some Agency Instruments and Processes Demonstrating Biodiversity Mainstreaming

- Draft Fisheries Strategy endorses an ecosystems approach in pursuit of sustainable fisheries.
- Revised Systems Plan for Protected Areas (SPAA2) is aimed at creating a framework for the designation, protection and effective management of a network of protected areas that play a major role in securing a sustainable environmental, social and economic future for Saint Lucia.
- Integrated Development for Piton Management Area (PMA) – Hyder Report presents guidelines for pursuing a balanced approach to development and conservation as the best approach for achieving objectives and conforming to the 'limits of acceptable change'.
- Preliminary Strategy and Best Practices for Saint Lucia Tourism Sector-Sustainable Tourism & National Eco-Tourism Strategy (NETS) makes provision for a system to monitor implementation, including the successes and failures of Eco-tourism, based on the measure of impacts on a local/community and regional scale.
- National Investment Policy seeking to promote investment opportunities in biodiversity related enterprise.
- National Invasive Species Strategy (NISS) seeks to address IAS in all facets of biodiversity – habitats, species, ecosystems, etc.
- Biosafety Management Plan incorporated into National Disaster Management
- Wildfire Management Plan includes Saint Lucia Fire Services
- Biodiversity themed stamps continued to be produced by Postal Services since 2010, the International Year of Biodiversity

This sub-section examines how effectively biodiversity has been mainstreamed within the key sectors of the national economy with respect to relevant sectoral and cross-sectoral policies, strategies, plans, programmes and projects. Most of the initiatives outlined require appropriate institutional arrangements for implementation. Challenges hampering implementation include financial limitations, weak agency capacity, desultory political commitment, and the absence of an established formal coordinating mechanism and overarching institutional arrangement for biodiversity management.

3.4.1 Sectoral Mainstreaming

With respect to Article 6b of the CBD, since the 4th National Report, biodiversity concerns continue to be progressively integrated into the agenda of the various key sectors of the economy, particularly in the departments of agriculture, forestry and fisheries. Since the 4th National Report a new Ministry for Sustainable Development, Energy Science and Technology has been established and this is now home to the Biodiversity Unit. Consequently, biodiversity management now forms an integral part of the sustainable development agenda for the country, and is well embedded within the strategic plan of the Ministry. More importantly, biodiversity principles and insights are also being more deeply ingrained in national development planning through the Medium Term Strategy and Plan and National Development Plan. Further, with the new organisational structure biodiversity considerations are truly becoming a key attribute of poverty reduction and other socio-economic development strategies.

The National Investment Policy: In the interests of sustainability, proposes that the size and nature of investment will be consistent with Saint Lucia's development goals, its scale, its natural environment and its absorptive capacity. The policy is based on national values, priorities and structures. The policy will create a clear sense of place as well as purpose, reflecting the qualities which make Saint Lucia distinctive, not least its unique combination of urban, rural, tropical, coastal and marine environments and its rich cultural heritage. The Policy seeks to marry these natural assets to effective policy instruments and delivery mechanisms

The following provide information on initiatives relating to sectoral mainstreaming:

- The Draft **Medium Term Development Strategy Paper (MTDSP)** is a five year medium term development and strategic plan for the Government of Saint Lucia. The MTDSP (2012-2017) is guided by a broad vision, goals and targets and an action plan. The vision includes,*inter alia*, addressing topics such as: stabilization and the macro-economy, diversification of the productive sectors through private sector development; poverty reduction; environmental sustainability; and human development. It seeks to promote optimal usage and stewardship of land and environmental resources supporting the social and economic needs of the population. It also seeks to address the poorly planned development of land which has led to inefficient and degraded settlements that are difficult to regularize. Poorly planned development has resulted from issues such as the absence of effective planning frameworks, inadequate enforcement and squatting.

- The **National Development Plan** is expected to facilitate review of the country's economic and macro-economic development and provide a blueprint for national development. This will look at *inter alia*, issues of: environmental sustainability and

management; progressive settlement development; physical and infrastructural development; and land use planning and management. Funding for the preparation of the National Development Plan has been provided by the Commonwealth Fund for Technical Cooperation and the process is on-going.

- Several other public sector departments and national development agencies, both at the national and local level have also incorporated biodiversity considerations within their agendas, cognisant that the island's biological resources continue to play a significant role in the country's socio-economic development. Of particular note are the recently revised policy for national investment; the National Eco-Tourism Strategy (NETS) and the National Export Development Strategy (NEDS). The extent to which these instruments have been integrated into the national agenda is typified by the existing policy, legislative and institutional framework, as well as the type of programmes and projects implemented in the various sectors outlined in **Tables 3.3 and 3.4**, in Section 3.3.

For the most part, mainstreaming of biodiversity appears to have been largely incidental to the implementation of the NBSAP, as the implementation of the Draft 2nd NBSAP could not have been actively pursued. However, there were several interventions undertaken by varied and diverse agencies, the outcomes of which reflected some measure of integration of biodiversity considerations into instruments and processes of these agencies (**Table 3.4**). Further, there appears to be a direct correlation between many of the actions taken to implement the NBSAP and the Convention on a national scale (**Table 3.3**; **Table 3.4**; **Table 3.5** and **Box 3.2**). This mainstreaming may be attributed to the fact that a fully participatory approach across a broad range of stakeholders was utilised in the development of the Draft 2nd NBSAP, and this meant that the objectives and insights of these various stakeholders/agencies involved would have been well integrated into the NBSAP and vice versa. Consequently the implementation of the biodiversity related enabling activities within the work programmes of the various agencies would have been well aligned with the implementation activities under the Draft 2nd NBSAP.

The SMMA (**Box 3.3**) epitomises the concept of effective mainstreaming of biodiversity issues across a wide range of sectors (economic, social and environmental), instruments (policies and plans) and processes (e.g. participatory planning processes and integrated development planning process in the PMA).

3.4.2 Tools Used for Mainstreaming

The process towards the formulation of this 5th National Report further identified improvements needed in the key mechanisms and tools used for integrating biodiversity concerns into sectoral and cross-sectoral strategies and plans, including:

- Legislative Mandate
- Knowledge and Information/CHM
- Functional collaboration/Inter-sectoral Committees/Networking
- Integrated development planning/Spatial Planning
- Environmental Impact Assessment (EIA)/Strategic Environmental Assessment (SEA)

- Ecosystem Approach

2.3.1.1 Legislative Mandate

The mandates of the government departments such as agriculture, fisheries and forestry typically cover biodiversity issues, which are enshrined in the various pieces of legislation that govern the work of these agencies. MEAs including CBD and other applicable agreements such as CITES, Cartegena Protocol, International Convention for the Prevention of Pollution from Ships (MARPOL) 73/78 for Management of Ship-borne Waste, United Nations Convention on Law of the Sea (UNCLOS) and Basel Conventions, to varying degrees, have also been enshrined in national law[59].

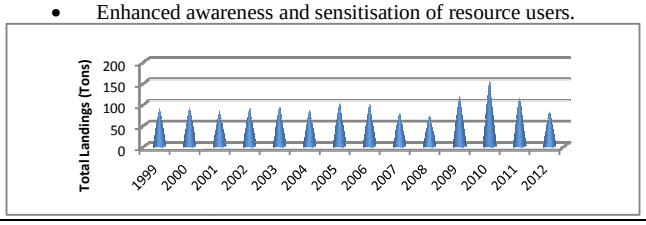
Several pieces of key biodiversity related legislation have been developed to redress deficiencies in legal and institutional capacity and assist in creating the requisite enabling environment, including the capacity to address access and benefit sharing. These are still pending and the complementary policies are also still to be developed and/or adopted.

The expressed commitment by the Government of Saint Lucia in preserving the PMA[60] has led to a study on Limits to Acceptable Change (LAC) being undertaken following the 2013 status report of the PMA. The study examines existing approved and proposed developments within the PMA and their potential impacts on the outstanding characteristics and will inform the development of regulations and guidelines, for a complete and legal integration into the development review process53. The Report states that since attaining World Heritage Site status, the features of the PMA that confer Outstanding Universal Value (OUV) have largely been preserved. The amount of development that has occurred between 2004 and 2013 has not been significant. Nonetheless, development within Policy Area 3 at Jalousie and in the Beausejour area has resulted in some detrimental impacts and measures to remedy and address these effects are accordingly recommended in the Report.

[59] The country's commitments under various international Conventions and agreements including the International Convention for the Prevention of Pollution from Ships (MARPOL) 73/78 for Management of Ship-borne Waste, United Nations Convention on Law of the Sea (UNCLOS) and Basel Conventions, have also been incorporated in the Marine Pollution Management Bill which has already been drafted.

[60] http://news.stluciastar.com/government-comments-on-discussion-over-development-in the-piton-management-area/

<table>
<tr><th colspan="2">Box 3.3: Success Story of the Soufriere Marine Management Area (SMMA)/Piton Management Area (PMA) in Saint Lucia</th></tr>
<tr><td>Problem</td><td>The Soufriere watershed and coastal region is located in an area that is very ecologically diverse and with an economy predominantly based on agriculture, fishing, and tourism, now the main growth sector in Saint Lucia, and which provides employment and other benefits for local residents. The coastal resources provide not only for recreation, sports and enjoyment, but also a source of employment for many people. Conflicts and issues arising thereto as a result of limited space and resources include:
Increase in water-based tourism activity in Soufriere vs. traditional users;
Conflict and competition for limited space and resources among various users and uses;
Degradation of resources; loss of economic opportunity; threat of crime;
Initial unsuccessful effort for management by Department of Fisheries.</td></tr>
<tr><td>Management Response: Adoption of Ecosystems Approach</td><td> 

Conflicts between tourism users and traditional users in the fishing and agriculture industries gave rise to the legal declaration of marine reserves and fishing priority areas. The sustainable development framework for Soufriere further identified protected areas as a means for conserving biodiversity and other natural, cultural and historical resources so that tourism can remain a key driver of economic development. More recent efforts to address these issues and conflicts have placed greater emphasis on increased community participation in development, and the establishment of a sound institutional framework, with initiatives such as the preparation of a land use plan for the Soufriere region, the establishment of a community-based organisation known as the Soufriere Regional Development Foundation and the establishment of the Soufriere Marine Management Area[61]. The inclusion of the PMA on the World Heritage List represents the culmination of these pioneering and innovative efforts. The SMMA management framework is fully participatory comprising Board and Stakeholder Committee, a key functional mechanism in the management of the SMMA demonstrating a prototype for public/private sector partnerships in natural resource management, particularly at the community level. The Stakeholder Committee demonstrates how co-management can assist in promoting regulatory legitimacy and compliance in light of limited resources for monitoring and enforcement.</td></tr>
<tr><td>Achievements</td><td>Co-existence of users with minimal conflict
General increases in fish stocks in marine reserves and fishing area and reflection of these increases in fishermen's catches.
Self-sustainability with regards to operating costs
International recognition
Community support
Enhanced awareness and sensitisation of resource users. 
</td></tr>
<tr><td>Challenges and Issues</td><td>The range of pressures on the resource are now even more varied and include issues related to further changes in the traditional use (artisanal fishing) of the resources, such as technological changes in the fishing industry, and an increase in negative impacts from land-based activities such as agriculture, industry and construction and other associated watershed management issues, as well as coastal an marine issues associated with activities such as yachting, building of jetties, marinas and other infrastructure. The aforementioned, which are essentially allied to development imperatives, are also compounded by other socio-economic development issues including high levels of poverty and unemployment[62], and coupled with the emerging issues of climate change and disaster risks will continue to create conflicts and challenges for the effective management of the resources.</td></tr>
<tr><td>Lessons Learned</td><td>Adoption of an ecosystems approach requires a consultative and participatory process of resource management and has led to the enhanced co-existence of users in a shared coastal zone, and increased commitment to the conservation, sustainable use and more equitable sharing of benefits from the use of resources of the SMMA.

Involvement of community members and resource users has helped to increase ownership for the SMMA initiative, through the direct involvement of resource users in management and has provided the forum for open and continuous</td></tr>
</table>

[61] The final agreement on the SMMA (1999) was the creation of a marine management area comprising 11 km of coastline and the adjacent marine area that includes: include marine reserves, fishing priority areas, multiple use areas, recreational areas and yacht moorings.

[62] Poverty remains is a critical challenge to development in the watershed and according to the 2005/2006 Poverty Assessment there are at least 3 communities that are vulnerable and where poverty is high. Housing conditions in these three communities are also inadequate.

	communication and information exchange.
Sources of Information:	Dawn Pierre-Nathoniel, 2003. TowardsStrengthening the Association; a detailed review of the SMMA. SMMA Reports Data: Department of Fisheries, Ministry of Agriculture, Food Production, Fisheries and Rural Development.

2.3.1.2 Knowledge and Information

A national Biodiversity Information Network (BIN) was established and operationalized in 2008. However, there is need for (i) ongoing maintenance of the BIN and (ii) promoting the use of the Biodiversity Clearing House Mechanism (CHM) and other biodiversity related information management systems like the GeoNode Platform for Climate Change information management, by providers and users of biodiversity information. There is also need to build on work such as the coastal mapping and forestry inventory to complete the mapping of the island's biodiversity resources. Information for scenario development with regard to potential changes in biodiversity remains an important element of knowledge and information for effective biodiversity management.

Range of Inter-Sectoral Committees

- *National Environmental Commission*
- *National Biodiversity Committee*
- *National Biosafety Coordinating Committee*
- *OPAAL Technical Advisory Committee*
- *SMMA/PMA*
- *UNFCC/Climate Change Committee*
- *Ad hoc Committee for UNCCD*
- *Coastal Zone Management Advisory Committee (CZMAC)*
- *Biosafety Clearing House Task Force*
- *Wildfire Management Committee*
- *National Emergency Management Advisory Committee (NEMAC)*

2.3.1.3 Functional Collaboration

An established formal mechanism for coordination among various agencies and departments concerned with biodiversity issues is yet to be established. However, there continues to be strong functional collaboration at the technical level of those agencies having biodiversity management related mandates. Several inter-sectoral committees have been established for oversight of the various conventions and agreements, especially MEAs. Notably, many of the same persons represent their respective agency on these committees and this has the advantage of promoting synergies in implementation of the biodiversity related and other MEAs, building upon the work of the range of inter-sectoral committees. Joint expert groups and meetings of intergovernmental bodies on selected issues of mutual concern further complement this type of inter-sectoral cooperation.

The Ministry of Sustainable Development has recently been established as the formal coordinating agency for MEAs, with responsibility for reporting on the country's obligations in this regard. Consequently, various systems and mechanisms that enable the national environmental framework are now being consolidated within the evolving framework for overall sustainable development. This framework comprises the National Environmental Commission (NEC), which is a Cabinet appointed forum for ensuring a joint approach to joint planning, implementation, assessment and evaluation of environmental related issues.

The NEC comprises agencies and groupings from various sectors and is coordinated by the SDED. Thus, the environmental management framework provides a strategic platform for future integration of biodiversity considerations and synergies with related conventions and agreements within a broad national sustainable development frame. It also allows for the development and strengthening of partnerships for implementation of relevant national and regional initiatives.

Strong networking among national and transnational agencies allows for synergies to be realised in implementation of some of the NBSAP activities. A case in point is the Department of Forestry, which has used a collaborative approach of international development cooperation and transboundary or regional cooperation to expand its network with regional and international government and non-governmental agencies and institutions (e.g. Rare, Durrell Wildlife Preservation Trust, Flora and Fauna International (FFI), AusAid, University of the West Indies) to overcome the many constraints and challenges in implementing biodiversity conservation and restoration measures, including the use of more technical methodologies in the areas of research, monitoring and training in conservation strategies. The Department of Fisheries likewise has formed some important collaborative networks with regional and international agencies such as Wider Caribbean Sea Turtle Network(WIDECAST), Caribbean Regional Fisheries Mechanism(CRFM), International Coral Reef Action Network (ICRAN), and World Heritage Centre (WHC).

2.3.1.4 Integrated Development Planning

Even before the advent of the draft 2nd NBSAP, the country had been pursuing an approach of integrated development planning (IDP), which seeks to promote an inter-sectoral approach to planning and development, in order to minimise potential conflicts, particularly as they relate to the use of resources. IDP has been proposed for a number of years, but there have been a number of administrative delays in its implementation. However, even in its limited application, the utilization of the IDP approach gives consideration to the mainstreaming of biodiversity conservation and sustainable use within location specific and thematic / cross cutting areas.

An applied case is the PMA[63] and Soufriere Region Integrated Development Plan, which identifies issues and components of an IDP for the Soufriere region.[64]The Guidelines defined for the PMA, also known as the Hyder Report[65], have been accepted by GOSL. Policy scenarios are presented and these are evaluated against environment, local economy, local interests, community interests and the risk to World Heritage status. The scenarios show that a balanced approach to development and conservation is the best approach for achieving

[63] PMA established in 2002 under Planning and Development Act (2001) 2,909 acre site near Soufriere including Pitons, link of Piton Mitan ridge, Sulphur Springs and marine area with coral reefs.

[64] Ministry of Physical Development, Housing, Urban Renewal and Local Government. (2008). Pitons Management Area and Soufriere Region Integrated Development Plan. http://www.slunatrust.org/assets/content/documents/Hyder_Report_PMA.pdf

[65] ibid

objectives and conforming to the 'limits of acceptable change'[66] (LAC).The Government of Saint Lucia (GOSL) established a management regime that involved the management of the marine and terrestrial areas within the site, particularly those of greatest importance: the Soufriere Marine Management Association and the Pitons Management Area Advisory Committee. Further, advancement of an IDP approach is supported by the LAC Study undertaken in 2013. This study followed concern expressed by the WHC about a proposed hotel development that could compromise the superlative natural beauty of the property and ongoing development that could lead to significant loss of the OUV of the PMA if not addressed. The outcome of the LAC study, along with development of regulations and guidelines, is expected to inform the development review process.

2.3.1.4 Use of Incentives

The process of mainstreaming biodiversity considerations in key economic sectors has also been supported by the development and introduction of various economic and social incentives in these sectors. For example, in the agriculture sector, the Agricultural Incentives Regime developed by the Ministry of Agriculture promotes mainstreaming at all levels (national, sector and community). Community level mainstreaming is also promoted through other voluntary agricultural related incentives programmes such as Fair Trade, Global Good Agricultural Practices (GAPs) and Leadership Enhancement in Agriculture Programme (LEAP). Incentives to promote mainstreaming of biodiversity issues in the tourism sector and industry include the use of global environment awards such as Green Globe and ISO 14001, Environmental Management Systems (EMS).

Saint Lucia's Investment Policy is managed by the agency, Invest Saint Lucia, which is charged with the responsibility to stimulate, facilitate, and promote the development of business and investment activities in selected sectors of the Saint Lucian economy. All investments to Saint Lucia must promote the economic, technological, and social and environment pillars that are strategic to our growth as a nation. Businesses that are facilitated by Invest Saint Lucia are encouraged to invest in new and existing green technologies and must strive to conduct operations that are beneficial not only to their bottom line, but to sustainable development efforts and the benefit of all Saint Lucians. The website of Invest Saint Lucia particularly highlights biodiversity in its portfolio of investment opportunities for the island with special emphasis being placed on medicinal products from herbal medicines, and heritage and eco-tourism facilities (joint ventures between local and foreign investors) as one of a number of investment opportunities in Saint Lucia.

2.3.1.5 EIA/SEA

The Environmental Impact Assessment (EIA) process continues to be an important tool for integrating biodiversity considerations into development planning options, although the enforcement of the proposed mitigation measures have been limited. Generally, the process involves broad-based participation led by the relevant Government Department acting as a referral agency and public participation is solicited. Biodiversity issues are given some

[66] ibid

consideration under the EIA process, largely through the recommendations made by the referral agencies.

Strategic Environmental Assessments (SEAs) are also now becoming essential components of most donor funded projects, for example United Nations Environment Programme (UNEP)/GEF funded projects must be subjected to SEA scoping.

2.3.1.6 Ecosystem Approach

Most natural resource and environmental projects now utilise an ecosystem approach for implementation, giving strong focus to maintaining the integrity of ecosystems and the services that they provide. This approach in turn ensures that the full range of biodiversity components is addressed. An example is the GEF financed Iyanola Conservation Project for the North East Coast of the island, which is currently being formulated by a group of national consultants under the coordination of SDED.

The PMA and SMMA are also viewed as good examples of established management regimes that have used an ecosystem approach.

The revised Systems Plan for Protected Areas (SPPA 2) recommends that the SMMA as a model, should be implemented by all other ports and marinas on the island, as it is able to continue to pull together and manage the resources of local fishermen, hoteliers, divers, yacht operators and the Soufriere community, and facilitate all economic activities related to the Soufriere coastal area.

The Draft Fisheries Plan endorses an ecosystems approach, in conformity with the sustainable use of the available fishery resources. The Plan considers that environmental considerations go beyond the status of the targeted species by considering sustainability in a wider sense; that is, looking at the potential indirect impacts of fisheries on other elements of the ecosystem.

The application of an ecosystems approach to agro-ecosystems gives consideration to the fact that “agro-ecosystems are not separate from other natural ecosystems and thus considers ways and means in which services can flow to and from the agro-ecosystem to surrounding ecosystems."[67] An ecosystem approach in this respect would therefore allow for better integration of food security values, since it would facilitate food security alongside healthy ecosystems.

[67] ARIES Consortium. (2012). Artificial intelligence for ecosystem services (ARIES).

Part III. Progress towards the 2020 Aichi Biodiversity Targets and contributions to the relevant 2015 targets of the Millennium Development Goals

4.0 Progress Towards Targets and Development Goals

This section of the document undertakes an assessment of the progress of Saint Lucia towards achievement of biodiversity targets and MDGs. It therefore focuses on the answering the following:

- What progress has been made by your country towards the implementation of the Strategic Plan for Biodiversity 2011-2020 and its Aichi Biodiversity Targets?
- What has been the contribution of actions to implement the Convention towards the achievement of the relevant 2015 targets of the Millennium Development Goals in your country?
- What lessons have been learned from the implementation of the Convention in your country?

4.1 Progress Towards Implementation

An updated assessment of progress made by Saint Lucia towards the implementation of the Convention and the Strategic Plan for Biodiversity 2011-2020 and its Aichi Biodiversity Targets, and contributions to the relevant 2015 targets of the Millennium Development Goals (MDGs) is presented in **Table 4.1**, using a coded traffic light system to depict progress based on some broad based indicators. **Boxes 4.1 to 4.4** highlight case studies and lessons learned.

According to the Biodiversity Indicator Partnership (BIP), as the Aichi Biodiversity Targets are multi-faceted, in most cases an individual global indicator is insufficient if used in isolation to assess overall progress towards a target. The BIP therefore declares that the new edition of the Aichi Targets Passport (2013), the flagship publication of the Biodiversity Indicators Partnership, recognises that the linking of multiple indicators under many of the Aichi Biodiversity Targets is required to provide more comprehensive storylines of progress.

Data available from relevant sources (government agencies and non-government organisations (NGOs) as well as online sources) which demonstrated a potential means to measure changes in national biodiversity status in the context of biodiversity indicators identified for the Revised 2nd NBSAP, were used to understand and assess status and trends relating biodiversity.

Several examples are provided to show how Saint Lucia is responding to MDGs of relevance to the NBSAP, namely MDGs 1 and 7, which refer to linkages between biodiversity and

poverty eradication and environmental sustainability, respectively. The NBSAP is one of the instruments that will be used by Saint Lucia to ensure that mainstreaming of biodiversity insights and principles promote sustainable livelihoods and contribute to poverty reduction. Environmental sustainability and the implementation of actions aimed at reducing the loss of environmental resources, including biodiversity resources, are also addressed through various initiatives under the NBSAP.

Undoubtedly, the consultative process for the elaboration of the NBSAP continues to ensure participation at all levels and foster the full, effective contribution of women, local communities, civil society organisations, and private and other sectors for widespread implementation of actions towards meeting the objectives of the Convention and its Strategic Plan for Biodiversity (2011-2020), including its Aichi Biodiversity Targets.

Table 4.1: Assessment of progress towards the 2020 targets

MDG/Aichi Biodiversity Target	Progress towards the Aichi Biodiversity Targets and contributions to the relevant Millennium Development Goals Colour Code: Improving / Little or no change / Deterioration / Insufficient or no comparable data				
	Implementation Actions/Case studies	**Action Effectiveness**	**Key Outcomes**	**Assessment of progress towards Aichi Targets and MDGs**	**Potential Indicators/ Other information**
Millennium Development Goals:					
MDG 1: Eradicate extreme poverty and hunger Target 1.B: Achieve full and productive employment and decent work for all, including women and young people	Support for development of sustainable livelihoods: • L'encens (Box 5) • Latanye Brooms • Eco-agro-tourism (Fig. 27) • Herbal medicines/remedies		Creation of sustainable livelihoods through use of biodiversity resources for vulnerable groups		Number of "green"sustainable livelihoods National employment levels
MDG 7: Ensure Environmental Sustainability					
Target 7.A: Integrate the principles of sustainable development into country policies and programmes and reverse the loss of environmental resources	Country is Signatory to Post 2015 Agenda " Future we want" and concomitant sustainable development objectives Green Economy Dialogue	High	Demonstrated commitment at country level to sustainable development agenda Sustainable development principles espoused by country and endorsed at several levels of decision making and planning		No. of policies and programmes integrating SD principles
	Establishment of a Ministry of Sustainable Development and Strategy for SD Ministry	High			

MDG/Aichi Biodiversity Target	Progress towards the Aichi Biodiversity Targets and contributions to the relevant Millennium Development Goals Colour Code: Improving / Little or no change / Deterioration / Insufficient or no comparable data				
	Implementation Actions/Case studies	**Action Effectiveness**	**Key Outcomes**	**Assessment of progress towards Aichi Targets and MDGs**	**Potential Indicators/ Other information**
	Strategic Plan for Climate Resilience (SPCR) developed and implemented with the 3 pillars of sustainable development: economic, social and environmental as foundation	High			
Target 7.B: Reduce biodiversity loss, achieving by 2020, a significant reduction in the rate of loss	Protected Areas consolidated and expanded under Revised SPAA 2.	Moderate	Establishment of PAs to minimise habitat loss and associated ecosystems and species decline		Coverage ofPAs Trends in land-use Trends in ecosystems and habitats Trends in abundance and distribution of selected species
Aichi Biodiversity Targets:					
Target 1- Awareness increased	Public awareness is ongoing by agencies of the ministry in work programmes that routinely highlight the importance of biodiversity via the electronic and print media. The National Television Network and the National Radio Station frequently carry panel discussions highlighting biodiversity. The National Television Network carries	High	Sustained awareness of biodiversity by all publics: Biodiversity is slowly becoming accepted as a household word. Several Surveys (2003, 2008, 2010), have indicated that Saint Lucians have some understanding of		Number of communities and publics sensitized Trends in production and consumption patterns and practices (KAPs and other survey outcomes)

MDG/Aichi Biodiversity Target	Progress towards the Aichi Biodiversity Targets and contributions to the relevant Millennium Development Goals Colour Code: Improving / Little or no change / Deterioration / Insufficient or no comparable data				
	Implementation Actions/Case studies	**Action Effectiveness**	**Key Outcomes**	**Assessment of progress towards Aichi Targets and MDGs**	**Potential Indicators/ Other information**
	Public Service Announcements highlighting biodiversity. School presentations made on demand and on special days like World Biodiversity Day by various agencies including those of the Ministry of Agriculture. Media activities often used to highlight that day. Biodiversity expositions and festivals: • Street Fair Exposition in September 2010, focusing on the theme "Biodiversity for poverty alleviation and development". • Sustainable Seafood Festival and Root crops festival held in 2011 • Stamps depicting four endemic species launched by the General Post Office in honor of the International Year of Biodiversity on 11th June 2010. • National Symposium on		biodiversity and its importance. Structured advocacy by citizenry for biodiversity issues: E.g. formation of national biodiversity advocacy group - *My island/My Community Coalition focusing on development of educational material and collective presentations on biodiversity and Climate Change.* *More regular programming on biodiversity on national media*		Proportion of products derived from sustainable sources.

MDG/Aichi Biodiversity Target	Progress towards the Aichi Biodiversity Targets and contributions to the relevant Millennium Development Goals Colour Code: Improving / Little or no change / Deterioration / Insufficient or no comparable data				
	Implementation Actions/Case studies	**Action Effectiveness**	**Key Outcomes**	**Assessment of progress towards Aichi Targets and MDGs**	**Potential Indicators/ Other information**
	biodiversity held in June 2010				
	Film productions on various aspects of Saint Lucia's biodiversity: • Film produced by Saint Lucia National Trust, called "Saint Lucia: An island nation under pressure" highlighting the development pressures affecting the North Eastern corridor of the island, showing the richness in biodiversity and the need for there to be balance between development and conservation. • Youth being trained in animation and biodiversity sensitisation to produce short animated videos on biodiversity for national television and social media				
	Entertainment education training workshop held in Saint Lucia in May 2010 funded through GEF Small Grants Programme funds done in conjunction with an	High			

MDG/Aichi Biodiversity Target	Progress towards the Aichi Biodiversity Targets and contributions to the relevant Millennium Development Goals Colour Code: Improving / Little or no change / Deterioration / Insufficient or no comparable data				
	Implementation Actions/Case studies	**Action Effectiveness**	**Key Outcomes**	**Assessment of progress towards Aichi Targets and MDGs**	**Potential Indicators/ Other information**
	international NGO –PCI Media Impact International.				
	CBD hosted regional training workshop on biodiversity education, communication and public awareness held in 2008 that was attended by media personnel and Clearing House mechanism representatives from Saint Lucia and again for CHM reps in 2013.	High			
Target 2 - Biodiversity values integrated	Finance officers trained in green national accounting (natural capital accounting) and with Central Statistics Office in Strategic Environmental Accounting.	Low to moderate	Economic valuation of biodiversity placed higher on development agenda. Natural capital accounting to be considered in national accounting processes		Number of methodologies used for natural capital accounting (e.g. PES and CES)
	The Economics of Ecosystem services and Biodiversity (TEEB) methodology is currently being applied to the country where a critical ecosystem is being studied by local experts as to how much value it offers financially to the country. Two local experts were trained in this regard. Two other experts were trained in the	Low to moderate			

MDG/Aichi Biodiversity Target	Progress towards the Aichi Biodiversity Targets and contributions to the relevant Millennium Development Goals Colour Code: Improving / Little or no change / Deterioration / Insufficient or no comparable data				
	Implementation Actions/Case studies	**Action Effectiveness**	**Key Outcomes**	**Assessment of progress towards Aichi Targets and MDGs**	**Potential Indicators/ Other information**
	Economics of Ecosystem Services and Biodiversity as it relates to Invasive Alien Species.				
Target 3 – Incentives reformed	Sectoral and community level incentives continuously being enhanced through the provision of concessions for the adoption of environmental and biodiversity management measures: e.g. • Agricultural Incentives Regime developed by the Ministry of Agriculture • Tourism global industry incentives (Green globe, EMS, etc.) • Community level – Fair Trade, Global GAPs	High	Conservation and sustainable use of biodiversity promoted in the key productive sectors to minimise or avoid negative impacts on biodiversity. Public response high in calling in about invasive alien species		Number of incentives reformed Trends in land use Soil loss Trends in abundance and distribution of selected species Changes in production and consumption patterns and practices
	Under the Invasive Alien Species (IAS) project, monetary incentives have been given, so that sightings of the alien iguana, which is a threat to the native iguana.	Moderate			

MDG/Aichi Biodiversity Target	Progress towards the Aichi Biodiversity Targets and contributions to the relevant Millennium Development Goals Colour Code: Improving / Little or no change / Deterioration / Insufficient or no comparable data				
	Implementation Actions/Case studies	**Action Effectiveness**	**Key Outcomes**	**Assessment of progress towards Aichi Targets and MDGs**	**Potential Indicators/ Other information**
Target 4 – Sustainable consumption and production	Integrated development plan for Piton Management Area (PMA) – Hyder Report; and Limits of Acceptable Change (LAC) Study for PMA, World Heritage Site (Box 3)	High	Steps taken at all levels (national, sectoral and community) to develop and implement management plans for use of natural resources well within safe ecological limits		Proportion of products derived from sustainable sources. Changes in land use patterns. Types of production and consumption patterns and practices.
	Sustainable production/harvesting practiced in key sectors and at community level: Forestry: L'encens, Mankote Mangrove Agriculture: Organic farming Fisheries: SMMA practices conservation of fish stock: closed seasons for lobster and sea eggs maintained; sustainable pilot whaling ongoing	High			
Target 5 – Habitat loss halved or reduced	Three hundred acres of forest recently added to the Government Forest Reserve. Another forty hectares of forest bordering the Castries Forest Reserve being acquired by the GOSL for watershed purposes. Reforestation project under Australian Aid	High	Increased protection of habitats		Trends in land use: • Type and extent of vegetative cover Soil loss: • silted dams • exposed tree roots Frequency and extent of landslide damage

MDG/Aichi Biodiversity Target	Progress towards the Aichi Biodiversity Targets and contributions to the relevant Millennium Development Goals Colour Code: Improving / Little or no change / Deterioration / Insufficient or no comparable data				
	Implementation Actions/Case studies	**Action Effectiveness**	**Key Outcomes**	**Assessment of progress towards Aichi Targets and MDGs**	**Potential Indicators/ Other information**
	Increased public awareness on measures to avoid destruction to land and water resources, following major hydro-meteorological events e.g. Hurricane Tomas, 2010 and trough of December 2013	High			
	Engagement of community groups schools, NGOs, in river bank stabilization	Moderate			
Target 6 – Sustainable land? management	See MDG Target 7A above				See MDG Target 7A above
Target 7 – Sustainable agriculture, aquaculture and forestry	Agriculture Sector policy 2009-2015 which promotes conservation of the natural resource base actively being implemented:	Moderate	Sustainable management of areas under agriculture, forestry and fisheries with regard to biodiversity conservation More citizens are		Trends in land use and PA coverage Soil loss- siltation Type and extent of vegetative cover Trends in abundance and distribution of
	Construction of a tissue culture facility for plant production and conservation	High			

MDG/Aichi Biodiversity Target	Progress towards the Aichi Biodiversity Targets and contributions to the relevant Millennium Development Goals Colour Code: Improving / Little or no change / Deterioration / Insufficient or no comparable data				
	Implementation Actions/Case studies	**Action Effectiveness**	**Key Outcomes**	**Assessment of progress towards Aichi Targets and MDGs**	**Potential Indicators/ Other information**
	Aquaculture facility to promote sustainable production of shrimp and tilapia	Moderate	engaging in backyard gardening Reports of more people planting traditional fruit and tree crops Active management of L'encens harvesters Protection of forests		selectedspecies Number of community based actions in SFM,SLM,SCP
	Community- based actions in sustainable forest management: Millet rain forest trail, latanye broom makers; Mankote mangrove charcoal producers; L'encens research on sustainable harvesting (Box 5)	High			
Target 8 – Pollution reduced	Establishment of measures/legislation for implementation of Land Base Sources of Marine Pollution Protocol	High	Levels of pollution in critical ecosystems are contained and controlled so as not to impair ecosystem function		Trends in water quality Trends in different types of solid waste collected Trends in fertiliser and agro-chemical imports
	Returnable Containers Act	Low			
	Establishment of National Water and Sewage Commission, WRMA and WRMA Strategy	High			
	IWCAM Project demonstrated the construction of wetlands for sewage management for replication in other areas of the country	Low-moderate			

MDG/Aichi Biodiversity Target	Progress towards the Aichi Biodiversity Targets and contributions to the relevant Millennium Development Goals Colour Code: Improving / Little or no change / Deterioration / Insufficient or no comparable data				
	Implementation Actions/Case studies	**Action Effectiveness**	**Key Outcomes**	**Assessment of progress towards Aichi Targets and MDGs**	**Potential Indicators/ Other information**
	Recreational water Quality Standard	High			
	Water Quality Monitoring (beaches)	Low-moderate			
Target 9 – Invasive alien species	National Invasive Species Strategy developed and published	High	Steps taken towards identification of priority IAS, their control or eradication and implementation of measures to prevent introduction and establishment		Trends in IAS Trends in abundance and distribution of selected species
	Public Awareness campaign on IAS	High			
	Two IAS species originating from the pet trade were prioritized for GEF-funded pilot projects: The Indo-Pacific lionfish for capacity building on prevention and preparedness, and the alien invasive iguana for early detection and rapid response towards eradication.	High			
	Durrell Wildlife Conservation Trust working with the Department of Forestry to reduce the impact of feral pigs in the forest.	High			
	Biosecurity and Conservation Efforts on Saint Lucia Offshore Islands Project	High			

MDG/Aichi Biodiversity Target	Progress towards the Aichi Biodiversity Targets and contributions to the relevant Millennium Development Goals Colour Code: Improving / Little or no change / Deterioration / Insufficient or no comparable data				
	Implementation Actions/Case studies	**Action Effectiveness**	**Key Outcomes**	**Assessment of progress towards Aichi Targets and MDGs**	**Potential Indicators/ Other information**
	➢ Maintaining the Maria Islands IAS free ➢ Eradication of predatory IAS on Praslin and Rat Islands, subsequent monitoring and keeping them IAS free (Box 1)				
	Measures to monitor and regulate Ballast waters to minimize possible pathway for IAS being taken with the assistance of the International Maritime Organisation (IMO).	Moderate-High			
	Training in the management of IAS	High			
	Draft IAS bill at Attorney General chambers	Moderate - High			
Target 10 – Pressures on vulnerable ecosystems reduced	Mesic forest reserve – land acquisition by GoSL	Low (early stages)	Steps towards reduction in anthropogenic pressures on vulnerable ecosystems.		Trends in ecosystems and habitats Trends in land use and PA Coverage Type and extent of vegetative cover
	Introduction of incentives by government for investment in green technology e.g. solar, photo-voltaic technology	Moderate			
	Sustainable harvesting of L'Encens project (Box 5)	High			

MDG/Aichi Biodiversity Target	Progress towards the Aichi Biodiversity Targets and contributions to the relevant Millennium Development Goals Colour Code: Improving / Little or no change / Deterioration / Insufficient or no comparable data				
	Implementation Actions/Case studies	**Action Effectiveness**	**Key Outcomes**	**Assessment of progress towards Aichi Targets and MDGs**	**Potential Indicators/ Other information**
	SPCR - Climate Change cocoa project for carbon forest	Low -early stages			
	Sea moss cultivation in Praslin and Vieux Fort	Moderate - High			
Target 11 – Protected areas	Employment of Protected Areas Manager	Low -early stages	Increased efforts at managing protected areas		Trends in land use and PA Coverage Soil loss Type and extent of vegetative cover
	Revised Systems Plan for Protected Areas formulated	Moderate-High			
	Establishment of Pointe Sable Environmental Protected Area(PSEPA – Figure 27)	High			
Target 12 – Extinction prevented	Management Plans are in place and being implemented for the Saint Lucia Parrot, the Saint Lucia Iguana	High	Prevention of extinction of known threatened species, and conservation status of most threatened improved and sustained		Trends in the abundance and distribution of selected Species
	Combination of concerted actions has helped to recover populations of the whiptail and to reduce risk to this species ➢ See Target 9; also ➢ Relocation of whiptail to Praslin and Rat Islands; management of meta-	High			

MDG/Aichi Biodiversity Target	Progress towards the Aichi Biodiversity Targets and contributions to the relevant Millennium Development Goals Colour Code: Improving / Little or no change / Deterioration / Insufficient or no comparable data				
	Implementation Actions/Case studies	**Action Effectiveness**	**Key Outcomes**	**Assessment of progress towards Aichi Targets and MDGs**	**Potential Indicators/ Other information**
	populations to maintain genetic integrity and avoid inbreeding depression(Box 1).				
	Restoration of mauby and latanye plants used for livelihoods brought back from threat of extinction; Restoration of fat poke traditional plant species for wildfire prevention.	High			
	Moratorium on hunting of wildlife.	Low – Moderate			
	Stocking taking of the population of threatened species: ➢ Saint Lucia Whiptail and the White Breasted Thrasher is monitored(Box 1 & 6.) ➢ Endemic and threatened plants, as well as their alien invasive competitors, are constantly being surveyed and monitored (www.saintlucianplants.com). Early detection and rapid response has aided the elimination of some IAS.	High			

MDG/Aichi Biodiversity Target	Progress towards the Aichi Biodiversity Targets and contributions to the relevant Millennium Development Goals Colour Code: Improving / Little or no change / Deterioration / Insufficient or no comparable data				
	Implementation Actions/Case studies	**Action Effectiveness**	**Key Outcomes**	**Assessment of progress towards Aichi Targets and MDGs**	**Potential Indicators/ Other information**
Target 13 – Genetic diversity maintained	Assessment of labs for equipment for Genetically Modified Organisms (GMO) detection	Low	Reduced impact of natural disasters such as hurricanes and bush fires Access to germplasm banks for cultivation Breeds/varieties of livestock/crops are maintained and strategies to minimize genetic erosion in place.		Number of GMO risk assessments conducted Trend in threatened species: Loss of germplasm Changes in crop and livestock yields Trends in IAS - include animal and microorganisms
	Draft Biosafety Framework developed Biosafety Systems implementation project ongoing	Low-Moderate			
	Germplasm banks for socio-economic and culturally valuable crops established on farmers holdings	Moderate - High			
	Fat poke propagated by forestry department for use as fire resistant plants. (Box 4)	Moderate - High			
	Backyard gardening promoted by Ministries of Agriculture and Social Transformation Jardin Keywol promoted by Folk Research Centre	Low to moderate			
Target 14 – Ecosystems and essential services safeguarded	Aus Aid Funded Reforestation Project	High	Resolution of conflict among resource users.		• Trends in land use and PA Coverage

MDG/Aichi Biodiversity Target	Progress towards the Aichi Biodiversity Targets and contributions to the relevant Millennium Development Goals Colour Code: Improving / Little or no change / Deterioration / Insufficient or no comparable data				
	Implementation Actions/Case studies	**Action Effectiveness**	**Key Outcomes**	**Assessment of progress towards Aichi Targets and MDGs**	**Potential Indicators/ Other information**
	Establishment of WRMA and proposed development of watershed management plans to safeguard country's water resources	Moderate	Restriction of development in certain zoned areas Increased fish stocks Increase in vegetative cover Reduction in landslides Improvements in water supply		• Soil loss • Type and extent of vegetative cover • Quantity and size of fish landing • Reports of confrontation to authority • Percentage of vegetative cover • Frequency of landslides • Frequency of water shortages
	Limits of Acceptable Change Study carried out for the PMA, World Heritage Site.	High			
	Extension of the SMMA to Canaries and Anse La Raye producing the West Coast Marine Management Area.	Moderate			
	Work within communities to cultivate medicinal herbs in order to conserve them.	Moderate			
	Coastal water quality testing.				
	Incorporation of biodiversity issues in disaster risk management; wild fire management plan case study (Box 4)	High			
Target 15 – Ecosystems restored and enhanced	Declaration of new forest reserves and marine protected areas (Draft	Moderate	Ecosystems that provide water, health, livelihoods		Trends in land use and PA Coverage

MDG/Aichi Biodiversity Target	Progress towards the Aichi Biodiversity Targets and contributions to the relevant Millennium Development Goals Colour Code: Improving / Little or no change / Deterioration / Insufficient or no comparable data				
	Implementation Actions/Case studies	**Action Effectiveness**	**Key Outcomes**	**Assessment of progress towards Aichi Targets and MDGs**	**Potential Indicators/ Other information**
	SPAA 2)		and well-being are being restored and safeguarded		Soil loss Type and extent of vegetative cover Trends in water quality and quantity.
	Pointe Sable Environmental Protection Area (PSEPA) Case Study (Fig. 27)	High			
	Water resources management agency (WRMA) has been established	High			
	Work of SMMA (Box 3)	High			
Target 16 – Nagoya Protocol	ABS clauses in place in draft biodiversity conservation and sustainable use bill. To be fine-tuned to take into consideration specifics of Nagoya Protocol in upcoming project to be funded by European Union (EU)-ABS Initiative.	High	Measures are being put in place for ratification/implementation of Nagoya protocol on ABS Copies of research documents lodged at natural resource departments		Research agreements signed and implemented Number of certificates of compliance issues: Number of Prior Informed Consent (PICs) granted Number of Mutually agreed terms (MATs) negotiated
	Agreements drafted by the departments of forestry and fisheries implemented with researchers to get access to country's biological resources.	High			

MDG/Aichi Biodiversity Target	Progress towards the Aichi Biodiversity Targets and contributions to the relevant Millennium Development Goals Colour Code: Improving / Little or no change / Deterioration / Insufficient or no comparable data				
	Implementation Actions/Case studies	**Action Effectiveness**	**Key Outcomes**	**Assessment of progress towards Aichi Targets and MDGs**	**Potential Indicators/ Other information**
Target 17 – NBSAP adopted	Biodiversity issues embedded into agendas of many agencies and integrated into national and sectoral strategies and plans (See Table 5)	High	Updated NBSAP to be adopted as a policy document and implemented in a participatory manner		No. of Revised 2nd NBSAP actions implemented
	Public, private sector agencies and community society organisations commence development of national position on the concept of "The Green Economy" (GE), national process for preparing the Rio +20 UNCSD undertaken.	Moderate			
	Draft 2nd NBSAP now being fine-tuned with funding from GEF, to take into consideration AichiTargets, Nagoya Protocol on Access and Benefit Sharing	High			
Target 18 – Traditional knowledge respected	Local communities represented at expert meetings of the CBD	High	Traditional knowledge, innovations and customary practices of local communities to be integrated and reflected in the implementation of the Convention. Country and		Numbers of technical knowledge registers produced. Number of registered patents. Number of PICs and MATs for technical knowledge
	Traditional pilot whale harvesters, conch harvesters, sea turtle and sea urchin harvesters managed and assisted by Fisheries Department.	High			
	Draft procedures manual for biodiversity research produced	Moderate			

MDG/Aichi Biodiversity Target	Progress towards the Aichi Biodiversity Targets and contributions to the relevant Millennium Development Goals Colour Code:  Improving  Little or no change  Deterioration  Insufficient or no comparable data				
	Implementation Actions/Case studies	**Action Effectiveness**	**Key Outcomes**	**Assessment of progress towards Aichi Targets and MDGs**	**Potential Indicators/ Other information**
			communities to benefit more from use of genetic resources and related TK		
Target 19 – Knowledge improved, shared and applied	A photographic and video graphic database on Saint Lucian biodiversity/flora created and widely used by the public and members of staff of the ministry of Agriculture.	Moderate	Measures in place for knowledge creation, widespread sharing and application.		Frequency of updates of CHM Number of hits on website. Number and types of knowledge and information materials produced Number of workshops and training sessions.
	Geo-Node platform established for data management for climate resilience	Moderate to High			
	Biodiversity website being updated and to be made functional.	Moderate			
	Educational materials prepared and distributed to schools and publics e.g.: • Booklet on folklore of sea turtles produced by the WIDECAST Turtle Network ; • Books on fisheries resources and conservation produced by Department of Fisheries • Book for schools called Environment Nature Watch,	High			

MDG/Aichi Biodiversity Target	Progress towards the Aichi Biodiversity Targets and contributions to the relevant Millennium Development Goals Colour Code: Improving / Little or no change / Deterioration / Insufficient or no comparable data				
	Implementation Actions/Case studies	**Action Effectiveness**	**Key Outcomes**	**Assessment of progress towards Aichi Targets and MDGs**	**Potential Indicators/ Other information**
	funded by the British High Commission produced and distributed; • Book on birds of Saint Lucia produced by the Forestry Department in collaboration with the Taiwanese government. • Project for production of agro-biodiversity education material underway. • Media kit prepared under OPAAL and distributed to media houses • Posters and booklets on biodiversity produced by OECS				
	Teacher training workshops on various biodiversity issues like forests, rivers, mangroves, sea turtles funded by the OECS and United Nations Educational, Scientific, and Cultural Organisation (UNESCO).	Moderate to High			

MDG/Aichi Biodiversity Target	Progress towards the Aichi Biodiversity Targets and contributions to the relevant Millennium Development Goals Colour Code:				
	Improving	Little or no change	Deterioration	Insufficient or no comparable data	
	Implementation Actions/Case studies	**Action Effectiveness**	**Key Outcomes**	**Assessment of progress towards Aichi Targets and MDGs**	**Potential Indicators/ Other information**
Target 20 – Financial resources increased	Legislation and Bye Laws drafted for the establishment of a National Conservation Fund managed by a Board in which the majority of the Directors are from Non-Government agencies; NCF to receive funding from the Caribbean Biodiversity Fund on a 1:1 match. A national Seminar on Sustainable Financing Options to capitalise the Fund was held in April/May 2014.	High	Mobilization of financial resources for effectively implementing theupdated NBSAP and Convention in a sustainable manner.		Number of sustainable financing options Trends in the capitalization of NCF. Trends in donor funding.

4.2 Contribution of Actions and Case Studies

Saint Lucia's NBSAP and the programmes and actions implemented through or facilitated by this Plan show that local management of biodiversity can contribute to human wellbeing, and thus, achievement of the MDGs, both directly and indirectly. For example, directly through income-earning opportunities, community empowerment, and improved access and benefit sharing of biological resources as illustrated in **Figure 3.2** (Livelihood Opportunities practiced by Eco-South Tours); and **Box 3.3** (Success Story of the SMMA); and indirectly through improved conservation practice and the impact this can have on ecosystem services as illustrated in **Box 3.1** (Recovery of Threatened Species on Maria Island); and **Box 4.1** (Case Study Biodiversity and Disaster Management).

Initiatives contributing to implementation of the Convention and MDGs include the preparation of the revised SPPA2; a framework for climate resilience building (SPCR); National invasive Species Strategy (NISS); management plan for protected areas (e.g. SMMA – **Box 3.3**); and management plan for threatened species (white breasted thrasher– **Box 4.3.** Direct interventions, such as forest restoration and rehabilitation and the establishment of germplasm banks have also contributed to implementation of the Convention and MGDs.

Most notable, has been the increasing use of an ecosystems approach, especially with regard to species rehabilitation, and production and sustainable use. Further, at the local, regional and international levels, financial resources have been mobilised and progress has been made in developing mechanisms for research, monitoring and scientific assessment (Case Study L'encens – **Box 4.2** and Species Recovery **Box 4.4**).

Box 4.1: Biodiversity and Disaster Risk Reduction: Wildfire Management

A National Wildfire Plan approved in 2009, was developed in response to the increasing occurrence of wildfires associated with the impacts of climate change, El Niño, and La Niña.

Study by DoF (Charles A, 2010) noted the presence of species like Bamboo, Razor Grass and Heliconia, Leucaena, Gliricida and Coconut trees- species of high calorific content and foliar structure which encouraged spread of wildfires, more so after becoming dry during the prolonged dry season. Recommendation for establishment of wildfire traces in areas prone to fires; reforestation with species such as; **Bwanblan**, bay leaf, white cedar; **fat poke** also to be used for terracing in steeper areas has proven to be very good as a fire retardant and also recovers very well after a fire.

Research done (Rock, 2011) in collaboration with DoF, utilised Geographic Information Systems (GIS) analysis to determine spatio-temporal patterns of wildfires, based on parameters including vegetation, soil, land use, temperature, rainfall and gradient datasets, and to create a Wildfire Hazard Zone Map that can assist in predicting future wildfire risk. Results demonstrated both temporal and spatial patterns in the occurrence of wild fires which allowed for a weighted multi – criteria overlay map to be produced showing high risk areas (class 4) – to low risk areas (class 1). This now provides much needed mechanism for agencies responsible for wildfires to better direct mitigation and education efforts to reach the proper locations and audience.

Sources of Information:

http://archive.stlucia.gov.lc/nemp/plans/FireManagementPlan.pdf

Department of Forestry, 2010. *Status Report on Wildfire Impact in Millet.* Prepared by A. Charles, Forest Officer.

Rock, R.E. 2011. *Using GIS to Analyze Modis and Local Wildfire Data, with a view to Predict Future Wildfire Risk.*A dissertation submitted in partial fulfillment of the requirements for the degree of M.Sc. in Geographic Information Systems by Online Distance Learning. University of Southampton.

<table>
<tr><th colspan="3">Box 4.2: Success Story in Sustainable Consumption and Production – L'encens (L'ansan)</th></tr>
<tr><td>Problem</td><td colspan="2">Incense produced from P. attenuattum is one of the most important NTFP traded on the island of Saint Lucia. Protium attenuatum (Rose) Urban; is known as l'encens, l'ansan, gommier, and bois l'ansan, with l'ansan the preferred trade name of the incense produced from the resin. It is produced and traded similar to frankincense and myrrh, hardened resinous exudates obtained from tree species of the Burseraceae family. It is utilized within the household and marketed for its social, cultural and religious significance. There is also potential for the frankincense obtained from such trees to be used in the cosmetics industry with the production of creams. However, the high mortality rate of Protium attenuatum trees, due to unsustainable harvesting of l'encens is a major challenge to the sustainable livelihoods it has the potential to afford rural persons.</td></tr>
<tr><td>Management Response</td><td>The Forestry Department and Fauna and Flora International (FFI) are helping local communities to develop a sustainable harvesting programme for the l'encens tree. This involves researching technologies for the extraction of incense from the bark of the l'encens tree without killing the tree.
This is further supported by monitoring and development of sustainable management and utilization plans in order to avoid further population decline in P. attenuatum (Toussaint A. 2010).These are based on the design and methods used in the timber inventory and the vegetation classification and mapping components of the 2009 Forest Inventory Study.</td><td> 
Harvesting the l'encens tree
Credit: @ globaltrees</td></tr>
<tr><td>Achievements</td><td colspan="2">The study produced important baseline information on density, distribution, range, diameter, size and class distribution of the target species in the study area. These are perhaps the most fundamental sets of information needed for managing species, especially in terms of estimating population size and non-detrimental findings. Moreover, the study emphasized the economic value of l'ansan to rural livelihood and the sustainable use issues of present modes of harvests.</td></tr>
<tr><td>Challenges and Issues</td><td colspan="2">Ethno botanic studies show l'ansan to be of high economic value to rural livelihoods. However, present modes of harvests have been detrimental to production and the sustainable use of the trees. While inventories have established relationships between tree diameter and its volume of wood; the same cannot be said for the relationship between diameter of a P. attenuatum trees and the amount of resin contained.</td></tr>
<tr><td>Lessons Learned</td><td colspan="2">Forests need to be recognised as a complex production system with more comprehensive assessment of forest products, in particular NTFPs which provide livelihoods, in order to avoid forests species becoming endangered.</td></tr>
<tr><td>Information Sources</td><td colspan="2">GOSL, 2009. National Forest Inventory of Saint Lucia.
Toussaint A. 2010. Assessing the Sustainable Management and Production of L'ansan</td></tr>
</table>

	Incense in Saint Lucia. Biodiversity Project, Saint Lucia.

Box 4.3: Case Study White Breasted Thrasher (gòjblan)

Problem	The white breasted thrasher, locally called gòjblan (*Ramphocinclus brachyurus*), a medium-sized songbird, is one of the unique components of Saint Lucia's biodiversity. Found only in very restricted areas of the islands of Saint Lucia and Martinique, it is believed that over 80% of the entire world population is found on Saint Lucia. Considered a common and widespread bird in the 19th Century, by the early 20th Century the famous ornithologist James Bond was already describing it as "one of the rarest birds in the West Indies". Currently, the Red List of the International Union for the Conservation of Nature (IUCN) assesses it as Endangered, defining this to mean *"at very high risk of extinction in the wild"*. The population on Saint Lucia appeared to be rallying, to some degree, following the reversion to native dry forest of an area between Dennery and Praslin that was formerly under cultivation; indicating the strong potential for reversing the gòjblan's slide into extinction. The gòjblan is in danger of being lost forever through habitat loss and fragmentation. Direct pressures on the gòjblan include contraction of suitable habitat and invasive alien predators. 
Management Response	Management response to decline in population is predicated on the fact that conserving the gòjblan means conserving its threatened ecosystem. The response included formulation and implementation of a plan for consolidation of fragmented habitat, recovering of degraded habitat and controlling non-native predators; the plan proposes to bring a minimum of three select areas under management for the gòjblan and other priority species and habitats (dry forests and rivers). Within these areas, there will be restoration sites (for improving habitat quality) and predator control sites (to demonstrate the impacts of removing invasive predators). These sites are planned for management areas that are zoned for sustainable uses.
Achievements	Management mandates for a number of land parcels in gòjblan areas already exist in, or adjacent to, gòjblan habitat that have existing management mandates held by government agencies including the four forest reserves in Iyanola (Marquis 1, 328 acres; Marquis 2 [La Rochelle], 87 acres; Marquis 3, 36 acres; and Marquis 4, 27 acres) managed by SLFD; and the parcel of Crown Lands surrounding Bordelais Correctional Facility (141 acres), held by the Crown Lands Section (who can extend management mandates to other entities). A comprehensive Plan for the management of gòjblan is now at final stage of drafting incorporating these; Other areas have been identified to extend management sites and co-management arrangements are being explored. The plan was designed to be fully aligned with the Revised NBSAP and CBD Aichi Biodiversity targets, particularly with regard to reversing the trend of biodiversity loss, and will thus contribute to Saint Lucia addressing these issues.
Challenges and Issues	• Sensitization to the importance of the gòjblan as part of Saint Lucia's wider biodiversity will be critical to the success of the Plan. • The need to ensure that all the actions identified in the Plan go through a participatory planning stage; and that local communities are empowered to develop and implement activities under the Plan, with training needs assessments and capacity building provided.
Lessons Learned	As a unique component of Saint Lucia's biodiversity a species recovery plan (in this case for the gojblan) is best situated in the context of the island's National Biodiversity Strategy and Action Plan (NBSAP), for synergistic collaboration in implementation. It was clear that the gòjblan cannot be viewed in isolation from the ecosystem it lives in – seasonal deciduous dry forest, with ravines appearing especially important to this species – or from the other species it shares that ecosystem with; an ecosystems approach is fundamental for species recovery.
Sources of Information	Felix, M.L., J. Mortensen, M. Morton and J. Tschirky, 2013.*The GòjBlan Plan: An action plan for recovering the white-breasted thrasher on Saint Lucia.(Draft);* personal

	communication from authors.

Box4.4: Case Study Species Recovery- Saint Lucia Racer

Problem: The harmless Saint Lucia racer is believed to be the rarest snake in the world, with the entire species being restricted to the 12 hectare island of Maria Major. Morton et al (2013) document the following trends: "*In 1850, it was described as the second commonest snake in Saint Lucia (Tyler 1885), but after the introduction of small Asian mongooses in 1869 it was, by the 1930s, believed to be extinct (Parker 1936). Attempts to find the racer were made in 1994 (when two were found; Sherriff et al. 1995) and in 1997 (when one was found; Buley et al. 1997). In 2011-2012, a survey method adapted from the Antigua Racer Conservation Project was used and produced 44 sightings of at least 11 individuals."*

Saint Lucia Racer
Credit: ©FFI

Action: An action plan for the recovery of this species has been drafted, by the Forestry Department in conjunction with British-based Durrell Wildlife Conservation Trust, particularly to address predation by Asian mongooses and other alien predators. The Plan involves:

- Population management at multiple sites, including captivity
- Implementation of conservation management, including biosecurity, at these sites - this has been implemented almost exclusively by SLFD and Durrell since 1993 up until 2013.
- Training and technical assistance provided to biodiversity management agencies, through projects that build on IAS initiative.

Results:

- Forestry Department with Durrell Wildlife Conservation Trust demonstrates a successful international collaboration for biodiversity management.
- At least 11 Saint Lucia Racer snakes were spotted and tagged by a group of international scientists hunting for the snake in the Maria Islands reserve, which is part of Saint Lucia and located about one kilometer (0.6 miles) south of the main island (reported by Durrell Wildlife Conservation Trust). The snakes were implanted with microchips that will transmit data for at least 10 years, including information about their lifespan and other unknown details.
- Overall, scientists estimate that 18 snakes live on the reserve - Matthew Morton, Durrell's Eastern Caribbean programme manager.
- Proposal for breeding the reptile in another place, such as the offshore islands for posterity is under consideration. Breeding on the main island is not considered a potential option as the mongoose, the biggest predator of the snake, lives there and will destroy the population
- Other IAS initiatives have lent support to the Species Recovery Plan:
    - A two-year project which began in 2012 on offshore island biosecurity: "Islands without Aliens", funded by the Critical Ecosystem Partnership Fund is supporting development of the plan and its implementation over the project lifespan.
- Earlier biosecurity management initiatives including the 2009-2013 project "Mitigating the Threats of Invasive Alien Species in the Insular Caribbean", one of whose aims was to "increase capacity to strengthen prevention of new IAS introductions in terrestrial, freshwater and marine systems".

Broader implications:

- Implementation of the management Plan means that snake population will increase resulting in a species that could have been lost now being preserved.
- Stakeholders sensitised and made aware of value and status of the snake, so they can help with their conservation.

Sources of Information: FAO website
http://cnsnews.com/news/article/snake-declared-extinct-re-emerges-caribbean#sthash.f5mjF0Fx.dpuf

4.3 Lessons Learned from Implementation of Convention

The many achievements and areas where progress is lacking, along with challenges encountered in implementation of the Convention, including implementation of the Draft 2nd NBSAP, have been elaborated in the previous sections and through the various case studies presented. This subsection seeks to summarise the contributions resulting from action and major achievements ("bright spots"), and challenges ("hotspots") encountered, as well as lessons learned both in terms of high points and constraints, in an attempt to determine gaps and future priorities for action.

Despite a lack of the requisite financial and human resources, Saint Lucia's efforts at implementation of the Convention can be deemed commendable. This is largely due to the high level of dedication and commitment on the part of the technical personnel involved in biodiversity management. Further, CBD enabling initiatives, in particular the formulation of the Draft 2nd NBSAP, have been driven by fully participatory approaches and have thus been able to stimulate action at many levels:public sector agencies, institutions of learning, scientific community, private sector, NGOs, and community based and grass roots organisations. Consequently, significant strides are reported towards the achievement of the objectives of the Convention, with regard to promoting and improving conservation and sustainable use of biodiversity and the fair and equitable sharing of benefits arising out of the utilization of genetic resources. Some of the "bright spots"in this regard and related to the Strategic Plan (2012-2020) and the Aichi Biodiversity Targets are summarised in **Table 4.2**.

Table 4.2: "Bright Spots" in Implementation of the Convention to Date

Conservation and Restoration	Production and Sustainable Use	Access and Benefit Sharing
• Revised SPPA2 • Framework for climate resilience building (Strategic Programme for Climate Resilience and Disaster and Vulnerability Reduction Programme) • National invasive Species Strategy (NISS) • Management plans for both ecosystems (e.g. PSEPA, SMMA, PMA& LAC study) and species (e.g. white breasted thrasher • Forest restoration and rehabilitation – after Tomas • Establishment of germplasm banks in agriculture • Monitoring and assessment of biodiversity enhanced by Saint Lucia's participation in International Platform on Biodiversity and Ecosystem Services (IPBES)	• Sustainable Consumption and Production (SCP) dialogue • Green Economy dialogue • Sustainable harvesting for Non-timber forest products, and fisheries • Sustainable agricultural and tourism practices • Eco-agri tourism initiatives	• Draft Revised Biodiversity Legislation incorporating requirements of Nagoya Protocol • Investment Policy promoting opportunities in biodiversity • Public Private/community partnerships (e.g. SMMA)

- Fiscal and economic incentives used to promote sustainable consumption and production in agriculture and tourism.
- Establishment of Biodiversity Unit in Sustainable Development and Environment Division of MSDEST
- Sustainable financing options being pursued for biodiversity management– National Conservation Fund.
- Officers in Finance, MSDEST and National Development Ministries trained in methodologies for green accounting and valuation of ecosystems and biodiversity(WAVES, UNSEEA, TEEB critical ecosystem project).
- Partnerships and international/regional collaboration in Research and Systematic Observation; Opportunities for south-south cooperation are being explored though limited.

A wealth of experience has been gained in implementation of the Convention, which can be utilised to support even more effective implementation by all parties, especially to address the fundamental causes of biodiversity loss. Actions taken to date to implement the Convention provide a platform to address many of the current pressures on biodiversity such as IAS, impacts of climate change and overexploitation. Decision-makers and other implementers of policy are also slowly becoming more aware of the long-ranging impacts of policies, or lack thereof, on biodiversity and consequently sustainable development. However, there are still a number of areas where progress has been slow and challenges continue to be encountered, as has been alluded to in previous sections and case studies. **Box 4.5**highlights some less successful actions undertaken.

Box 4.5. Less Successful Actions

- Systems Plan for Protected Areas has not yet become a legal document in spite of its being widely accepted at the very grassroots level since 1992; it is hoped that with the presentation of the revised SSPA 2 that it will be endorsed by Cabinet of Ministers. Government is still very challenged by the perceived dichotomy between environment and development.
- The capacity of wetlands and the dry forests ecosystem to deliver goods and services continues to be under threat. There is increasing incidence of human induced ecosystem failure as land use changes due to development pressures negatively impact ecological function
- World Heritage Site Conservation Area – The Piton Management Area (PMA) was brought into question; it is envisaged that the recommendations of the Limits of Acceptable Change (LAC) Study (2013) will be used to establish future guidelines for management of the PMA.
- The Saint Lucia fer-de-lance or pitviper, *Bothrops caribbaeus*, has drawn international attention due to its medical importance and the unusual effects of its venom. The snake is not protected under the Wildlife Protection Act so there is need for an urgent lobby for it to be protected and systems put in place for appropriate Access and Benefit sharing.
- Use of EIAS and SEAs in development planning need to be strengthened; adverse impacts of development at Praslin on White Breasted Thrasher not minimized. Potential for impacts on other endangered species with new developments being proposed in e.g. North East Coast – Iyanola.

Table 4.3 provides additional challenges encountered in the implementation of the Convention to date and **Table 4.4** provides some valuable lessons learned.

Table 4.3: "Hotspots" in Implementation of the Convention to Date

Key Challenges Encountered include:
• Skewed national development objectives arising from a protracted global economic recession, which tend to promote economic imperatives and alter the balance with the social and ecosystem dimensions required for real sustainable development.
• Challenging socio-economic conditions, including demographics and high levels of poverty and

Key Challenges Encountered include:
unemployment (currently 26.5%), especially among the youth and in rural communities promote unsustainable use of resources leading to biodiversity loss. • Capacity constraints, particularly with regard to governance and administrative arrangements to enable integrated development planning and collaborative implementation. • Lack of 'ownership' at the political level in terms of urgency of Cabinet endorsement and appropriate systems for operationalization of key biodiversity related dogmas: Revised Draft Biodiversity Legislation, Biosafety Framework, Revised SPPA2 and NISS. • Limited agency and community capacities for managing biodiversity, in areas such as appropriate technology for valuation of biodiversity, SCP, RSO, M&E, among others. • Slow progress in development of Biodiversity indicators due to inadequate skills, limited understanding of the value of biodiversity amongst many sectors and insufficient use of science-based information in decision making. • Impaired knowledge and information gathering and dissemination due to poor functionality of Biodiversity Information Network (BIN) impacting the use of Biodiversity Clearing House Mechanism (CHM) and other related information management systems. • Adhoc and fragmented approach to public awareness hence stimulus has not been sustained to ensure that biodiversity is embedded into systems for national, sectoral and community planning.

Table 4.4: Lessons Learned in Implementation of the Convention to Date

Lessons Learned: Implementation on Convention on Biological Diversity
Relevant data of some form can be found within various institutions, both public and community society organisations to assist in understanding biodiversity issues and at least for discharging national responsibilities of reporting with regard to international obligations; however, knowledge and information sharing and exchange require clear mechanisms, with the most appropriate types and formats established to enable proper interpretation. The adoption of an ecosystems approach in biodiversity management has been an eye-opener especially in the way concerned stakeholders are now able to use selected species for understanding and assessing biodiversity and the associated ecosystems where they are found (e.g. SMMA; PSEPA; *The GòjBlan Plan, L'encens, Fisheries Policy*), thus ensuring sustainable use for deriving benefits for all, especially the most vulnerable. For example, in the case of L'Encens, it was recognised that forests need to be recognised as a complex production system with more comprehensive assessment of forest products, in particular NTFPs which provide livelihoods, in order to avoid forests species becoming endangered. Application of an ecosystems approach has also been instrumental in creating new collaborations among a diverse range of partners and has paved the way for improved communications and information exchange. It was acknowledged (e.g.*The GòjBlan Plan*) that biodiversity related management plans are best situated within the context of the NBSAP, in order to obtain requisite support at the national level. In the context of poverty reduction, biodiversity provides effective ways to empower the poor: biodiversity and poverty are linked in two major ways: (1) poverty alleviation should not promote unsustainable use of biological resources, which would only substitute gains in one area for losses in another, (2) improving the condition of biological resources and ecosystems can help reduce poverty

Lessons Learned: Implementation on Convention on Biological Diversity
(improved health, livelihoods and security). The NBSAP cannot be viewed as just a technical document, and ownership must be established at the highest level of government if biodiversity is to be appropriately valued in the national development agenda, and NBSAP activities appropriately resourced. Capacities for managing biodiversity, in areas such as appropriate skills and technology for biodiversity valuation, SCP, RSO, M&E, among others, have to be addressed with urgency. Public awareness and sensitization need to be holistic and sustained to ensure that biodiversity becomes well embedded into systems for national, sectoral and community planning.

4.4 Gaps and Future Priorities

Saint Lucia has made noteworthy progress in the implementation of the Draft 2nd NBSAP and the Convention, as indicated by accomplishments and activities related to biodiversity and ecosystems management undertaken at the various levels of society since preparation of the Draft 2nd NBSAP. However, the process for revision of the Draft 2nd NBSAP was purposed to identify any pertinent issues that have remain unaddressed in terms of gaps and limitations of the Draft 2nd NBSAP, particularly with regard to emerging issues that are gaining prominence, and deemed critical to biodiversity.

4.4.1 SMART Targets

One of the major gaps in the Draft 2nd NBSAP which needed to be addressed because the document was drafted prior to the adoption of the Strategic Plan in 2010, was the incorporation of the requirements of the Global Strategic Plan for Biodiversity (2011-2020) and it's Aichi Targets. Further, the principal gaps and limitations emanating from a review of the Draft 2nd NBSAP and detailed in Part II of this report, indicated the need for an improved construct for the revised 2nd NBSAP to ensure a results-based framework that established a more holistic vision, with clearly defined goals and specific, measurable, attainable, realistic and timely (SMART) targets that were aligned with the Aichi Targets, to enable effective monitoring and review.

4.4.2 Environmental Management Dimension versus Socio-Economic Dimension

The review revealed that substantial concrete activities and innovative thinking in biodiversity planning had been generated[68]. This has taken place not only within the conservation community, but also on a wider scale across the major economic sectors. However, the desired impact of improved biodiversity management has not yet been fully realised. The process for the alignment of the NBSAP targets with the 20 Aichi Targets further revealed that despite the many accomplishments with regard to activities undertaken,

[68] The NBSAP process has contributed to this to some extent; the Stocktaking exercise has demonstrated that many biodiversity related activities are being implemented at all levels of society (national, sectoral, agency, community, household, etc.) which contribute inadvertently to the implementation of the NBSAP.

many of these were still strongly linked with the environmental management dimension of conservation and sustainable use of biodiversity, with the socio-economic dimension still largely underemphasised. Moreover, to facilitate a more harmonized approach to implementation of the Convention, and thus a more focused outcome, a mechanism to connect and direct the various separate initiatives being undertaken by the various interest groups had to be defined. In addition, the Revised 2nd NBSAP will have to include measures and mechanism to ensure that the 20 Aichi targets are particularly well embedded with a well aligned suite of activities that can be effectively monitored for impact.

4.2.3 Formal Linkages among Key Agencies

The data and information presented in PartII further revealed, that despite the multiplicity of activities being undertaken, the country still continued to experience biodiversity loss at concerning rates as the underlying drivers of biodiversity loss have not been effectively addressed. Major threats in this regard included habitat destruction (loss and fragmentation) resulting from indiscriminate changes in land use patterns due to inappropriate land use and poorly managed development; and further exacerbated by the negative impacts of climate change and threats from invasive alien species (IAS). Though to a lesser extent, threats of over-exploitation and pollution also required urgent attention.

To effectively address the threat of habitat destruction as it relates to land use changes, it will be necessary to incorporate more binding requirements for land use planning and physical development initiatives with regard to biodiversity management. In this regard, adequate enforcement and compliance will be critical. Stronger and more formal linkages with key entities such as the Ministries with responsibility for National Development, Physical Development and entities such as the Development Control Authority (DCA) will also be required to foster a development agenda imbued with requisite biodiversity values and insights.

4.2.4 Green Economy

Overall, Saint Lucia's processes for NBSAP development, implementation and updating have so far assisted the country in improving biodiversity knowledge, and in identifying the main causes of biodiversity loss and the response measures needed to combat loss. It has also propagated many programmes on conservation and sustainable use of biodiversity. However, the review in Part II further highlighted that, in as much as the Draft 2nd NBSAP has been devised and supported by other programmes relating to conservation and sustainable use of biodiversity, it has not yet fully embraced the potential opportunities associated with a now emerging and important value of biological resources and natural capital: The Green Economy. The Draft 2nd NBSAP does not identify strategies to exploit the potential of biodiversity-based industries; sustainable production and consumption; food security; economic value of invasive species, among others. Strategies to exploit the potential of biodiversity-based industries; sustainable production and consumption; food security; economic value of invasive species, and such like, are still to be identified. Thus, a priority at this stage for Saint Lucia's biodiversity management agenda is the consideration to valuing economic benefits for biodiversity and incorporation of biodiversity values into national

financial and economic planning and decision making. Also important is the incorporation of the revised Strategic Plan for Biodiversity (2011-2020) including the twenty Aichi Targets of COP 10 in 2010, the Nagoya Protocol on Access and Benefit Sharing (ABS), as well as the further deepening of linkages amongst Rio Conventions and the related biodiversity conventions such as CITES and RAMSAR to derive synergies. **Box 4.6** highlights future priority areas for the country with regard to convention implementation and overall biodiversity management.

Box 4.6: Future Priorities for CBD Implementation and Biodiversity Management

- Appreciation of opportunities in biodiversity management to overcome development issues of poverty reduction through livelihood development; e.g. rural development initiatives in arts and craft, eco-tourism with potential to expand.
- Economic valuation of biodiversity resources and incorporation into the economic development paradigm; particularly to record both the value of the ecosystems services, and the cost of degradation as pertains to reduced ecosystem service output.
- More meaningfully adopt the ecosystems approach, especially in the realm of sustainable consumption and production of biodiversity goods and services.
- The potential value of the creation and management of protected areas to biodiversity management in a small island state such as Saint Lucia.[1]
- Indicators and mechanisms for effective NBSAP monitoring, and particularly with regard to measuring the impact of climate change and climate variability on habitat damage or loss such as forest degradation and its impact on biodiversity.
- Guidelines for the consideration of biodiversity in environmental assessments particularly in marine and coastal areas.
- The consideration of risk mitigation initiatives to protect biodiversity and ecosystems.
- Urgent attention to sustainable use of genetic and biological resources; overfishing and potential collapse of Inshore Marine Ecosystems.
- Ensuring access to Genetic Resources and Benefit Sharing – both at the community and national level.
- Appreciation of the special role women play in ensuring that environment and development issues are sustainably harnessed for the continued health and wellbeing of their families and communities. Also, the considerable contribution of youth to sustainable development programmes.
- The requirement for substantially more human and financial resources than what is currently being allocated for biodiversity conservation and ecosystem management.
- Articulation of coherent policies and distinctive mechanism for coordination among sub-sectors and across sectors given that biodiversity management is a multi-sector mandate.
- Need for sustained public awareness and education; including the presentation of sustainable management of ecosystem services and biodiversity conservation to economists, political leaders and policy makers in terms of its contribution to development, growth and equity.
- Improved data management (esp. collection and dissemination) as an imperative for improved coordination and collaboration for biodiversity management.

4.2.5 Key Elements of Biodiversity Management

Some elements of the biodiversity management framework have been deemed critical for ensuring that biodiversity values and insights become well embedded into the national planning agenda, which must be successfully addressed in order to realise more effective

implementation of the Convention and the Revised 2nd NBSAP**(Box 4.7).**These elements include, *inter alia*, appropriate governance systems and processes to guide biodiversity management and to ensure inter sectoral and inter agency coordination; creation of appropriate partnerships between the public sector, private sector and civil society; a sustained communication, education and awareness programme on biodiversity issues and the NBSAP; and tools and platforms necessary for creating a repository on information and knowledge on the various aspects of biodiversity in Saint Lucia.

Box 4.7. Key Elements of Biodiversity Management Framework for the Revised NBSAP

- An appropriate implementation framework, that provides for the strengthening of existing institutional arrangements necessary for coordinating the implementation of the revised 2nd NBSAP,
- Enhancement of the existing policy, legislative institutional and fiscal framework with particular regard to the ABS and Nagoya Protocol.
- Appropriate systems and mechanisms for monitoring, evaluation and reporting with appropriate indicators.
- Identification of supporting capacity needs, technology needs and mechanisms for resource mobilization for implementation of the revised 2nd NBSAP.
- The formulation of a more broad based communications and education public awareness (CEPA) strategy to support the implementation of the revised NBSAP.

4.2.6 Institutional Framework

Recommendations for actions that will help to establish the enabling environment comprising appropriate institutional arrangements, and strengthened policy and legislative frameworks necessary for effective biodiversity management are outlined in **Box 4.8**.

Box 4.8. Recommendations for Future Enabling Environment for Biodiversity Management

- Appropriate governance systems and processes to guide biodiversity management in the country and to ensure inter sectoral and inter agency coordination and collaboration – National Biodiversity Management Entity (NBME);
- Creation of appropriate partnerships between the public sector, private sector and civil society;
- Review and enhancement of the existing policy, legislative institutional and fiscal framework with particular regard to the ABS and Nagoya Protocol.

The framework for governance for biodiversity management ought therefore, to be anchored within the environmental management framework (EMF) which will promote the integrated

development planning process, thereby cementing the link between biodiversity management, environmental management and sustainable development at all levels.

The National Environmental Commission (NEC) already establishes the foundation for enabling effective inter-agency collaboration on, environmental planning and management. This is a Cabinet appointed entity which may be replaced in function and/or title by a successor body, and should be enhanced with the National Biodiversity Coordinating Committee (NBCC) as a subcommittee specifically focused on ensuring that biodiversity insights and values are incorporated into this level of planning. A National Biodiversity Technical Committee (NBTC) comprising a multidisciplinary, multi-agency group of technical persons would be required to advise the National Biodiversity Management Entity (NBME) on issues relating to biodiversity conservation, sustainable use, access and benefit sharing. The composition of both the NBCC and NBTC should be purposed to engender equitable participation of the various sectors and societal groups in the biodiversity management dialogue and thereby facilitating more effective internalization and integration of biodiversity management issues at the sectoral, business and community level. It is also able to provide a platform to facilitate knowledge management and, with the option to co-opt other members, to further extend the reach of knowledge sharing.

The implementation framework must further seek to obtain ownership for the Revised 2nd NBSAP at the Ministerial level in an effort to secure better political buy-in than in the previous Plans. Given the spread of Ministerial mandates, an implementing entity which straddles three key Ministerial portfolios of (i) Finance, (ii) National Development and (ii) Sustainable Development, Energy, Science and Technology (MSDEST) will need to be considered. Ministerial lobby of other critical Ministries such as Agriculture and Fisheries, Tourism, Commerce will be undertaken through the NEC, a Cabinet appointed body comprising key policy makers in public and private sector and civil society organisations.

The implementation modality should also create mechanisms for engagement of key stakeholders at a coordination level of Chief administrative officers, working with and through the National Biodiversity Coordinating Committee (NBCC) and the Committee of Permanent Secretaries, technical level of chief technical officers working with and through a National Biodiversity Technical Committee (NBTC) and the functional implementation level within the existing Biodiversity Unit, supported by relevant departments and functions within the Ministry(MSDEST), working closely with implementing partners and engaging all relevant stakeholders.

In this regard, existing institutional arrangements need to be further enhanced. The Biodiversity Unit which now resides in the Ministry of Sustainable Development should be established as a separate and distinct unit within the Ministry, supported by the other departments within the Ministry, including SDED, Forestry Department, WRMA and the Accounting Section of the Ministry. The Unit would serve as the secretariat for the various coordinating mechanisms. Memoranda of Understanding (MOUs) and other agreements, with

roles and responsibilities clearly defined, could also be utilized for collaboration and cooperation, once the requisite support (legal, financial) is in place to ensure adherence.

4.2.7 Monitoring and Evaluation

A key priority for implementation of the Convention and the updated NBSAP identified in Sub-section 4.4.1is the establishment of appropriate systems to facilitate effective monitoring and evaluation. The process of effective Monitoring and Evaluation (M&E) of the Revised NBSAP should be an on-going process and based on the following strategic directions:

- An effective coordinating mechanism with roles and responsibilities clearly defined and within the auspices of a key national biodiversity management entity (NBME), which has lead responsibility for executing the biodiversity management programme.
- The monitoring and evaluation process is participatory, consultative and aimed at evaluating the level of success at achieving the defined targets. Evaluation will be based on the status of implementation, through identification of gaps, and the measurement of impacts and level of success in the application of best practices.

The M&E framework needs to be inextricably linked to the existing CHM framework for research and systematic observation and concomitant data and information acquisition, knowledge management and sharing. In particular, data capture systems to support indicator development, particularly with regard to the process of natural capital accounting and other relevant emerging issues such as climate change must be improved or new systems established.

4.2.8 Capacity Strengthening

Capacity strengthening is required at all levels: policy, institutional, sector, community, and individual level (**Box 4.9**). Institutional capacity for systematic monitoring needs to be upgraded in terms of equipment and skills to be able to provide the necessary follow-up on decisions taken and identify gaps and constraints as they arise. This is an imperative. The country will need to upgrade existing programmes, or establish new programmes where necessary, to create a national network for research and systematic observation (RSO) to effectively monitor biodiversity and ecosystems, especially with regard to the emerging issues of invasive species, climate change, biotechnology, intellectual property, among others. Research and Monitoring in this regard would also be greatly enhanced through promoting the use of the Biodiversity Clearing House Mechanism and other biodiversity related information management systems such as the Geo-Node platform for climate change information. Efforts must also be made to finalise the draft procedures manual to guide biodiversity research in the country. The participation of the country in the processes of the Convention and those related, such as the International Platform on Biodiversity and Ecosystem Services (IPBES) which provides technical assistance and guidance in assessment and monitoring of biodiversity, and the continuing work of the various focal points related to the Convention should be supported and encouraged. Focal Points such as those for the ABS, Protected Areas, Global Taxonomy Initiative, Biosafety Clearing House, Global Plant Conservation should be kept thriving.

Moreover, specific groups will need to be empowered with knowledge and skills on business opportunities for biodiversity friendly goods and services, and within a SCP context, and paying special attention to the creation of sustainable livelihoods for vulnerable groups, in particular, women and youth. Hence, relevant scientific and technical education and training in measures for the identification, conservation and sustainable use of biological diversity and its components will be required in this regard. In addition, relevant tools and guidelines for the application of science, technology and innovation (STI) in biodiversity management; public awareness and sensitisation; and capacity building and training, to mention a few, will need to be identified and developed or adapted.

Given existing personnel constraints, in the medium-to-long term, efforts will have to be made to increase staffing levels within the appropriate departments or agencies, which will have financial implications for the Government. In the immediate to short term however, it will be necessary to clearly identify skills needed and enhance where possible, (through training or deployment of requisite expertise, to the relevant department or agency to perform the desired function).

Box 4.9 General Capacity Strengthening Needs

- Training for monitoring and evaluation of the implementation of the convention particularly of personnel in the Biodiversity Unit and supporting Biodiversity Committees
- Training, skills development and development of systems required in the area of Natural Capital Accounting, Natural Resource Economics and Environmental Audits so as to provide a scientific basis to inform decisions;
- Capacity strengthening at various levels with respect to advocacy, negotiation and policy formulation;
- Equipment and skills for improved data gathering systems, including fine tuning of appropriate M&E indicators
- Development of relevant tools and guidelines for the application of science, technology and innovation (STI) in planning and development for biodiversity management
- Promotion of science education in the school system so as to make individuals more responsive to biodiversity issues.

Other specialised training based on an assessment of needs is outlined in the training needs assessment report for the Revised 2nd NBSAP, presented under separate cover.

4.2.9 Communications and Awareness

Ongoing public sensitisation and awareness have been deemed critical to the Convention and NBSAP implementation process. Hence, a programmatic approach needs to be pursued. Hence a holistic CEPA strategy will be required in order 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, to mention a few) who impact on or are impacted by biodiversity and ecosystem goods and services.

Resources should therefore be made available for the design and implementation of a Communication and Outreach Strategy targeting policy makers and other decision-makers, the general public and specific groups, including the vulnerable persons, about biodiversity management and sustainable consumption and production. The existing draft Biodiversity Education and Awareness Strategy needs to be enhanced into a broader CEPA Strategy. The Strategy must aim to equip the various publics with the necessary knowledge and tools to take meaningful action to accrue the potential benefits of biodiversity and genetic resources in Saint Lucia. In addition the CEPA should highlight and profile ecosystem services and biodiversity conservation in terms of their contribution to development, growth and equity to economists, political leaders and policy makers.

To ensure that there is regular and sustained communication on the NBSAP itself, the CEPA strategy should seek to address the key messages of:

What is different about the Revised 2nd NBSAP?
What has been done?
What is yet to be done?

Information management as a whole is critical for proper understanding of the issues, options, and achievements at the policy-making, technical, community and other levels. While the infrastructure for data management has been established through the Biodiversity Information Network (BIN), there are still some gaps and overlaps that would need to be addressed for more effective implementation of the NBSAP and Convention as a whole. Some of the priorities for information management are highlighted in **Box 4.10**.

Box 2.10 Information Management Priorities

- Holistic approach to public sensitization and awareness to be pursued through a broader based and comprehensive CEPA; coordination and collaboration among biodiversity management agencies as well as key resources user should be pursued in this regard.
- Public Awareness to be supported by Knowledge, Attitude and Practice (KAP) studies.
- Packaging of information to target various publics
- Promotion of the use of the Biodiversity Clearing House Mechanism and other biodiversity information management systems by providers and users of biodiversity information.
- Provision of adequate resources to support Biodiversity Web site and CHM for effective functioning
    - Need to have designated Web Master and Information Manager
    - Establish and operationalise data management systems for key monitoring indicators
    - Improve existing information management systems or establish new systems to take into account relevant emerging issues (invasive species, biotechnology, intellectual property)

4.2.10 Financing Interventions

The availability of financial resources for implementing programmes under the updated NBSAP and for implementing the Convention will continue to be an issue. Financing interventions will need to focus on activities that will generate sustainable financing options to undertake NBSAP actions. In this regard, the soon to be established National Conservation Fund can be used as one of the mechanisms for creating a sustainable source of funding. Additional funding for biodiversity management related interventions will need to be sought through available and on-going projects and programmes through funding from donor agencies.

A number of parallel projects could be looked to, to provide complementary funding. Proponents of the Iyanola Project, NISS implementation, other projects in the Department of Forestry and the Organisation of Eastern Caribbean States (OECS) have, through the process of consultation, committed to collaborative implementation of these projects with the NBSAP, in areas of complementarity. Other regional collaborations could be explored through initiatives with CARICOM[69], University of the West Indies (UWI), FAO, Inter-American Institute for Cooperation on Agriculture (IICA) and other regional agencies.

[69]E.g. funding for virtual regional forum on biodiversity which was decided upon at the CARICOM Preparatory Meeting for COP 11 in Trinidad in 2012.

In addition, a review and implementation of appropriate fiscal and economic instruments that will strengthen biodiversity management is required, to seek to ensure that ecosystem and biodiversity considerations are appropriately reflected in national budgets through an integrated cross-sectoral approach, and not dependent on external sources of financing only. The National Conservation Fund development is considering practical financing options locally to resource the fund financially.

Further enhancement of the scale and/or efficiency of many of the proposed interventions typically undertaken by the Government of Saint Lucia (GOSL's budgetary contribution) can be pursued through engagement with the private sector, creating opportunities for public-private partnerships, as well as other private sector partnerships with communities and vulnerable groups. Hence, appropriate fiscal and economic incentives will need to be formulated and implemented to support and promote private sector and civil society involvement.

5.0 Conclusion

It is clear that if the current threats to biodiversity and ecosystem services, in particular habitat change and destruction, and IAS, are not adequately addressed and with a measure of urgency, then the destruction to key ecosystems and species will worsen and negatively impact the livelihoods and overall well-being of the citizenry. Moreover, if the country continues with business as usual with regard to its development imperative, the situation of declining water resources is likely to deteriorate further, exacerbated by the impacts of climate change and climate variability.

However, if adequate investments in biodiversity and ecosystems are undertaken to address the gaps which still exist at the national, institutional and individual levels, more effective implementation of the Convention will be realised. Successful implementation of the Convention will ultimately require close collaboration of the many and varied stakeholders, the availability of a wide range of skills, supported by adequate technology and financial resources. Establishing a fully conducive environment will not only result in a more effective national response to biodiversity management but will, in many ways, set the stage for the pursuit of the national goal of sustainable development with biological resources used more integrally for socio-economic development. Biodiversity can be positioned as one of the main factors of production of the country as we look forward to the future.

Appendix I: Information Concerning Reporting Party and Preparation of National Report

A. Reporting Party

Contracting Party	**SAINT LUCIA**
NATIONAL FOCAL POINT	
Full name of the institution	Ministry of Sustainable Development, Energy, Science and Technology
Name and title of contact officer	Mr. Sylvester Clauzel, Permanent Secretary
Mailing address	Norman Francis Building, Balata, Castries, Saint Lucia
Telephone	1 (758) 468-5840/7223119
Fax	1 (758) 453-4560490
E-mail	Sylvester.clauzel@govt.lc
CONTACT OFFICER FOR NATIONAL REPORT (IF DIFFERENT FROM ABOVE)	
Full name of the institution	Ministry of Sustainable Development, Energy, Science and Technology
Name and title of contact officer	Mr. Terrence Gilliard, Sustainable Development and Environment Officer III responsible for Biodiversity/Biosafety
Mailing address	2nd Floor, Caribbean Cinemas Complex, Choc, Castries, Saint Lucia
Telephone	1 (758) 468- 5804
Fax	1 (758) 450-1901
E-mail	biodivproject@biodivslu.org or terrence.gilliard@gmail.com
SUBMISSION	
Signature of officer responsible for submitting national report	Sylvester Clauzel
Date of submission	

Appendix II: Process of preparation of national report

The preparation of the 5th National Report for Saint Lucia commenced with the establishment of a Project Steering Committee (PSC) in December 2012, to oversee the production of the Fifth National Report and to engage the various stakeholders using a participatory approach. The services of the firm AGRICO Ltd., was engaged in March 2013, as the National Consultant to deliver the TORS developed by the PSC **(Annex x).** A Project Coordinator, Ms Anita James, was hired on the 1st June 2013 to execute the project.

The Fifth National Report Steering Committee (NSC) comprised representatives from the following agencies/departments:

- Ministry of Sustainable Development, Energy, Science and Technology
    - Biodiversity Unit
    - Sustainable Development and Environment Division (SDED)
    - Water Resources Management Agency
    - Department of Forestry
- Ministry of Agriculture, Food Production, Fisheries, Co-operatives and Rural Development
    - Department of Fisheries
    - Marketing Unit
- Ministry of Commerce, Business Development, Investment and Consumer Affairs
- Ministry of Finance, Economic Affairs and National Development
- Ministry of Health, Wellness, Human Services and Gender Relations
- Ministry of External Affairs, International Trade and Civil Aviation
- Registry of Intellectual Property
- Saint Lucia National Trust
- Folk Research Centre

Following desk research and document review, the first phase of information gathering through the process of stakeholder consultation commenced in June 2013. National and community consultations were held and the compilation of the several reports, towards formulation of the revised 2nd draft NBSAP and Fifth National Report were prepared under the purview of the PSC:

- Stakeholder Consultation Report
- Rapid Biodiversity Loss Assessment Report
- Stocktaking Report including Draft 2nd NBSAP Review
- Technology Needs Assessment Report
- Strategic Environmental Assessment Report

Five meetings of the PSC were held at various stages of report compilation to appraise the Committee of status of work and to obtain requisite feedback on the documents produced.

The methodology used for the preparation of 5th National Report and revision of the 2nd NBSAP for Saint Lucia entailed the following:

i. A consultative process, throughout the country, to assess the accomplishments or activities related to biodiversity and ecosystems management undertaken at the national level since the 2nd NBSAP.
ii. Review of the Draft 2nd NBSAP to identify any issues that were raised that are still pertinent and remain unaddressed and which would inform the revision of the NBSAP; and the identification of gaps and limitations, particularly with regard to emerging issues that are gaining prominence, and deemed critical to biodiversity.
iii. Identification of challenges faced in the implementation of the 2nd NBSAP and any lessons learned that will help in the design of the implementation framework for the Revised Draft 2nd NBSAP.
iv. Review and consideration of means for the incorporation of the Global Strategic Plan for Biodiversity 2011-2020 and its Aichi Targets.
v. Recommendation of appropriate actions to address issues and challenges identified.
vi. Elaboration of a framework for implementation of the Revised Draft 2ndNBSAP.
vii. Pursuit of stakeholder endorsement of the 5th National Report and Revised Draft 2nd NBSAP, including approval by the Cabinet of Ministers.

The national consultative process is described in the Stakeholder Consultation Report and involved:

- Multiple planning/reporting meetings of the consultants and biodiversity Project coordinator and/or PSC to discuss report format and the process as per the CBD guidelines for preparation of the 5th National Report;
- Data gathering and reviews by the national consultant focused on six thematic areas: Socio-Economic Issues; Agricultural Biodiversity; Forest Ecosystems; Marine and Coastal Ecosystems; Freshwater Ecosystems; and Tourism. The reviews identified the status and trends with regards to biodiversity and sought to identify the broad issues, gaps, and actions required;
- Focus group discussions and one-on–one interviews and individual consultations within communities and among major stakeholders from around the island;
- Four broad-based national consultations convened: two in the north and two in the south of the island, the first for introduction of project and information gathering and the second to review the first draft of the report, thus ensuring island wide participation and input into the report; and two community meetings in biodiversity rich areas of the country.
- Public awareness/sensitisation activities involving the mass media.

The comments received through the various focus groups, interviews and consultations at the various stages were incorporated into the document. Draft Final Reports with feedback from stakeholders was subjected to a review and final verification by the PSC and the requisite feedback incorporated into the Final Report.

Main Difficulties encountered in undertaking the process include:

- Long lag times in convening relevant stakeholder consultations due to scheduling issues with stakeholders, which resulted in a protracted consultation process.
- Documents dealing with biodiversity from most sectors were not readily available and information was not easily accessible.
- Insufficiency of data and inconsistency of formats created some difficulty in analysis and interpretation.

Appendix II: Implementation of the thematic programmes of work and cross-cutting issues

The main areas and issues of national importance and actions or activities suggested for Parties in relevant thematic programmes of work and COP decisions were as follows for Saint Lucia:

Main Issues	Key Actions/Activities
• **Invasive Alien Species** • **Climate Change and Resilience Building** • **Disaster Risk Reduction** • **Access and Benefit Sharing** • **Investment in Biodiversity for Development of Sustainable Livelihoods – (SCP)**	• **Science, Technology and Innovation** • **Research and Systematic Observation** • **Community Capacity Development** • **Indicator Development for M&E** • **Effective use of Clearing House Mechanism** • **Sustainable Financing for Biodiversity Management**

There have been notable successes with regard to cooperation and collaboration in the area of scientific and technology transfer. Local institutions, such as the Department of Forestry of the MSDEST have formed some useful linkages and partnerships with foreign-based institutions to undertake research locally, train Saint Lucians in biodiversity conservation techniques and help restore dwindling populations of species (e.g. RARE, Durrell Wildlife Preservation Trust, University of Puerto Rico, Caribbean Natural Resources Institute (CANARI), WIDECAST, Fauna and Flora International, Island Conservation, World Resources Institute (WRI)). The Department of Fisheries likewise has formed some important collaborative networks with regional and international agencies such as WIDECAST, CRFM, and ICRAN. The MSDEST needs to further strengthen and refine such arrangements to ensure, as far as possible, more effective mobilisation of scarce resources for research and training; and, that technical staff derives adequate benefit through scientific knowledge and technology transfer, and research and monitoring.

The country should continue to be fully engaged in regional initiatives to address emerging issues related to access and benefit sharing, climate change and variability, modern biotechnology and introduction of genetically engineered organisms. These include the implementation of strategies and plans from the UNEP/GEF regional project "Mitigating the threats of IAS in insular Caribbean" and the national "Feral Pigs Reduction Project" of the Department of Forestry. Another key initiative in the strengthening of research capability would be to improve laboratory capability to support molecular biology.

There is also need for a regional approach to strengthen product development and marketing of species in support of sustainable livelihoods.

The country should also continue to seek harmonisation and standardisation of information systems and other information and communications technology (ICT) protocols with regional and international standards as with CHM and BIN to improve information exchange and knowledge management.

Other suggestions for action at the regional level include the need for countries to work closer together in implementation sharing methods, experiences, technologies, lessons learned and expertise. The proposed regional centre for biodiversity (discussed at a regional CBD meeting in October 2008) and the further request by CARICOM countries for the establishment of a virtual regional forum on biodiversity in September 2012 should be pursued and established. This proposed regional Centre of Excellence for Biodiversity can be developed along with the upcoming establishment of the Centre for Biosafety at the University of the West Indies. Also as a region there is need to pursue cooperation in technology transfer and assessment and monitoring. Expertise from the different countries should assist one another in implementation of components, through attachments, for example.

Annexes

Annex 1: Second NBSAP at a Glance

2nd NBSAP @ A GLANCE

GOAL for 2008 – 2018

"***Conservation and sustainable practices for use of biological diversity in Saint Lucia are effectively integrated into national development at all levels*".**

VISION: "*Biodiversity management is an integral part of the overall framework of environmental management, for ensuring sustainable social, cultural and economic development in Saint Lucia; and that there is collective responsibility for, and sharing in the benefits derived from the conservation and sustainable use of biological resources*".

EXPECTED OTUCOMES

1. Mainstreaming biodiversity objectives in national development planning agenda
2. Community participation in biodiversity initiatives
3. Enhanced institutional and enabling framework for biodiversity management
4. Effective M,E&R developed and implemented

PROGRAMME AREAS	1. Planning and policy formulation 2. Research and monitoring / assessment 3. Conservation 4. Sustainable Use 5. Education and awareness 6. Monitoring and Evaluation			
SECTORS	Education	Agriculture	Fisheries	Industry & Manufacturing
	Tourism	Forestry	Transport	Health
THEMATIC AREAS	Land use and management	Sustainable development	Poverty reduction	ICT
	Environmental Management	Millennium Development Goals	Disaster Management	National security & Border control

EXPECTED RESULTS	PROJECTS	TARGETS
Mainstreaming biodiversity objectives in national development planning agenda	Mainstreaming BioDiv conservation into tourism development	Integrating BioDiv into sector specific and thematic areas through IDP
Adoption of ecosystems approach	Develop management plans for protected areas	
	Protection of species by maintaining critical habitats, and migratory corridors	Measures to reduce/halt erosion of species and genetic diversity within ecosystems
Improved knowledge management for BioDiv	Promotion of BioDiv research	Using scientific research and information systems to assess and monitor BioDiv
Capacity development and institutional strengthening	Promotion of BioDiv conservation and protection through the greening of businesses	Capacity building at agency and community level for effective biodiversity management
Increased Public Awareness and Community Participation	Stimulate and mobilise communities to conserve or protect biodiversity within their environs	Enhancement of awareness of biodiversity including goods and services within all sectors of the local population (communities, schools, judiciary, politicians, businesses, etc.)
		Protection of traditional knowledge practices and innovations and associated biological resources
Enhanced institutional and enabling framework for BioDiv	Promotion of public involvement in policy change and development in BioDiv conservation and protection	Improvement and implementation of legal measures for effective biodiversity management Establishment of BioDiv Scientific Committee [Establishment of a Biodiversity Trust Fund]
M,E&R of 2nd NBSAP implementation	Implementation of the goal and programmes emanating from the 2nd NBSAP within the ten (10) year time frame	Periodic review of implementation of 2nd NBSAP against targets