

Setting the foundations for zero net loss of the mangroves that underpin human wellbeing in the North Brazil Shelf LME (NBS-LME)

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NORTH BRAZIL SHELF MANGROVE PROJECT

POLICY ANALYSIS



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KEY MESSAGES

Well-designed legislative and policy frameworks support and present the most suitable enabling environment for effective mangrove conservation and management. Guyana's Forest Policy clearly defines and outlines the rights of ownership and access to and use of mangroves and the ecosystem services they provide. While various initiatives have been implemented in Guyana to address these resources, including the implementation of public awareness and education programmes and solicitation of public support through the formation of community action groups, some legislative mechanisms and institutional systems are still fragmented and need to be strengthened or need to be comprehensive in order to complement the existing efforts- especially in light of climate change and its related sea level rise phenomenon and the oil and gas sector development. These include:

- Legislative reform taking cognizance of new and emerging environmental issues as well as the datedness of many laws governing mangroves;
- Updating of the Integrated Coastal Zone Management Strategy and Plan and synchronizing it with the revised legislation;
- Development of a broad-based framework involving government, non- governmental organizations (NGOs), private sector, and the public that allows for a better understanding and a higher level of participation in the management of the mangrove ecosystem and its resources. Such a framework promotes the mainstreaming of mangrove conservation and management into sectoral policies as well as reduce instances of policy conflicts.
- Revision of the National Mangrove Management Action Plan guided by an updated Integrated Coastal Zone Management Strategy and Plan (ICZMSP) and reflective of the obligations of the internationally ratified agreements and the Multilateral Environmental Agreements (MEAs) related to mangroves;
- Institution of supporting legislation for addressing conflicts between the State and private freehold interests over the use of land with mangrove resources;
- Empowerment of local communities to assist with mangrove conservation and management; and
- Monetization of community involvement in mangrove management to encourage buy-in and to strengthen support at the local level.

Overall, the effectiveness of law reform and its benefits for climate change adaptation and livelihood security depend significantly on the ability to acquire adequate financial and technical resources to ensure consistent compliance and law enforcement.

ACRONYMS

CCCCC	Caribbean Community Climate Change Centre
CDB	Caribbean Development Bank
CDC	Civil Defence Commission
CI	Conservation International
CLME+ SAP	Caribbean and North Brazil Shelf Large Marine Ecosystems Strategic Action Program
DoE	Department of Environment
EIMMS	Environmental Information Monitoring and Management System
EPA	Environmental Protection Agency
EU	European Union
EU FLEGT	European Union Forest Law Enforcement, Governance and Trade
EDF	European Development Fund
FAO	Food and Agriculture Organization of the United Nations
FCPF	Forest Carbon Partnership Facility (FCPF)
GCCA	Global Climate Change Alliance
GEF	Global Environment Facility
GLSC	Guyana Lands and Surveys Commission
GMCS	Guyana Marine Conservation Society
GMRP	Guyana Mangrove Restoration Project
GoG	Government of Guyana
GSDS	Green State Development Strategy: Vision 2040
ICZM	Integrated Coastal Zone Management
IUCN SUR	International Union for the Conservation of Nature of South America
ISME	International Society for Mangrove Ecosystems
IPCC	Intergovernmental Panel on Climate Change
LCDS	Low Carbon Development Strategy
LDN-TSP	Land Degradation Neutrality - Target Setting Programme
LME	Large Marine Ecosystems
MoB	Ministry of Business
MoPI	Ministry of Public Infrastructure
MNR	Ministry of Natural Resources
NAREI	National Agricultural Research and Extension Institute
NBS	North Brazil Shelf
NBSAP	National Biodiversity Strategy and Action Plan
NMMAP	National Mangrove Management Action Plan
OCC	Office of Climate Change
REDD	Reducing Emissions from Deforestation and Forest Degradation
REDD+	Reducing emissions from deforestation and forest degradation and the role of conservation, sustainable management of forest and enhancement of forest carbon stocks in developing countries
RDC	Regional Democratic Council
SRDD	Sea and River Defence Division
SLDM	Sustainable Land Development and Management

THD	Transport & Harbor Authorities
UNCBD	United Nations Convention on Biological Diversity
UNFCCC	United Nations Framework Convention on Climate Change
UNCCD	United Nations Framework Convention to Combat Desertification
UNCED	United Nations Conference on Environment and Development
VMAC	Village Mangrove Action Committee
WRC	Wetland Restoration and Conservation

1. INTRODUCTION

1.1. Background

The project titled “Setting the foundations for zero net loss of the mangroves that underpin human wellbeing in the North Brazil Shelf LME (NBS-LME)”, referred to as the NBS Mangrove Project, is a one-year primer project to help establish a shared and multi-national process for an Integrated Coastal Management (ICM) system in the NBS. The project is being implemented through a collaborative arrangement between Conservation International (CI), the International Union for the Conservation of Nature of South America (IUCN SUR), and local partners in Guyana and Suriname. CI Guyana is partnering with the Mangrove Department of the National Agricultural Research and Extension Institute (NAREI) to implement the project.

The project recognizes the prevalence, socio-ecological importance and connectivity of mangroves in the retention and generation of key ecosystem services (fisheries, coastal protection and defences, water quality, blue carbon etc.) from which communities in the NBS countries are benefiting. This project builds on, and supports, the recent antecedents and elements of the regional agreement established within the Caribbean Large Marine Ecosystem plus (CLME+) Strategic Action Programme (SAP) for the NBS region.

The objectives of the NBS Mangrove Project are:

- To generate the necessary baseline knowledge and technical assessments as inputs towards a collaborative vision and a coordinated well-informed management of North Brazil Shelf (NBS) mangrove systems, with emphasis upon the information needs of countries Guyana and Suriname.
- To support the development of a transboundary coordination mechanism(s) between the countries of Guyana, Suriname, French Guiana, and Brazil (State of Amapá) towards the improved integrated coastal management of the extensive, ecologically connected yet vulnerable mangrove habitat of the North Brazil Shelf (NBS) region.

In order to develop a broader and more in-depth perspective of the multiplicity of cross-cutting legislative and institutional issues that surround the management, governance, and utilization of mangrove resources in the coastal areas of north-eastern Brazil, Suriname, and Guyana, a Policy Analysis was conducted.

1.2. Objective of the Policy Analysis

The Policy Analysis was aimed at providing a comprehensive understanding of the existing public policy tools, institutions, relationships, and legal instruments that support the conservation of mangroves, particularly in Guyana. It was intended to assist in addressing legislative and policy issues relevant to the sustainability of mangroves and ecosystem services associated with "blue forests", support the development of concrete and concerted actions to strengthen mangrove governance mechanisms, and promote the healthy state of mangroves to secure the benefits they provide to Guyana and the wider society of the NBS-LME.

1.3. Structure of the Report

The Report is divided into eight (8) sections as outlined below:

- Section 1 presents a brief Introduction, including the background and objectives of the wider project;
- Section 2 focuses on the methodological framework used for conducting the study and compiling the Report;
- Sections 3 & 4 provide an analysis of the Legislative, Policy, Institutional and Jurisdictional Frameworks for mangrove restoration, conservation and ecosystem services in Guyana;
- Section 5 outlines the regional perspectives and recommendations relevant to Guyana and the north

Brazil shelf countries;
Section 6 identifies the enabling factors and barriers to mangrove governance in Guyana;
Section 7 presents recommendations; and
Section 8 proposes policy actions to improve mangrove governance and management in Guyana

2. METHODOLOGICAL FRAMEWORK

2.1. Desk Review

Information and supporting data were obtained from relevant government reports, policy briefs, project documents, and academic papers pertaining to the legislation, policies, and plans related to mangrove management and mangrove ecosystem as a whole. Reference was also made to the mangrove management framework utilized in Suriname, guiding principles for sustainable mangrove management and lessons learned from some other regions.

2.2. Semi-structured Interview

Semi-structured interviews with representatives of key institutions (Refer to Appendix 1 for interview questions) were conducted from July 22, 2019 to August 14, 2019. These were done not only to fill information gaps that existed from the desk review, but they also provided local context for some of the discussions contained in this report. Altogether, sixteen (16) representatives of the following fifteen (15) institutions participated in the interviews:

1. National Agricultural Research and Extension Institute (NAREI)
2. Department of Environment (DoE);
3. Environmental Protection Agency (EPA);
4. Guyana Forestry Commission (GFC);
5. Ministry of Indigenous Peoples' Affairs (MoIPA);
6. National Toshias Council (NTC);
7. Guyana Lands & Surveys Commission (GLSC);
8. Guyana Marine Turtle Conservation Society (GMTCS);
9. Office of Climate Change (OCC);
10. Protected Areas Commission (PAC);
11. Regional Democratic Council (RDC) – Region 3;
12. Regional Democratic Council (RDC) – Region 6;
13. Sea & River Defence Division (SRDD) - Ministry of Public Infrastructure;
14. University of Guyana (UG); and
15. World Wildlife Fund (WWF)-Guianas.

Legal and Policy Framework for Mangrove Restoration, Conservation and Ecosystem Services in Guyana

3. LEGAL AND POLICY FRAMEWORK FOR MANGROVE RESTORATION, CONSERVATION AND ECOSYSTEM SERVICES IN GUYANA

In Guyana, there is a plethora of legislative and policy instruments and measures in place to facilitate the restoration and conservation of mangroves and the provision of ecosystems services. However, meeting the obligations of the frameworks is not without barriers or constraints. These impediments and related issues have been highlighted in many reports. One such report is the comprehensive study titled “*Institutional and Legal Review of Mangrove Management in Guyana*” which was completed in 2013 with financial support from the European Union under its Global Climate Change Alliance (GCCA) and co-funded by the Government of Guyana. This report details the results of a study conducted under Component 3 of the National Mangrove Management Action Plan (NMMAP) - subcomponent 3.1, which aims to develop and implement appropriate policies and strategies for the management and conservation of Guyana’s mangrove ecosystems and resources. The components of the NMMAP are the following:

- Establishment of the administrative capacity for the management of mangroves in Guyana;
- Promotion of the sustainable management of mangrove forest (Monitoring and Enforcement);
- Establishment and completion of a legal framework for mangrove ecosystem and community-based mangrove management;
- Support of research and development of Guyana’s mangrove forest;
- Development of effective mangrove ecosystem protection and rehabilitation; and

Increase of public awareness and education on the benefits of the mangrove forests. Activities carried out to date under this subcomponent include the establishment of a legal basis and guidelines for mangrove ecosystem management. This involves the amendment, in January 2010, of Regulation 17 of the Principal Regulations of the *Forestry Act* by the substitution of “Protected Trees” 17. (1) “No bullet-wood tree or red, black or white mangrove trees shall be felled without first obtaining the permission in writing of an authorized forest officer not below the rank of an Assistant Commissioner of Forests.” However, this amendment was not accompanied by revised or new supporting regulations.

3.1. Perspectives on Legal and Policy Issues

While the *Forest Act of 2009* vests in the Guyana Forestry Commission (GFC) the legal authority for overall management of state forests, the National Forest Plan bestows upon the agency the responsibility for the development of a national mangrove management plan. There are some other laws which can be inferred to confer on many agencies a degree of autonomy, in some cases while there is overlap in others over various aspects of mangrove management. The laws seek to provide a legal definition for mangroves, delineate the geographical space for which mangroves are legally protected; address issues related to the conservation and protection of natural resources, including mangroves; establish jurisdiction over mangrove forests, identify Island and embankment (beach) for protection and rehabilitation; and determine the regulations on cutting and burning mangroves, grazing and impounding of animals in mangrove ecosystem, and community involvement and participation. However, at the same time, there is absence of an overarching mangrove protection policy.

3.2. Legislative Context

Although there is a plethora of *Acts* and *Statutes* in place for mangrove management, they are either fragmented or archaic; rendering themselves unsuitable for addressing some current issues, such as the compatibility of new coastal development projects and new and emerging ones. These will affect mangrove colonization, the sustainable management of mangrove resources and the protection of mangrove species. One example of a legislation that fits this category is the *Fisheries Act of 1957*.

Most of the regulations, outlined below, do not pronounce directly on mangroves. This has led to overlapping

jurisdiction regarding mangrove management activities since there seemed to be no clear line of separation of the statutory duties and responsibilities of various agencies. This means that there is neither distinct mandates nor clear laws and regulations for mangrove management. Table 1 identifies the pieces of legislation that govern mangrove conservation and management in Guyana.

Table 1 - List of Laws governing mangrove conservation and management

Acts/Statutes	Legal and Policy Instruments
Constitution of the Cooperative Republic of Guyana	Article 25 states that every citizen has a duty to participate in activities designed to improve the environment and protect the health of the nation.
	Article 36 declares that in the interest of the present and future generation, the state will protect and make rational use of its land, mineral and water resources, as well as its flora and fauna, and will take all appropriate measures to conserve and improve the environment.
<i>Civil Act 1998</i>	<i>Article 4.1</i> defines foreshore of Guyana as the part of the shore of the sea and tidal navigable rivers which is covered by the medium high tide between the spring tides and the neap tide, the soil under tidal waters called land shall be deemed to be under state land.
	<i>Article 4.3</i> states that no one shall remove any sand, shell, gravel, shingle or other mineral substances or any seaweed or vegetation from the lands without the permission of the Minister responsible for sea defences and are subject to the like penalties.
	The <i>Act</i> declares that “sea defence includes – any shell bank or reef, sand bank or reef or other natural feature which serves as a protection of the seacoast against the erosive action of the river current”. In Part 3 <i>Section 12</i>

<i>Sea Defence Act of 1998</i>	of the <i>Act</i> declares that “all sea defences which are or shall be in existence in any district shall by force of this Act become the property of the state”.
	The <i>Act</i> defines sea defence as (c, e) “All land fifty (50) feet landwards from the centre of any sea or river dam or sea or river wall and all land on the other side of such sea or river dam or sea or river wall in the direction of the sea or river to the toe of such sea or river wall ; and declares that “sea defence includes – any shell bank or reef, sand bank or reef or other natural feature which serves as a protection of the sea coast against the erosive action performed by the Ministry or its agents at the expense of the Board
	Sec.13 (1 Sec. 14, 15 and Sec. 16 (b) (a) (b) Sec, 26 state that everyone who infringes any of the provision of this Act shall be liable on summary conviction of twenty-two thousand five hundred dollars (G\$ 22,500)
	Part V Offences Article 20, states that “removal of earth, shell etc., sea weed or vegetation, or any other matter or thing, whatsoever from any sea defence or from any land along the foreshore within one half of a mile of mean high water mark (seaward) is liable to a fine of twelve thousand dollars (\$12,000.00) and to imprisonment for twelve months, and any such matter or thing together with any article used in connection with the removal thereof shall be forfeited”
	Sec.13 (1) and Sec. 16 (b) mandated to make regulations for (a) protecting the growth of underwood, shrubs, and trees, on or near the foreshore or between high and low water marks (b) and the protection of the land and soil between high and low marks; and generally, conserving the foreshore; and require estate to protect the foreshore by sowing seed, planting shoots to promote the growth of or the other tree, underwood, or shrubs, between and low water marks on the foreshore courida.
	Part 1 5.2 (b) (1) defines forest with reference to mangroves.
	Part 3. 23 (b) prohibiting any disturbance of the soil, vegetation, rivers, or creeks in that specially protected area; and Part 3.31. (1) The Minister may by public notice make an order – (a) declaring any forest on private land to be a forest conservation area; and (b) prohibiting, restricting, or regulating all or any of the following - (i) entry into the forest conservation area (ii) cutting, damaging, taking, or removing any forest produce in the forest conservation area; (v) clearing, cultivating, or turning of soil in the forest conservation area; (vi) grazing or pasturing of livestock in the forest conservation area; (vii) setting of fire in the forest conservation area; (2) No order may be made except on the advice of the Commission that the order is necessary for – (a) conserving the forests of Guyana and securing the proper management of forest land; (b) preventing soil erosion, coastal erosion, or erosion of the banks of rivers or creeks; (c) preventing the deposit of mud, stones, or sand in rivers or creeks or on agricultural land; (d) maintaining water supplies in springs, rivers, canals, reservoirs, aquifers, or water conservancies; (e) minimising the risk ormitigating the impact of storms, winds, floods, or landslides.

<i>Forest Act of 2009</i>	Part 3.31. prohibits the cutting, damaging, or taking any forest produce, or carry out any other kind of forest operation in a State forest; occupy or use any land in a State forest.
	Part 3. 5.23. (1) mandates the EPA to declare a specific area of state forest to be a specifically protected area for a period not exceeding 25years (a) declare a specified area of State forest to be a specially protected area for a specified period not exceeding 25 years; Purpose of Part 3,5.22 (1) is to: 1) conserve biological diversity; 2) protect specific trees and plants; 3) conserve soil and water reserves; 4) protect forests from fires, pest, diseases and degradation.
	Part 3.24., Part 3. 25 (2), Part 6. 68 b. (iv) section 25(2), section 30(3), section 31(4), section 23(5) - prohibit person in any State forest to throw down a lighted match or lighted or inflammable material; or do anything else likely to result in any forest produce being burnt or damaged. Penalty range from G\$250,000 to 1,00000.
	Part 3. 5. 30 Minister can make order for protection of trees and plants any tree or plant
	Part 3. 5. 31 Minister can declare private land to be a forest conservation area.
<i>Environmental Protection Act of 1996</i>	Part 10.68.1 Minister may make regulations for giving the effect to the provisions of this Act for the protection of particular species of prescribed fauna and flora (j.) protecting the coastal and marine resources and establish, monitor and enforce the environmental regulations.
	Sec. 4 (1) (a), the EPA is given the mandate to “take such steps as are necessary for the effective management of the natural environment so as to ensure conservation, protection and sustainable use of its natural resources”
	provide for the management, conservation, protection and improvement of the environment; danger of extinction; (2) any person who in any marine reserve without permission granted under subsection 3 (b) takes or destroys any flora and fauna other than fish is guilty of an offence.
	EPA Regulations establish the terms and conditions of environmental authorisation: "(a) that the holder of the environmental authorization shall take all reasonable steps to - (i) avoid all adverse environmental impacts which could result from the activity; (ii) minimise the adverse environmental impact where the avoidance is impractical;(iii) mitigate the impact where the impact cannot be avoided; (iv) avoid cross media transference; and (v) compensate for impacts."

<p><i>Fisheries Act of 1957</i></p>	<p>Part 8 Marine Reserves and Fishing Priority Areas, Section 21. (1). to afford special protection to the flora and fauna of such areas and to protect and preserve the natural breeding grounds and habitat of aquatic life with particular regard to flora and fauna in danger of extinction; (2) any person who in any marine reserve without permission granted under subsection 3 (b) takes or destroys any flora and fauna other than fish is guilty of an offence.</p>
<p><i>Guyana Lands & Surveys Commission Act 1999</i></p>	<p>4. (1)e states that the Commission is “to check, approve, record and, where required, certify all land surveys carried out in relation to any land in Guyana”</p>
	<p>Section 4. (1) o states that the Commission is “to initiate studies into and formulate policy on the development of public lands, including the feasibility of specific land development projects”</p>
	<p>The Act mandates the Guyana Lands & Surveys Commission “to prepare land use plans for Guyana or any part of Guyana, except any municipality which is subject to a planning scheme (or interim development control pending the preparation of a planning scheme) under the Town and Country Planning Act”.</p>
<p><i>Transport and Harbours Act of 1997</i></p>	<p>Section 44. Every person who digs, takes or removes for any purpose whatsoever any caddy, shell, sand or any other soil from any harbor, without permission from the General Manager shall be liable to a fine of nine thousand seven hundred and fifty dollars ...</p>
<p><i>Local Democratic Organs Act</i></p>	<p>Part II Sec. 7 states that duties of the local democratic organs is (a) maintain and protect property (b) protect and improve the physical environment (f) raise the level of civic consciousness (awareness).</p>
	<p>Article 74 (1) states that it is the duty of the Local Democratic to ensure in accordance with the law the efficient management and development of their areas and to provide leadership by example (3) to maintain and protect property , improve working and living condition and raise the level of civic consciousness.</p>
	<p><i>Local Government Act</i> Part IV sec 50 states that grazing of animals on common land of the village and in country district will be impound and sec.102 (1-5) straying animals</p>
<p></p>	<p><i>Local Government Act</i> part IV sec 51. Cutting of trees will have fix fees.</p>
<p><i>Town & Country Planning Act of 2001</i></p>	<p>The <i>Act</i> states that “The duty of carrying out of provisions of this Act, including the execution and enforcement of town planning schemes, regional schemes and supplementary schemes, shall be vested in the Central Housing and Planning Authority established under the Housing Act”.</p>

<i>Municipal & District Council Act</i>	Part II Sec. 7 (2) “jurisdiction of the City Council shall extend to low water mark of spring tide of the Demerara River and to all structure there on (2) town council shall extend to low water mark of spring tides of the Berbice River and to all structures; the MDCA Part IX 302 (19) to plant, trim, preserve or remove trees, flowers and shrubs in any public places
	Sec. 287, 290 28). states the power of the council to regulate the grazing of animals; impounding the stray animal found in public places
	Sec. 302 (28). states the power of the council to regulate the cutting of wood on land vested in the council

3.3. Policy Instruments (Strategies, Plans, Codes of Practice)

Similar to the legislative framework that governs mangrove management, there are gaps in the policies that limit the extent to which mangrove management activities are implemented. Except for the Revised National Forest Policy Statement (NFPS) 2018¹, the National Forest Policy 2018- 2028, National Forest Plan (NFP), the National Biodiversity Strategy and Action Plan (NBSAP) 2012-2020, the Code of Practice for Mangrove Harvesting (2011), and the Sea Defences Sector Mangrove Monitoring Protocols 2011, the policy instruments implicitly address mangrove conservation and management. In many cases, therefore, there is disconnect between the policies and the legal framework to effect sustainable mangrove management activities. Below (Table 2) is a list of the policy instruments that allude to mangroves directly or indirectly.

Table 2 - Key Policy instruments and Institutions associated with mangrove management

Policy Instruments	Institution
National Forest Policy 2018-2028	GFC
Sea and River Defence Sector Policy 2015	MoPI
Integrated Coastal Zone Management Policy 2015	EPA
Land Use Policy 2004, 2007, 2012	GLSC
National Forest Policy 2011	GFC
National Biodiversity Action Plan II (1999-2004) (NBAP II)	EPA
National Biodiversity Action Plan (2007-2011)	
National Biodiversity Strategy and Action Plan (NBSAP) 2012-2020	
Green State Development Strategy: Vision 2040	GoG
National Agriculture Strategy 2013-2020	MoA
Guyana Climate Change Adaptation Policy and Implementation Strategy for	

¹ The Policy Statement identifies the conservation and management of mangroves as a priority action. (p. 24).

Coastal and Low-Lying Areas 2002	OCC
National Development Strategy 2000	GoG
Low Carbon Development Strategy 2010	
National Forest Plan (NFP) 2018	GFC
Climate Resilience Strategy and Action Plan for Guyana 2015 (Draft)	OCC
National Action Plan to Combat Land Degradation (Aligned NAP) 2015	GLSC
National Mangrove Management Action Plan (NMMAP) 2010- 2012	GFC/NAREI
Disaster Risk Management Plan for the Agriculture Sector 2013-2018	MoA
Integrated Coastal Zone Management Action Plan 2000	EPA
National Land Use Plan 2013	GLSC
Guyana National Action Programme to Combat Land Degradation 2006	GLSC
Forest Management Plan Guidelines 1999	GFC
Code of Practice for Mangrove Harvesting (2011)	
Code of Practice for Forest Harvesting 2002	
Guyana's Second National Communications to the UNFCCC 2012	OCC
Guyana's Third National Communications (currently under preparation)	
Sea Defences Sector Mangrove Monitoring Protocols 2011	MoPI
Guyana Tourism Strategic Action Plan: 2018-2025	MoB

3.4. Internationally Ratified Agreements on Mangrove Management

The Table below identifies the Multilateral Environmental Agreements (MEAs) - the UNCBD, UNCCD and UNFCCC, the Cartagena Convention, United Nations Convention on Law of the Sea, and the Basel Convention that have either directly or indirectly highlight the roles and functions of mangroves and implications for their conservation and management along with the coastal and estuarine areas that are integral aspects of their ecosystems. The relevance of these MEAs is that they have recognized and specifically placed emphasis on the value of mangroves with respect to addressing the issues of climate change and sea level rise, protecting coastal areas from land degradation resulting storm surges and saline water intrusion from the ocean, and serving as refuge and nurseries for biological species. Guyana, as a signatory to these Conventions and agreements, has therefore committed to partnering with local, national, regional, and international bodies for the establishment of legislative framework and other mechanisms to safeguard mangrove forests and their ecosystems for future generations.

Table 3: Key International Conventions and Agreement relevant to mangrove conservation and management

Key International Conventions and Agreements	
Conventions and Agreements	Summary of parameters relevant to mangrove management
United Nations Convention on Biological Diversity (UNCBD) - ratified in 1994	The Convention identifies the ecological functions of mangroves, such as serving as (a) nurseries for fishes and other aquatic species and (b) habitat for pollinators.
United Nations Framework Convention on Climate Change (UNCCD) - ratified in 1997	The UNCCD outlines the protective functions of mangroves. These include safeguarding low-lying coasts and shorelines from strong waves, retarding erosion rates and degrading of coastal soils from salinization; thus protecting underground water systems and agricultural lands.
United Nations Framework Convention to Combat Desertification (UNFCCC) - ratified in 1994	The UNFCCC identifies the protective roles mangroves play, such as (a) shielding coastal areas from sea level rise and storm surges and (b) contributing to carbon sequestration.
Kyoto Protocol – ratified August 2003	The Protocol identifies the role of mangroves in carbon sequestration.
Paris Agreement – ratified May 2016	The Agreement identifies the role of mangroves in carbon sequestration.
Cartagena Convention – Guyana ratified the Convention in July 2010	The Convention focuses on the protection and development of the marine environment in the Wider Caribbean Region (WCR) and provides a legal framework for cooperative regional and national actions in the protocol areas of oil spills, specially protected areas and wildlife (SPAW), and land-

	based sources of pollution.
United Nations Convention on the Law the Sea (UNCLOS) – Guyana ratified the Convention in November 1993	The UNCLOS establishes the limits of the territorial sea and delineates Guyana’s maritime boundary.
Basel Convention on the Control of the Transboundary Movement of Hazardous Wastes and their Disposal – (Guyana) entered into force in July 2001	The Convention aims at decreasing the movements of hazardous waste (excluding radioactive waste) between nations, and specifically to prevent transfer of hazardous waste from developed to Least Developed Countries (LDCs) and to assist LDCs in environmentally sound management of the hazardous and other wastes they generate.

3.5. Analysis of the Strengths and weaknesses of the existing regulatory framework for mangroves management

3.5.1. Extraction and use of mangrove ecosystem resources

There is no specific legislation in Guyana designated to regulate the use, management, and conservation of mangroves; but there are many **Acts** and regulations related to forest, coastal sea defence, and development activities that constitute the legislative framework for mangroves.

For example, **Article 4.3 of the Civil Act of 1998** states that “no one shall remove any sand, shell, gravel, shingle or other mineral substances or any seaweed or vegetation from the lands without the permission of the Minister responsible for sea defenses and are subject to the like penalties.” The penalties referenced in **Sea Defence Act of 1998, Sec.13 (1 Sec. 14, 15 and Sec. 16 (a) (b) Sec, 26** is that “everyone who infringes any of the provision of this **Act** shall be liable on summary conviction of twenty-two thousand five hundred dollars (G\$ 22,500)”; the equivalent of one hundred and nine United States Dollars (USD 109) - using the current foreign exchange rate. There are also instances where the legislation is limited in scope but embraces the ‘polluter pays’ principle. **Part V Offences Article 20** of the same **Act** states that the “removal of earth, shell etc., sea weed or vegetation, or any other matter or thing, whatsoever from any sea defence or from any land along the foreshore within one half of a mile of mean high water mark (seaward) is liable to a fine of twelve thousand dollars (\$12,000.00) and to imprisonment for twelve months, and any matter or thing together with any article used in connection with the removal thereof shall be forfeited.” Here the sum is corresponds to USD 60 at the current foreign exchange rate.

While most of laws are dated within the last two decades, a few of them are archaic and do not require consideration for the environment generally and for mangroves specifically; for instance, the **Fisheries Act of 1957 Part 8 Marine Reserves and Fishing Priority Areas, Section 21. (2)** which states that “...any person who in any marine reserve without permission granted under subsection” **3 (b)** “takes or destroys any flora and fauna other than fish is guilty of an offence.” The **EPA Act of 1996** has not been amended to make reference to more recent legislation and policies, such as the Forest Policy of 2009, although it mandates the protection of flora and fauna. However, the legislation provides control mechanisms for the use of the vegetation and ecosystems resources, but it is less effective for the sustainable management of mangroves.

A major shortcoming is the lack of law enforcement and legal provision to address the process in resolving disputes related to the extraction and use of mangroves. Based on this deficiency in the legislation, it can be inferred that the traditional manner in which mangroves have been extracted and used is likely to continue.

While Provisions are in place to regulate the extraction and use of mangrove ecosystem services, as outlined in the **Forest Act – such as Part 3. 23 (b)** “prohibiting any disturbance of the soil, vegetation, rivers, or creeks in that specially protected area” and **Part 3.31** “prohibits the cutting, damaging, or taking any forest produce, or carry out any other kind of forest operation in a State forest; occupy or use any land in a State forest”, **Part 3. 5.23. (1)** confers on the EPA the authority to “declare a specific area of state forest to be a specifically protected area for a period not exceeding 25 years.” The current status is that on the coast, only mangroves in Shell Beach Protected Area fall into this category. The **Civil Act 1998, Article 4.1** extends the area under state control to include the foreshore and clearly demarcates this coastal area as the foreshore. The foreshore is “part of the shore of the sea and tidal navigable rivers which is covered by the medium high tide between the spring tides and the neap tide, the soil under tidal waters called land shall be deemed to be under state land.”

There are other laws that give further protection to mangrove ecosystem outside of the Protected Area (PA) and the foreshore but some of them are ambiguous while others are dated. This includes the **Sea Defence Act of 1998** which defines and declares sea defence and the area coverage. It defines sea defences as “any shell bank or reef, sand bank or reef or other natural feature which serves as a protection of the seacoast against the erosive action of the river current.” **Part 3 Section 12 of the Act** declares that “all sea defences which are or shall be in existence in any district shall by force of this Act become the property of the state.” Sea defences are defined in **(c, e)** of the same **Act** as “All land fifty (50) feet landwards from the centre of any sea or river dam or sea or river wall and all land on the other side of such sea or river dam or sea or river wall in the direction of the sea or river to the toe of such sea or river wall; and declares that “sea defence includes – any shell bank or reef, sand bank or reef or other natural feature which serves as a protection of the sea coast against the erosive action performed by the Ministry or its agents at the expense of the Board.”

As discussed before, while a few of national policies including the National Forest Policy 2018-2028, National Forest Plan (NFP) 2018, the Code of Practice for Mangrove Harvesting (2011), and the Sea Defences Sector Mangrove Monitoring Protocols 2011 are deliberate about the extraction and use of mangroves, the national development instruments either do not or merely recognize mangroves for the sea defence role they perform. For instance, the National Land Use Plan - 2013 does not refer to or place any emphasis on mangroves.

Consideration of the potential impact of sea level rise and its related phenomena, the area allocated as sea defense (50 feet from the centre of the sea ...) is inadequate to mitigate against these natural events. The Coastal Plain lies approximately 0.5 to 1 metre below high spring tide level of the Atlantic Ocean² and sea level rise projection for Guyana is 10 millimeters/year (mm/yr) or 2 to 5 times faster than the global rate of 2 to 4 mm/yr³. Storm surges are expected to between 2 cm (moderate scenario and 5 cm (catastrophic scenario)⁴. These projections indicate that the approximately 45 percent of the coastline is subject to erosion⁵ and large swaths of coastal land, including mangrove areas, are likely to be inundated⁶.

Additionally, offshore activities associated with oil and gas development escalates the threat to the coastal ecosystems, including mangroves. Simulation models for Guyana show that oil spills are unlikely⁷. However, literature provides evidence that despite the location of an oil project offshore, oil and gas production and transportation have various environmental impacts associated with⁸ poisonous materials in

² Government of Guyana. National Mangrove Management Action Plan 2010-2012, p. 5; Government of Guyana. Second National Communications to the UNFCCC, 2012, p.19.

³ Government of Guyana. Second National Communications to the UNFCCC, 2012, p. 23

⁴ Ditto

⁵ Ministry of the Presidency, Guyana. Report on the State of Guyana’s Coastal Landscape: A Rapid Assessment, April 2008, p. 13

⁶ Government of Guyana. Second National Communications to the UNFCCC, 2012, p. 23

⁷ Final Terms of Reference – Environmental Protection Agency Guyana. <http://www.epaguyana.org/epa/downloads/esso/send/16-eepl/341-final-terms-of-reference-liza-phase-2- eia>

⁸ Chapter 21 - the United Nations https://www.un.org/Depts/los/global_reporting/WOA_RPROC/Chapter_21.pdf.

the oil, and clean-up activities could have a severe impact on the mangrove ecosystems as well.

As precautionary measures, the relevant authorities have begun to put contingency plans in place to reduce the impact of oil spills on the environment, in the event of an occurrence. These include the National Oil Spill Contingency Plan⁹ currently being prepared by the Civil Defence Commission (CDC) and the Environmental Protection Agency (EPA), the Ministry of Natural Resources, and other stakeholders. Guyana signed on to the International Oil Pollution Compensation Funds (IOPC Funds), which provides financial compensation for oil pollution damage that occurs in Member States. The country is also a signatory to several conventions, including the International Convention on Oil Pollution Preparedness, Response and Co-operation (OPRC)¹⁰, which will help to offer protection if an oil spill occurs. Considering the issues of sea level rise and oil and gas development, it is imperative that the aforementioned laws are revised and new laws put in place to address these issues.

The legislation governing the EPA also places on the agency overall responsibility for coastal zone management and the implementation of the Integrated Coastal Zone Management Action Plan (ICZMAP) and the Shore Zone Monitoring Programme (SZMP). A policy action sought the establishment of an ICZM Committee¹¹. However, both ICZMP and the ICZM Committee which was established in 2000 have been defunct for many years¹². The legislation and associated policies and plans need to be updated not only to strengthen the agency's role in coast zone management but also in keeping with the emerging developments in the oil and gas sector which could impact mangroves, the new development thrust of the country adumbrated in the GSDS: Vision 2040, and other policy documents.

3.5.2 Public participation mechanisms

The legislation regarding local community participation and the allocation of mangrove management to local community is not well-articulated in statutory law.

Article 25 of the Constitution of the Cooperative Republic of Guyana states that:

“every citizen has a duty to participate in activities designed to improve the environment and protect the health of the nation”, is the sole legislation that addresses public participation; albeit in a cursory manner.

The legislation does not delegate mangrove management to the local communities. The absence of critical pieces of legislation on public participation creates three undesirable situations. It limits the transfer of governance authority to local communities and NGOs, stymies opportunities for collective agreement over mangrove management, and restricts persons who share the same territory from being involved in the preservation of the common goods (mangrove resources). Legislation is therefore required to establish collective agreements which constitute a customary rule governing the management of mangroves at the local level. For mangroves that are part of the Shell Beach PA, the communities can sign management agreements supported by new laws.

3.5.3 Tenure arrangements for mangrove management

Except for mangroves on state lands, the legislation governing tenure arrangements where mangroves exist is also not clearly defined. In principle, for mangrove forests located on the land belonging to the public domain of the State, the land tenure that applies to mangroves is characterized by its inalienability, by its limitations.

⁹ Oil spill response: Guyana must be prepared for all eventualities. March 2019
<https://dpi.gov.gy/contingency-plan-key-to-effective-oil-spill-response/>

¹⁰ Guyana ratifies conventions to protect against oil spills, December 2018. <https://oilnow.gy/tag/oil-spill-response/>

¹¹ Ministry of the Presidency, Guyana. Report on the State of Guyana's Coastal Landscape: A Rapid Assessment, April 2008

¹² Ditto; Institutional and Legal Review of Mangrove Management in Guyana/ Final Report/Landell Mills Ltd/, July 2013.

However, the difficulty arises in cases where mangroves colonize on lands secured through private freehold/absolute grant arrangement.

The perceptions of tenure security outside of the Shell Beach PA where mangroves exist vary. Some individuals perceive their right to mangroves on private freehold land as secure due to the lack of knowledge about the legal status of the species, while others view it as insecure for two reasons. Firstly, the lands become private domain of the State and cannot be sold or leased by the owner henceforth and secondly, the lands are subjected to the legal regime of specific protection and these are implemented through an administrative act of declassification whereby the lands are brought under state/public jurisdiction. The implication of these two systems is that a portion of a residential lot with mangroves cannot be considered a forest. Therefore, the **Forest Act 2009, Part 3.31. (1)** which states that “The Minister may by public notice make an order – (a) declaring any forest on private land to be a forest conservation area...” ought to be seen in the context of a PA and not necessarily mangroves. Without supporting legislation, this declaration could result in disputes between the State and private freehold interests.

3.6. Summary of Policy and Legal Framework for Mangrove Restoration, Conservation and Ecosystem Services in Guyana

Overall, the analysis of the existing regulatory framework for the management of mangroves aforementioned points to the need for legislative reform. One option is the enactment of a mangrove legislation; either a separate **Act** or regulations under the **Sea Defence Act** complemented by policy instruments to give it effect. The **Sea Defence Act** is under review but makes reference to the jurisdictional role of the Sea and River Defence Division (SRDD) as it relates to regulations governing mangroves. This is not a new mandate. The SRDD was originally responsible for mangroves for coastal protection and shoreline monitoring but the attrition of technical expertise over the years has weakened the Division’s ability to undertake initiatives that focus on these aspects. If the regulations are subsumed under the **Sea Defence Act** in which mangroves are defined from a coastal protection perspective, this would give the SRDD the stewardship of mangroves, explicitly outline the objective to manage mangroves sustainably for preserving their climate change adaptation and livelihood benefits, and identify the role and responsibilities of each line ministry and agency with regards to mangroves. Alternatively, if the legislation defines mangroves based on a forest conservation standpoint, the **Plant Protection Act of 2011** which places mangroves under GFC could be strengthened to give GFC overall control for mangroves. Regardless of the position taken by the relevant authorities, such legislation could also create the institutions and processes for intergovernmental and bilateral coordination in relation to various matters associated with mangroves. Importantly, it would establish the legal basis and outline the processes for empowering coastal communities to manage mangroves as part of an integrated coastal zone management plan, ensuring coherence with the provision for designated coastal communities empowered to assist with conserving and managing mangroves under the **Sea & River Defence Act** or a revised **Forest Act** that seeks to strengthen the role of GFC as it relates to mangrove conservation and management.

Amendments to some relevant existing laws would also be required to harmonize them with a revised Integrated Coastal Zone Management Strategy and Plan and the internationally ratified agreements related to mangroves (such as the Cartagena Convention and the RIO Conventions). An additional option is to undertake a law reform process that focuses on the review and amendment of existing legislation to support mangrove governance and management. Notwithstanding these propositions, the effectiveness of such law reform and its benefits for climate change adaptation and livelihood will ultimately depend upon the ability to acquire adequate financial and technical resources to ensure consistent compliance and law enforcement.

Institutional and Jurisdictional Framework for Mangrove Restoration and Conservation and Ecosystem Services in Guyana

4. INSTITUTIONAL AND JURISDICTIONAL FRAMEWORK FOR MANGROVE RESTORATION AND CONSERVATION AND ECOSYSTEM SERVICES IN GUYANA

4.1. Perspectives on Institutional and Jurisdictional Issues

With respect to the administrative and jurisdictional perspective of mangrove restoration and conservation in Guyana at the institutional level, consideration needs to be given to both the horizontal and vertical levels of the framework. At the horizontal level the framework needs to consider the participation of several agencies across different sectors to facilitate coordination and integration of activities and the avoidance of policy conflicts. According to the National Mangrove Action Plan (2010–2012) many agencies have jurisdiction over the management of mangroves. These included the Ministry of Public Infrastructure (MoPI), Guyana Forestry Commission (GFC), Ministry of Agriculture (MoA), National Agricultural Research and Extension Institute (NAREI), the Municipalities of Georgetown and New Amsterdam, Guyana Lands and Surveys Commission (GLSC), Environmental Protection Agency (EPA) and the Local Democratic Organs of the Ministry of Communities.

The main legal framework that supports the work of these agencies include the:

- Constitution of the Cooperative Republic of Guyana, 1980 (*Article 36*)
- *Forest Act, 2009*
- *EPA Act, 1996*
- *Sea Defence Act, 1998*
- *National Agricultural Research and Extension Institute (NAREI) Act*
- *Fisheries Act, 1957*
- *Civic Act, 1998*

In addition, the recently established Departments of Energy and Environment of the Ministry of the Presidency also play important jurisdictional roles. The energy and environment sectors, represented by these agencies, and their involvement are designed to support the exploitation of Guyana's marine oil and gas resources and facilitate the development of a green economy respectively, both of which have the potential to impact of mangrove management.

NAREI is one of the primary agencies in Guyana with institutional responsibility for mangrove conservation and management and habitat restoration while the Sea and River Defense Division and the Guyana Forestry Commission have jurisdictional responsibility over this resource. With the support from the Ministry of Agriculture and the European Union (EU), the agency has been able to establish a special unit and conduct, with the support of local communities, the planting of several hectares of mangroves along the coastal regions as well as monitoring the progress being made.

At the vertical level (global, national and local), mangrove management in Guyana is guided by the legal and institutional framework identified above, including plans such as the National Mangrove Action Plan and Integrated Coastal Zone Management Plan (ICZM) but also by Conventions and Agreements at the global level to which Guyana is a signatory as well as those at the local level. At the global level are the UNCBD, UNCCD and UNFCCC and those related to some Multilateral Environmental Agreements. At the level of the Regional Democratic Council (RDC) and Neighbourhood Democratic Council (NDC) are the ***Municipal District Council Act*** and the ***Local Democratic Organs Act***.

4.2. Analysis of the Strengths and weaknesses of the existing institutional/administrative

framework for the management of mangroves

4.2.1. Institutional Assessment and Mangrove Management

The following is a SWOT (Strengths, Weaknesses, Opportunities and Threats) of the main institutions entrusted with the responsibility for mangrove management. Table 4 below provides a summary of the strengths, weaknesses, opportunities and threats (SWOT) that the agencies in Guyana confront in their efforts to address the multiple issues faced in managing mangrove ecosystems. The strengths and opportunities are perceived as positive elements while weaknesses and threats are considered negative aspects. Also, the strengths and weaknesses are linked to the internal arrangements of the agencies and are within their ambit to control or adjust while the opportunities and threats are those issues that exist outside of the agencies and which they have limited power to control.

Table 4 - SWOT Analysis of the Key Institutions responsible for mangrove Management

INTERNAL	STRENGTHS (+)	WEAKNESSES (-)
	<ul style="list-style-type: none"> • Efforts to promote public awareness and education as part of management strategy • On-going research/studies conducted by several agencies (NAREI, SRDD, CI-Guyana) to acquire data and information to strengthen policy and decision-making • Existence of the Faculties of Agriculture and Forestry, Earth and Environmental Sciences and Natural Sciences at UG to facilitate training programmes in support of mangrove management and policy development • Agencies (GLSC, OCC, & EPA) are obligated under the UN Conventions (UNCCD, UNCBD and UNFCCC) to which Guyana is a signatory to include mangrove management as an integral aspect of their strategic framework. • Mangrove management is embedded in the national policy (GSDS - Vision 2040) framework • Mangrove management activities exist as an integral part of a number of national policy documents (ICZMP, Mangrove Action Plan, National Forest Plan) 	<ul style="list-style-type: none"> • Lack of coordination among key agencies (GPL, GFC, Min of Infrastructure, MMA) • Limited availability of financing • Weak institutional and legislative arrangements • Fragmented approach to conservation and management of mangroves • No direct assistance to build technical capacity (DoE, GLSC) • Limited availability of skills in key institutions • Weak linkages among agencies participating in mangrove management • Limited public participation in decision-making and management of mangroves • Absence of data and information sharing among agencies • Exclusion/limited inclusion of mangroves in the strategic plans of agencies associated with its protection • Lack of private landowners engagement in policy and decision-making with respect to the use of their lands for mangrove management • Local authorities in whose areas/jurisdiction mangrove ecosystems are located are ill equipped (financially and technically) to participate in the management process
EXTERNAL	OPPORTUNITIES	THREATS
	<ul style="list-style-type: none"> • Training in mangrove conservation and management from external sources • Funding from external sources such as GEF Small Grants Programme, Global Environmental Fund (GEF), European Union (EU) and United Nations Development Programme (UNDP) • Data and information gathering and sharing through the development of an Environmental Information Management and Monitoring System (EIMMS) • Build on on-going discussion between DoE and other agencies on the development of an ICZM Unit. 	<ul style="list-style-type: none"> • Change/reversal of government policy • Change in donor policy with respect to funding for mangroves • Conversion of coastal lands, especially those privately owned and occupied, from mangrove habitats to other uses • Weakening of monitoring and enforcement mechanisms due decline in institutional support • Land degradation and coastal pollution from potential oil and gas spills from marine sources • Unplanned and uncoordinated coastal drainage and irrigation infrastructure works resulting in hydrological changes to mangrove habitats

- Zoning through the implementation of a land policy by GLSC in collaboration with inputs from other local and external agencies
- Utilize experiences and knowledge of local communities, (e.g. Indigenous in Region 1), in developing skills in mangrove utilization and management
- Collaborate, through a MOU, with the local marine conservation organization (for example GMCS) that assist in managing the Shell Beach PA
- Shared knowledge and experiences through the establishment of Mangrove Management Committee
- Establish statutory governance body/working groups and regional committees
- Use mass media platform/companies to assist with public awareness programmes on mangroves

- Submergence of coastal areas due to sea level rise resulting from climate change
- Urban expansion and land use change and discharge of effluents in waterways along riverine areas.

According to the Table 4 above, agencies that have both direct and indirect responsibility for the management of mangroves in Guyana exhibit several strengths but also weaknesses.

Strengths

With respect to the strengths, data obtained from the consultant's survey and review of available literature indicate that there are existing and on-going activities, plans and programmes to support this claim. For instance, several public awareness and education programmes have been undertaken by GMCS and NAREI to solicit the involvement of stakeholders in the mangrove management process. Similarly, on-going activities by agencies such as NAREI, DoE, GLSC, CI-Guyana, and WWF that relate to re-planting and monitoring of coastal mangroves, establishment of a data and information network, development of a land use policy and zoning plan and collaborative research and data gathering respectively have all served to strengthen the work capacity of the agencies to carry out their tasks. A variety of other management initiatives have been put in place to facilitate the sound management and use of the resources. These include restrictions placed on the extraction of mangroves, especially on public lands, through the various policies and plans, public awareness and education programmes, and solicitation of public support through the formation of community action groups.

Weaknesses

While those undertakings serve as strengths for the participating agencies, some limitations or weaknesses exist. These include limited availability of finances and technical capacity, lack of collaboration and coordination among agencies, insufficient stakeholder participation (especially among private landowners), absence of data and information sharing and inadequate local plans and programmes that directly target mangrove conservation and management. With respect to these weaknesses exhibited by the agencies, it was observed that some agencies such as Guyana Power and Light Incorporated (GPL) and Mahaica Mahaicony Abary - Agricultural Development Authority (MMA-ADA) (See Fraser Report) initiated projects that resulted in the loss of mangroves as a consequence of failure to coordinate their actions with agencies such as the GFC or the local authorities. Similarly, in some locations in Region 6, for example, where mangroves have been thriving on private lands these have been removed to accommodate other land uses without discussions with local/regional authorities or national agencies, such as GFC or Ministry of Public Infrastructure.

Opportunities

As shown in the Table 4, there are multiple opportunities available for agencies to address mangrove management in Guyana. With respect to training and capacity building, opportunities exist both locally at the University of Guyana and externally through short courses supported by multilateral and bilateral agencies. Funding is also available from the EU, UNDP, UNEP, and other agencies. There are also on-going activities by local partner agencies that provide opportunities for synergies and cross-sectoral integrations to strengthen each other in support of mangrove policy-making and management. For instance, the DoE's work on the EIMMS will facilitate data and information gathering and sharing will create a platform for agencies such as GFC, GLSC, NGOs (WWF and CI) and local authorities (RDCs and NDCs) to readily access data and information to support and strengthen their work. Similarly, GLSC's work on land policy and zoning will serve to assist agencies in decision-making so that land use conflicts and their impacts can be addressed.

Threats

Finally, as in most instances with land use policy and development, there are threats that the participating agencies need to include in their planning process. In the case of mangrove management in Guyana, several threats appear to face the agencies. These include changes in government policy, unplanned and uncoordinated infrastructure works, urban expansion, and coastal pollution from potential oil spill, weak legal and institutional support, and coastal erosion and land degradation from sea level rise. Reference has already been made to the effects of infrastructure development on mangrove habitats. While the GSDS is strongly supportive of mangrove protection, there is no certainty that a future administration will embrace a similar policy or alter it altogether in response to changing national circumstances. Similarly, issues of sea level rise and changing coastal geomorphological features can negatively impact on mangrove ecosystems.

4.3 Summary of Institutional Framework for Mangrove Restoration, Conservation and Ecosystem Services in Guyana

The current institutional framework has resulted in a number of successes in mangrove restoration, conservation and ecosystem services. To date there is evidence of some public participation activities related to the management of mangroves which have been put in place to facilitate the sustainable use of the resources. These include education and awareness programmes used to sensitize local communities about the socio-economic and environmental value of mangrove ecosystems to their livelihood, collaboration with public and private sector agencies, and mangrove seedling planting at various locations. However, these efforts are not without issues. In some Regions (such Regions 3 and 5), the management of mangroves has encountered some conflicting situations as institutions have overriding power to use public lands for infrastructure development¹³. This includes pathways for installation of power lines and drainage canal for agricultural activities. Some of these actions due to lack of coordination have led to the destruction of mangroves.

¹³ Institutional and Legal Review of Mangrove Management in Guyana/ Final Report/Landell Mills Ltd/, July 2013.

Regional Perspectives and Recommendations relevant to Guyana and the North Brazil Shelf countries

5. REGIONAL PERSPECTIVES AND RECOMMENDATIONS RELEVANT TO GUYANA AND THE NORTH BRAZIL SHELF COUNTRIES

5.1. Comparative Analysis of Mangrove Management in Guyana and Suriname

Both Guyana and Suriname have recognized the importance of mangroves for coastal protection and for the provision of ecosystems services and have since attempted to put measures in place to address the rapid loss of mangrove resources in some locations. Over the years, advances have been made in the area of policy. But the management of these resources has proven difficult for both countries. It has been recognized that sea level rise will compound the sustainable management of the resources due in part to the complex institutional and regulatory systems.

In Suriname, mangrove management has not been recognized as a high priority area. For this reason, there has been very little effort to streamline the management of mangroves with the country's development agenda. Consequently, a major issue that arises is the lack of adequate technical and financial support to restore, safeguard, and monitor mangroves and the ecosystems services they provides. Notwithstanding these circumstances, research institutions and NGOs in Suriname have been engaged in various mangrove initiatives. Anton de Kom University of Suriname and Conservation International collaborated in a project to mitigate coastal erosion at Weg naar Zee by building Sediment Trapping Units (STUs). WWF has been playing a part in these endeavours. However, it appears that the National Environmental Council is not fully functional. Like Guyana, many agencies are responsible for the enforcement of the environmental regulations as well as planning for environmental activities. These include the Nature Conservation Division and the Ministry of Physical Planning, Land and Forest Management.

In 2001, the first Mangrove Action Plan was prepared for Guyana and in 2004, a draft Code of Practice for Mangrove Management was compiled by the GFC and EPA. This has since been updated. However, since 2010, there has been heightened interest in the preservation of mangroves, particularly in Guyana. The establishment of the Mangrove Project Unit at NAREI (the designated lead agency) managed by a Coordinator and the Mangrove Action Committee (MAC) and the Ministerial proclamation in 2010 that mangroves are a protected species were steps towards the realization of the country's commitment to provide a structured and systematic approach to mangrove management. The NMMAP 2010-2012 which was prepared under the Sector Policy Support Programme (SPSP), highlighted the institutional and legal framework for mangrove management. More than ten agencies have been working directly or otherwise in the management of mangroves, including the GFC, SRDD, EPA, Fisheries Department, and the NDIA. From 2010 onwards, a series of other developments have occurred.

Overall, the initiatives undertaken in both countries focused on monitoring of mangroves colonies along some sections of the coast, enforcement of some regulations (although some are outdated), facilitation of research on mangrove forest and related ecosystem services, establishment of restoration of areas depleted of mangroves, installation of structures to protect mangroves, and promotion of public awareness and education programmes on mangroves. Generally, there is a lack of a sound policy framework for mangrove management in Suriname. The existing legal framework referenced in some documents does not directly relate to mangrove management. It addresses broader areas, such as climate change and national development paradigms. The legislative framework includes the following:

- Article 6G¹⁴ of the Constitution of the Republic of Suriname which provides the legal basis for a sustainable environmental policy

¹⁴ Article 6G of the Constitution of the Republic of Suriname affirms the country's commitment to the preservation of nature and the safeguarding of ecological balance. <https://reliefweb.int/resources/UNDP-RBLAC-ClimateAdaptationActionsSR>

- Nature Conservation Law of 1954
- Forest Management Act
- National Forest Policy (2003)
- Forest Policy Paper of the Ministry of Spatial Planning, Land and Forest Management
- Coalition Agreement and Government Policy Statement (2010 – 2015)

Suriname does not have a national mangrove action plan, but many plans and strategies provide guidance with regards to mangrove conservation and management. Some of the key documents are:

- National Environmental Action Plan
- Development Plan (OP) for 2012 – 2016
- The National Biodiversity Strategy 2006 - 2020
- National Biodiversity Action Plan 2012-2016
- Interim Strategic Action Plan for Suriname Forest and timber 2009-2013
- Multiple Use Management Areas Plans¹⁵
- National Climate Change Policy, Strategy and Action Plan (NCCPSAP)¹⁶
- First National Communications and the Second National Communications to the UNFCCC (2013)
- REDD+ PRODOC

Guyana has moved a few steps beyond and has instituted a framework of laws and regulations for mangroves and mangrove ecosystem and community-based mangrove management systems. These initiatives have received financial support at different periods from the European Union under the Global Climate Change Alliance (GCCA) for sustainable Coastal Zone Management as well as from the Government of Guyana (GoG). Other initiatives undertaken include research on mud bank stabilization; recruitment of rangers and support staff; rehabilitation of mangrove sites; establishment of mangrove nurseries and procurement of propagules from local communities; and establishment of mangrove reserves.

5.2. Summaries of best practices in mangrove governance and management

There are many examples of best practices in mangrove management globally. For the purpose of this study, two cases have been examined and the key findings are identified below. These are the Tanzanian and Indonesian experiences.

a) Mangrove governance and management - Tanzania

- At the sub-national level, plans should adopt a landscape approach to the management of mangroves. This includes processes that take place outside of the area but impact on the mangrove area need to be considered in the plan implementation. In particular, those issues that have potential to impact the management plan are pertinent.
- Integrate women into mangrove decision-making and management and benefit-sharing should be included in the regulatory framework.
- Improve capacity among stakeholders to manage mangrove forests.
- Pay particular attention to relations between long-term residents in the mangrove area and outsiders who enter into the area to use the mangrove forests.

¹⁵ The Plan includes the Management Areas of Bigi Pan (S. B. 2002 no. 80), North Commewijne / Maroni (S.B. 2002 no. 85), North Coronie (S. B. 2002 no. 87) and North Saramacca (S. B. 2002 no. 88)
file:///E:/CI-Mangrove/suriname%20and%20guyana%20comparison.pdf

¹⁶ This Action Plan emphasizes the need for national research programmes on social, environmental, and economic baselines, climate science, vulnerability, impacts and risk management.

- Strengthen and coordinate activities among different groups of resources users (forests, fisheries, researchers) within the mangrove area.
- Further research within the mangrove area needs to be conducted in order to find solutions to multiple issues that tend to impede the successful governance of mangrove forests.

b) Mangrove governance and management – Indonesia

- A maximum of four agencies are responsible for mangrove management.
- A specific agency has the overall authority over mangrove protection in different geographic settings or zones. For example, the Ministry of Environment and Forestry (MOEF) has jurisdiction for mangrove found in classified forests while the Ministry of Marine Affairs and Fisheries (MMAF) and the Agrarian & Spatial Planning Affairs/National Land Agency have authority over the protection and management when mangroves are located in coastal areas and Islands and for enforcing tenure rights and conducting spatial planning in mangrove zones respectively.
- By placing mangroves under state forest, the legislation vests authority and control in the forestry agency.
- Local authorities have responsibility for monitoring mangrove activities on the ground.

5.3. Lessons Learned relevant to the NBS countries

- Mangrove forests and ecosystems have different groups of stakeholders who depend upon the resource for their livelihood. As such, management plans have to take cognizance of this fact and regulations and systems must be put in place to facilitate the needs and interests of the different groups.
- Mangroves play a vital role in protecting low-lying coastal areas and vulnerable populations from storm surges and potential sea level rise. This has led to concerted efforts to ensure that mangrove forests and ecosystems are protected and where such forests are degraded, rehabilitation efforts have been put in place.
- A ministerial declaration for mangrove protection must be accompanied by subsequent regulations
- Community participation is regulated under the law.
- Regulations mandate the development of a rehabilitation plan that includes tenure rights, zoning, and rehabilitation of mangrove sites.
- Research in mangrove ecology plays a vital role in policy formulation and decision-making.
- Local and community participation allows for the integration of local and indigenous knowledge and skills in the decision-making process with respect to the mangrove management.
- Education and awareness programmes are an integral part of the mangrove management process as it allows stakeholders to understand the value of and participate in the conservation and management of the resource.
- A national mangrove ecosystem strategy is necessary for centralizing mangrove ecosystem management within an overall approach to managing the coastal landscape.
- It is difficult to coordinate mangrove activities across different agencies operating through their own legal frameworks.
- Mangrove forests have multiple uses, some of which on occasions are conflicting, there is need for cross-sectoral coordination and collaboration among the different agencies that have a stake in the mangrove forest to avoid land use conflicts.

5.4. Guiding Principles for Sustainable Mangrove Management

FAO - (Adopted from: FAO Mangrove Forest Management Planning Principles)

Mangrove ecosystems provide a multiplicity of products and services upon which many communities depend for their livelihood. These include a number of inter-related activities such as fuelwood, shrimp and fisheries nurseries, materials for housing, and fencing agricultural plots. In many tropical and sub-tropical areas around the world, mangrove forests are under threat from a variety of unsustainable activities. As such, it is recognized that multidisciplinary management principles are required to reverse this contrary trend. These have been clearly articulated in the FAO 1994 document “Mangrove Forest Management guidelines” In: FAO Forestry Paper (FAO), no. 117. (See Appendix 1 A)

United Nations Conference on Environment and Development (UNCED) Forest Principles adopted from World Bank, ISME, cenTER Aarhus (2004).

Having recognized the severity of the threat to mangrove ecosystems worldwide, World Bank along with other institutions have worked together and sought to combine the UNCED (1994) principles for a Code of Conduct to reinforce the sustainable use of the resource. The Code is viewed as guideline for countries to follow if they were to reverse the trend of mangrove forest deforestation and degradation and at the same time address the inter-related issues of climate change, land degradation, and biodiversity conservation that are linked to the UNFCCC, UNCCD and UNCBD Conventions respectively and to which many of the countries are signatories. These principles are outlined in Appendix 1 B.

Enabling Factors, Barriers and Recommendations to Mangrove Governance in Guyana

6. ENABLING FACTORS AND BARRIERS TO MANGROVE GOVERNANCE IN GUYANA

The management of mangrove forests and ecosystems in Guyana is affected by a number of disparate factors some of which positively aid in the mangrove governance process while others serve to counteract or offset the management efforts. Overall, this conflicting environment helps to limit the spatial distribution, quality, and the extent to which mangroves are successfully managed across Guyana. In areas that are relatively inaccessible and unpopulated, such as the northwest coast of the country, mangrove forests flourish with minimal efforts at protection. However, in areas where the opposite situation exists, greater threats to the forests prevail and as such require more significant inputs of technical, financial, and legal and institutional support. These enabling factors and barriers are more explicitly outlined below:

6.1. Factors that Enable Effective Mangrove Management

- GMCS has a 30-year environmental footprint regarding the management of the marine environment in Region 1 and can be contracted to undertake public awareness and some other activities. The work of GMCS complements some aspects of NAREI's mangrove project activities.
- Establishment of Shell Beach Protected Area has created scope for PAC to be more visible in the area and to collaborate with other stakeholders in support of mangrove protection.
- Coastal zone protection and conservation is one of the priority areas of the GSDS, which is a national development policy that is supported at the highest level of government in Guyana (Office of the President).
- The broad-based framework involving international agencies, government, NGOs, private sector, and the public through various initiatives allows for a better understanding and participation in the management of the mangrove resources.
- Funding and technical support from donor agencies, such as the EU and NGOs (WWF and CI), have created a broader framework and potential for better management of mangroves
- The GSDS: Vision 2040 provides guidance on the country's development trajectory
- Documentation of potential sites for management
- Through the Multilateral Environment Agreements Committee (MEAC), mangrove management can be addressed.
- Local knowledge about mangrove ecosystem can be used to strengthen mangrove management activities.

6.2. Factors that Constrain Effective Mangrove Management

- Absence of dedicated funds for the establishment and sustainability of Community Environmental Workers in each Region
- Limited knowledge about mangrove ecosystem
- Disconnect between scientific data and local knowledge about mangrove management in Guyana
- Lack of adequate equipment, such as drones, cameras, field laptops, field gears, and internet connectivity to monitor mangroves
- Lack of collaboration between NAREI and GMCS on mangrove management. GMCS has a long history (30 years) of dealing with the marine environment
- Lack of complementarity, integration, and collaboration among stakeholders for the planning and implementation of public awareness activities
- Limited engagement with local community groups where mangroves exist
- Lack of capacity building for local communities in Region 1 where a relatively large mangrove

- ecosystem exists
- Absence of monetizing mechanism (esp. for GMCS and women) for the collection of mangrove data
- Limited integration of geographic areas with mangroves (e.g. Region 1)
- Absence of land use plans for coastal regions¹⁷
- Land tenures, especially the dominance of mangroves in some areas (Region 6), where policy interventions are restricted

7. RECOMMENDATIONS

7.1. Proposed Regulatory Framework

The study shows that the legislative framework for mangrove governance and management in Guyana allows for some degree of flexibility. The recommendations outlined below are intended to strengthen the existing framework for mangrove governance and management taking cognizance of the new and emerging developments in the oil and gas sector, climate change and sea level rise projections for the country, the new national development thrust outlined in the GSDS: Vision 2040, Guyana's commitments to assist in addressing global environmental issues, and the need to safeguard the country's coastal environment.

7.1.1. Adjustments to Existing Laws/Regulations

- Sea Defence Act of 1998 - Sec.13 (1 Sec. 14, 15 and Sec. 16 (b) (a) (b) Sec, 26** states that everyone who infringes any of the provision of this **Act** shall be liable on summary conviction of twenty-two thousand five hundred dollars (G\$ 22,500).
 - The *Act* stipulates summary conviction for the infringement of any provision of the **Act**. However, based on the heightened level of importance mangroves attract, summary conviction of the sum stated is lenient and would not act as a deterrent to violators.
- Forest Act of 2009 - Part 3.31** prohibits the cutting, damaging, or taking any forest produce, or carry out any other kind of forest operation in a State forest; occupy or use any land in a State forest.
 - This *Act* could be revised to include "protected species on private freehold lands" in support of the ministerial proclamation that mangroves are a protected species.
- Fisheries Act of 1957 - Part 8** Marine Reserves and Fishing Priority Areas, **Section 21. (1). (a)** to afford special protection to the flora and fauna of such areas and to protect and preserve the natural breeding grounds and habitat of aquatic life with particular regard to flora and fauna in danger of extinction;

(2) any person who in any marine reserve without permission granted under subsection **3 (b)** takes or destroys any flora and fauna other than fish is guilty of an offence.

 - **Part 8** should be amended to include "protected species"
- Local Government Act, Part IV sec 51.** Cutting of trees will have fix fees.
 - **Part IV** needs to specify that mangroves are exempted from cutting.

¹⁷ The GSLC has completed land use plans for Region 6 - East Berbice, Corentyne; Region 9 - Sub-region 1; Lethem-Linden Road Corridor; Soesdyke-Linden Highway; and Natural Resources Management Project Regional Planning area.

7.1.2. New laws

- a. A clear law defining mangroves and the ministry or institution under which they fall. For instance, if mangroves are defined as sea defense, the rightful jurisdiction ought to be the Sea & River Defence Division. Alternatively, if it is defined as a forest resource, then the GFC needs to have jurisdiction over mangroves.

A recommendation arising from this study is to situate mangroves under the Sea and River Defence Division of the MoPI. Many pieces of legislation currently being used for mangrove management fall under the **SRD Act** (compared to the use of mangroves as forest resources or agricultural resource) where mangroves are defined for sea defense purposes. The Division has already taken steps to update the Sea and River Defence Bill which embraces Integrated Coastal Zone Management (ICZM). Further, the Division plans to establish in the near future a department focusing on research, advancing collaboration, analysis of data, and reporting based on policy directives.

- b. Extending landward the geographical space to be brought under state control considering the potential impact of sea level rise and storm surges and the need to protect the coast and mangroves. This recommendation is made in the context of the projections for sea level rise and storm surges, the low-lying nature of the coast, and the need to protect larger swaths of land (and mangroves) from inundation. The legislation would bring into the management scheme some areas where mangroves have advanced on private freehold lands.
- c. Addressing dispute resolution regarding the management of mangroves on private freehold lands. There is no legislation that is supported by regulation for the management of mangroves on private freehold lands. This study shows that conflicts and disputes arise over resource use where there are multiple users. The absence of legislation to address these issues could compromise mangrove management activities.

7.1.3. Memoranda of Understanding

In addition to the existing MoUs, it is recommended that agreements for collaboration with each of the following entities be established:

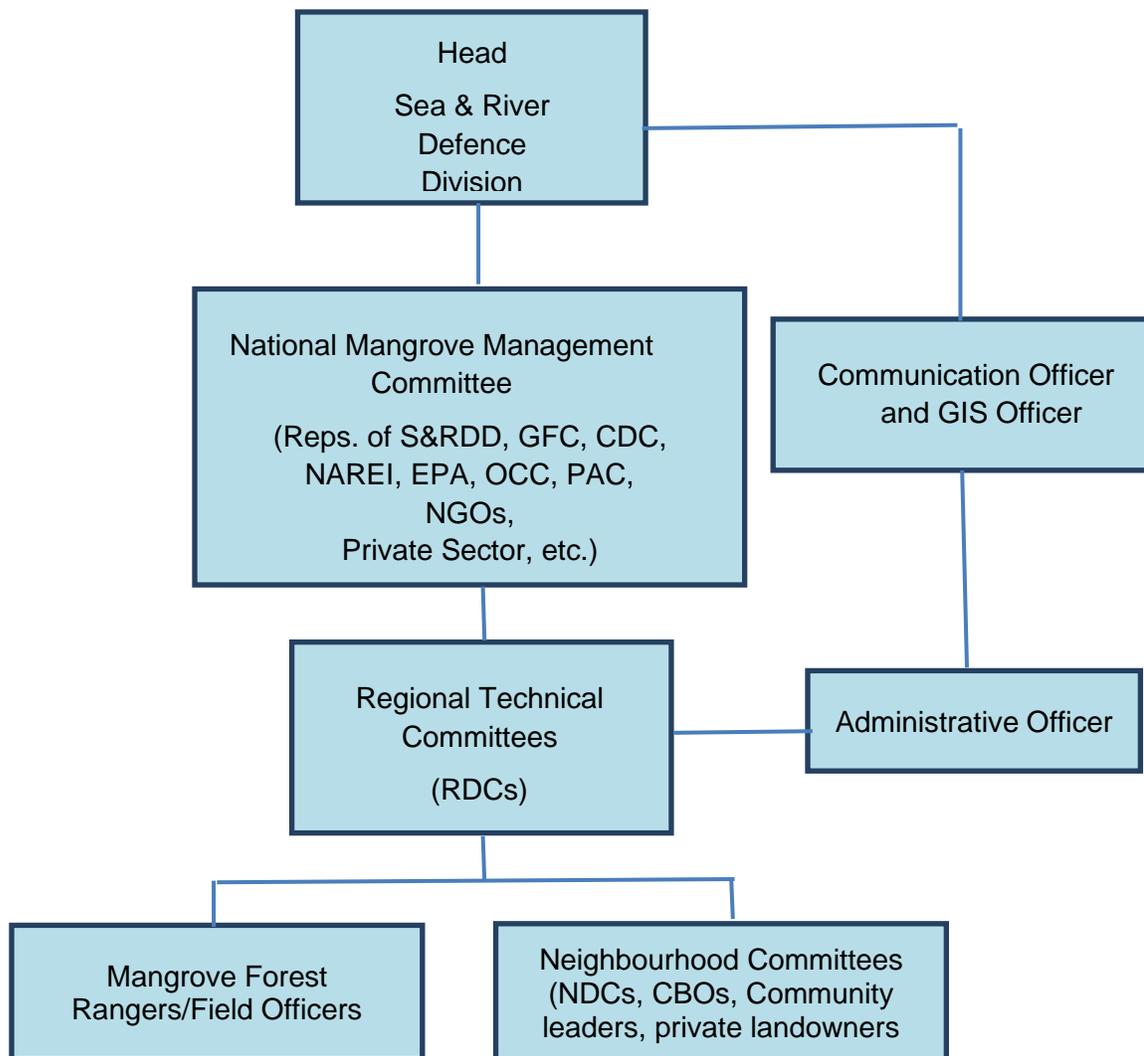
- a) NGOs for the implementation of public awareness programmes. For example, the GMCS offers guided tours in mangrove reserves and has the capacity to collect and data sharing for mangrove ecosystem in Region 1. This Society has a long history associated with coastal ecosystems services and public awareness programmes for environmental matters.
- b) Local communities where mangroves exist for mangrove forest conservation as well as rehabilitation/restoration of the degraded sites.
- c) Research institutions, such as the University of Guyana, to conduct studies to fill data/information gaps

7.1.4. Proposed Administrative Framework

The organization structure that is currently in place for mangrove governance, conservation, and management requires the coordination of mangrove activities across different agencies operating through their own legal frameworks and led by NAREI. This structure promotes a project-based approach to mangrove management, conflicting jurisdiction over mangrove management, and stymies collaborative opportunities at the grassroots level. The structure is neither sustainable nor consistent with best practices in mangrove governance, conservation and management. In order to address these issues, it is recommended that a Department be established at the Sea and River Defence Unit to coordinate mangrove

management activities. As stated before, the recommendation is made in the context that the Sea and River Defence Division of the MoPI has the legal mandate to address many issues related to mangroves as a form of sea defense, as outlined in the *Sea Defence Act*, and its associated regulations, strategies, and plans. The proposed Organizational Structure below was conceptualized based on the need to strengthen the institutional capacity for sustainable mangrove management; improve real-time and accurate scientific data collection and information from indigenous and local sources for refining the information base; promote a decision-making process that is visible, inclusive, and equitable; articulate clearly the planning functions from the local community level to the national level; promote viable economic and social activities; and reduce instances of conflicts and disputes over the extraction and use of mangroves and tenure arrangements. The structure would also transform mangrove management from a project-based approach to a more structured institutional approach. The SRDD has a detailed plan under which mangroves and flood protection fall.

Figure 1: Proposed Organizational Structure



7.1.5. Proposed Roles and Responsibilities

1. Head

- Provide guidance to minister with respect to policies and regulations
- Facilitate collaboration with other agencies
- Oversee policy formulation and implementation

2. National Mangrove Management Committee (NMMC)

- Provide guidance on policy development
- Provide technical support to the Director
- Interface with national and regional bodies
- Articulate views of the different stakeholders
- Facilitate the development of synergies among stakeholder groups
- Participate in dispute resolution among local stakeholders

3. Regional Technical Committees

- Provide technical support and guidance to local mangrove groups
- Provide feedback on mangrove issues to the NMMC/Director
- Articulate policy issues with local stakeholders
- Provide support to local mangrove initiatives
- Participate in dispute resolution among local stakeholders

4. Communication and GIS Officers

- Promote education and awareness programmes
- Facilitate local initiatives among stakeholders
- Provide technical support in the areas of mangrove mapping
- Provide scientific data on the state of mangroves
- Provide support to the NMMC to facilitate policy and decision-making
- Participate in national and regional collaborative activities on the conservation and management of mangroves

5. Administrative Officer

- Provide support to the director and the NMMC
- Organize meetings/workshops and other forums
- Prepare minutes of meetings, workshop reports etc.
- Manage records related to the mangrove sector
- Management of Director's schedule, etc.

6. Mangrove Forest Rangers/Field Officers

- Collect data and information
- Monitor activities within mangrove forests
- Maintain information flow to policy-making bodies
- Maintain records of changing status of mangroves
- Report complaints and cases of non-compliance with mangrove regulations to the authorities

- Liaise with neighbourhood committees and the NMMC

7. Neighbourhood Committees

- Maintain contact with the local communities
- Facilitate local initiatives associate with mangroves
- Promote education and awareness among local stakeholders
- Coordinate mangrove initiatives
- Participate in dispute resolution among local stakeholders
- Provide guidance to decision-making bodies on local concerns and issues

8. PROPOSED POLICY ACTIONS AND IMPLEMENTATION PERIOD

The Table below is a proposed Policy Action Plan that outlines the pathway towards addressing a number of the issues pertinent to mangrove governance and management. The actions are meant to assist in mainstreaming mangroves in sectoral policies while creating a platform for transitioning mangrove governance and management from a project-oriented one to a well-structured Department. It identifies what the issues are, who is responsible for addressing them, timelines, indicators, and cost for implementation of the actions. The issues were derived from the desk review and stakeholder interviews conducted.

Table 5 - Table of Proposed Policy Action Plan

What needs to be done?	Who will be responsible?	When will it be done? *	How do you know that it is done?	What will it cost?
1. Enact laws and review regulations to conserve mangroves	Responsible officers in the relevant agencies	Short Term	<ul style="list-style-type: none"> Copy of revised and new laws to prevent Conversion of coastal lands, especially those privately owned and occupied, from mangrove habitats to other uses 	Costs of reviewing and preparing legal documents
2. Prepare a national strategy for mangrove ecosystem management	Consultant	Short – medium term	<ul style="list-style-type: none"> National Strategy for Mangrove Ecosystem Management Revised Integrated Coastal Zone Management Plan 	Consultant Fees, Document printing and distribution costs
3. Prepare a mangrove ecosystem policy and review, consolidate, and strengthen existing policies and update the mangrove management plan	Consultant	Short - Medium Term	<ul style="list-style-type: none"> Copy of a revised policy document (including a mangrove policy), regulations and mangrove management plan Copy of the Statutory bodies gazetted 	Consultant Fees, Document printing and distribution costs

4. Incorporate mangroves in the strategic plans for agencies associated with its conservation and management	Technical officers located in the relevant agencies	Mid-term	<ul style="list-style-type: none"> • Copies of the strategic plans • Revised copy of the current Draft Concept Note on “Integrated Coastal Zone Management with Emphasis on Sustainable Management of Mangrove Forests in Guyana” (prepared by GMCS and 5 Cs) 	Cost of meetings, preparation and printing of documents
5. Strengthen monitoring and enforcement mechanisms through institutional support	Officers hired by the relevant agencies	Mid-term	<ul style="list-style-type: none"> • Copy of the monitoring and enforcement plan 	Salaries/wages of officers and cost of monitoring equipment
6. Strengthen linkages among stakeholders	Senior officers in the responsible agencies	Short-term	<ul style="list-style-type: none"> • Stakeholder assessment report 	Cost of meetings and preparing documents
7. Increase coordination of the approach to mangrove conservation and management	All Stakeholder agencies	Short-term	<ul style="list-style-type: none"> • A Statutory National Mangrove Management Committee/National Task Force established consisting members of key institutions to have oversight of mangrove activities • Regional Mangrove Committees established 	Cost of meetings and preparing documents

<p>8. Strengthen (financially and technically) Regional Democratic Councils (RDCs) and Neighbourhood Democratic Councils (NDCs) to participate in the management process</p>	<p>Finance Committee Regional Democratic Council (RDC)</p>	<p>Medium- term</p>	<ul style="list-style-type: none"> • Financial and technical plans for improving local authorities' participation • Drone and other useful technology for monitoring mangroves • Strategy to Integrate Region 1, which has the largest natural mangrove stance compared to any other Administrative Region, into national mangrove platform 	<p>Costs for the preparation and dissemination of documents</p>
<p>9. Increase resource mobilize for mangrove management activities</p>	<p>Consultant</p>	<p>Long-term</p>	<ul style="list-style-type: none"> • Resource mobilization plan • Minutes of donor round table 	<p>Consultant fees</p>
<p>10. Build capacities within relevant institutions</p>	<p>Mangrove Training Specialist</p>	<p>Short-term</p>	<ul style="list-style-type: none"> • Technical capacity building plan • Recruitment plan and training programme for Community Environmental Workers in each region • Funds allocated for exchanges to learn from other countries' best practices List of rangers to undertake surveillance and report to the relevant authorities, e.g. Sea and River Defence Division 	<p>Costs of researchers</p>

			<ul style="list-style-type: none"> Recruitment and training programme for Community Environmental Workers in each region 	
11. Foster public participation in decision-making and management of mangroves	Regional Democratic Council (RDC)	Medium-term	<ul style="list-style-type: none"> Monetary system developed for the collection of data by local community groups, especially women's groups MoU with successful organizations involved in environmental work for public awareness programmes, monitoring mangroves , e.g. GMCS to fast track the work of NAREI Private landowners' engagement plan for policy development and decision-making with respect to the use of their lands for mangrove management 	Costs of organizing regional meetings and producing documents for stakeholders
12. Establish links with the Environmental Information Monitoring and Management System (EIMMS) that is currently under development in order to acquire and share up-to-date data	Officers of Department of Environment (DoE) and the RDC	Short-term	<ul style="list-style-type: none"> Establish a mangrove data sharing policy in place Database of mangrove ecosystem resources 	Costs of copying and documenting and data and information

<p>13. Participate in the development of a framework for the protection of coastal and marine resources from oil spills and other forms of pollution</p>	<p>Officers from DOE, MNR and EPA</p>	<p>Medium-term</p>	<ul style="list-style-type: none"> • Oil spill contingency plan in place • Coastal sea and river defense and drainage and irrigation infrastructure work plans • Strategy to monitor urban expansion and land use change and discharge of effluents in waterways along coastal and riverine areas • Plan for the establishment of at least one Mangrove Protected Area in each Administrative Region 	<p>Cost of preparing, reviewing and disseminating document</p>
<p>14. Establish regulations to conserve mangrove forests for protection of coastal areas from sea level rise resulting from climate change</p>	<p>Legal Officers of GFC and MOPI</p>	<p>Short-term</p>	<ul style="list-style-type: none"> • Plan for implementation of recommendations outlined in major local studies/research completed • Review of permits for major development activities/projects along the coast are approved • Site analysis report for proposed development activities/projects 	<p>Costs for meetings and document preparation and dissemination</p>

Short-Term (1 - 2 years)

Medium-Term (3 – 5 years)

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10. APPENDICES

Appendix 1 A: Mangrove Forest Management guidelines - FAO 1994

1. Wood, non-wood and aquatic resources are managed in an integrated way and used to meet local, regional or national needs. Managing natural resources to meet peoples' needs implies a knowledge of what people want. An assessment of needs and public participation is an integral part of the planning process. The importance of a resource supply is not only determined by its physical or biological characteristics but also by the priority that society places on its use. This prioritization among the management objectives should be clearly reflected in the management plan's activities.
2. Plans must be objective oriented. When the problems or issues are understood, a set of objectives should be identified to address key issues. Objectives should be quantifiable targets that serve to focus management efforts and measure performance.
3. Plans must try to achieve the greatest good for the greatest number of people in the long run. Minority interests must be weighed in relation to the general well-being of larger communities. In practice it is impossible to achieve complete or unanimous support for all the management objectives. Compromises between local level and national level interests are necessary.
4. The ecological carrying capacity should never be exceeded and resource sustainability should be given high priority. This is a non-negotiable requirement, if sustainable production is to be achieved. This requirement should be given high priority in the management planning agenda and for example a code of conduct for responsible harvesting of given products (forest-based or aquatic) should be elaborated.
5. The need for the conservation of biological diversity and wildlife should be recognized. This should be incorporated into the plan in relation to the scale of the management area. For small and/or highly fragmented areas, it is impractical to reserve large tracts of pristine vegetation for conservation purposes. Instead, the establishment of well-placed control plots may be more feasible.
6. Planning is an on-going dynamic process. Planning must be flexible enough to accommodate shifts in demand/supplies and priorities. Because society's values change over time, planning is an on-going dynamic process.
7. The plan must provide for improvements in data collection to reduce areas of uncertainty associated with an incomplete or weak information base. The ultimate objective may be achieved in phases, taking into account an improved information base over time and applying a conservative approach where the uncertainty is perceived to be great.
8. The decision-making process must be visible and equitable. Involving the public in the decision-making process is necessary to promote local support and acceptance for integrated forest management planning. It is the duty of the forest service to explain to the public the implications of various decisions. Customary rights should be respected where possible. Decision-making should not marginalize the traditional incomes of local people nor their access to forest products without offering practical and acceptable alternatives.
9. Planning functions and responsibilities. The responsibility for planning functions should be clearly spelt out at different levels, from the local forest management unit level towards the national level.

Appendix 1 B United Nations Conference on Environment and Development (UNCED) Forest Principles adopted from World Bank, ISME, center Aarhus (2004) relevant to mangroves

- 2. (a) States have the sovereign and inalienable right to utilize, manage and develop their forests in accordance with their development needs and level of socio-economic development and on the basis of national policies consistent with sustainable development and legislation, including the conversion of such areas for other uses within the overall socio-economic development plan and based on rational land-use policies.
- (b) Forest resources and forest lands should be sustainably managed to meet the social, economic, ecological, cultural and spiritual needs of present and future generations. These needs are for forest products and services, such as wood and wood products, water, food, fodder, medicine, fuel, shelter, employment, recreation, habitats for wildlife, landscape diversity, carbon sinks and reservoirs, and for other forest products. Appropriate measures should be taken to protect forests against harmful effects of pollution, including air-borne pollution, fires, pests and diseases, in order to maintain their full multiple value.
- (c) The provision of timely, reliable and accurate information on forests and forest ecosystems is essential for public understanding and informed decision-making and should be ensured.
- (d) Governments should promote and provide opportunities for the participation of interested parties, including local communities and indigenous people, industries, labour, non-governmental organizations and individuals, forest dwellers and women, in the development, implementation and planning of national forest policies.
- 3. (a) National policies and strategies should provide a framework for increased efforts, including the development and strengthening of institutions and programmes for the management, conservation and sustainable development of forests and forest lands.
- (c) All aspects of environmental protection and social and economic development as they relate to forests and forest lands should be integrated and comprehensive.
- 4. The vital role of all types of forests in maintaining the ecological processes and balance at the local, national, regional and global levels through, inter alia, their role in protecting fragile ecosystems, watersheds and freshwater resources and as rich storehouses of biodiversity and biological resources and sources of genetic material for biotechnology products, as well as photosynthesis, should be recognized.
- 5. (a) National forest policies should recognize and duly support the identity, culture and the rights of indigenous people, their communities and other communities and forest dwellers. Appropriate conditions should be promoted for these groups to enable them to have an economic stake in forest use, perform economic activities, and achieve and maintain cultural identity and social organization, as well as adequate levels of livelihood and well-being, through, inter alia, those land tenure arrangements which serve as incentives for the sustainable management of forests.
- (b) The full participation of women in all aspects of the management, conservation and sustainable development of forests should be actively promoted.
- 6 (b) National policies and programmes should take into account the relationship, where it exists, between the conservation, management and sustainable development of forests and all aspects related to the production, consumption, recycling and/or final disposal of forest products.
- (c) Decisions taken on the management, conservation and sustainable development of forest resources should benefit, to the extent practicable, from a comprehensive assessment of economic and non-economic values of forest goods and services and of the environmental costs and benefits. The development and improvement of methodologies for such evaluations should be promoted.
- (e) Natural forests also constitute a source of goods and services, and their conservation, sustainable

management and use should be promoted.

- 8 (b) Efforts to maintain and increase forest cover and forest productivity should be undertaken in ecologically, economically and socially sound ways through the rehabilitation, reforestation and re-establishment of trees and forests on unproductive, degraded and deforested lands, as well as through the management of existing forest resources.
- (d) Sustainable forest management and use should be carried out in accordance with national development policies and priorities and on the basis of environmentally sound national guidelines. In the formulation of such guidelines, account should be taken, as appropriate and if applicable, of relevant internationally agreed methodologies and criteria.
- (e) Forest management should be integrated with management of adjacent areas so as to maintain ecological balance and sustainable productivity.
- (f) National policies and/or legislation aimed at management, conservation and sustainable development of forests should include the protection of ecologically viable representative or unique examples of forests, including primary/old-growth forests, cultural, spiritual, historical, religious, and other unique and valued forests of national importance.
- (h) National policies should ensure that environmental impact assessments should be carried out where actions are likely to have significant adverse impacts on important forest resources, and where such actions are subject to a decision of a competent national authority.
- (b) The problems that hinder efforts to attain the conservation and sustainable use of forest resources and that stem from the lack of alternative options available to local communities, in particular the urban poor and poor rural populations who are economically and socially dependent on forests and forest resources, should be addressed by Governments and the international community.
- (c) National policy formulation with respect to all types of forests should take account of the pressures and demands imposed on forest ecosystems and resources from influencing factors outside the forest sector, and inter-sectoral means of dealing with these pressures and demands should be sought.
- 12. (a) Scientific research, forest inventories and assessments carried out by national institutions which take into account, where relevant, biological, physical, social and economic variables, as well as technological development and its application in the field of sustainable forest management, conservation and development, should be strengthened through effective modalities, including international cooperation. In this context, attention should also be given to research and development of sustainably harvested non-wood products.
- (b) National and, where appropriate, regional and international institutional capabilities in education, training, science, technology, economics, anthropology and social aspects of forests and forest management are essential to the conservation and sustainable development of forests and should be strengthened.
- (c) International exchange of information on the results of forest and forest management research and development should be enhanced and broadened, as appropriate, making full use of education and training institutions, including those in the private sector.
- (d) Appropriate indigenous capacity and local knowledge regarding the conservation and sustainable development of forests should, through institutional and financial support and in collaboration with the people in the local communities concerned, be recognized, respected, recorded, developed and, as appropriate, introduced in the implementation of programmes. Benefits arising from the utilization of indigenous knowledge should therefore be equitably shared with such people.

Appendix 2: Interview Questions - Institutions

1. Are mangroves being considered as part of your agency's strategic objectives?
If yes, what are the strategic objectives?
2. Does your organization have sufficient technical skills to support mangrove management?
3. Does your organization have sufficient funds to organize mangrove conservation activities?
4. What funding does your organization receive to support mangrove management?
5. Are you aware of other funding opportunities to support mangrove projects?
6. Are there institutional linkages to support mangrove management?
7. Is there a mangrove management plan for your agency?
8. Does your agency provide training opportunities to staff for mangrove management?
9. Is there legislative support for your agency to implement mangrove conservation activities?
10. Does the legislative structure allow the agency's involvement in mangrove management?
11. To what extent are the regulations enforced to protect mangroves in the country?
12. How can agencies work together to address the mangrove management problems?
13. What plans does your agency have to improve its involvement in mangrove management?

Appendix 3: Coordination/Meeting Schedule

	Name	Institution	Schedule	Contact No.
1	Dr. Vincent Adams	Executive Director - Environment Protection Agency (EPA)	14/08/2019	225 2062
2	Mr. Seon Hamer	Assistant Dean - Faculty of Earth & Environmental Sciences, (FEES), University of Guyana (UG)	25/07/2019	222 4180
3	Hon. Sydney Allicock	Minister - Ministry of Indigenous Peoples' Affairs (MoIPA)	25/07/2019	227 5067
4	Mr. David Armogan	Regional Chairman - Region 6	29/07/2019	333 3761
5	Mr. Inshaan Ayube	Regional Chairman - Region 3	05/08/2019	264 2330
6	Ms. Hansrajie Sukhdeo	Project Officer, REDD Secretariat - Guyana Forestry Commission (GFC)	05/08/2019	226 7271
7	Mr. Jermaine Braitwaite	Senior Engineer - Ministry of Public Infrastructure (MoPI)	06/08/2019	231 1104
8	Mr. Paul Pierre	Vice Chairman - National Toshias Council	06/08/2019	227 6525
9	Mr. Chetwynd Osborne	Policy Analyst	26/07/2019	226 640
		Guyana Lands & Surveys		
10	Mr. Kelcie Marques	Commission - GLSC		
11	Ms. Aiesha Williams	Country Manager - World Wildlife Fund (WWF) - Guyana	05/08/2019	223 7802
12	Ms. Annette Arjoon	President - Guyana Marine Conservation Society (GMCS)	23/07/2019	600 7272
13	Ms. Denise Fraser	Commissioner - Protected Areas Commission (PAC)	26/07/2019	227 2265 Ext 103
14	Ms. Janelle Christian	Head - Office of Climate Change (OCC)	08/08/2019	223 5231

15	Ms. Diana Fernandes	Coordinator, Multilateral Environmental Agreement - Department of Environment (DOE)	02/08/2019	223 6313
16	Dr. Odhu Homenauth	Executive Director - National, Agricultural Research & Extension Institute (NAREI)	14/08/2019	220 2249 220 0072

Appendix 4: Report- Semi-structured Interviews Report

Meetings/Semi-structured Interviews for the Preparation of the Policy Analysis-NBS Mangrove Study

Introduction

This report contains the results of a series of meetings/semi-structured interviews with key stakeholders from both public and private sector organizations. Consultations were held with the stakeholders for three reasons. Firstly, to apprise them about the larger project “Setting the foundations for zero net loss of the mangroves that underpin human wellbeing in the North Brazil Shelf LME (NBS-LME)” and the Policy Analysis-NBS Mangrove Study. Secondly, the sessions were conducted to solicit information on the entities’ capacity to engage meaningfully in mangrove management and thirdly, they were done to fill information gaps on policy and other issues that existed from the desk review. Their views about the link between mangroves and agencies’ strategic objectives, availability of technical expertise to support the management of mangroves, availability of adequate funding to organize mangrove conservation activities, institutional linkages to support mangrove management, existence of mangrove management plan, training opportunities for staff on mangrove management, and plans for involvement in mangrove management are outlined in the reports that follow. It is anticipated that the information collected would inform the decision- making process regarding the efficiency and sustainability in the governance and management of mangroves in Guyana.

Stakeholders from the National Agricultural Research & Extension Institute (NAREI), Sea & River Defence Division (SRDD) - Ministry of Infrastructure, Guyana Forestry Commission (GFC), Department of Environment (DoE), Environmental Protection Agency (EPA), Protected Areas Commission (PAC), Guyana Lands and Surveys Commission (GLSC), Ministry of Indigenous Peoples’ Affairs (MoIP), Office of Climate Change (OCC), Faculty of Earth & Environmental Sciences (FEES), National Toshias Council (NTC), Guyana Marine Conservation Society (GMCS), World Wildlife Fund (WWF) – Guyana, and Regional Democratic Councils (Regions 3 & 6). Altogether eighteen (18) stakeholders participated in the consultations (Refer to Appendix B). The sessions were conducted through face-to-face sessions and, where practicable, via telephone interviews. They took place from July 22, 2019 to August 14, 2019. The sessions were facilitated by the Consultant.

Interview with Representative of the National Agricultural Research & Extension Institute (NAREI)

Link between mangroves and agencies' strategic objectives

Mangrove restoration and management is included in the NAREI Strategic Research & Development Agenda (SRDA) 2013-2017. The Action Plan envisions restoration of an additional five (5) km of coastal mangrove forest through the implementation of the principles of Ecological Mangrove Restoration, inclusive of hydrological restoration, construction of low cost coastal engineering structures, planting of spartina grasses and planting of mangrove seedlings based on site analysis.

Activities to achieve the stated targets are implemented through the Mangrove Restoration and Management Department of NAREI.

Availability of technical expertise to support the management of mangroves

The Department is staffed with technical officers in the following areas:

- Project Management
- Engineering
- Forestry
- GIS

While there is need for continuous capacity building to increase knowledge and skills of technical staff, the current team has implemented a number of successful restoration projects.

Availability of adequate funding to organize mangrove conservation activities

Mangrove restoration activities are planned and budgeted based yearly budget cycle. Funding is received from Government of Guyana accounts (Current and Capital programme). Potential funding opportunities are available through grant/project funding from organizations such as Global Environment Facility (GEF), Green Climate Fund (GCF), WWF, EFN Restoration Grant. NAREI has received funding from WWF, EFN and, EPA and CI-G has received funding from GEF for projects targeting mangrove research and restoration.

Institutional linkages to support mangrove management

NAREI collaborates with the following institutions on mangrove management, particularly with regards to issues on enforcement of legislation that protects mangroves:

- Guyana Forestry Commission
- Environmental Protection Agency
- Ministry of Public Infrastructure, Sea and River Defence Division

GFC and NAREI recently signed a Memorandum of Understanding (MoU) for sharing imagery in support of mangrove cover analysis (Modalities on the Use and Sharing of the MRVS Spatial Data). Ministry of Public Works, Ministry of Natural Resources, and Ministry of Agriculture signed a MoU

on Integrated Coastal Zone Management Dec 2014. This MoU provides for parties to collaborate, coordinate activities and jointly develop and implement programmes to improve ICZM.

Given that mangrove management is an integral aspect of an overall program for coastal zone management, the Coastal and Marine Management Committee established under the EPA should provide an ideal mechanism that allow agencies to work together to address mangrove related issues. The CMMC brought together all agencies that have a mandate with regards to coastal zone management. The committee however did not meet since its inception meeting early January 2019.

Existence of mangrove management plan

The National Mangrove Management Action Plan guides restoration activities but the plan expired in 2012. The intention is to have the plan updated.

Training opportunities for staff on mangrove management

Training is provided where opportunities exist to build staff capacity in mangrove management.

Plans for involvement in mangrove management

The Agency intends to:

- Development of an updated National Mangrove Management Action Plan to guide restoration and management and
- Continue research and restoration initiatives

Interview with Representative of the Sea & River Defence Division, Ministry of Infrastructure

Link between mangroves and agencies' strategic objectives

The Division has always advocated for and used mangroves as a natural sea Defence structure/protection.

Availability of technical expertise to support the management of mangroves

There is a deficiency in human resource to support mangrove management. For instance, over the years the Division has lost expertise for monitoring shoreline change. There is dire need for dedicated staff to monitor flood protection and other related programmes. In order to avoid duplication of efforts with NAREI, the Division limits certain activities.

Availability of adequate funding to organize mangrove conservation activities

Funding is usually facilitated by the government. Under the current Caribbean Development Bank (CDB) funded consultancy/project on capacity building for shoreline change and monitoring of shoreline conditions, one of the outputs is the development of a shore zone management system. The Division has also received financial support from the European Union (EU) under the 11th

European Development Fund (EDF) to assist with coastal protection. One of the indicators which is underway is updating the Sea and River Defence Bill. This Bill will embrace Integrated Coastal Zone Management (ICZM).

Institutional linkages to support mangrove management

While the Division provides technical support to NAREI, it actively collaborates with CI and OCC. Agencies can work together in the following ways to address mangrove management issues:

- a) Collaborating at the policy framework level to provide technical support especially where there is a lack of implementation of mangrove conservation activities.
- b) Boards (e.g. the Sea and River Defence Board) that could ensure that greater effort is placed on achieving the objectives set out in the policies and Memoranda of Understanding (MoU).
- c) Devise a formal arrangement/system for updating data/information on the depletion of mangroves countrywide as well as consistently sharing/transferring data on mangrove
- d) Facilitating occasional visits to sites
- e) Organize regular meetings to discuss the depletion of mangroves and measures that should be taken before destruction occurs. A point of reference the Mahaicony sea defense which was recently damaged.
- f) Implementing the recommendations on studies done on mangrove

Existence of mangrove management plan

No specific mangrove management plan exists but the Ministry of Infrastructure has a detailed plan under which mangroves and flood protection fall. The division has MoU with NAREI detailing collaboration between the Ministry of Agriculture (NAREI and NDIA) and the Sea & River Defense Division.

Training opportunities for staff on mangrove management

Training has not been done for many years. The most recent training exercise was in 2011 when the 9th EDF programme was implemented. Currently, the focus of the Division is on flood protection and hard engineering infrastructure.

Plans for involvement in mangrove management

The Sea & River Defense Board is discussing the establishment of a department focusing on research, advancing collaboration, analysis of data, and reporting based on policy directives.

Interview with Representative of the Guyana Forestry Commission (GFC)

Link between mangroves and agencies' strategic objectives

Mangroves are considered under the agency's strategic objective. Guyana's current National Forest Policy and Plan was revised in 2018 and it highlights mangrove as part of its afforestation and reforestation efforts. This new Policy and Plan focuses heavily on forest ecology and conservation as opposed to the previous plans, which focused on timber harvesting. In the current policy, mangrove is included under Specific Objective 2 (conserving and protecting the forest), specifically under Goal 2, which addresses preventative and restorative measures for better forest health (See National Forest Policy, 2018, p. 24).

Availability of technical expertise to support the management of mangroves

The agency does not have adequate technical expertise to support mangrove management. The Mangrove Action Committee (MAC) that falls under the umbrella of the Ministry of Agriculture usually carries out mangrove management. GFC's role in mangrove management is simply because it is a forest type in the national vegetation classification, and it needs to be monitored from temporally. As such, GFC's role in its management is more akin to supporting MAC. At GFC, there is very little in-house skill to manage mangroves.

Availability of adequate funding to organize mangrove conservation activities

There is no fund allocated towards the support mangrove conservation activities. The GFC has commenced the implementation of its Policy and Plan. However, the Commission is currently experiencing financial difficulties. Additionally, the National Plantation Strategy, which includes mangroves, is yet to be drafted.

Most of the Commission's funds are directed to research and they are derived from the revenue it generates or from projects.

Institutional linkages to support mangrove management

GFC works in collaboration with the main agencies that work with mangroves. This includes NAREI, Environmental Protection Agency (EPA), the Sea and River Defence Division of the Ministry of Public Infrastructure (MoPI), and Guyana Lands and Surveys Commission (GLSC).

There exists a collaboration but there is overlap in mandates of some agencies. To address this issue, there needs to be a clear role for each of the participating agencies. Additionally, it is better for one entity to be entrusted with the overall responsibility for managing mangroves while the other agencies provide support.

Existence of mangrove management plan

There is no mangrove management plan but the National Forest Policy has identified it as a priority area. The National Forest Plan identifies it to be included as part of the Forest Plantation Strategy.

Training opportunities for staff on mangrove management

Training opportunities are provided to a limited extent. The GFC does not currently manage mangrove, as

this is done by the Ministry of Agriculture. However, should there be a large clearing of it, the GFC gets involved in an effort to address the issue of deforestation and degradation. A Code of Practice was developed by the GFC which is used to guide the GFC's intervention in encroachment or harvesting in this forest type.

Plans for involvement in mangrove management

The Commission's Plan is to take steps to restore and promote sustainable management of mangrove forest as outlined in the revised National Plan and Policy.

Interview with Representative of the Department of Environment (DoE)

Link between mangroves and agencies' strategic objectives

Mangroves are not specifically considered part of the mandate of the DoE. However, under the DoE's strategic objectives 1. Inter-Sectoral integration and harmonization of environmental management and Environmental Governance, it can be considered. Mangroves are protected under the Forest Act. Work pertaining to mangroves falls under the responsibility of the GFC, GWCMC and the Mangrove Management Unit-NAREI.

The GSDS-Vision 2040, which is Guyana's developmental plan for the next 20 years, provides the framework for the management and conservation of mangroves. As indicated in the GSDS:

"A fundamental principle of the Vision 2040 development agenda is the recognition of the role that nature plays in economic and social development. To this end, Guyana's development promotes consideration of "green infrastructure", that is, use of ecosystems and their natural functions e.g. coastal protection systems and wetlands and mangrove forests that trap sediments and dissipate wave energy. Natural ecosystems must be understood and valued for the services they provide and incorporated into spatial and economic planning"

Mangroves are covered under Development Objective E: Resilient Infrastructure, Green Towns and Urban Public Spaces of the GSDS. Specifically, the policy recommendation under this development object is the Protection and/or restoration of mangrove areas.

The DoE has responsibility for the implementation of the GSDS.

Availability of technical expertise to support the management of mangroves

Limited skills reside in the Department.

Availability of adequate funding to organize mangrove conservation activities

At present, there is no financial resource available for such activities. However, the DoE can provide technical support for organizing mangrove conservation activities. Not funding is usually received for those activities. External sources that provide funding opportunities for mangroves include Global Environment Facility (GEF), EU, GEF Small Grants Programme, CI, WWF, UNDP, and UNEP.

Institutional linkages to support mangrove management

Institutional linkages exist with the EPA, PAC, DoE, GWCMC, GFC, and the Ministry of Public Infrastructure but these have to be strengthened.

The linkages can be strengthened by the following:

- a) Strengthened coordinated and joint action between key agencies to ensure evidence-based decision making.
- b) A review or harmonisation of associated legislation and policies.
- c) Development of a data sharing policy. The GSDS provides the policy directive for action in this respect.

Existence of mangrove management plan

There is no mangrove management plan

Training opportunities for staff on mangrove management

There are no training opportunities for staff.

Plans for involvement in mangrove management

The DoE is engaged internally in discussion for the development of an ICZM Unit within the DoE.

Interview with Representative of the Environmental Protection Agency (EPA)

Link between mangroves and agencies' strategic objectives

There are links between mangroves and EPA's strategic objectives, but partially. The Agency does not have oversight for mangrove management. The legislative responsibility for mangroves rests with the Guyana Forestry Commission in accordance with Part I, Interpretation- 'forest', Forest Act, No. 6, 2009, Laws of Guyana. ii. Officially, the National Agriculture Research Extension Institute (NAREI) – Mangrove Department coordinates all mangrove restoration related activities in collaboration with the Agency where relevant. iii. Closely related to Mangrove systems, particularly the coastal ecosystems/wetlands, the Agency has within its purview/functions the coordinating responsibility for Integrated Coastal Zone Management Programme in accordance with Part II, section 4 (1)(f) as well as section 4 (2)(f) for developmental purposes.

The Agency's consideration for mangroves is all encompassing. The Agency is currently seeking to revive the ICZM programme through the reestablishment of a Coastal and Marine Management Committee (CMMC). To date, a Terms of Reference (ToR) for the committee was developed for review by all stakeholder Agencies. An inception meeting of the committee was held earlier this year. Discussion on the way forward is still ongoing at the level of the Agency.

Availability of technical expertise to support the management of mangroves

The Agency does not have a full complement of technical expertise to support mangrove management. It has Lands Resources Management as well as a Coastal and Marine Resources (CMR) Programmes and it liaises with the GFC from time to time on matters related to forestry, while Officers from the CMR liaise with the NAREI- Mangrove Department. The following are capacity (skills) gaps to support management of mangrove:

1. Coastal and Marine biologist
2. Strategic Assessment for Coastal and Marine Management

Availability of adequate funding to organize mangrove conservation activities

APA does not have adequate funding to organize mangrove conservation activities. It normally collaborates with the NAREI – Mangrove Department regarding all mangrove related activities – conservation and/or developmental. Funding is not specifically provided for mangrove management. Evidently because of the Agency's role in environmental management, primarily through the Authorizations process, support in this area is achieved. EPA is unaware of other funding opportunities to support mangrove projects.

Institutional linkages to support mangrove management

There are opportunities for collaboration for mangrove management. The proposed CMMC seeks to enhance the collaborative networks that currently exist. Government stakeholders – NAREI, GFC, Department of Fisheries, Guyana Lands and Surveys Commission, Protected Areas Commission, Civil Society Organizations – World Wildlife Fund- Guyana Office, Conservation International- Guyana, Guyana Marine Conservation Society.

Agencies can work together to address mangrove management issues through the following::

1. Collaboration can be fostered through a legally mandated/organized committee, such as the proposed CMMC
2. Collaboration for management exists through the Agency's Environmental Authorizations process. Some of these activities include, infrastructure, tourism, agricultural, industrial, forestry development activities and emerging oil and gas sector.
3. There also exists a National Biodiversity Research Information System (NBRIS), where collaboration is also fostered for the processing and cataloging for biodiversity research conducted in Guyana (concentrated in the interior regions). It is envisioned that with the growing oil and gas sector, more request and processing of research in the coastal area may intensify.
4. Through the processes above, there is scope for modeling and improvement of environmental management best practices. Moving in that direction will require some level of capacity building that enables the Agency to achieve its goal in this regard. This remains a work in progress, under the current leadership, an ongoing towards reevaluation and reforming of the Agency.

Existence of mangrove management plan

A mangrove management plan is not required by the Agency

Training opportunities for staff on mangrove management

Where applicable, the job training opportunities are facilitated through collaboration with the NAREI and WWF.

Plans for involvement in mangrove management

The Agency can still improve by strengthen collaboration with stakeholders that do hold the responsibility for mangrove management. - For continued enhancement of the Environmental Authorizations process

with regards to developmental projects and - Possibly towards current and future policies that necessitates considerations for mangroves.

Interview with Representative of the Protected Areas Commission (PAC)

Link between mangroves and agencies' strategic objectives

Mangroves are not specifically linked to the strategic objectives of the PAC but they are integrated in the overall management programme of the Commission. For example, the Shell Beach Protected Area, which falls under the jurisdiction of the PAC, has the largest stretch of mangroves.

Availability of technical expertise to support the management of mangroves

The Commission does not have adequate technical expertise to support mangrove management. It is still involved in capacity building for its staff.

Availability of adequate funding to organize mangrove conservation activities

Funds are not available specifically for mangrove conservation activities. WWF assists in providing financial for monitoring marine turtle.

Institutional linkages to support mangrove management

The PAC worked with the mangrove project and made a presentation on PA system at a Workshop organized for the mangrove project. For mangrove management to be effective, it is important that the agencies share their expertise and experiences, dedicate resources towards addressing the mangrove management issues, and facilitate research on specific areas for which there is information gap. Working groups need to be established and there must be a mechanism in place to ensure that permits for development activities along the coast adhere to the regulations and standards. There needs to be opportunities to learn from the successful initiatives undertaken in other countries, especially as it relates to combating erosion.

Existence of mangrove management plan

The Commission has no mangrove management plan.

Training opportunities for staff on mangrove management

No training is undertaken.

Plans for involvement in mangrove management

Involvement in mangrove management is not at the top of the list of priorities for the Commission at this time

Interview with Representatives of the Guyana Lands and Surveys Commission (GLSC)

Link between mangroves and agencies' strategic objectives

Mangrove management is not directly linked to the GLSC's strategic objectives but as the Focal Point for the UNCCD, the Commission is obligated to manage land and its resources. For the UNCCD, mangroves are considered under the Strategic Objectives 1: To improve the condition of affected ecosystems, combat desertification/land degradation, promote sustainable land management and contribute to land degradation neutrality, 3: To mitigate, adapt to, and manage the effects of drought in order to enhance resilience of vulnerable populations and ecosystems, and 4: To generate global environmental benefits through effective implementation of the UNCCD.

Availability of technical expertise to support the management of mangroves

The Commission has approximately ten (10) staff who can support mangrove management activities.

Availability of adequate funding to organize mangrove conservation activities

Adequate funding is not available to support mangrove management activities since it is not a budgeted line item. However, the Commission can provide financial support for restoration efforts, including mangroves, through the SLDM/LDNTSP project. This project supported the procurement of 15,000 red and black mangrove seedlings and has funds to support three (3) years of restoration activities. GEF Small Grants facility is a possible source of funding for mangrove conservation activities.

Institutional linkages to support mangrove management

Institutional linkages exist with NAREI, DoE, EPA, CI, and WWF-Guyana. In order to effectively address mangrove management issues, working groups can be established, relevant data should be shared among institutions using a national platform and used to inform mangrove project activities, and establish a statutory mangrove governance body.

Existence of mangrove management plan

No mangrove management plan exists.

Training opportunities for staff on mangrove management

GIS training is done but not specifically for mangrove management. Staff are usually invited to participate in training sessions hosted by WWF-Guyana and CI.

Plans for involvement in mangrove management

Mangrove is included in the Land Degradation Neutrality - Target Setting Programme (LDN-TSP). Through the Sustainable Land Development and Management (SLDM) project, the land policy will be prepared. This would facilitate zoning and land use planning using an integrated approach to determine change in land use and mangrove coverage. The Commission recommends updating of the Mangrove Action Plan and implementation of the recommendations outlined in studies that have been conducted.

Interview with Representative of the Ministry of Indigenous Peoples' Affairs (MoIP)

Link between mangroves and agencies' strategic objectives

Mangroves are not explicitly identified in strategic objectives of any other entity. However, it is considered in the activities undertaken. For example, the protection of the natural environment, of which mangroves are a component, is of interest to all of the entities. For example, the coastal ecosystem at Shell Beach – Region 1 has mangroves which are protected indirectly from destruction since the site is designated a Protected Area. The mangrove forest is seen as a protector of coastal soils and used for handicraft, among other uses. The Ministry of Indigenous Peoples' Affairs is committed to exercising its power to protect mangroves.

Availability of technical expertise to support the management of mangroves

The Ministry do not have technical expertise to support mangrove management.

Availability of adequate funding to organize mangrove conservation activities

No funds are available to organize mangrove conservation activities. The Ministry does not receive financial assistance from any source to support mangrove conservation activities. However, there are opportunities international and locally for financial assistance for mangrove conservation. These include GCF, World Bank, and WWF.

Institutional linkages to support mangrove management

There is collaboration with CI and WWF on biodiversity issues but not specifically on mangroves. In relation to institutional collaboration, the Ministry of Natural Resources (MNR) needs to collaborate with the Guyana marine Conservation Society (GMCS) in their quest to manage the mangroves in Region1.

Existence of mangrove management plan

There is no mangrove management plan.

Training opportunities for staff on mangrove management

No training opportunities for mangrove are provided to staff of the Ministry.

Plans for involvement in mangrove management

The Ministry intends to:

- a) become actively involved in education and awareness programmes for mangrove management
- b) collaborate with other agencies for the revise/develop a management plan
- c) Support the formation of Village Mangrove Action Committees (VMACs)

Interview with Representative of the Office of Climate Change (OCC)

Link between mangroves and agencies' strategic objectives

Mangrove fit into the Coastal Resilience and Climate Change Adaptation aspect as specified in the GSDS. Mangroves are strongly recommended for resilience and ecosystem-based adaptation and they are part of the solution to build resilience on the coast. The OCC's work is focused mainly on policy.

Availability of technical expertise to support the management of mangroves

There is a lack of adequate technical expertise at the OCC. Hence, limited capacity, technology, and country-specific research compromise its ability to respond to mangrove matters. Recently, one officer has been recruited to work along with NAREI.

Availability of adequate funding to organize mangrove conservation activities

Previously, funding was available through the GCAA+ (EU adaptation project). Funding of mangrove activities is not a budgeted line item and as such it is inadequate. Under the international financial space, GCF and GEF provide funding to support mangrove management activities. Funding could be acquired through bilateral discourses.

Institutional linkages to support mangrove management

The Office collaborates mainly with NAREI, S&RDD, DoE, MoA. However, there needs to be collaboration to establish clear policies on the role of specific stakeholders. There seems to be a lack of communication between the NDIA and the S&RDD regarding the design and placement of sea defense systems. Consultations become necessary when development works are to be undertaken, for example, the NDIA places sluices in areas that undermine mangrove colonization. The Fisheries Department also needs to manage their activities since they undermine the sluices and mangroves. There is need for greater visibility on the importance of mangrove as well as recent incidents at locations, such as Mahaicony. Overall, the approach to mangrove management from an institutional perspective could be better structured thereby consolidating the fragmented approach being used. Studies on sediment shifts that compromise mangrove colonization and restoration efforts need to inform policy. The focus on project-based arrangement needs to be shifted to more organized institutional arrangements. The focus should be on the macro and multilateral picture when dealing with mangroves.

Existence of mangrove management plan

There is no mangrove management plan.

Training opportunities for staff on mangrove management

General training opportunities are provided to staff.

Plans for involvement in mangrove management

The Third National Communications, which is currently being prepared, would identify specific recommendations for mangrove management. The National Adaptation Plan for the CRSAP would also provide guidance on specific actions that could be taken. The *Acts* and statutes must clearly state the roles and responsibilities of the key actors;

Interview with Representative of the Faculty of Earth & Environmental Sciences (FEES), University of Guyana (UG)

Link between mangroves and agencies' strategic objectives

Mangroves are not explicitly stated in the strategic objectives of the Faculty of Earth and Environmental Sciences (FEES). However, the Faculty is mandated to educate citizens about the environment and to engage in research on spatial and environmental issues, including mangrove management. Both staff and students have undertaken research on mangroves.

Availability of technical expertise to support the management of mangroves

Adequate and relevant technical skills to support mangrove management exist in the Faculty. There are staff with expertise in forestry, agriculture, natural resources management, ecological economics, physical geography, and hydrology, among other critical areas to support mangrove management.

Availability of adequate funding to organize mangrove conservation activities

Funding for research and other activities to support mangrove conservation is not a budgeted line item. However, consultancies provide financial resources for staff and students to be directly engage in mangrove conservation activities. Funding is received for specific activities through collaboration with agencies/organizations but not has been allocated for mangrove conservation activities. GCF, EU, FOA, WWF, and CI provide funding for mangrove conservation activities.

Institutional linkages to support mangrove management

The Faculty has both formal and informal linkages with the Mangrove Management Unit (at NAREI), the Faculty of Agriculture and Forestry (UG), and the Guyana Forestry Commission.

All responsible or relevant agencies can work together to address mangrove management issues by promoting a bottom-up policies and plans and by involving the users of the resource more often since most of the issues stem from how the mangroves is used. This will also enable policies and plans to be more streamlined and practical rather than contradictory.

Existence of mangrove management plan

There is no such plan existing at FEES. However, the Faculty can provide support to other agencies that wish to formulate such a plan.

Training opportunities for staff on mangrove management

No training for staff is undertaken but this can be streamlines once funding is acquired to do so. Staff, inn their individual capacity, usually seek opportunities to gain knowledge and skills in mangrove conservation issues, including ecology and rehabilitation, among others.

Plans for involvement in mangrove management

There is no formal plan to improve FEES' involvement. However, with the availability of funding, it is possible for the Faculty to provide support or training to entities that are involved in mangrove management.

Interview with Representative of the National Toshihos Council (NTC)

Link between mangroves and agencies' strategic objectives

The NTC is responsible for all indigenous lands rich in biodiversity, e.g. Shell Beach. Despite the fact that activities related to mangrove conservation and management are not specifically identified in its objectives or currently undertaken by the Council, the Council takes seriously any work that involves biodiversity.

Availability of technical expertise to support the management of mangroves

There is a paucity of expertise to support mangrove management. However, at least one staff has working knowledge of mangrove conservation based on involvement with the wider biodiversity conservation experience.

Availability of adequate funding to organize mangrove conservation activities

The Council receives subvention from the government for the execution of mandate of the secretariat, but no fund is allocated to mangrove conservation activities. The EU FLEGT Facility assists in providing funds in some cases for forest conservation. Another possible funding agency is World Bank (via **Forest Carbon Partnership Facility (FCPF)**).

Institutional linkages to support mangrove management

There are institutional linkages with CI, WWF, and government agencies but not for the purpose of mangrove management. To support mangrove management, collaboration among the conservation agencies and leaders of the local is imperative. It is necessary for the local community to benefit from capacity building on the technicality involved in mangrove management.

Existence of mangrove management plan

There is no mangrove management plan existing. Training opportunities for staff on mangrove management
No staff has ever received formal training on mangrove management. However, one staff attended a Workshop on mangrove and coastline protection hosted by ExxonMobil.

Plans for involvement in mangrove management

No plan exists for the mangrove management but recent deliberation by the leadership of the Council suggest that a plan might be prepared.

Interview with Representatives of the Guyana Marine Conservation Society (GMCS)

Link between mangroves and agencies' strategic objectives

Mangroves are not specifically identified in the objectives of the organization but they are included in the activities under thematic areas such as 'Public awareness.' Mangroves are included in the ecosystem's services component, especially as it relates to Shell Beach.

Availability of technical expertise to support the management of mangroves

The Society does not have permanent technical staff, but representatives of the Board are experts in various areas relevant to mangrove management. Despite the availability of experts, the lack of adequate equipment (drones, field laptops, and field gears) to monitor mangrove is a major problem.

Availability of adequate funding to organize mangrove conservation activities

There is no dedicated funding for mangrove conservation activities. Funding received for other project activities is indirectly used, for example, for crabwood oil production and for the tanning project in which the red and black mangroves are used. Funding opportunities are available from GCF. With the assistance of the Caribbean Community Climate Change Centre (CCCCC), a Concept Note titled "Integrated Coastal Zone Management with Emphasis on Sustainable Management of Mangrove Forests in Guyana" was prepared (led by GMCS) for a full-size project to be funded by GCF but this has not moved forward.

Institutional linkages to support mangrove management

Institutional linkages exist mainly with PAC, the Sea & River Defence Division, and WWF, CI, and NAREI to a limited extent. Agencies can utilize existing partnerships to promote mangrove activities as well as use the management strategy employed by GMCS.

Existence of mangrove management plan

There is no mangrove management plan.

Training opportunities for staff on mangrove management

GMCS does not provide training opportunities to staff but it capitalizes on those sessions offered in the area of marine environment, which includes mangrove. More recently, the University of Guyana biology students are used to assist with the Shell Beach project.

Plans for involvement in mangrove management

GMCS intends to promote community mangrove monitoring in Region 1 in order to complement the work of NAREI since it has a 30-year presence in marine ecosystem management in this region. The organization also intends to continue its birding tours, funded by GiZ (Deutsche Gesellschaft für Internationale Zusammenarbeit - a German firm) as a livelihood activity, to the Mahaica River and extend its services to Hope Beach.

Interview with Representative of the World Wildlife Fund (WWF) - Guyana

Link between mangroves and the agency's strategic objectives

World Wildlife Fund (WWF) - Guyana Office does not have a specific focus on mangrove management given that NAREI has a project that is committed towards the protection and development of sustainable mangrove forests. However, the Suriname office has a programme focused on raising awareness on the protection and

restoration of mangroves, where they have and continue to engage stakeholders in several activities.

Availability of technical expertise to support the management of mangroves

WWF- Guyana has one Marine Conservation Officer responsible for implementation in our oceans programme and the organization also benefits from and coordinates with the Regional Marine Coordinator who is based in Suriname. Whenever necessary, through our Suriname office, the Guyana Office would engage local mangrove stakeholders in regional activities which build on strengthening of capacities. For example, the most recent initiative (held in 2019) was a 5- day Guianas Regional Mangrove Ecosystems Training Workshop in Suriname.

Availability of adequate funding to organize mangrove conservation activities

There is no dedicated funding for mangrove conservation activities. However, such activities are facilitated through the wider coastal ecosystem's projects.

Institutional linkages to support mangrove management

Whenever necessary, through our Suriname office, the Guyana Office would engage local mangrove stakeholders in regional activities which build on networking and allow for information exchange.

Existence of mangrove management plan

There is no mangrove plan.

Training opportunities for staff on mangrove management

At the local level, partnership is facilitated through projects such as the MSP project titled: Promoting Integrated and Participatory Ocean Governance in Guyana and Suriname: The Eastern Gate to the Caribbean. The primary focus of this is enhancing the management of marine and coastal resources, improving the knowledge of the coastal environment for both Guyana and Suriname, among others. This project is highly premised on participatory approaches and will engage all stakeholders (including those linked to mangroves) during every stage of implementation of the project.

Plans for involvement in mangrove management

There are no plans for mangrove management beyond regional engagements. If the opportunity for new funding to include Guyana arises, the organization would pursue this in partnership with NAREI.

Interview with Representative of the Regional Democratic Council (RDC), Region 6

Link between mangroves and agencies' strategic objectives

Mangroves are not linked to the RDC's strategic objectives. However, it is understood that mangroves are a protected species and measures are in place to protect mangroves. For instance, rangers conduct surveillance and report their findings to the Sea & River Defence Division.

Availability of technical expertise to support the management of mangroves

There is a paucity of technical expertise at the RDC to support mangrove management. The focus of the RDC is on health, education, infrastructure development, engineering services, and regional administration. Mangroves are not one of the areas of focus.

Availability of adequate funding to organize mangrove conservation activities

No funding is available through budgetary allocation. Some international agencies provide funding for mangrove activities but the agencies deal directly with the government, via the Ministry of Agriculture, for instance.

Institutional linkages to support mangrove management

The RDC has representation on some Boards, such as the Ministry of Agriculture and NAREI. There needs to be more engagement and collaboration between the central administration and the region. Therefore, decentralization of mangrove activities is imperative for effective implementation of the activities. It is also necessary to have more widespread education and awareness programmes using mass communication agencies, such as the Guyana Telephone & Telegraph company.

Existence of mangrove management plan

There is no mangrove management plan at the regional level. There was a request for a mangrove committee to be established in the region but this did not materialize.

Training opportunities for staff on mangrove management

Staff members have not been exposed to training on mangrove management. The RDC is willing to have staff participate in training programmes as trainees.

Plans for involvement in mangrove management

The RDC is awaiting opportunities to be part of the national planning team for mangrove management. It was recommended that there be synchronization between the regional plan and the national plan for mangrove management and that mangrove committees be established in the region.

Interview with Representative of the Regional Democratic Council (RDC), Region 3

Link between mangroves and agencies' strategic objectives

Mangroves are not linked to any strategic objective of the RDC. The importance of mangroves is understood but they are not a priority area for the RDC.

Availability of technical expertise to support the management of mangroves

There is a lack of technical expert to support mangrove management at the RDC.

Availability of adequate funding to organize mangrove conservation activities

Funds are not allocated for such activities.

Institutional linkages to support mangrove management

There is no linkage existing between the RDC and other institution/agency for mangrove management. There is need for the establishment of a mangrove organization/central body and branches in Leguan and other areas where mangroves exist. For successful mangrove management, a number of factors need to be considered. These include the quantum of resources required to effectively manage mangroves; allocation of finance in the budget for the region for mangrove activities; seek funding from private firms and individual to support the activities; prove to local communities that mangroves are important. NAREI has only one officer managing mangrove activities in Leguan.

Existence of mangrove management plan

There is no mangrove management plan.

Training opportunities for staff on mangrove management

No training opportunities are provided for staff.

Plans for involvement in mangrove management

The RDC is willing to participate in activities to convince the communities of the positive impact of mangroves on the environment and people.

The current approach to mangrove management needs to be revised and greater emphasis needs to be placed on the involvement of community leaders and undertaking studies/research to inform policy. A comprehensive study is needed to determine why mangroves have been destroyed over the years and the geographical extent to which they can be colonized. At Dauntless in Leguan, dense mangrove stands exist although no artificial sea defense system is located there.

Community leaders, such as the Chairperson of the NDCs, have the legal authority to engage in sea defense protection. The relationship with community members also exists so it is less burdensome to galvanize support for mangrove activities from the communities. The most appropriate way to manage mangroves is to utilize a community-based approach.

Ongoing training provides a constant input of expertise to manage mangroves. To this end, the entire coast should be brought under conservation and protection.