OFFICE OF THE AUDITOR GENERAL

SPECIAL REVIEW REPORT

SUSTAINABLE DEVELOPMENT GOALS 2030 – SEYCHELLES COASTAL MANAGEMENT



Report of the Auditor General

SPECIAL REVIEW REPORT

SUSTAINABLE DEVELOPMENT GOALS 2030 – SEYCHELLES COASTAL MANAGEMENT

Office of the Auditor General
Victoria, Mahe
Republic of Seychelles

Office of the Auditor General

AUDITING FOR SEYCHELLES

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The Honourable Speaker of the National Assembly

In accordance with Section 22 (1) of the Auditor General Act 2010, I have the honour to submit my special review report entitled 'Sustainable Development Goals 2030 - Seychelles Coastal Management' for presentation to the National Assembly.

Following its presentation, the report will be placed on the website of the Office of the Auditor General — http://.www.oag.sc



Gamini Herath
Auditor-General
Office of the Auditor General
Victoria, Republic of Seychelles

Acknowledgements

I wish to record my personal gratitude to members of my staff who sincerely carried out their duties with dedication and devotion despite some constraints. I acknowledge also the assistance and co-operation extended by the accounting officers and the staff of various ministries, departments and statutory bodies involved in this audit. It is with appreciation that I note also the valuable contributions made by the regional partners (AFROSAI-E and GIZ) in realising this report.

Finally, I would like to thank the Finance and Public Accounts Committee (FPAC) of the National Assembly who review my reports and make appropriate recommendations to the Government for remedial action and improvements.

Auditor General's overview

The Auditor General can undertake special purpose audits (reviews/investigations) on his own initiative and/or at request from the President or the National Assembly as provided in the Constitution and the Auditor General Act. A special purpose audit looks at a particular issue, system, function, operation, scheme, project, programme or an organisation, either in isolation or in a transversal, cross-cutting manner. The rule of thumb used for selection of the subject matter is 'does it matter to the public'. The purpose of a special audit is to provide objective information on the particular subject matter to those who seek that information. These reports often result in better decision making and positive differences in public institutions. The positive differences in turn result in better service delivery to the public through efficient public administration and cost savings through sound finance management, in other words, better value for the money. These processes help promote good governance, transparency and accountability.

This special review on the Coastal Management of the Seychelles in line with the Sustainable Development Goals (SDGs) 2030 was part of a project initiated by the African Organization of English Speaking Supreme Audit Institutions (AFROSAI-E), an organization that regroups all English Speaking Supreme Audit Institution on the African Continent. The aim of the project was to identify and bring forth the risk and challenges faced by coastal African nations to effectively manage their coastal areas. A total of six countries participated including the Seychelles and the end product is expected to be a joint report that will highlight the issues identified by these coastal nations.

The review focused on five key areas, namely, Overall Coastal Management, Climate Change, Coastal pollution and Degradation, Coastal Monitoring and Enforcement and Overfishing. Several government ministries, agencies and authorities were involved in this process. We are of the view that to attain the SDG goals and targets effectively, they must be in line with the national policies and strategic documents that a country follows. It was noted that integration of the SDGs into the national plans and polices were well underway as per the result of the RIA assessment conducted in 2017 where 131 of the 143 targets relevant to the Seychelles were mapped into national documents. However, there was a need to address the 12 remaining targets as well as to update and monitor the implementation of these national plans. The review also highlighted the need for more efforts to sensitize the public about the SDGs.

The review noted that although there are various Policies, Acts and Regulations that governs the management of the coastal zones some were outdated and needs revision. Most importantly, however, the review noted that Seychelles does not have an Integrated Coastal Zone Management (ICZM) plan which is vital for the sustainable development and management of the coastal zone given the vulnerability of the islands coastal areas. Like other Small Developing Island States, the review identified that Climate Change is a significant threat to our coastal areas leading to coastal degradation amongst other calamity that will have significant impact on our coastline and economy. It was noted that Government has taken proactive steps to address climate change through the development of policies and strategies such as switching from petroleum to renewable energy sources to reduce its Green House Gas emission. However, Audit is of the view that the target for the achievement of the 5% and 15%

share of renewable energy by 2020 and 2030 respectively seems to be difficult to achieve unless extra efforts are made.

Pollution along the coast comes from various inland and offshore activities. Audit found that MEECC were not maintaining proper records of pollution cases. Further, the coastal adaptation projects being implemented to preserve the coastal areas undergoing erosion were mostly reactive and predominantly by the use of hard engineering. There was a need for better planning and management of the various coastal projects whilst abiding to the Procurement Regulations.

In regards to coastal monitoring the review identified that there were various Authorities that conducted the same. The review focused on illegal fishing and noted that there were synergies between SFA and the Coast Guard to apprehend vessels that conduct illegal fishing in our EEZ, however, the need for SFA to maintain proper records on the expenditure they incur on these vessels once apprehended was highlighted and also the need for these and other environmental crimes to be dealt with in a timely manner by relevant Authorities. The fishing industry is key to our economy and the review highlighted the need for better management of both the artisanal and industrial fisheries through the implementation and monitoring of the Fisheries Management Plan, Monitoring and Enforcement of the lobster fisheries as per the Regulation, as well as the need to effectively monitor the Yellow fin landings and transshipment to ensure compliance with IOTC regulation 17/01 towards the preservation of the species.

I hope that this report will be of some use to the National Assembly and policy makers to understand and appreciate the specific national activities of the government related to Coastal Management and achievement of the SDGs 2030, and their consequential impact on the communities across Seychelles.



Gamini Herath
Auditor General

List of Acronyms and Abbreviations

AFROSAI-E-	African Organization of English-speaking Supreme Audit Institutions
BCD-	Biodiversity and Conservation and Management Division
CBD-	Convention on Biological Diversity
CMS-	Convention on Migratory Species
COP-	Conferences of Parties
CPCs-	Contracting and Non-contracting Parties
DFA-	Department of Foreign Affairs
DTEP-	Department of Trade and Economic Planning
EEZ-	Exclusive Economic Zone
EIA-	Environment Impact Assessment Study
EPA-	Environment Protection Act
ETF-	Environment Trust Fund
FADs-	Fishing Aggregated Devices
FAO-	Food and Agriculture Organization
GHGs-	Green House Gases
GoS-	Government of Seychelles
HLPF-	High-level Political Forum
ICZM-	Integrated Coastal Zone Management
INDC-	Intended Nationally Determined Contribution
IOTC-	Indian Ocean Tuna Commission
IPCC-	International Panel on Climate Change
IUU-	Illegal, Unreported and Unregulated
LWMA-	Land Waste Management Agency
MDAs-	Ministries, Department and Agencies
MDGs-	Millennium Development Goals
MEAs-	Multilateral Environment Agreements
MEECC-	Ministry of Environment, Energy and Climate Change
MoFTEP-	Ministry of Finance, Trade and Economic Planning
MPAs-	Marine Protected Areas
MSP-	Marine Spatial Planning
NGOs-	Non-Governmental Organisations
NM-	Nautical Miles
NOA-	Notice of Acceptance
OAG-	Office of the Auditor General
PECO-	Public Education and Community Outreach
PCU-	Project Coordination Unit
PSMA-	Port State Measure Agreement
PUC-	Public Utilities Corporation
RIA-	Rapid Integrated Assessment
S4S-	Sustainability for Seychelles

SCG-	Seychelles Coast Guard
SSDS-	Seychelles Sustainable Development Strategy
SEC-	Seychelles Energy Commission
SFA-	Seychelles Fishing Authority
SIDS-	Small Island Developing States
SIT-	Seychelles Institute of Technology
SNPA-	Seychelles National Parks Authority
SPA-	Seychelles Planning Authority
TNC-	The Nature Conservancy
UN-	United Nations
UNDP-	United Nations Development Programme
UNEP-	United Nations Environment Program
UNESCO-	United Nation Education, Scientific and Cultural Organisation
UNFCCC-	United Nations Framework Convention on Climate Change
VNR-	Voluntary National Review

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Executive Summary

1. Seychelles is a Small Island Developing State (SIDS) located in the Western Indian Ocean with a large Exclusive Economic Zone (EEZ) and a wealth of marine resources that the islands depends on for its socio-economic growth and development. The islands have limited landmass and due to its topography it is considered in its entirety as coastal zones.

2. The majority of the inhabitants reside along the narrow coastal plateau of its three main islands and it is there that the majority of the socio-economic activities take place. They exert significant pressure on the area leading to pollution, over-exploitation of fish stocks and coastal degradation which adversely affect the coastal areas, ocean and marine ecosystems.

3. These issues are not unique to the Seychelles and has been found in many other Coastal African nations and research has shown that effective coastal management can effectively address them. Such is the objective of this joint international Audit spearheaded by the AFROSAI-E, an organization that regroups English-speaking Supreme Audit Institutions (SAIs) in Africa.

4. There are many strategies used in coastal management, these included legislative framework as well as adherence to international commitments. The main focus of this Audit was to evaluate the compliance of participating countries to their national legislations and their attainment of the Sustainable Development Goals (SDGs) 2030 related to coastal management.

5. The report evaluates the five critical areas that impact on coastal management as identified by AFROSAI-E in Seychelles. These were: overall coastal management, climate change, coastal pollution and degradation, coastal monitoring and enforcement and overfishing.

6. The main findings and recommendations of this Audit are summarized below:

Key Findings

1. Good mainstreaming of SDGs in the National Policies and Plans

To effectively attain the SDG goals and targets, they must be in line with the national policies and strategic documents that a country follows. In 2017, the RIA assessment, a tool that helps countries gauge their readiness to the SDGs, was utilized to verify the mainstreaming of the SDGs in 20 national documents. It was found that Seychelles had a high degree of mainstreaming of the SDGs in these documents, given that of the 143 targets that was relevant to the Seychelles, 92 percent were mapped in the 20 documents reviewed. However, the assessment tool also indicated that 12 targets across 9 SDGs were not mapped or were not sufficiently covered in the 20 national documents reviewed.

2. Seychelles does not have an Integrated Coastal Zone Management Plan as per the requirements of the EPA

An Integrated Coastal Management (ICZM) Plan is a document that provides an integrated approach that considers all aspects of the coastal zone in an attempt to achieve its sustainability. It will contribute to sustainable development of coastal zones by the application of an approach that respects the limits of natural resources and ecosystems. The plan is crucial to the Seychelles given that the country is dependent on its coastal resources and the area is vulnerable to various threats that can lead to its degradation and over-exploitation. The development of the plan is inscribed in the Environment Protection Act (EPA) as well as the Seychelles Sustainable Development Strategy (SSDS) 2012- 2020. Audit requested a copy of the ICZM plan from MEECC and was informed that the Ministry has made several attempts in the past to conduct the required survey and complete the ICZM plan, but they have been unsuccessful in completing the aforementioned survey due to various constraints, particularly related to manpower. Evidence of these unfinished works were also unavailable for Audit to inspect.

3. Seychelles is switching from petroleum based to renewable energy

The Vulnerability Resilience Profile of the Seychelles raised concerns over the energy security of the country, given the high dependence on petroleum based energy sources that are not only unsustainable, but adversely contribute to climate change.

Petroleum based products are sources of Green House Gases (GHGs) that contribute to Climate Change and although Seychelles is not a significant emitter of GHGs, the country is heavily reliant of these products for its energy supply. As per the requirement of the Seychelles Energy Policy 2010 - 2030, Seychelles is working towards reducing this dependence and achieving 100 percent use of renewable energy in the long-term, starting with 5 percent by 2020 and 15 percent by 2030. Audit noted that through various renewable energy projects; wind turbine farms, Rooftop Photovoltaic rebate scheme and LED bulb exchange amounting more than R 355 million Seychelles has reached 2.5 percent of its renewable energy target as at 2017.

4. Poor maintenance of records relating to pollution cases

The Standard and Enforcement Section (SES) of the MEECC has the powers to enforce the EPA, address pollution related offences, and follow-up on complaints put forth by the public and other entities. Through review of 51 case files at the Section, Audit noted that the section was not properly maintaining records in regards to complaints and pollution cases. It was noted that 51% of the case files selected from the log book did not have an investigation form or any other supporting documents. Further, all files related to pollution cases are paid to the ETF and expenses relating to the cleaning of the same are also incurred from the fund. However, Audit only received details of fines relating to oil pollution.

5. Seychelles may not be prepared to deal with a major oil spill incident

The outer islands of the Seychelles is at close proximity to a major international transportation route therefore at risk of encountering a major oil spill. Such an incident will be disastrous to the environment and marine ecosystem. Through review of plans in place to address such a calamity, Audit noted that Seychelles may not be prepared, given that the Seychelles National Oil spill Contingency Plan (NOSCP) which coordinates the activities taken by various agencies to address such a disaster is outdated and there is a need for its revision. Further the equipment designated for oil spill management is minimal and some even outdated and non-functional.

6. Predominant use of hard engineering practices to address coastal degradation

Coastal erosion is one of the main cause of coastal degradation in Seychelles and it affects most coastlines of the islands. The situation is exacerbating with the impact of climate change as sea level rise and extreme weather conditions increases. Through review of 10 coastal projects conducted by the Climate Adaptation and Mitigation Section (CAMS) of the MEECC for the period 2015 to 2017, Audit noted that hard engineering practices such as rock dumping and rock armoring was primarily being used as mitigation measures in nine of these projects. It is of Audit view that MEECC is being reactive to address coastal degradation hence they have no other option but to use hard engineering practices in emergency cases when damage occurs.

7. Large variation between contract and actual cost of coastal projects

The La Passe Rock armoring and beach nourishment project was one of the ten projects conducted by CAMS for the period 2015 to 2017. Through review of the project file, Audit noted that although the contract of the project was awarded at R 674, 130 in 2015, at the end of the project in 2017 the total cost incurred was R 2,086,905, which was a 210 percent increase from the original price.

8. SFA is not keeping proper records related to illegal fishing

Illegal fishing is a significant threat to fish stock and contributes to overfishing. The Seychelles Fishing Authority (SFA) and the Seychelles Coast Guard (SCG) conduct joint patrols to apprehend and prosecute these offenders. Audit noted that of the eight cases of illegal fishing recorded by SFA, several shortcomings were identified in the authority's maintenance of documents in regards to these cases. For example, the apprehension of these vessels were done through coordination between SCG and SFA, however, Audit noted that not all cases reported by SCG were found in SFA records, indicating incompleteness of the SFA records. Audit also noted that expenditure related records were not complete and recovery of the expenses incurred which are required to be recovered as per rules, is not ensured.

9. Delay in the implementation of fisheries management plans

Seychelles fisheries are categorized into four; artisanal, semi-industrial long line fishery, industrial long line fishery and industrial foreign-owned purse seiners. Audit noted that artisanal and semi-industrial long line fishery that contribute to Seychelles' food security are conducted on the Mahe Plateau that surround the main islands of the Seychelles. To prevent over-exploitation of the plateau and for its sustainability two fisheries co-management plans; the "Mahe Plateau Demersal Trap and Line Fishery Co-management Plan" and the "Fisheries Co-management Plan for Praslin/La Digue Artisanal Trap and Line Fishery" have been drafted in 2015 and 2013 respectively. Audit however noted that both plans are yet to be finalised, which is causing delay in their implementation.

10. Lobster license condition is not being enforced.

Lobster fishery is regulated under Section 19 of the Fisheries Act (Subsidiary Legislation), 2010 and it follows a limited licensing system where few licenses are given during open season with set conditions to follow, amongst which is the prohibition to catch lobsters less than 7.5 centimeters. This clause is also one of the license conditions that fishers agree to and they also deposit a compliance bond of R 5000 when applying for the license. Review of reports from lobster season 2015-2016 and 2016-2017 were done by Audit and it was noted that more than 40% of the females caught that were sampled were under the regulated size. Following the 2015–2016 season Audit noted that more monitoring was recommended in the *Lobster Fishery Note 2016* to reduce the number of undersized lobsters caught but this was not followed through. Furthermore all 15 fishers that gained a license in the 2016-2017 season were refunded their bond even though undersize lobsters were caught and therefore in breach of their license conditions. It is to be noted that capturing of undersized lobsters, in particular females, can have a significant impact on the reproduction of the species and the sustainability of lobster fishery.

Recommendations

1. The National Oversight Committee should address the gaps identified by the RIA assessment. Further the actions of the various policies and strategic documents used in the RIA assessment should be followed through, implemented and closely monitored by the committee to ensure that they meet their intended objectives, targets and in the process attain the SDGs.
2. The DFA in collaboration with the National Oversight Committee should identify ways to spread awareness on the SDGs and distribute the SDG creole version booklet to the masses as per the booklet's intended objectives.
3. MEECC should ensure that the reporting requirements to the MEA's are abided to.
4. MEECC should expedite the exercise of reviewing and updating its legislations.
5. Considering the high importance of the ICZM plan which has been brought out in various documents including EPA, MEECC should develop the Integrated Coastal Management plan.
6. MEECC should ensure that the strategies are implemented and attain their respective objectives.
7. The PECO should document the educational campaigns/programs it is involved in, so that the impact of these programs could be evaluated and necessary corrective mid-course actions are taken and to ensure that their objectives are met.
8. MEECC should take measures to ensure that the renewable energy target of 5% and 15% by 2020 and 2030 respectively is achieved.
9. The Government of Seychelles and the local partners including civil societies should maintain good working relationship towards the achievement of the climate change mitigation objectives.
10. SES should document the procedures for dealing with complaints to ensure consistency. Furthermore, all pollution cases should have an investigation form and other supporting documents.
11. Audit recommends that relevant authorities such as MEECC, Ports Authority and PHA test the water quality of the port areas on a regular basis. SPA should also increase monitoring and surveillance to identify and address the causes of likely pollution of the port areas from the activities of the tenants and visitors.

12. Audit recommends that MEECC monitors the permits that it issues to identify non-compliances to the EPA.
13. MEECC and SCG should ensure that the NOSCP is revised and updated to reflect current best practices to address an oil spill. Also, all relevant stakeholders should be aware of their roles and responsibilities.
14. Audit recommends that the MEECC and SCG maintains a proper equipment records such as an asset register and performs an inventory-count of equipment available whilst ensuring that they are operational and will be able to address an eventual oil spill incident.
15. The MEECC should ensure that the terms under the two legislation that regulate the importation of plastic bags are enforced.
16. Audit noted that such vital partnership can amount to fruitful achievements and recommends that MEECC maintains such relationships.
17. Considering the potential risk posed by non-performance of the EIA process, MEECC should ensure that as prescribed by the EPA, all developments must undergo an EIA and measures are in place for all Environment Conditions to be duly complied with.
18. The MEECC should adopt a pro-active approach to address a coastal degradation whilst also ensuring that the most appropriate coastal mitigation option is being used.
19. CAMS should ensure that project files are complete and contains all relevant documents which are sequentially numbered.
20. The MEECC should abide to the Procurement Act. It should also ensure better planning and monitoring of its projects to prevent large variation of the initial project cost.
21. The SFA should maintain complete and up to date records of all cases of suspected illegal fishing vessels it attends to or apprehends, as well as records of expenses incurred for the up keep of apprehended vessels.
22. MEECC should work in close collaboration with all relevant stakeholders so that the environment cases are processed in a timely manner.
23. SFA should continue to maintain proper statistics on Seychelles fish stocks and maintain up to date records with the various bodies that it is in agreement with.

24. Considering that the two plans were developed and finalised in 2015, their implementation needs to be expedited.
25. SFA should ensure effective monitoring of yellow fin landings and transhipment to ensure compliance with the IOTC resolution17/01.
26. SFA should ensure that the lobsters caught are as per regulation.
27. Audit recommends that the implementation of the project should be done in line with the conditions set forth by the NOA, so as to ensure that all the risks are properly evaluated and mitigated. SFA should ensure that effective monitoring is conducted to ensure adherence to the policies and legislations.

PART 1: Background Information

Introduction

1.1 The coast is where land meets the ocean. This line of intersection is ever changing as a result of various natural processes and human-induced activities, creating a region of interaction between land and sea, often referred to as the coastal zone or area.

1.2 Coastal zones can hence be defined as; the band of dry land and adjacent ocean space (which includes water and submerged land) in which terrestrial processes and land uses directly affect oceanic processes and uses, and vice versa[1]. It is a highly productive system comprised of valuable ecosystem and natural resources that supports a multiplicity of human activities, wellbeing and economic wealth.

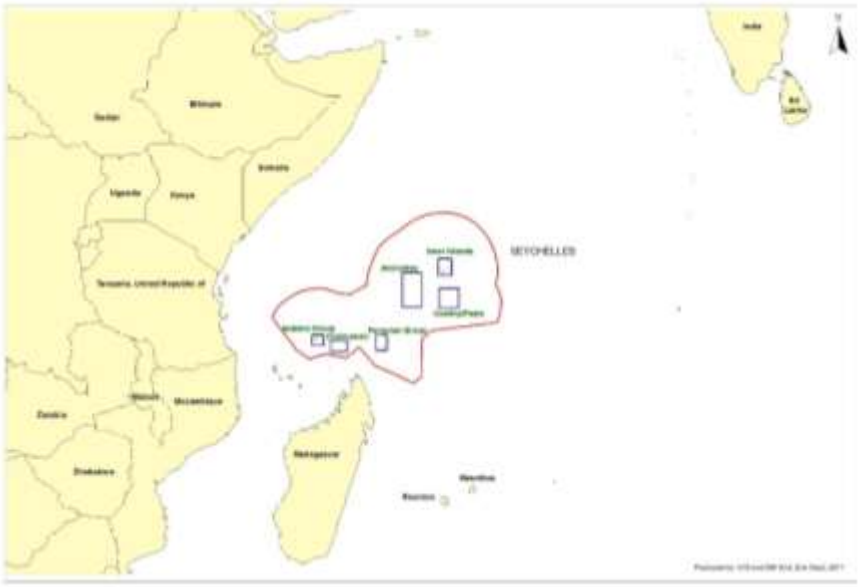
1.3 These human activities however place significant pressure on the coastal resources and it is for this reason that special attention should be placed on planning and management of the coastal areas for its sustainability through effective coastal zone management. Coastal zone management involves the continuous management of the use of coastal lands and waters and their resources within some designated area, the boundaries of which are usually politically determined by legislation or by executive order[2].

1.4 The Seychelles is a group of 116 islands[3] situated in the Western Indian Ocean off the East Coast of Africa. The archipelago is characterized by a small land mass but a large oceanic space with an Exclusive Economic Zone (EEZ) extending over more than 1.374 km^2[4]. The coastline of the Seychelles is estimated to be about 1307 km [5] and due to its topography most of the islands of the Seychelles, are considered as coastal zones, given that all human activities and ecosystems on the islands tie in with coastal zone through

[1] Kay, R. & Alder, J. (1999), Coastal Planning and Management.p.2
[2] Kay, R. & Alder, J. (1999), Coastal Planning and Management.p.4
[3] Seychelles n Figures 2017, National Bureau of Statistics; Seychelles.
[4] MEECC_Climate Science & Data Management Section
[5] MEECC_Climate Science & Data Management Section

natural processes and the geography of the islands. Therefore the coastal zones of the Seychelles has been described as a contiguous system which includes human activities, landward areas, wetlands, sea grasses and coral reefs[6].

Figure 1: Seychelles location and EEZ



Source: MEECC (GIS)

1.5 Like many other coastal nations and Small Island Developing State (SIDS), Seychelles is heavily reliant on its coastal resources and its vast EEZ is the pillar to its fisheries and tourism industry.

1.6 The success of these industries is however dependent on a pristine marine ecosystem and a sustainable coastal zone, but these are threaten by various anthropogenic factors such as the development of human infrastructures (e.g. housing, tourism) and pollution. They are nonetheless inevitable consequences, given that almost 95% of all socio-economic activities and more than 90% of the Seychelles population[7] are located along the narrow coastal plateaux of its three main islands of; Mahe, Praslin and La Digue. These threats further exacerbates other pressures being placed on the coastal areas such as climate change and sea level rise.

1.7 Over the past decade the islands has experienced several events that has shown the vulnerability and the susceptibility of its coastline and marine resources. These include; the mass coral bleaching event of 1998, caused by a

[6] Lundin, C.G. and Linden, O. (1995).Proceeding of the National Workshop on Integrated Coastal Zone Management in the Seychelles. http://documents.worldbank.org/curated/en/571491468304270730/pdf/402920Box33885101PUBLIC1.pdf

[7] As at 2016 the population of Seychelles was estimated to be 94,600_Seychelles in Figures 2017 Edition

subtle rise in sea-water temperature as a result of global warming, which affected a large proportion of corals reef around the islands; threatening fish stocks and affecting the aesthetical value of reefs and Marine Protected Areas (MPAs).The Indian Ocean Tsunami and three days of inundation of Victoria in 2004 and the most recent flooding and landslides caused by tropical cyclone 'felleng' in January of 2013, which caused an estimated 8.4 Million US$ worth of damages[8].

1.8 Coastal erosion is also of concern, given the coastline importance to the tourism industry but more than 30% of Seychelles' beaches has been identified as undergoing this process[9]. These are being replaced by rip raps that are considered as an eyesore and in certain instances hazards to beach-goers.

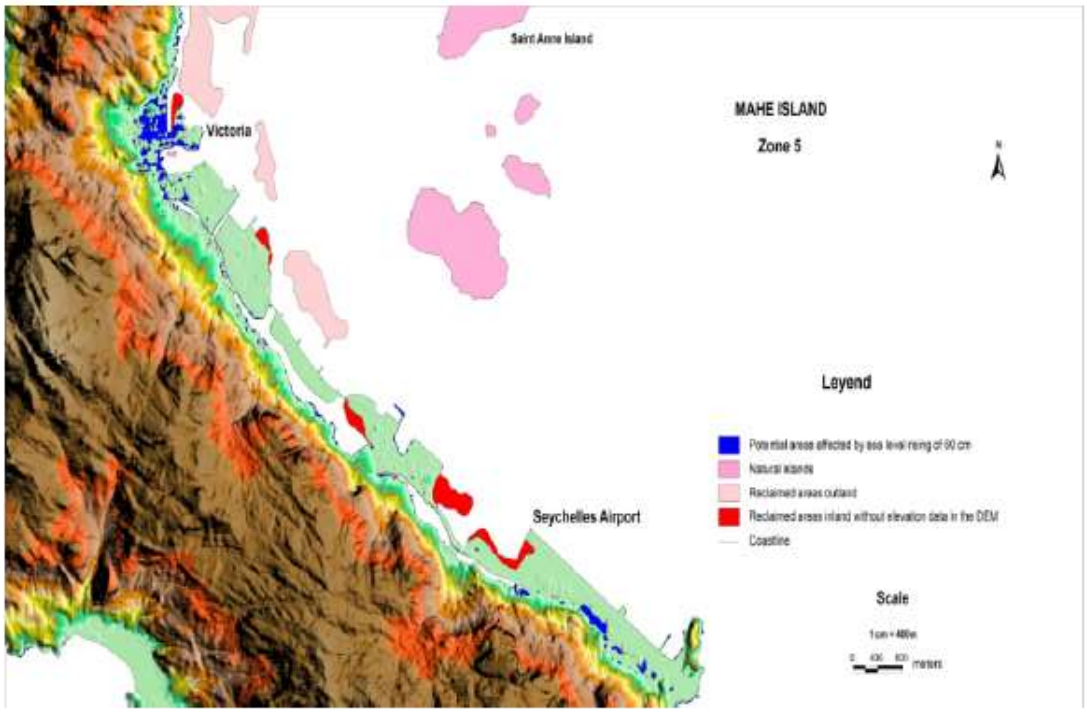
1.9 Reports[10] indicate that due to sea level rise, increase in rainfall intensity and storm surges caused by the climate change, flooding and erosion will continue. In line with that, it has been projected that if this trend continues by 2100 a vast majority of the islands will be submerged including parts of the capital of Victoria (***Figure 2***). Various essential infrastructures will also be inundated including the International Airport, hospitals, schools and major road networks on all three islands. Therefore a need for proper planning, management and preservation of the area through effective coastal management strategies.

[8] Seychelles Damage, Loss and Needs Assessment (DaLA) Floods. A report by the Government of Seychelles. June 2013

[9] Duvat. V., (2009) Beach erosion management in Small Island Developing States: Indian Ocean case Studies, WIT Transaction on Ecology and the Environment, Vol126 doi:10.2495/CP090141

[10] JICA Interim Report: Project for the study for coastal erosion and flood control management in the Republic of Seychelles, May 2012, Chapter 2: p. 65- 67 and Àlvarez Cruz et al, 2011, Preliminary Hazards analysis of sea level rise and coastal flooding in Seychelles Islands. Climate Change for current and the projection for the year 2025, 2050 and 2100, First Report.

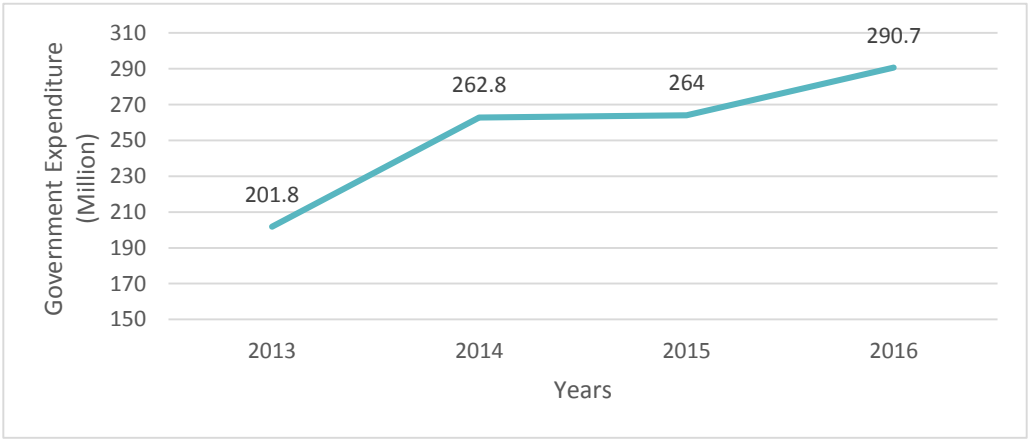
Figure 2: Potential Flooding areas on Mahe with a sea level rise of 60 cm



Source: Àlvarez Cruz et al. 2011.p. 80

1.10 Coastal zone management in Seychelles is conducted by various Ministries, Department and Authorities (MDAs) depending on their mandate and conservation of the environment is at the forefront of this process. Support from the Government has been through; the ratification of various Multilateral Environment Agreements (MEAs) and their subsequent domestication into national laws, regulation and policies, as well as through Government expenditure for Environment Protection, which has steadily increased by 44% during 2013 to 2016 as shown in ***Figure 3***.

Figure 3: Government Expenditure on Environment Protection



Source: Seychelles in figures_2017 Edition, p.22

1.11 The Constitution of the Seychelles provides for Environment protection where Article 38 states that;

> "the state recognizes the right of every person to live in and enjoy a clean, healthy and ecologically balanced environment and with a view to ensuring the effective realization the State undertakes:
>
> - to take measures to promote the protection, preservation and improvement of the environment;
> - to ensure a sustainable socio-economic development of Seychelles by a judicious use and management of the resources of Seychelles; and
> - to promote public awareness of the need to protect, preserve and improve the environment[11]".

1.12 Likewise, Article 40 (e) further adds that "it shall be the duty of every citizen of Seychelles to protect, preserve and improve the environment". Henceforth, indicating everyone's role in Environment protection of the country.

1.13 The Government is also very active on the international scene to support and spearhead various actions towards the protection of the environment, in particular to issues relating to SIDS. On the 25th September 2015, at the United Nations Sustainable Development Summit in New York, the Seychelles Government also signed and committed itself to the Sustainable Development Goal (SDGs) also known as the *Global Goals* and a few months prior to this, at the 24th Ordinary Assembly held in Addis Ababa, Ethiopia, the Seychelles had adopted the African Agenda 2063; the blueprint for Africa's development over the next 50 years. These are the two key agreements that further promote the sustainable use and development of coastal resources, as well as targets to address the various threats that impacts on the Seychelles such as climate change.

[11] Constitution of the Republic of Seychelles- Chapter 42, 1994 – Chapter III- Part 1, p. 36.

Rationale for the Audit

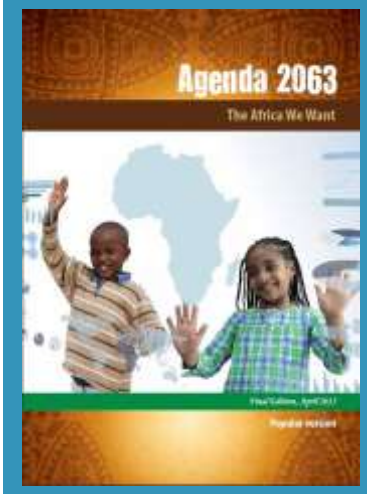
2.1 The SDGs is an international commitment that has brought numerous stakeholders together to look deeper into their roles to contribute towards the achievement of these goals and targets, primarily because the outcome of the SDGs affects everyone.

2.2 Supreme Audit Institutions (SAIs) worldwide, including the Seychelles has also committed themselves towards the SDGs, on October 2016 at the 17th meeting of International Organisation of Supreme Audit Institution (INTOSAI) Working Group on Environmental Auditing, in Jakarta, Indonesia. At the meeting it was emphasized that SAIs can provide a valuable contribution to their National Government's effort to assess the progress, monitor the implementation and identify improvements and opportunities across the SDGs.

2.3 Such is the rationale for this international Audit initiated by the African Organization of English-speaking Supreme Audit Institutions (AFROSAI-E) to evaluate the Financial Governance and readiness of these countries to attain both the SDGs 2030; with particular emphasis on Goal 14: Life below water (***Appendix 2; Figure 4***) and to achieve point 15 of the African Agenda 2063; Sections that are directly related to coastal management.

THE AFRICAN AGENDA ASPIRATION 2063 RELATED THE OCEAN

Africa's Blue/ocean economy, which is three times the size of its landmass, shall be a major contributor to continental transformation and growth, through knowledge on marine and aquatic biotechnology, the growth of an Africa-wide shipping industry, the development of sea, river and lake transport and fishing; and exploitation and beneficiation of deep sea mineral and other resources



Source: un.org/en/africa/osaa/pdf/au/agenda2063.pdf

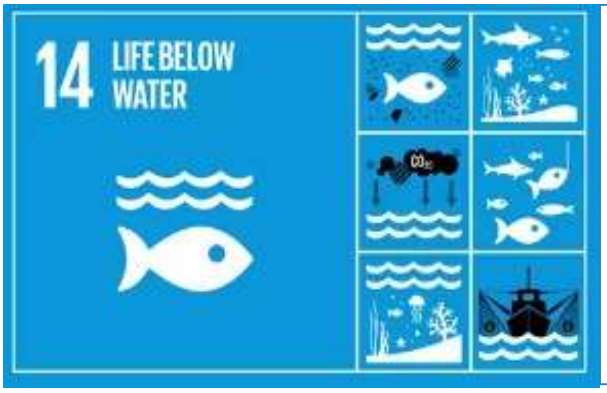
2.4 Through research[12] AFROSAI-E identified that African coastal communities including the Seychelles are faced with various risks and challenges to effectively manage their coastal areas and the most current and pressing coastal themes identified were summarized into the following five (5) focus areas which formed the basis for the audit:

1. **Overall Coastal Management**
2. **Climate Change**
3. **Coastal Pollution and Degradation**
4. **Coastal Monitoring and Enforcement**
5. **Overfishing**

2.5 Further all of these focus areas were being addressed in the Sustainable Development Goals and Targets. Therefore the objective of the Audit was to focus on the conservation of coastal areas with particular emphasis on coastal management governance and environment protection of coastline through legislative compliance and other coastal management commitments.

2.6 Additionally these critical issues or focus areas will be assessed and aligned with the SDGs and other international commitments. So as to promote the utilization of current and limited resources and to potentially make a substantial contribution towards initializing or addressing the most significant coastal management risks and resources needs. Hence showing the SAIs and participating country's commitment to the SDGs and African Agenda 2063.

Figure 4: Goal 14: Life Below Water



Conserve and sustainably use the ocean, seas and marine resources for sustainable development.

Source: www.globalgoals.org

[12] Pretorius, I & Smith, E. AFROSAI-E Coastal Audit. Coastal Risks and Proposed Audit Focus Areas

Figure 5: The Sustainable Development goals- SDG 2030



Source: www.globalgoals.org

Aim

3.1 The aim of the Audit in Seychelles was to ;

1. establish what infrastructure, legal, administrative and institutional are in place with regards to coastal management;
2. to examine the extent to which the coastal management legislations and regulations are being implemented, monitored and enforced;
3. to assess the extent of alignment of the available coastal management plans and targets with the Sustainable Development Goals 2030; and
4. to make recommendations on shortcomings and non-compliances identified in the audit.

Methodology

4.1 The Audit was guided by a set Audit procedure prescribed by the AFROSAI-E as indicated in ***Appendix 3*** which required the evaluation of the five aforementioned focus areas.

4.2 Given that environment conservation is at the forefront of coastal management the Ministry of Environment, Energy and Climate Change (MEECC) was the main auditee for this Audit. However several interviews were also conducted with various other MDAs involved in coastal management in particular those involved in the five focus areas. Refer to ***Appendix 4*** for list of all MDAs involved in the Audit. Files, documents, reports, and related information pertaining to the period January 2015 to December 2017 were requested from the concerned MDAs and reviewed by Audit.

PART 2: Overview, Finding, Conclusion and Recommendation

5.1 This section provides details of the Audit findings conducted on the aforementioned focus areas related to the coastal management in the Seychelles and their link with the SDGs and targets.

Sustainable Development Goals (SDGs)

6.1 Seychelles like many other nations has embraced the SDGs and the aim is to achieve the set targets and replicate the achievements that the country has made with the MDGs. However, compared to the MDGs where the targets include improving social parameters such as education, health and gender equality, Seychelles being a coastal nation the achievement of the SDGs will safeguard the islands future, as many of the issues that these targets address relate to climate change and over fishing which are significant threats to the islands' livelihood. Therefore, it is imperative that they are met.

6.2 Seychelles is currently in the planning phase to monitor the implementation of the SDGs and two national forum has been done thus far to consult with stakeholders. In 2017 there was also an evaluation of national policy documents to identify the level of mainstreaming of SDGs within them using the Rapid Integrated Assessment (RIA).

6.3 Following these, the Government has opted to utilize a lessons learnt approach, where they have evaluated the various strength and weaknesses involved in the implementation of the MDGs to shape the proposed plan to implement the

MILLENIUM DEVELOPMENT GOALS (MDGS)

In September 2000, at the UN Millennium Summit, world leaders came together at UN headquarters in New York to adopt the United Nations Millennium Declaration. The Declaration committed nations to a new global partnership to reduce extreme poverty, and set out a series of eight time-bound targets (deadline 2015) they have become known as the Millennium Development Goals (MDGs)



http://www.undp.org/content/undp/en/home/sdgoverview/mdg_goals.html

SDGs. Reporting of the SDGs is significant and Seychelles will be utilizing the Voluntary National Reviews (VNR), a method that has been found; to strengthen policies, institutional capacity, mobilize multi- stakeholder support and partnership for the implementation of the SDGs. It is expected that this approach will ensure that Seychelles conducts regular reviews of progress at national level that can then be disseminated to High-Level Political Forum (HLPF) meeting as per requirement of the VNR Committee.

6.4 Government has committed itself to implement the SDGs in a more strategic manner to accommodate the inter-linkage of the SDGs and on the 12th July 2017 the Seychelles Cabinet of Ministers, approved the creation of a National Oversight and Strategic Committee that will oversee the implementation of Seychelles regional and global commitments, including the 2030 Global Goals. The National Steering Committee which will be headed by the Department of Economic Planning under the Ministry of Finance, Trade and Economic Planning (MoFTEP), co-chaired by the Department of Foreign Affairs. The plan is to focus on the country's development by aligning it with the SDGs and linking the national strategic plans with its targets.

1. Good mainstreaming of SDGs in National Policies and Plans

6.5 The Rapid Integrated Assessment (RIA) is a tool developed by the United National Development Program (UNDP) that help countries to gauge their readiness to the SDGs by assessing the degree of alignment of their respective national development framework with the SDG targets. It also does a gap analysis of SDG targets that are not prioritized in the current national development plans and relevant sector strategies. It further identifies inter-linkages across targets, including targets that are prioritized by multiple sectors and sectors where actions can impact multiple SDGs. The RIA tool has been successfully applied in various countries including SIDS[13] that have similar characteristics and environmental vulnerability to the Seychelles. The primary audience of the tool are MDAs in charge of development planning.

[13] https://undg.org/2030-agenda/mainstreaming-2030-agenda/tailoring-sdg-to-national-context/

6.6 The Seychelles RIA was conducted in June 2017 against twenty national plans and policy documents covering various aspects of socio-economic development including national development strategy, biodiversity, sustainability, tourism, health, human resource development, education etc... Refer to ***Appendix 5*** for the list of documents used.

6.7 The preliminary findings of the RIA assessment indicated that Seychelles has a high degree of mainstreaming of the SDGs in the documents reviewed. Where out of the 169 SDG targets; 143 targets were relevant to the Seychelles and 131 (91.6%) of these targets were mapped in the 20 documents reviewed as presented in ***Table 1***.

Table 1: Alignment of 20 national documents to the SDGs as per RIA

Not Applicable to Seychelles	**20**	**12%**
Targets have already met by Seychelles (through the MDGs)	6	4%
Targets Mapped in National Documents	131	78%
Targets Not found in the National Documents	12	7%
Total	**169**	**100%**

Source: OAG analysis of preliminary RIA findings

6.8 The assessment also indicated that 12 targets across 9 SDGs were not mapped or were not sufficiently covered in the National Documents reviewed. A detailed list of all 12 gap targets can be viewed in ***Appendix 6***. Amongst those were targets pertaining to Overfishing (i.e. Target 14.6) and targets towards Affordable and clean energy (i.e. Target 7.A and 7.B), which targets are related to the current Audit. Audit however noted that certain national documents such as the *Seychelles Energy Policy 2010- 2030* and the *Seychelles National Agricultural Investment Plan* for instance that covers some aspects of overfishing and clean and affordable energy were not used in the assessment.

6.9 Audit also noted that for all the National planning documents used in the RIA assessment that had a prescribed time frame, they were all however confined to the year 2025 (e.g. *Seychelles Strategy for the Prevention and Control of Non-communicable Diseases, 2016-2025*), for others their time frame ended earlier mostly in 2020 (e.g. *Seychelles Sustainable Development Strategy (SSDS) 2012-2020*), whilst for other documents they have already ended (e.g. *Employment Department Strategic Plan 2011-2015*).

6.10 Audit noted that it is important to consider the lifespan of these documents and their relevance to SDGs; given that the SDGs would be up to 2030.Therefore, the need to revise update and extend the scope matching that of the SDGs.

Conclusion

6.11 The results of the RIA assessment provides a good indicative of the various policies available in a country and how they are aligned to the SDGs, which would facilitate the implementation of the SDGs. From the RIA assessment conducted on 20 national documents it revealed that Seychelles has been able to align and mainstream the SDGs to a large extent, as it was found that out of the 143 SDG targets relevant to Seychelles 131 targets were covered within these plans.

6.12 Nonetheless effort is needed to address the gaps identified with the 12 targets which were not found within these policy documents and strengthen the implementation of the already covered aspects. Audit noted that the policy documents related to energy and fisheries was not included in the RIA assessment which may have also contributed to this extent to the identified gap in the assessment.

6.13 Further all of the policy documents reviewed in the assessment will expired by 2025 and may not be relevant thereafter, therefore a need to revise, update and extend them up to 2030 .

Recommendation

6.14 The National Oversight Committee should address the gaps identified by the RIA assessment. Further the actions of the various policies and strategic documents used in the RIA assessment should be followed through, implemented and closely monitored by the committee to ensure that they meet their intended objectives, targets and in the process attain the SDGs.

Management response

6.15 *Following the RIA Assessment the National Oversight Committee has been set up as per its Term of Reference. The Committee meets every two months and comprises of various stakeholders in the country. Three policy instruments have been developed to ensure mainstreaming of SDGs into national policies and these include; the Strategic Planning Policy which provides a template where all MDAs are expected to present their strategic plans into the document of which has elements related to the mainstreaming of SDGs; mainstreaming of SDG in the National Development Strategy 2019-2023. The Department of Economic Planning is seeking funding for an SDG stocktaking baseline exercise study in all national MDAs to produce an SDG baseline Assessment report as the way forward.*

2. More efforts needed to sensitize the public on SDGs

6.16 Ensuring that no-one is left behind and that there is equal access to information to all, are some of the fundamental principles of the SDGs. It is on these principles that in June 2017, the UNDP Sustainable Development Goals Agenda Booklet Creole version; '*Lobzektif pour Devlopman Dirab'* was launched by the UNDP Seychelles office. The booklet was brought out to reach a wider audience of all corners of society, as being written in the mother tongue will also ensure that the booklet is understood by all as per the SDG objective.

6.17 Through correspondences with UNDP and DFA officials, Audit was informed that the Creole booklet has been distributed in several SDGs related events such as workshop and conferences and there were plans to distribute the booklets with

the education institution through an awareness raising workshop but till date this has not yet be materialized.

6.18 Audit also noted that there are various MDAs that are also unsure how to implement the SDGs in their everyday working activity to meet the SDG target and subsequently being able to contribute towards the reporting of the SDGs. Audit noted that it is the mandate of the National Steering Committee to regroup and ensure that SDGs is mainstreamed in its national policies.

Conclusion

6.19 The UNDP has made available the creole version of the SDGs booklet so that everyone can understand the SDGs and hence be actively involved however to date the booklet has only been distributed at SDG workshops and events amongst individuals that may already have knowledge of the SDGs. However sensitization activities to access a wider audience has not yet been materialized. Audit noted that innovative and cost effective methods can also be used to distribute the said booklet to the masses such as the use of social media, UNDP/ DFA websites, Government email portals and also distributing them to Non-Government Organisations (NGOs) and civil societies.

Recommendation

6.20 The DFA in collaboration with the National Oversight Committee should identify ways to spread awareness on the SDGs and distribute the SDG creole version booklet to the masses as per the booklet intended objective.

Management response

6.21 *The National Oversight committee also acknowledges the gap in the awareness on SDGs and notes that one of its primary activity is to develop a national committee communication strategy to raise awareness and provide more education on the SDGs. This will be presented at the next high level meeting of Principal Secretaries (PS) and Chief Executive Officers (CEOs) forum for dissemination into the public sector organisation.*

Overall Coastal Management

7.1 The islands of the Seychelles are considered as coastal zones, as per the definition, where all the human activities and ecosystems link in together through natural processes and the geography of the islands.

7.2 The coastal areas are indispensable and fragile and it is estimated that almost 95% of all socio-economic activities and 90% of its population are located along the coastal plateaux of its three main island of Mahe, Praslin and La Digue. Henceforth there are many factors such as; development of infrastructures (e.g. housing, tourism), pollution, reclamation, sea level rise, climate change and pollution that pose significant pressure on and are potential threat to the coastal zone. Therefore a need for its effective planning, prioritisation, preservation and sustainable management through an effective coastal management plans.

7.3 The United Nations Environment Program (UNEP) states that "Multilateral Environment Agreements (MEAs) are one of the most effective ways in which Government of the world meet environment commitments to protect biodiversity, safely managing chemicals and waste, sustainably managing land and mitigation and adapting to climate change[14]".

7.4 As at the 31st July 2017, in addition to the SDGs and African Agenda 2063 the Seychelles had signed and adopted 30 MEAs in the area of Environment and five international agreement related to ocean management and fisheries. These are represented in ***Appendix 7 and 8*** respectively. These MEAs partly sets the framework for the enforcement of environmental crime and coastal management efforts in the country and ***Table 2*** provides details of how some of these MEAs have been translated into national legislation, policies and other strategic documents.

[14] https://www.unenvironment.org/explore-topics/environmental-governance/what-we-do/meeting-international-environmental-commitments

Table 2: MEAs and their related national legislation

MEAs	National Legislation and Strategic Documents
1. Convention on International Trade in Endangered Species (CITES)	- Wild Life Animals and Birds Protection Act 1961 (Updated 2001)
2. Convention on Biological Diversity (CDB), 1992	- Environment Protection Act 1994 (Updated 2016) - National Biodiversity Strategy and Action Plan, 2000-2010 (Updated 2015-2020)
3. Ramsar, 1972	- National Wetlands policy 2010 (Updated Draft 2017)
4. Vienna Convention, 1985	- The Environment Protection (ozone) Regulation. - Trades Tax (prescribed goods) Notice 2000
5. United Nations Convention the Law of the Sea (UNCLOS), 1982	- Maritime Zone Act, 1999 - Maritime Zone (Marine Pollution) Regulation 1981 - Fisheries Act, 2014
6. Basel Convention on the Control of Trans boundary Movements of Hazardous Waste, 1989	- Environment Protection Act 1994 (Updated in 2016) - SBS 1994-SS 36 94 Code of Practice for handling, storage and disposal of Hazardous Chemicals and other Agricultural Pesticides.
7. Nairobi Convention for the Development, Protection, Management and Development of Marine & Coastal Environment of the Western Indian Ocean, 1985	- Environment Protection Act 1994 (Updated in 2016) - A new ICZM (integrated Coastal Zone Management) Protocol is being drafted so as to implement coastal zone management in an integrated manner within the region.

Source: OAG Review of Documents

7.5 Reports indicate that the four most significant pieces of legislation that address coastal management in the Seychelles are;

1. The Environment Protection Act (EPA), 2016
2. The National Park and Conservancy Act (NPCA) 1969[15]
3. The Town and Country Planning Act (TCPA) 1972
4. Environment Protection Act (Environment Impact Assessment) 1996

These legislations are further supported by various regulations, ordinances and orders.

[15] Mangroves for the future initiative, National strategy and Action Plan 2010 – 2013

7.6 The EPA was established in 1994 and has recently been revised and amended to the EPA 2016. The two other legislations stated above are currently under review. Whilst EPA deals with the preservation of Environment in its entirety, NPCA focuses primarily on the preservation and conservation of only designated protected areas such as MPAs.

7.7 Both Acts are governed by the Ministry of Environment, Energy and Climate Change (MEECC), that has the mandate; to ensure that the constitutional right of every person to live in and enjoy a clean, healthy and ecologically balanced environment are met. They are also responsible to make provision for a reliable, affordable, safe water and energy supply and to build resilience against climate change and other disasters[16]. Refer to ***Appendix 9*** for the organizational structure of the MEECC.

7.8 TCPA on the other hand, addresses issues with development and building of infrastructure and provides guidelines for planning applications and conditions. It is governed by the Ministry of Habitat, Infrastructure and Land Transport (MHILT) and development aspects are also closely monitored by the Seychelles Planning Authority (SPA). The SPA liaises with the MEECC through various committees to review planning applications to ensure sustainable development in Seychelles.

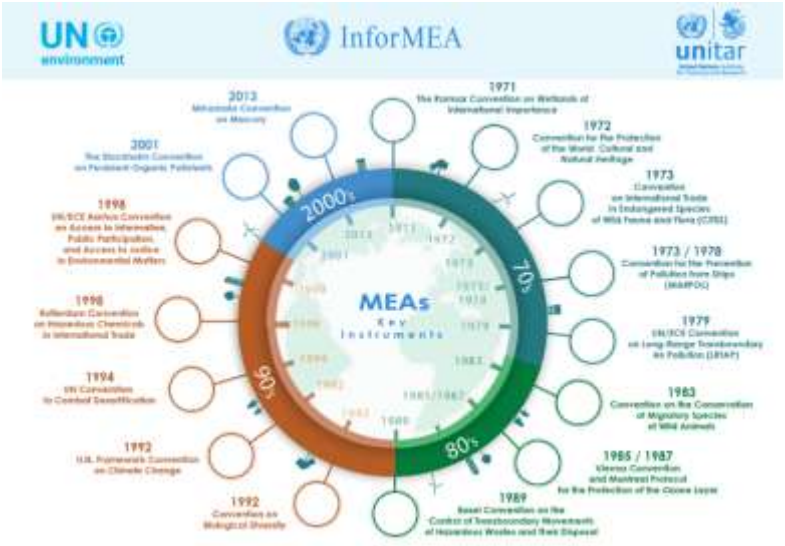
7.9 The EPA states that all development in Seychelles must undergo an Environment Impact Assessment (EIA) to successfully obtain an Environment Authorisation before they are implemented. In addition to the aforementioned legislations, there are various other legislations and regulations that are considered in the EIA process.

[16] http://www.meecc.gov.sc/

1. Non- compliance with reporting requirements of MEAs

7.10 The United Nations Environment Program (UNEP) makes reference to 15 key MEAs from 1971 to 2013 as indicated in ***Figure 6***. Audit compared these MEAs with the records provided by the Treaties Department of the DFA ***(Appendix 7 and 8)*** and noted that Seychelles is a signatory to 13 of these key MEAs and two were not relevant to the Seychelles as they were related to European countries only.

Figure 6: UNEP, Key Multilateral Environmental Agreements



Source: UNEP[17]

7.11 Audit was informed that DFA is involved only in the negotiation, signature and ratification of these MEAs and that it was the responsibility of the designated technical agencies to implement, monitor and fulfil the reporting requirements of these MEAs thereafter.

7.12 Audit noted that 10 of these MEAs were under implementation of the MEECC and Audit analyzed the compliance with the reporting requirements of each of these MEAs (***Appendix 9***) and the following shortcomings were observed: Audit did not receive details in respect of three MEAs and for the remaining seven;

[17] https://www.unenvironment.org/explore-topics/environmental-governance/what-we-do/meeting-international-environmental-commitments

four (40%) were noted up to date with their reporting requirements, these included; the Vienna convention, Minamata, UNFCCC and CBD. However Audit noted that reporting for Ramsar, Basel convention and CITES were not on a regular basis as they did not meet their annual reporting schedule.

7.13 During interviews conducted with MEECC officials, Audit was informed that they currently do not have a proper monitoring system in place in regard to reporting requirements on the MEAs.

Conclusion

7.14 The Government of Seychelles has shown its commitment to environment protection by being signatory to all the 13 key MEAs relevant to the Seychelles. However, concern is raised over the monitoring of these MEAs to ensure their compliance to the reporting requirement as Audit noted that 60 percent of the MEAs under MEECC did not meet their reporting requirements.

Recommendation

7.15 MECCC should ensure that the reporting requirements to the MEA's are abided to.

Management response

7.16 *CAMS; The National Reporting for example, the RAMSAR Convention is done to coincide with the Conference of Parties (COP) which is held every 3 years. Hence not all reporting is done annually.*

7.17 *MEECC acknowledged that we are not up to date with the reporting requirements of some MEA's so budgetary provision has been made to recruit a person in the post of International Relations which will ensure that the international obligations of the Ministry towards the conventions and other agreements are met. The person will also act as the focal person between the Ministry and the MEA's*

2. Legislation needs review and updating

7.18 In addition to EPA and NPCA, MEECC is the custodian of four other legislation namely;

1. Breadfruit and other Trees (Protection) Act, 1917
2. National Parks and Nature Conservancy Act, 1969
3. Wild Animals and Birds Protection Act, 1961 and Amendment, 2001
4. Energy Act, 2012

They additionally deal with the conservation of various species, biodiversity and also address climate change issues.

7.19 Through analysis of the aforementioned legislations Audit noted that the average age of the acts were 42 years and their age ranged from 1 to 100 years. Analysis of their associated regulations also indicated that their average age were 25.7 years and their age ranged from 3 to 51 years. Audit was informed that due to the age of these legislations, the issues they cover may not be relevant or applicable to address the current environment issues in the country.

7.20 Further as presented above (***Figure 6)*** Seychelles has signed various MEAs (established between the year 1971 and 2013) and some were signed after the development of the aforementioned legislations therefore the need for their domestication and incorporation into these legislations for their implementation.

7.21 An example of an outdated legislation repeatedly referred to in interviews conducted as part of this Audit was "The Breadfruit and Other Trees (Protection) Act of 1917 which dates back 101 years, with the last amendment dated in 1998 (20 years ago). The Act protects several native plant species in the Seychelles and in addition to being old, Audit noted that the penalty is very lenient, were Section 3 of the Act states that "Any person who shall destroy or cause to be destroyed any of the trees specified in the schedule whether on his own property or on the property of any other person, without having received the written permission of the Chief of Agricultural Officer so to do, shall be

liable on conviction to a fine not exceeding fifty Rupees for each tree destroyed, in addition to three times the value of each tree".

7.22 Audit noted that the penalty being enforced is insignificant to worth of the trees towards environment protection of the islands, given that of the 30 trees protected under this legislation, three (3) species; the Casuarina equisetifolia (Sed), Calophyllum inophyllum (Takamaka) and Cocos nucifera (pye koko) are located along the coast and protect it from degradation and coastal erosion, whilst the other 27 trees safeguards the stability of the steep hill slopes inland which are prone to landslides hence subsequently protecting the coast. Therefore their preservation is significant.

7.23 Audit was informed that the MEECC has since 2015 been involved in an exercise to review and update these legislations. However this process has been identified as slow given the various challenges faced by the Ministry such as manpower and the review process being time consuming since it requires lengthy communication with relevant stakeholders.

Conclusion

7.24 The MEECC has various laws and regulations that governs the protection of the environment. However most of these legislation are outdated and may not be relevant to address current environment issues. This hence can affect the MEECC ability to fulfil its mandate, as the threats on the coast may not be properly addressed through its current legislative framework. For instance the Bread Fruit and Other Trees Act, 1917 is over a 100 years old and the fines stipulated in it on the destruction of a tree is too lenient and insignificant to the worth of the tree towards the protection of the environment the islands. Further significant developments have taken place in the field of coastal management globally and locally and therefore Audit is of the view that the old legislations are reviewed and updated to incorporate the new developments and challenges.

Recommendation

7.25 MEECC should expedite the exercise of reviewing and updating its legislations.

Management response

7.26 *MEECC agrees that these legislations need to be updated and as mentioned above the process has started. The Breadfruit and other Trees (Protection) Act, 1917 in question, has been submitted to the Attorney General Office for review and we still waiting for feedback. As per the cabinet policy MEECC is also expediting the review of the EIA Regulation 1996 and the plan is to complete its review by the 3rd Quarter of 2018.*

3. Seychelles does not have an Integrated Coastal Zone Management plan as per the requirements of the EPA

7.27 Part III Section 29 (1) of the EPA, 2016, states that "*The Ministry may make or cause to be made a survey of the Coastal Zones and prepare or cause to be prepared an Integrated Coastal Zone Management (ICZM) Plan based on the report of the survey*". Section 29 (2) and 29(3) further provides information about what the survey must include and its review.

7.28 Audit also noted that the SSDS 2012-2020, which is a national planning document being used by Seychelles to meet the needs of present and future generations acknowledges the need for an ICZM Plan. The document presents that "the ICZM is increasingly being accepted as an effective

WHAT IS ICZM?

Integrated coastal management aims for the coordinated application of the different policies affecting the coastal zone and related to activities such as nature protection, aquaculture, fisheries, agriculture, industries, off shore wind energy, shipping, tourism, development of infrastructure and mitigation and adaptation to climate change.

It will contribute to sustainable development of coastal zones by the application of an approach that respects the limits of natural resources and ecosystems, the so-called 'ecosystem based approach'.

Integrated coastal management covers the full cycle of information collection, planning, decision-making, management and monitoring of implementation.

It is important to involve all stakeholders across the different sectors to ensure broad support for the implementation of management strategies.

Source: http://ec.europa.eu/environment/iczm/index_en.htm

framework to address coastal and marine environmental problems, conflicts and management needs and its main objective is to achieve sustainable use of coastal resources and to ensure that coastal communities plan for and minimize or mitigate the impacts of development and natural hazards"[18].

7.29 Audit requested a copy of the ICZM plan from MEECC and was informed that the Ministry has made several attempts in the past to conduct the required survey and complete an ICZM plan, but they have been unsuccessful in completing the aforementioned survey due to various constraints, particularly related to manpower. Evidence of these unfinished works were also unavailable for Audit to inspect. Therefore Audit could not confirm the above statements.

Conclusion

7.30 An Integrated Coastal Zone Management Plan is vital for the sustainable development and management of the coastal zone and this is particularly significant for the Seychelles given the vulnerability of the islands coastal areas. Audit noted that the development and significance of the ICZM plan has been identified in both the EPA as well as the SSDS but the Seychelles is yet to formulate an ICZM plan.

MARINE SPATIAL PLANNING (MSP)

Marine Spatial Planning is a public process of analyzing and allocating the spatial and temporal distribution of human activities in marine areas to achieve ecological, economic and social objectives that are usually specified through a political process.

It is a more practical way to create and establish a more rational organisation of the use of marine space and the interactions between its uses, to balance demands for development with the need to protect marine ecosystems, and to achieve social and economic objectives in an open and planned way.

Source: http://msp.ioc-unesco.org/msp-good-practices/concepts-and-terminology/

Recommendation

7.31 Considering the high importance of the ICZM plan which has been brought out in various documents including the EPA, MEECC should develop the Integrated Coastal Zone Management plan.

[18] Seychelles Sustainable Development Strategy (SSDS 2012- 2020) p. 29

Management Response

7.32 *MEECC is currently receiving assistance with the World Bank to develop a Coastal Zone Management Plan, it will also involve the development of a new setback policy for development from the high water mark. A presentation to Cabinet of Ministers is due for October 2018.*

4. Marine Spatial Planning is being considered to effectively manage the Seychelles EEZ

7.33 Target 14.5 of the SDGs aims to by 2020, conserve at least 10 per cent of coastal and marine areas, consistent with national and international law and based on the best available scientific information. Currently only 0.04% of Seychelles EEZ of 1.347 km² is being conserved as MPAs and since 2010 after the Government committed itself to conserve 30% of its EEZ, efforts have been underway to achieve this using Marine Spatial Planning (MSP).

Figure 7: Target 14.5



Source: www.globalgoals.org

7.34 The MSP outlines the management of the EEZ and aims to separate it into various zones of which 15% will be a strict no-take-zone designated for conservation efforts only. Activities such as fishing will be allowed in the other zones, but they will be done in a sustainable manner in line with the blue economy concept.

7.35 The MSP is being formulated by the Government in partnership with The Nature Conservancy (TNC), which is a charitable environmental organisation with the mission to conserve the lands and waters in which all lives depend[19]. Funding for the initiative is being provided through a number of grants to GoS and TNC,

[19] https://www.nature.org/about-us/vision-mission/index.htm?intc=nature.tnav.about

as well as under the debt-for-adaptation swap that Seychelles initiated in 2016, to fund continued marine conservation and climate adaptation activities[20].

7.36 At the time of the Audit the MSP was nearing the end of Phase 1[21], where the various zoning designs have been drafted in consultation with stakeholders and a number of public sensitization activities have been conducted. However the MSP is not expected to enter into force until 2020 as this will be implemented in various phases.

Conclusion

7.37 Audit acknowledged the GoS initiative and engagement in the MSP, as with the implementation of the MSP the Seychelles is targeting to conserve 30% of its 1.374 million km² EEZ. Further the aim of the MSP is to provide various zones with different levels of protection including 15% of the EEZ as a complete no-take-zone reserved for high biodiversity conservation. The engagement of the Government into the MSP shows commitment towards achievement of environment protection as well as achievement of the SDGs.

Management response

7.38 *The first 15% protection was achieved in January this year. The Ministry of Environment, Energy and Climate Change is continuing with the process in consultation with stakeholders for the completion of the plan in 2020.*

[20] http://seymsp.com/the-initiative/
[21] The MSP has a total of 2 phases: Phase 1: 2014-2017, Phase 2:2017-2020.

Climate Change

8.1 The Seychelles Intended National Determined Contribution (INDC), which is a document that presents Seychelles' contribution towards achieving the objective of the UNFCCC, a key MEA related to climate Change states that "the main climate change threats facing Seychelles are similar to those threatening other SIDS: changes in rainfall pattern leading to flooding, landslides on one hand and extended periods of drought on the other, increases in storm and storm surges and seal level rise during the longer term"[22].

8.2 This is also supported by the Vulnerability and Resilience Profile study that was conducted in the Seychelles which presented that Seychelles was most vulnerable and least resilient in terms of biodiversity resources and sustainable consumption and production which are significant implications for climate change adaptation[23]. The impact of climate change on coastal livelihoods as a result of sea level rise, storm and tidal surges, extreme sea-surface temperatures, and coastal flooding will have serious consequences for livelihoods in the Seychelles given that concentration of development on narrow coastal zones.

8.3 The Energy and Climate Change Department of the MEECC has the responsibility for energy, water and other related issues pertaining to climate change as

SEYCHELLES CLIMATE VULNERABILITY

- Critical Infrastructure (roads, ports, government buildings, electricity, water and sewerage management systems);
- Tourism (in proximity to the coast or in areas vulnerable to flooding and landslide);
- Food Security (currently reliant on food imports, and need support for local sustainable and climate-smart agriculture and fisheries efforts);
- Coastal and Marine Resources (considering the aims of the *Blue Economy* and *Seychelles Strategic Plan 2015)*;
- Water Security (particularly considering issues of storage and distribution);
- Energy Security (particularly considering the reliance on fossil fuels);
- Health (particularly addressing the burden placed on high-density populations in the coastal areas and general vulnerability to climate-sensitive diseases);
- Waste (particularly for landfill sites in high risk, coastal locations); and
- Disaster preparedness (particularly addressing the need for more research to understand climate change impacts, and resources to predict, prevent and respond to disasters).
- Source: INDC 2015

[22] INDC Seychelles 2015, p. 4
[23] G. Adonis & W. Zarine. Seychelles Vulnerability and Resilience profile Country Report, 2014

per the mandate of the Ministry to build resilience against the impact of climate change and to provide a reliable, affordable safe energy supply[24]. The Principal Secretary of the Department also oversees the functioning of the Project Coordination Unit (PCU) which is the local management system for the Global Environment Facility (GEF) and UNDP national projects[25]. The Department consists of two divisions, namely Energy Division and Climate Change Division. The Climate Change Division has the responsibility to coordinate climate change issues, implement the National Climate Change Strategy, the SSDS and the international climate change cooperation and global negotiations. It is made up of five different sections- Climate Adaptation Management, Climate Mitigation Management, Climate Science and Data Management, National Meteorological Services and International Climate Negotiation sections[26].

1. Government has taken proactive steps to address climate change

8.4 The Government is aware that Seychelles is highly vulnerable to the adverse impact of climate change and that these effects are real and is being felt throughout the islands and especially along the coastline, due to the impact of sea level rise and storm surges. Seychelles has a National Climate Change Strategy, 2009, which envisions to minimize the impacts of climate change through concerted and proactive action at all levels of society. As noted previously the objective of this strategic plan as well as Seychelles' commitment to the UNFCCC, which is a key MEA that addresses climate change, has been

Picture 1: Tidal waves of the South East Monsoon impacting on the South Coast road



[24] http://www.meecc.gov.sc/index.php/about-us/mandate/
[25] www.pcusey.sc/index.php/80-about-pcu/70-about-pcu
[26] http://www.meecc.gov.sc/index.php/about-us/structure/

mainstreamed in national documents such as the SSDS 2012 – 2020 and the Seychelles Energy Policy 2012- 2020.

8.5 ***Picture 1*** presents the current impact of tidal waves on the south coast road which is one of the coastal roads that is actually being affected by climate change. It is to be noted that concrete revetment has been used (***Picture 2***) to protect the stretch of road from the wave action and erosion. However the wave action is still significant and affects the road system and users.

Picture 2: The above road at low tide showing the concrete revetment used



8.6 Audit noted through review of documents that two bilateral studies were conducted in Seychelles by researchers from Cuba and Japan and they highlighted the threat of climate change and made several alarming projections in regards to the impact of climate change on the Seychelles.

8.7 These studies indicate that in 2100 for instance, given the worse possible scenario of a tropical cyclone passing through the islands causing; a high tide of about 1.4m, with a concurrent flood water depth rising up to 0.5 m and with an estimated sea level rise of 0.6 m, it was predicted that all buildings and roads below 2.5 m are expected to be submerged in the ocean. ***Table 3*** further presents details of the extent of the damage.

Table 3: Projected number of buildings likely to be inundated under the worse possible scenario in 2100

Island		Risk of Inundation				
	Total Number of building	Number of Buildings affected	Number of facilities included			
			Hospitals	School	Restaurant	Hotel
Mahe	14,529	2,017(14%)	9	10	14	24
Praslin	2,528	1,601(63%)	1	3	7	33
La Digue	674	321 (57%)	1	2	0	12
Total	***15,461***	***3,939(25%)***	***11***	***15***	***21***	***69***

Source: JICA Report Chapter 2, P.65-67

8.8 The study also indicates that amongst other damages, the road system will be affected where; 67 km of roads on Mahe, 43km of roads Praslin and 7 km of roads on La Digue are expected to be inundated. These include 42% of the coastal main roads on Mahe, 72% in Praslin and 27% on La Digue are expected to be inundated. The impacts would be disastrous given that most of the coastal roads are major routes that links to various parts of the island and some are without alternatives.

8.9 Furthermore Audit noted that with the restructuring of the Ministry of Environment in 2015, there is now the Department for Energy and Climate Change which is divided into various sections and agencies that aim to collect data on, raise awareness, manage projects and carry out adaptation and mitigation measures to address climate change.

Conclusion

8.10 Audit acknowledged that the Government is aware of the impact and future threat of climate change, therefore has resulted in the development of strategic documents and policies that have mainstreamed climate change adaptation and mitigation activities. A Department for Energy and Climate Change was also established in 2015 under the Ministry of Environment to

facilitate the same. However the implementation of these documents are vital in ensuring that the vulnerabilities identified are addressed.

Recommendation

8.11 MEECC should ensure that the strategies are implemented and attain their respective objectives.

Management response

8.12 *Seychelles came out first globally in the Environmental Performance Index 2018 for its efforts in its Climate Change Policy*[27]*. MEECC is also in the process of recruiting a Climate Change Negotiator for its international Climate Negotiations Section. This will build the Section's capacity, ensure that Seychelles is well represented at discussions and negotiate against climate change.*

2. Improper record keeping of climate change education and awareness programmes

8.13 Target 13.3 of the SDG aims to improve education, awareness-raising and human and institutional capacity on climate change mitigation, adaptation, impact reduction and early warning. The National Climate Change Strategy, 2009 also places significant importance on education as a means to build capacity and social empowerment at all levels to adequately respond to climate change and strategies to 'Develop Climate Change Education and Communication' and to 'Implement climate change awareness at all levels' was proposed in the document[28].

8.14 Audit noted that MEECC has a Public Education & Community Outreach (PECO) section whose mandate is to organize educational activities, and implement programs at community level to better encourage the public to adopt sustainable lifestyles. Audit requested details of programs conducted by the

[27] https://epi.envirocenter.yale.edu/epi-country-report/SYC
[28] Seychelles National Climate Change Strategy, 2009

section related to climate change and was informed that; the main activities done has been workshops for teachers and school children in regards to impact on climate change, coastal rehabilitation activities which involve planting of trees around the coast to fight against erosion, school children has also been trained to do beach monitoring so as to measure the changes in sand level and there has also been competitions related to coast and climate change. However Audit was not provided with evidence such as reports, activity plans or photographs to substantiate these activities.

8.15 Further Audit noted that the Ministry has been organising sensitization campaigns and developed the "Eco-schools[29]" program, details of which were also not made available for Audit perusal. Audit was hence unable to confirm the type, number and effectiveness of the educational programs run by PECO. Audit also noted that the Sandwatch programme, relating to climate change was organised from 2003 to 2012 but no records relating to the same was available.

Conclusion

8.16 Education is an important tool in ensuring that people are sufficiently aware of the threats that climate change poses for inhabitants of vulnerable areas including the Seychelles. This provides them with skills and knowledge to engage in sustainable lifestyles which will further reduce the human factors which contribute or accelerate the impacts of climate change on the environment. Moreover, ensuring that Seychelles improves education, awareness-raising and human and institutional capacity on climate change mitigation, adaptation, impact reduction and early warning further assist Seychelles to meet Target 13.3 of the SDGs.

8.17 Audit noted that the PECO is mandated to conduct educational activities in the community however they are not keeping documentation to confirm the type of activities conducted.

[29] https://www.facebook.com/ecoschools.seychelles/

Recommendation

8.18 The PECO should document the educational campaigns/programs it is involved in, so that the impact of these programs could be evaluated and necessary corrective mid-course actions are taken and to ensure that their objectives are met.

Management response

8.19 *MEECC has agreed to develop templates for record keeping and to properly document educational programmes organized by the Ministry.*

3. Seychelles is switching from petroleum products to renewable energy

8.20 As indicated above the Vulnerability Resilience Profile of the Seychelles raised concerns over the energy security of the country, given the high dependence on petroleum based energy sources that are not only unsustainable, but adversely contribute to climate change.

Picture 3: Ile De Romainville's wind power project



Source: www.masdar.ae

8.21 To address this the Seychelles Energy Policy 2010-2030, which outlines the vision of the energy sector development towards 2030, targets to diversify the energy base of the country so as to achieve 100% renewable energy in the long term, by gradually achieving 5% and 15% share of renewable energy by 2020 and 2030 respectively. Further under the INDC of the UNFCCC, Seychelles has also committed to reduce its economy-wide absolute Green House Gases (GHG) emission by 21.4% by 2025 and 29.0% by 2030[30]. Nonetheless, Seychelles is an insignificant emitter of GHGs by world

[30] INDC September 2015

standard, as it accounted for less than 0.003% in 2011 and is not expected to be a net emitter before 2025[31].

8.22 Audit was informed that as at March 2017, Seychelles had reached an estimated 2.5% of its renewable energy target and this was being generated through various renewable energy projects such as the six-megawatt wind turbine farm located on Ile Du Port (three plants) and Ile De Romainville (five plants) (***Picture 3***) as well as other supplementary projects implemented by the Government of Seychelles through PUC, SEC and MEECC in collaboration with other partners and funding agencies which amounted to more than R 355 million. These projects are presented in ***Table 4***.

Table 4: Renewable energy related projects undertaken by -the Government

Year	Project	Cost (R)	Status
2012	Port Victoria Wind Farm	339,868,800	Completed
2013	Rooftop photovoltaic rebate scheme	14,592,418	Ongoing
2017	LED Bulb exchange	542,880	Ongoing
	Total Amount	**355,004,098**	

Source: PUC

8.23 To further achieve its renewable energy target, Audit was informed that the Government has also committed itself to other renewable energy projects as of 2018 at an estimated total cost of R 321 million as shown in ***Table 5***.

Table 5: Proposed energy related project

Project	*Proposed startup date*	*Estimated Cost (R)*	*Implementing organisation*
Energy efficiency in government buildings	2018	1,000,000	MEECC and SEC
Floating solar farm (4MW)	2019	113,289,600	Government and SEC facilitated by PUC
Romainville solar farm (5MW)	2018	155,773,200	PUC
Democratization of photovoltaic	2018	48,753,330	Government and assisted by PUC
Energy storage study	2018	2,493,338	PUC
	Total	**321,309,468**	

Source: PUC

[31]INDC September 2015

Conclusion

8.24 Audit concludes that the Government supported by various funding agencies are involved in various clean energy efficient projects that aims to reduce Seychelles' reliance on petroleum base energy source and to move towards cleaner energy sources from wind and solar farms, photovoltaic systems and other renewable energy sources.

8.25 Audit noted that from activities conducted from 2012 to 2017, only 2.5% of the 5% share of the renewable energy target has been achieved. Therefore Audit is of the view that the target for the achievement of the 5% and 15% share of renewable energy by 2020 and 2030 respectively seems to be difficult to achieve unless extra efforts are made.

Recommendation

8.26 MEECC should take measures to ensure that the renewable energy target of 5% and 15% by 2020 and 2030 respectively is achieved.

Management response

8.27 *MEECC; considering the decrease in the cost of photovoltaic and the various projects which the Government are or/will be engaged in, the 5% target by 2020 is achievable but the 15% target by 2030 might be more of a challenge.*

8.28 *SEC; Table 4 has gotten Seychelles at 4% and Table 5 will get Seychelles at 6% by 2019. SEC is therefore confident that Seychelles will achieve and surpass its 5% target of renewable energy by 2020, however the 15% by 2030 and 100% in the long run appears unattainable unless an exceptional effort is made by the Government of Seychelles. SEC noted that Seychelles will be in a better position to determine whether the 15% target can be reached closer to 2020-25.*

4. Local support for climate mitigation projects.

8.29 The vision of the Seychelles Energy Policy 2010-2030 is that "energy supply in Seychelles should be based on both public and private participation and ownership".

8.30 On the awareness front, Audit noted that the Programme Coordination Unit (PCU) of the MEECC, which is the local management system for the Global Environment Facility (GEF) and UNDP national projects[32], has galvanized support from various local partners to achieve this. For instance, the Seychelles Energy Commission (SEC) has worked with NGOs such as the Sustainability for Seychelles (S4S) at local science fairs to increase knowledge and interest in renewable energy sources amongst school children (***Picture 4***).

8.31 Further Audit noted that through the Grid-Connected Rooftop Photovoltaic (PV) Systems project, steps have been taken to develop local capacity to install and maintain these systems. Under this project lecturers from the Seychelles Institute of Technology (SIT) were trained for the development of a vocational training program at the institute.

Picture 4: SEC and S4S collaborate in local science fair to showcase innovation in creating models powered by solar energy



Source: Seychelles News Agency

[32] www.pcusey.sc/index.php/80-about-pcu/70-about-pcu

Conclusion

8.32 Audit noted that to accelerate the process of achieving the renewable energy targets set forth by the Seychelles Energy Policy support from the public is being mobilized through their participation in its projects and efforts. The civil society and other key stakeholder groups play a vital role in the mitigation of climate change and they have assisted the Government through various projects and activities to achieve these objectives and therefore, this relationship needs to be maintained and promoted further.

Recommendation

8.33 The Government of Seychelles and the local partners including civil societies should maintain good working relationship towards the achievement of the climate change mitigation objectives.

Management Response

8.34 *SEC is working with S4S to develop a Seychelles Energy Efficiency Communication Strategy (SEECS) which will further enhance education and awareness programs for the public.*

Coastal Pollution and degradation

Coastal Pollution

9.1 Pollution along the coast comes from various inland and offshore sources. The potential sources of inland pollution are from dumping or inappropriate disposal of land based pollutants and waste. It can be from as small as a plastic bottle left over after a family picnic on the beach, to as large as domestic and household materials that are illegally dumped in secluded coastal areas. These are then deposited into the sea directly or through natural processes such as wave action, tide movement, wind or rain water (i.e. flooding).

Figure 8: Target 14.1



Source: www.globalgoals.org

9.2 Sediment wash-down from construction sites and agricultural farms are also potential sources of coastal pollution and they are expected to increase with the expansion of such economic and developmental activities.

9.3 Marine debris is another contributor to coastal pollution and a concern to the Seychelles due to its impact on the outer islands, as the removal and clean-up of these debris is comparatively challenging and costly. One such example is the deposition of marine debris on the atoll of Aldabra situated over 1, 000 km southwest of the main island of Mahe. It is to be noted that Aldabra being a UNESCO Marine World Heritage Site, as well as a Ramsar site, is a safe haven for various marine biodiversity and they are prone to ingest and suffocate on these debris.

9.4 The adverse impact of micro plastics on marine ecosystem which consequently forms part of the human food chain is also of concern, given that the population of Seychelles has a high fish consumption.

9.5 Reports indicate that passing ships, local and tourist vessels[33] that moor directly on the coast may also pose a potential threat of pollution to the marine environment including the coastal zone. Further the risk of a major oil spill from boats and tankers is also probable given that the islands lie on a major international oil transportation route and in 1972, a Royal Navy vessel ran aground near Aldabra, and discharged 40,000t of oil[34].

9.6 Part III of the Environment Protection Act (EPA) 2016, contains provision for prevention, control and abatement of environment pollution and addresses the issue of coastal pollution. All Environment officers and Authorities as prescribed by the EPA has the power to enforce the provision of the EPA related to pollution and other non-compliance. However the Standards and Enforcement Section (SES) of the MEECC is the Section that specifically deals with pollution cases. All fines collected related to pollution cases are deposited in the Environment Trust Fund (ETF), managed by the MEECC and the fund is also used to pay cleaning cost (e.g. oil slick) or other payments in cases where the perpetrator has not been identified.

9.7 The Land Waste Management Agency (LWMA) of the MEECC is responsible for cleaning and waste management in the country in accordance with the Solid Waste Management Policy. The LWMA contracts out to various private contractors for beach cleaning and related works in accordance with the Environment Protection (Landscape and Waste Management Agency) Regulation 2009. Audit also noted that NGOs such as The Ocean Project also undertake beach cleaning and sensitization activities.

1. Poor maintenance of records relating to pollution cases

9.8 As indicated previously the Standards and Enforcement Section (SES) of the MEECC has the powers to enforce the EPA and they deal with pollution related offences. Complaints are received from the general public, other agencies and

[33] Mangroves for the future initiative, National strategy and Action Plan 2010 – 2013
[34] https://irp-cdn.multiscreensite.com/2eb50196/files/uploaded/Seychelles1.pdf

other sections of the MEECC through; the Greenline, emails or personal visits to the Section.

9.9 Audit noted that the SES does not have a documented policy or a well laid down procedure as to how the Standards and Enforcement Officers (SEOs) are to receive, record and deal with the received complaints. However, from interviews conducted, Audit was informed that upon receipt of a complaint, the Officer receiving the complaint fills out a "complaint form" and registers it in the log book. The Officer will apply his/her own judgment as to how to classify/reference the complaint depending on its nature. Information from the "complaint form" is then used to fill an "investigation form" before opening a case file, which is later assigned to a SEO by the chief enforcement officer. A case file will additionally contain communication trail and other supporting evidence such as photographs, site visit reports, investigation details.

9.10 Audit selected a sample of 51 pollution cases from the log book based on the proximity of the reported incidents to the coast, sea or any water course to verify whether investigations were carried out and to confirm their status. The following observations were made:

- 26 cases (i.e. 51%) from the sample of 51 cases selected from the log book did not have an investigation form or any other supporting documents (photographs or other correspondence) attached. Five of these cases did not have a SEO name allocated to;
- seven cases which were all dated in the year 2016 were incomplete; and
- two cases dated in 2015 were also still pending.

9.11 Audit also noted that in 2013 a significant oil slick occurred due to an oil leakage into the sea from the Public Utilities Corporation's (PUC) oil reservoirs located at Roche Caiman which affected the islands of Ste Anne and Cerf as well as the Ste Anne Marine Park. However the relevant case file could not be located at SES, ETF or MEECC and was reported as missing.

9.12 All fines related to pollution cases are paid to the ETF and expenses relating to the cleaning of the same are also incurred from the Fund. However Audit only received details of fines relating to oil pollution and its corresponding expense as shown in ***Table 6***.

Table 6: Cleaning costs incurred and fines collected

Year	2015	2016	2017
Costs incurred by MEECC (R)	273,041	148,780	1, 500
Fines collected by MEECC (R)	Nil	250,000	255, 000

Source: Audit Analysis from ETF General Ledger

Conclusion

9.13 Apart from not having a clear written down guideline of how to deal with complaints, Audit noted that 51% of the pollution cases selected did not have an investigation form or other supporting documents. Audit is of the view that having complete records of pollution cases are vital in ensuring that such cases are dealt with. Furthermore MEECC can use these information to devise a risk mitigation strategy to prevent the same from occurring.

Recommendation

9.14 SES should document the procedures for dealing with complaints to ensure consistency. Furthermore all pollution cases should have an investigation form and other supporting documents.

Management response

9.15 *MEECC agreed with the findings and recommendation. Standard templates will be designed to ensure consistency of dealing with complaints. Also all pollution cases should have relevant supporting documents as this is required to substantiate court cases.*

2. Coastal pollution at the port areas are not being monitored

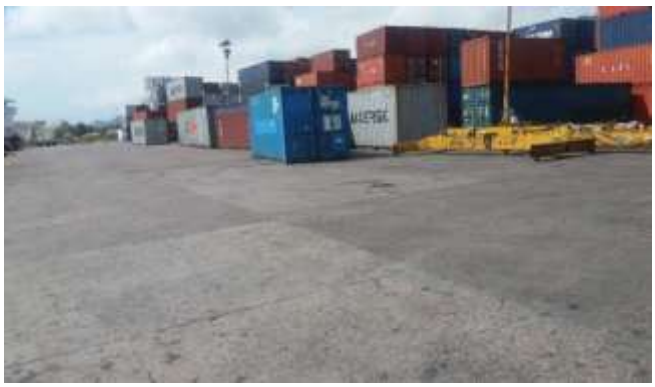
9.16 Audit carried out a number of visits of coastal areas around Mahe and Praslin to determine their level of pollution and the ports were identified as high pollution risk areas due to the nature of the activities that take place there, the types of industries that border with the coast and various vessels and individuals frequenting the area.

9.17 Audit visited some selected ports; New Port, Zone 14, Dolphin Quay, Inter Island Quay and Fishing Port, being managed by the Seychelles Ports Authority (SPA) on the 6th September 2017 to see and evaluate their level of pollution and the following were observed.

9.18 The port dock at new port was found to be generally well-maintained. (***Picture 5***).

Picture 5: New port docks were well maintained





9.19 Litter and rubbish such as Styrofoam boxes, water bottles were found floating in the water near the inter-island quay and Zone 14. Some were also suspended in the nearby ripraps. It was however unclear if the rubbish had drifted to these shores or if they had been improperly disposed of by users of the nearby port facilities (***Picture 6***).

Picture 6: Litter in ripraps and water at Inter Island quay and zone 14



9.20 At the fishing port the water was darker and murkier in color. Audit observed a white foamy water being discharged and was informed that it was from a nearby industry's sewage treatment plant (***Picture 7***).

Picture 7: Effluent being discharged from a nearby sewage treatment plant



9.21 Audit noted that Port activities such as refueling of vessels, berthing of tuna vessels and discharge of waste water from the cleaning of vessels or keeves were other potential sources of pollution at the port (***Picture 8 and 9***).

Picture 8: Vessel refueling cause a potential threat of oil pollution



Picture 9: Discharging waste water during the cleaning of keeve (fish container)



9.22 Audit observed that some of the port areas being occupied by businesses were poorly maintained which caused a potential pollution threat in the area (***Picture 10***).

Picture 10: Improper maintenance of port area by some tenants







9.23 Audit observed that there were improper storage of industrial salt bags used in tuna fisheries along the edge of the commercial port, some of which were open and were leaking into the ocean. Close by there was a pile of old debris the outcome of a cleaning activity performed on the port that was yet to be cleared (***Picture 11***).

Picture 11: Improper placement of salt bags and debris along the edge of the Commercial Port



Debris stacked along the coast of the Commercial Port

9.24 Audit could not confirm who was responsible to test and verify the quality of water in the port area. However, Audit noted that it was the responsibility of the MEECC to monitor discharge of effluent at sewage treatment plants.

9.25 Through interviews with Public Health officers Audit was informed that they conduct tests in the port area on an adhoc basis when reports of pollution are

reported to them. Audit also noted that the Authority has been assigned with a five yearly "sea-water quality monitoring study" which involves various coastal areas in the Seychelles but not the port areas.

Conclusion

9.26 From observations made Audit concludes that port areas stand a high risk of pollution due to the nature of their activities occurring in the area such as; discharge of waste water from sewage treatment plants, runoffs from vessels' keeve during cleaning as well as re-fuelling while docked. The vessels may have contaminants that can be released into the surrounding environment when they are being cleaned. Audit also observed that some of the grounds in the port area were not properly maintained by some tenants, posing a high risk of pollution.

9.27 Audit was however not provided with information as to the authority primarily responsible for evaluating the water quality at the ports area as such there is no specific authority designated for this purpose. The PHA stated they conduct these tests on an adhoc basis only when reports of pollution are received. Nonetheless they have the capacity and experience to do the same as they are involved in the sea monitoring exercise. Likewise the MEECC has the responsibility to monitor discharge from sewage treatment plants to ensure that it is in-line with the relevant guidelines. Therefore Audit is of the opinion that maybe a task force involving these key authorities; SPA, MEECC and PHA may be required to monitor the port area.

Recommendation

9.28 Audit recommends that relevant authorities such as MEECC, SPA and PHA test the water quality of the port areas on a regular basis.

9.29 SPA should also increase monitoring and surveillance to identify and address the causes of likely pollution of the port areas from the activities of the tenants and visitors.

Management response

9.30 *MEECC agrees that the Port area is a high risk pollution area and that there should be close monitoring and testing of water quality. This exercise could be carried out as a joint effort given that Port Authorities also have their international standards to meet and also since MEECC depends on the laboratory services of Seychelles Bureau of Standards (SBS), the PHA and the PUC. Limited human resources has prevented MEECC from performing such tests.*

9.31 *SPA; The information related to the Audit carried at the Port are indeed correct and the points raised are environmental issues that have very often brought to light. Yet in a realistic view, most of the pollution mentioned are to some extent inevitable vis a vis the type of activities being undertaken at the ports. This includes the high volume of industrial fishing vessels calling at the ports and the tuna canning factory situated right on the dock of the fishing port which is probably two of the main source of water pollution around Port Victoria. Competent authorities must find ways to mitigate the pollution level and in doing so implement strict penalties to parties found liable of deliberate act of pollution.*

9.32 *PHA; The Public Health Authority (PHA) has the mandate to test for water pollution for recreational activities. The Public health laboratory may provide its services to other departments such as Department of Environment.*

3. Non monitoring of effluent quality at Sewage Treatment and Desalination Plants by MEECC

9.33 The discharge of effluent in a water course such as the sea/ocean is governed under Part III of the EPA and requires a permit from the MEECC, the sole authority having the mandate to monitor the effluent discharged to ensure conformation to the prescribed effluent standards. The permit is valid for two years and has a set of prescribed effluent standards, in accordance to the EPA, that the permit holder must abide to.

9.34 PUC provides water, electricity and sanitation services to the country. It has several Sewage Treatment Plants (STPs) and desalination plants around Seychelles and most of their effluent are released into the sea.

9.35 Audit noted that MEECC does not have a flagging system in place to inform the plant owners for renewal of their permits after two years as onus of renewing permits and carrying out tests on the final effluent lies on the plant owners. Audit was informed that the MEECC's laboratory is not operational and thus the Ministry has not been able to test the effluent samples from PUC or any other establishments owning STPs and desalination plants, however relies on the test results as obtained from PUC.

9.36 Through site visit, interviews and document reviews Audit noted that PUC was doing independent testing on most of its effluent parameters except for '*heavy metal'* and '*Chlorophyll A'* that are being conducted by external laboratories. Further, till date we are yet to receive any document or confirmation from MEECC to confirm that they are doing monitoring activity at PUC plants and other similar plants. Audit was informed through interviews that if PUC encountered any issue they would inform MEECC on the same.

Conclusion

9.37 Ensuring that the standards of effluent discharge is significant for the protection against pollution and for effluent with sea-outflow as it is essential to safeguard the marine ecosystem. The EPA makes provision for permits to regulate the effluent discharge to prevent the same however Audit noted that MEECC is only providing these permits with no monitoring being done to ensure that the terms and conditions of the permit are being abided to.

9.38 Audit also noted that PUC has several desalination and sewage treatment plants and they were doing self-testing on the effluent discharged by their plants which poses a risk of false reporting and non-compliance. Audit acknowledged the shortcoming of the MEECC for having a non-operational laboratory which may have affected the inability of the MEECC to test samples of effluent from sewage treatment and desalination plants. Nonetheless they could perform

monitoring and inspection exercises and sought assistance from other certified laboratories to perform the required test.

Recommendation

9.39 Audit recommends that MEECC monitors the permits that it issues to identify non-compliances to the EPA.

Management response

9.40 *Compliance to the permit is a priority to MEECC however, we currently do rely on the results given to us by the PUC as we are unable to carry out our own test since we do not have the required equipment and laboratory to do so. It is to be noted that the EPA makes provisions for MEECC to use public laboratories such as PUC, PHA and SBS. However we may consider the use of SBS laboratory to carry out test on a sample basis.*

4. Seychelles may not be prepared to deal with a major oil spill incident

9.41 As previously indicated, Seychelles lies on a major international oil transportation route and therefore, is at risk of encountering a major oil spill. However Audit noted that Seychelles may not be prepared to address a major oil spill incident and these are presented through the collective shortcomings identified in points 6.1 to 6.2 below.

4.1 Seychelles' National Oil Spill Contingency Plan (NOSCP) needs revision

9.42 In the eventuality of an oil spill occurring in Seychelles this will require the mobilization of a number of organizations which operate as a national task force to address the situation. This is governed by a National Oil Spill Contingency Plan (NOSCP) which aims to provide for the coordination and direction of an effective response to oil spills in Seychelles.

9.43 Audit was informed that the master document is maintained by the MEECC and relevant sections are available with individual partners such as the SCG for instance, depending on their role in addressing the disaster.

9.44 The NOSCP was last revised in June 2000 and a revision was scheduled for August 2005[35] but did not materialize due to non-availability of funds to support the exercise. Nonetheless, the NOSCP has been tested in 2013 through simulation exercises organized by the European Union Conference on Antennas on Propagation (EUCAP) Nestor and the European Union's Critical Maritime Routes in the Indian Ocean (EU CRIMARIO) and Audit noted that the recommendations in the activity reports of these simulation exercises, highlights the need for the revision of the NOSCP to truly be able to measure Seychelles' responsiveness and preparedness to such a disaster.

Conclusion

9.45 The NOSCP is an important document that coordinates the activities of all relevant agencies in the event of a major oil spill. However, Audit noted that the document requires revision and updating based on the recommendations made from agencies that have tested the plan. This will provide a standard approach and well-defined roles for all the involved agencies and thus will improve Seychelles' preparedness to deal with such a disaster. Audit noted that the unrevised document is rendered idle to some extent.

Recommendation

9.46 MEECC and SCG should ensure that the NOSCP is revised and updated to reflect current best practices to address an oil spill. Also all relevant stakeholders should be aware of their roles and responsibilities.

Management response

9.47 *MEECC agrees that the NOSCP should be revised, given the significance of such a calamity to the country. MEECC and SCG plans to meet up to discuss the way forward.*

[35] Source: The International Tanker Owners Pollution Federation (ITOPF) Limited, country profile.

4.2 Seychelles is inadequately equipped to deal with a major oil spill

9.48 As per the Command Post Chart of the NOSCP (***Appendix 12***), the Department of Risk and Disaster Management (DRDM) is the designated headquarter to oversee a major oil spill. The NOSCP chart provides different levels of command with the DRDM on the second tier (often referred to as the Unified Command) as a "Coordinator" of operations while the MEECC takes up the role of the "lead agency". Audit was informed that the SCG is a key agency to deal with cases of oil spill in Seychelles' EEZ and all the equipment related to the oil spill were stored there.

9.49 ***Table 7*** presents the various equipment available for oil spill as per the NOSCP. A verification visit was conducted by Audit in September 2017 to assess the availability and conditions of the reported equipment.

Table 7: Database of equipment to address oil spill

Item	Quantity	Ownership
Long range patrol vessel	4	SCG
Medium range patrol vessel	3	SCG
Rescue boat	1	SCG
Short range vessel	7	SCG
Booms	11	MEECC
Micro-booms	10	MEECC
Portapak 5	10	MEECC
Loose fibre	100 x 10kg	MEECC
Hydraulic pumps	2	MEECC
Tank	1	MEECC
Skimmer	2	MEECC
Air Compressor	1	MEECC
Water pump	1	MEECC

Source: NOSCP

9.50 Audit noted and was informed that several of the items above (***Picture 12***) were partially defective, no longer operational or outdated where items such as; the hydraulic pump, water pump, air compressor and tank were purchased between 10 to 20 years ago. Audit also noted that the vessels involved in the oil spill were also part of the SCG fleet for normal duty operations.

Picture 12: Air compressor, partially operational and aged



9.51 Audit was informed that the SCG carries out maintenance work on the equipment every two to three months, however no fixed maintenance schedule for the same has been drawn. Audit was also informed that the SCG officer who carries out the maintenance works will be retiring shortly.

9.52 Audit noted that MEECC stores smaller oil spill equipment (e.g. booms) that they had recently purchased (November 2015 and February 2016, at a cost of ZAR 150, 724 and ZAR 34, 399.11 respectively[36]) at the SCG (***Picture 13***). These equipment are also used for oil slick clean-up. Audit noted that no asset register to record these equipment was being maintained nor any inventory count was conducted. The MEECC provided Audit with only a list of invoices for these items. SCG only kept an equipment log book to monitor the movement of equipment, however Audit was not provided with the log book for examination and verification.

9.53 Audit observed that oil spill equipment are stored at two locations on the SCG premises; the small items are located in their helicopter hangar (***Picture 13***) and the larger items are at their workshop (***Picture 14***); the latter was in an open area with unrestricted access by officers while the hangar was kept locked.

[36] Valued at R 172,591.75 and R 39, 389.89 respectively

Picture 13. Oil Spill equipment at SCG premises



Picture 14: Oil spill equipment in the open-access workshop at SCG premises



Conclusion

9.54 A major oil spill would be detrimental to the Seychelles, given its heavy reliance on its marine resources. Various sectors such as fisheries and tourism would be affected by such an incident thus the need to address the disaster effectively.

9.55 From the visits conducted at the SCG where all oil spill equipment and resources are stored, Audit observed that the equipment are old and may not be adequate to address a situation of major oil spill. Further no asset register was

maintained nor has any physical verification of the assets in possession been conducted. Proper maintenance and upkeep of the equipment was lacking.

Recommendation

9.56 Audit recommends that the MEECC and SCG maintain proper equipment records such as an asset register and perform an inventory-count of equipment available whilst ensuring that they are operational and will be able to address an eventual oil spill incident.

Management response

9.57 *MEECC will also take stock of equipment and ensure that proper records are kept. We have included the purchase oil spill equipment in our budget over the years but the Ministry of Finance consistently does not approve for it. MEECC now will be making a call for project under the ETF to provide some funding for some equipment for oil spill.*

9.58 *SCG has made the necessary provisions to train further personnel in oil spill exercises and to assist in the maintenance of oil spill equipment. It was noted that a few SCG officers have attended international trainings in such fields as at September 2018.*

5. MEECC enforces plastic ban to tackle marine pollution

9.59 Plastic pollution, dubbed as "the silent killer" is one of the most pressing marine threats in the world including the Seychelles. Plastic marine debris does not only affect the aesthetical view of Seychelles' beaches but also poses significant threat to marine life as well as to its inhabitants given that micro-plastic has the potential to become part of the food chain.

9.60 In July 2017, the MEECC implemented the complete banning of the importation and use of plastic bags, single use plates, cups and utensils and Styrofoam take-away boxes through the development and implementation of two sets of regulations under the EPA namely the Environment Protection (Restriction on manufacture, importation, distribution and sale of plastic bags) Regulation

2017[37] and the Environment Protection (Restriction on importation, distribution and sale of plastic bags) Regulation 2017[38].

9.61 The Regulations sets out the various conditions and standards related to plastic bags. They were welcomed by environmentalists although to some extent contested by the private sector and business operators. Nonetheless, the latter had been given a grace period until July 2017 to fully exhaust their stock of plastics and find alternatives.

Conclusion

9.62 Marine debris, such as plastic bags and plastic products, is a concern to the Seychelles as pollutants which poses a significant threat to marine life as well as jeopardize the quality of our food source. To reduce plastic bags in the environment, the MEECC has enforced a ban on the importation and production of plastic bags as well as regulated the grade of essential plastic bags promoting bio-degradable products through the implementation of two Regulations. Audit acknowledged efforts being made by the Ministry to raise awareness and change people's lifestyle related to the use of non-plastic and more sustainable carrier bags.

Recommendation

9.63 The MEECC should ensure that the terms under the two legislation that regulate the importation of plastic bags are enforced.

Management response

9.64 *MEECC is implementing and monitoring the plastic ban and there are currently two court cases prosecuting offenders who were still selling plastic bags after the ban has taken effect. Also MEECC has produced a cabinet paper, which was recently approved in which it seeks the support of MDA's to switch from using plastic to reusable options in their work environment. These include activities such as replacing plastic water bottle in meeting rooms with other*

[37] SI 37 of 2017
[38] SI 38 of 2017

alternatives such as glass re-usable bottles or a water dispenser. MEECC has also drafted the plastic straw ban Regulation which has also obtained the approval of the cabinet.

6. Local community action for raising awareness on environment protection

9.65 The MEECC raises awareness with the general public against littering via television, radio and newspaper advert. They also run educational programs such as holiday activities, eco-school and eco-camp which target children and youth.

9.66 On its part, the civil society has committed to a series of action aimed at protecting coastal resources against pollution. NGOs such as S4S, SIDS Youth AIMS Hub (SYAH) Seychelles and The Ocean Project (TOP) are examples of grass-root organizations working to sensitize the masses on the importance of environment protection.



Picture 15: Civil society involved in campaign to utilize biodegradable bags

Source: SYAH Seychelles



Picture 16: Sorting of rubbish that was collected after beach cleanup at Grande Police Bay

9.67 One example includes the monthly cleanup initiated by The Ocean Project in 2017 across the country to educate and engage Seychellois to take action to protect the ocean against the threats of marine pollution and climate change, an activity that Audit participated in as presented in ***Picture 16*** across.

9.68 S4S has launched its own campaign on waste sorting as well as develop educational materials such as the "Reduce, Re-use, Recycle" leaflet which lists important contacts of recycling agencies in Seychelles. S4S also offers personalized advice on how to sort household waste among other services.

9.69 On its part, SYAH has developed a "Blue Economy Internship" program to get young people to take an interest in ocean-related careers. The program entered into its second phase in 2017 and aims at shaping young people into "ocean ambassadors" where they learn to protect and advocate for the ocean. These programmes have been complemented by other national initiatives, although constant sensitization would go a long way to raise more awareness.

9.70 The MEECC works closely with the civil society whom they consider as partners in development. For instance, the MEECC consulted them for the revision of the Environment Protection Act (EPA) and invite them to key exercises such as the Environment Impact Assessment (EIA) meetings.

Conclusion

9.71 Audit concludes that the MEECC's activities are being complemented and supported by activities of the civil society and their collective effort is working towards the protection of natural resources.

Recommendation

9.72 Audit noted that such vital partnership can amount to fruitful achievements and recommends that MEECC maintains such relationships.

Management response

9.73 *MEECC will continue to raise awareness and maintain engagement with civil societies and all relevant stakeholders in the various activities being conducted by the Ministry.*

Coastal degradation

10.1 In Seychelles coastal erosion is one of the main sources of coastal degradation. Coastal erosion involves the break down and removal of material along the coastline by the movement of wind and water[39].

10.2 Research conducted by Duvat in the early 2000, presented that of the 62 beaches on Mahe, Praslin and La Digue, 33 (53%) were seriously eroded as presented in ***Table 8***. These were caused by a combination of both natural factors (e.g. changes in monsoon patterns, storm frequency) and human interferences (e.g. sand 2extraction and coastal reclamation).

Table 8: Characteristics of coasts and beaches in Granitic Seychelles

Island and land Area(Km²)	**Main characteristics of coasts and beaches**			**Importance of beach erosion**	
	Coastline (km)	Sandy Coastline (km/%)	Number of Beaches	Number of beaches which are seriously eroded	Number of beaches with hard protection structures
Mahe (154)	105	36(34%)	23	12	7
Praslin (37)	43	21(48%)	24	16	11
La Digue (10)	15	8(53%)	15	7	5
Total	**163**	**65(40%)**	**62**	**33**	**23**

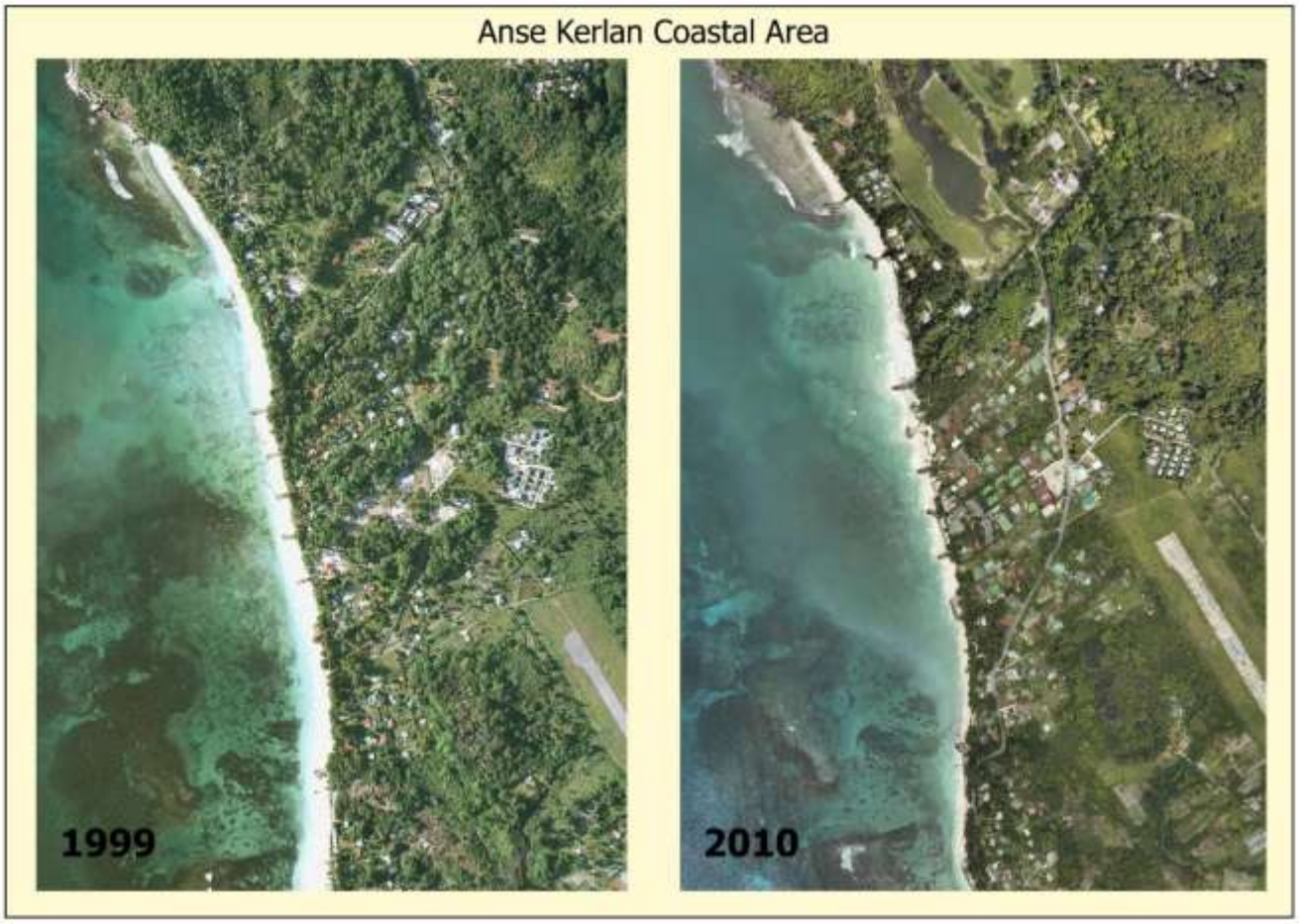
Source: Duval, V[40]

10.3 Of the beaches which have undergone considerable recession over the years, the most significant is the Anse Kerlan beach on Praslin. ***Figure 9*** below

[39] Coastal Erosion & Control, Ministry of Environment, Energy and Climate Change website.
[40] Duvat. V., (2009) Beach erosion management in Small Island Developing States: Indian Ocean case Studies, WIT Transaction on Ecology and the Environment, Vol126 doi:10.2495/CP090141

presents the aerial photo of the area, depicting the change of the beach profile with time.

Figure 9: Aerial photo of Anse Kerlan coastal area over 10 year period



Source: MEECC GIS

10.4 The Coastal Adaptation & Management Section (CAMS) of the MEECC has the mission to promote, educate and ensure implementation of effective storm water, management, flood control and coastal zone management practices in the Seychelles.

10.5 CAMS uses different coastal protection methods also referred to as "engineering practices" to protect the coastline from erosion. Coastal protection methods can be either soft or hard or a combination of both. Examples of soft engineering practices used in the Seychelles are; Timber piling, Beach

Nourishment and Sand dune management[41]. Rock Armouring is an example of hard engineering practices and ***Picture 17*** presents rock armouring used at the Anse Kerlan beach to mitigate the impact of coastal degradation.

10.6 CAMS is also involved in various activities to monitor the level of coastal degradation and they provide advice to both public and private entities on the best way to prevent coastal degradation during development either through the EIA process of through direct contact with the developer.



Picture 17: Coastal Degradation and Rock armouring being used at Anse Kerlan Beach

1. Legislative framework in place to protect the coast from erosion

10.7 The EPA states that an Environment Impact Assessment (EIA) is required for all developments in Seychelles and depending on its threat to the environment, it requires a categorization as Class I or II depending on the likely severity of its risks to the environment. Once an EIA has been successfully completed and all the environmental threats have been identified due to the proposed developmental activity an Environment Authorization is granted with a List of

[41] http://www.meecc.gov.sc/index.php/what-we-do/coastal-protection-management/

Standards Environment Conditions (***Appendix 11***) that the developer has to comply with.

10.8 Audit reviewed the list of Standard Environment Conditions and identified that it has 13 Sections and the second section deals with erosion. The section on Erosion section has a total of 20 conditions, labelled E1 to E20. They address coastal erosion and flooding. It provides various ways to prevent land destabilization and sediment wash down which ultimately affects the coast.

10.9 Audit noted that this section had the highest number of conditions compared to all other sections in the list. Audit was informed that E11 and E12 are key conditions that prevent construction/development too close to the shoreline that will cause coastal degradation which are as below:

E11: A buffer of 25m from high water mark should be maintained.

E12: Development should be set back a minimum of 25m from the High Water Mark in aid of beach erosion prevention.

Conclusion

10.10 Audit noted that the prescription of EPA, making an EIA mandatory before any development takes place in the Seychelles, so as to evaluate the potential impact on the environment and provide mitigation measures against environment degradation is a good step towards prevention of soil erosion. Audit further noted that the set of Environment Conditions imposed provides guidance to the developer and the second section of these conditions protects the coast from coastal degradation by providing guidance to mitigate erosion.

Recommendation

10.11 Considering the potential risk posed by non- performance of the EIA process, MEECC should ensure that as prescribed by the EPA, all developments must undergo an EIA and measures are in place for all Environment Conditions to be duly complied with.

Management response

10.12 *The project with the World Bank to develop a Coastal Zone Management Plan will also include a revision of the setback policy where the distance from the high water mark is being developed given the impact of the erosion to our coastline which will result in amendment to E11 and E12. The aim is to have the set-back policy incorporated with the Coastal Management Plan with the assistance of World Bank. It is expected that the policy and the plan would reach its final stage by 1st quarter of 2019.*

2. Predominant use of hard engineering to address coastal degradation

10.13 Through review of coastal project files and site visit Audit noted that Seychelles uses primarily hard engineering practices to address coastal erosion. As indicated previously two kinds of engineering practices exist to protect the coast from erosion they are; soft and hard engineering practices.

10.14 Past reports and research conducted in the Seychelles related to the same has identified that hard engineering practices has long been used in the Seychelles with the building of sea walls and other similar infrastructure since the 1980s. However these structures are today being seen as eye-sore and some even a danger to beach goers (***Picture 18***).

Picture 18: Degraded sea walls at Au Cap



Picture 19: Rock Dumping at North East Point



10.15 The MEECC presented that soft engineering approaches are often less expensive, have less impact on the environment and are usually more sustainable and long term than hard engineering practices[42]. However, through review of the 10 coastal projects conducted by CAMS for the period 2015 to 2017, (***Appendix 13***) which referred to five affected areas at Anse La Mouche, La Passe (la Digue), Anse Gaulette, Anse Boileau and North East Point. Audit noted that hard engineering practices have been used for nine of these projects, except for Anse Boileau were only the topographical survey has been done so far.

10.16 Audit further noted that timber piling which is a soft engineering approach was initially used in the Anse La Mouche project but it was later replaced by rock armouring and rock packing after the timber piling was damaged because untreated wood was used for the piling. This resulted in a waste of resources due to the use of untreated wood.

10.17 For La Passe a combination of both soft and hard engineering was used, namely rock armouring and beach nourishment. For both Anse Gaulette and North East Point (***Picture 19***) where rock dumping has been used as an emergency solution to coastal degradation in that area.

10.18 Duvat explains that structures such as sea walls and groynes (namely hard engineering structures) that are built hastily has long been a concern in the Seychelles as they are consequently ineffective to address their intended

[42] http://www.meecc.gov.sc/index.php/what-we-do/coastal-protection-management/

purpose and they additionally spoil the scenery, disturb human activity and are hazardous[43].

10.19 From a visit around the main island of Mahe, Audit noted that rock dumping and ripraps are common and in some areas were the method that has been used it no longer serves its purpose.

Picture 20: Rock Dumping at Beau Vallon Beach



10.20 An example is the Beau Vallon, Mare Anglaise Beach (***Picture 20***) where rock dumping has been done and the rocks are now an eye sore and it also poses a potential danger to those that use the beach. It is to be noted that coastal degradation is still prominent in the area with the adjacent road visibly at risk of being affected.

Conclusion

10.21 Audit noted that hard engineering practices are predominantly being used to overcome coastal degradation in Seychelles, such has been used in the past and has been found to be ineffective. Audit is of the view that MEECC is being reactive rather than proactive to address coastal degradation in the Seychelles hence they have no other option but to use hard engineering practices when the damage occurs. Hence the need for effective planning and management to address the issue.

[43] Duvat. V., (2009) Beach erosion management in Small Island Developing States: Indian Ocean case Studies, WIT Transaction on Ecology and the Environment, Vol126 doi:10.2495/CP090141

Recommendation

10.22 MEECC should adopt a pro-active approach to address coastal degradation whilst also ensuring that the most appropriate coastal mitigation option is being used.

Management response

10.23 *The predominant use of hard engineering practices arise mostly in cases of emergency whereby factors such as public infrastructures, namely road system public utilities (electric supply lines, etc... needs to be safeguarded. Climate change mitigation/adaptation measures are generally costly and have to be budgeted for.*

3. Poor record keeping of projects files at CAMS

10.24 As indicated above, CAMS is involved in various types of mitigation measures to address coastal degradation. Projects at CAMS are classified as either drainage, wetlands or coastal projects. The latter involves projects involving coastal fronts and high watermark or cases of erosion, sand accumulation, sand drifting and dune lands.

10.25 Review of the main coastal project undertaken by CAMS for the period 2015 to 2017 Audit observed the following shortcomings; poor project record keeping, as key documents such as, contracts, details of payments and completion certificates were not sighted in some project files and documents were not folioed. Out of a sample of 12 transactions from the projects which should have contracts and completion certificates Audit sighted only four contracts (33%) and five (41.6%) completion certificates.

10.26 These were significant documents related to the aforementioned projects as for instance a valid contract (or a written agreement) will list the agreed terms of both parties, while a completion certificate serves to ascertain that the work carried out by the respective contractor has been performed as per agreement. The completion certificate will also have details such as expected date of completion, progress of work completed and remaining works to be completed.

Picture 21: Rock Armouring at Anse La Mouche



10.27 Audit also noted that the Anse La Mouche Coastal Rehabilitation project took place in four phases since 2015 although the project had been separately classed in three files. Audit did not sight Phase II of the project and project documents had been randomly placed in the different files rather than having each set filed separately in its corresponding phase and year.

Conclusion

10.28 Maintaining proper records of projects through a good filing system does not only facilitate retrieval and use of information for monitoring but it protects documents from loss or damage and provides documentary evidence under legal circumstances. Audit did not sight contracts and completion certificates for more than 50 percent of the sample selected. This could be due to poor record keeping or these documents were non-existent.

Recommendation

10.29 CAMS should ensure that project files are complete and contains all relevant documents which are sequentially numbered.

Management response

10.30 *MEECC acknowledges this shortcoming and noted that record keeping has significantly improved since the beginning of 2018 with close supervision being*

done by the Director General to monitor the same in collaboration with the Procurement Oversight Unit (POU) to ensure compliance and transparency with the provisions in the Procurement Act 2008. As a start, a Vetting Committee, chaired by an external personnel and comprised of members from POU and Finance, has been set up since the beginning of 2018 whereby all projects are vetted to ensure compliance to set policies and guidelines.

4. Large variation between contract and actual cost of coastal projects

10.31 The La Passe rock armouring and beach nourishment project was awarded in 2015 through direct bidding to one contractor for an amount of R 674,130. The main objective of this project was the construction of a proposed rock revetment with embedded rock steps and beach nourishment at La Passe, La Digue.

10.32 The same contractor had also been awarded the La Passe bridge project and it was agreed to utilize the rocks and sand from the demolished cofferdam of the La Passe Bridge project as rock armouring and beach nourishment material respectively for the La Passe beach.

10.33 However Audit noted that additional rocks were purchased and transported from Praslin which increased the project cost substantially. The purchase of additional sand was also made further increasing the cost. This has resulted in a variation cost of more than a 100 per cent of the project cost as shown in ***Table 9***. Audit noted that retrospective approval of the variation cost was obtained from the procurement oversight unit.

10.34 Furthermore, Audit noted that in July 2017, R690, 000 was paid to the same contractor for beach nourishment works carried out at La Passe, La Digue for which approval from either the Procurement Oversight Unit or the National Tender Board was sought. Audit noted that the total project cost was over R2 million.

Table 9: Payments made in respect of the La Passe rock armouring and beach nourishment project

	Amount (R)	Remarks
Contract cost	674,130	Direct bid to one selected supplier
Additional variation cost	722,775	Retrospective approval from the procurement oversight unit
Beach Nourishment	690,000	No procurement approval
Total	**2,086,905**	

Source: Audit analysis

10.35 Audit noted that MEECC had the service of a project consultant who certified invoices from the contractor that the work had been carried out before payments were made.

Conclusion

10.36 Audit is of the view that better planning and monitoring should have taken place in respect of this project so that such large variation could have been minimized. Also other bids could have been obtained from other contractors to ensure that MEECC received the most competitive bid.

Recommendation

10.37 MEECC should abide to the Procurement Act. It should also ensure better planning and monitoring of its projects to prevent large variation of the initial project cost.

Management response

10.38 *MEECC stated that it has established a Vetting Committee to oversee projects undertaken by CAMS. The committee is made up of a mix of internal and external personnel from CAMS and MEECC which will improve transparency as well as provide compliance to various legislations such as Procurement Act.*

Coastal Monitoring and enforcement

11.1 Coastal monitoring and enforcement are carried out by different Government agencies; such as the MEECC, Seychelles Coast Guard (SCG), the Seychelles Fishing Authority (SFA) and the Seychelles National Parks Authority (SNPA) in accordance with their respective functional and operational mandates and jurisdictions.

Ministry of Environment Energy and Climate Change (MEECC)

11.2 The Standard and Enforcement Section (SES) of the Waste, Enforcement and Permit (WEP) Section of the MEECC has the responsibility of monitoring and enforcing the EPA clauses related to pollution. Whilst the Enforcement Section conducts land patrol on a daily basis based on a pre-determined schedule. The Standard Section does monitoring visits to primarily Water and Sewage Treatment Plans. This is done on an adhoc basis, whilst the Enforcement section patrols are conducted daily on various areas on Mahe including the coastline, to follow-up on lodged complaints and to investigate cases of illegal dumping, pollution, oil spill and other disturbances. SES is required to evaluate and monitor the compliance to the Environment Protection Act (EPA). Findings relating to this Section have previously been discussed above in the section on coastal pollution.

Picture 22: Officers from the Biodiversity Section Conducting Sea Turtle monitoring



Source: Annual Turtle Monitoring report, Oct 2015- March 2016

11.3 The Biodiversity, Conservation and Management (BCM) Division in the MEECC has both a marine unit and terrestrial unit, which manage and monitor native species during their breeding seasons, in particular the sooty tern and sea turtles[44]. It is guided by national biodiversity related legislations such as the

[44] Annual Turtle Monitoring Reports 2015 – 2017

EPA, National Parks and Nature Conservation Act, the Wild Animals and Birds Protection Act and the Breadfruit and Other Trees Act. The division is responsible for the implementation of various international obligations such as the CBD, CITES, CMS and the Nagoya Convention.

Seychelles National Parks Authority (SNPA)

11.4 The Seychelles has six marine national parks which are; Ste. Anne, Silhouette, Port Launay, Baie Ternay, Ile Coco, Curieuse and St. Pierre. The Seychelles National Parks Authority (SNPA) is responsible for conservation and maintenance of all marine and terrestrial national parks of the country. The work of the SNPA is guided by the National Park and Conservancy Act (NPCA) 1969 and its associated regulations and ordinances. Being the only authority under the MEECC that has boats SNPA also assists MEECC with monitoring of the sea along the coast when necessary.

Seychelles Fishing Authority (SFA)

11.5 The SFA was established in August 1984 under the Seychelles Fishing Authority (Establishment) Act and is mandated to safeguard the fisheries industry in the country. It has a Monitoring, Control and Surveillance (MCS) Division which consist of two Sections; the Enforcement Section and Monitoring Section. The Division mandate is to ensure compliance to the Fisheries Act and its associated regulations as well as other regional and international requirements. Their activities include the collection of data, port side monitoring and inspections and land and sea patrol along the coast of the islands of Mahe, Praslin and La Digue. MCS also monitors the movement of registered vessels through the Vessel Monitoring System (VMS).

11.6 SFA has entered in to various collaborations with national, regional and international bodies to undertake surveillance of Seychelles' EEZ such as regional patrols under the Regional Fisheries Surveillance Project and air patrols in collaboration with Seychelles Air Force. These monitoring activities are funded primarily under the sectorial support component of the Sustainable

Fisheries Partnership Agreement between the Seychelles and the European Union (EU) for the years 2015, 2016 and 2017 a total of €1,229,129 has been allocated to Monitoring, Control, Surveillance and Enforcement under this partnership agreement as detailed in ***Table 10*:**

Table 10: Allocation of Monitoring, Control, Surveillance & Enforcement for SFA by the EU

Year	2015	2016	2017	Total
Total Budget (€)	5,236,204	2,686,713	3,698,681	**11,621,598**
Budget allocated to MCS and Enforcement (€)	412,113	422,035	394,981	**1,229,129**
Percentage (%) of budget allocated to MSC & Enforcement	7.90	15.70	10.70	**10.57**

Source: SFA

11.7 In line with its core mandates, the SFA ensures that provisions under the Fisheries Act, 2014 and Fisheries Regulations are complied with. SFA also ensures that vessels flying its flag and vessels operating on a relatively small scale in comparison to the industrial fleets, are being compliant to the many regional and international requirements under various agreements, conventions, and other non-binding instruments as well. It also ensures that the sustainable management of fisheries resources are in line with best international practices and principles.

11.8 The SFA is the main entity empowered with addressing matters related to illegal, unreported and unregulated (IUU) fishing. ***Table 11*** provides details of the total number of patrols conducted by SFA for the period 2015 – 2017.

Table 11: Land, Inshore and Air patrol conducted by SFA for the period 2015 -2017

Types of Patrol	2015	2016	2017
Land Patrol	13	8	17
Inshore Patrol	3	4	4
Air Patrol	17hrs	22.7hrs	19.3hrs

Source: SFA

Seychelles Coast Guard

11.9 The Seychelles Coast Guard (SCG) monitors the Seychelles EEZ through patrols to safeguard the Seychelles territory against various threats such as piracy, IUU, narcotics and other transnational crimes. Patrols are conducted within Seychelles' EEZ, covering both inner and outer islands of the EEZ. They also utilize the VMS, Automatic Identification System (AIS) and other digital monitoring system to monitor vessels in the EEZ.

11.10 SCG assists the above mentioned authorities in their monitoring activities; For instance they assist the SFA to seize suspected vessels conducting illegal fishing activities in the Seychelles EEZ. They escort them back to port where the matter is then taken up by SFA which has the legal authority under the Fisheries Act to charge these offenders. They also work with MEECC to address issues related to oil spill and other disasters at sea.

Citizens, Governmental organizations and NGOs

11.11 Seychelles has various islands that are nature reserves, examples include Moyenne, Cousin Islands and the Aldabra Atoll. The preservation and monitoring of biodiversity on these islands are conducted by other Governmental organizations such as the Seychelles Island Foundation (SIF) and other NGOs that manage the island.

11.12 The citizens of the Seychelles are also a significant partner in the coastal monitoring through their vigil and cooperation. The MEECC has a Greenline and this is utilized by Seychellois to report on various acts that they observe such as pollution, illegal dumping, poaching amongst others. Further given the vastness of the EEZ, fishermen are considered as significant assets and they report acts of suspicious activity they observe at sea such as illegal fishing to either SCG or SFA.

1. SFA is not keeping proper records related to illegal fishing

11.13 Part III-sub-part 1- section 11(1) of the Fisheries Act 2014 states that ; a foreign vessel shall not be used for fishing or any fishing related activity in

Seychelles waters or for sedentary species on the continental Shelf, except under and in accordance with a license granted by the Authority'.

11.14 Audit requested a list of illegal fishing cases that SFA has registered during 2015 to 2017 and was provided with a list of eight cases related to the same and all pertaining to the year 2015 as presented in ***Table 12***.

Table 12: Recorded cases of suspected illegal fishing for 2015 – 2017

Case	Date	Nationality	Offence	Position	Result
Case 1	February 2015	Indian Vessel A	Suspected of fishing inside Seychelles waters without a valid fishing license	Seychelles waters	Case dropped due to insufficient evidence to prosecute
Case 2	February 2015	Indian Vessel B	Suspected of fishing inside Seychelles waters without a valid fishing license	Seychelles waters	Case dropped due to insufficient evidence to prosecute
Case 3	September 2015	Malagasy Vessel A	Suspected of fishing inside Seychelles waters without a valid fishing license	Seychelles waters	Court order to sell goods and dispose of bad sea cucumbers- Rs. 30,256.50 collected-Captain charged. Vessel forfeited and sold
Case 4	September 2015	Malagasy Vessel B	Suspected of fishing inside Seychelles waters without a valid fishing license	Seychelles waters	Related to the above, Court order to sell good and dispose of bad sea cucumbers- Rs. 30,256.50 collected-Captain charged. Vessel forfeited and sold
Case 5	November 2015	Taiwanese Vessel A	Fishing in restricted zones within the Seychelles waters	Armirantes and Farquhar Groups	Settled outside court, Compounding of offence for Rs. 1,250,000
Case 6	December 2015	Comorians Vessel A	Suspected of fishing within restricted zones within the Seychelles waters	Aldabra Group	Vessel forfeited and sold
Case 7	October 2017	Sri Lanka A	Fishing within Seychelles EEZ without a fishing licence	100NM South of Mahe	Persons of limited means to settle case, compounding of offence, vessel/gears seized
Case 8	**December 2017**	Sri Lanka B	Fishing within Seychelles EEZ without a fishing licence	Near Bird Island	Persons of limited means to settle case, compounding of offence, vessel/gears seized

Source: SFA

11.15 Through review of SFA case files and analysis of reports from the SCG, Audit noted the following;

11.16 For the period 2015 to December 2017 eight cases of illegal fishing were recorded by SFA of which six was recorded in 2015, none in 2016 and two cases in 2017.

11.17 Audit compared SFA records with those of SCG and noted that seven of the eight cases were apprehended through the joint patrol between SFA and SCG. SCG records reported on an additional case in July of 2015 involving a Sri Lankan Vessel that was not sighted in SFA records. SFA verbally informed Audit that they were involved in the apprehension of the vessel but that it was later released as the vessel was found to have drifted in the Seychelles waters following an engine problem. Audit was informed that reports are compiled by SFA officials at the end of each patrol but no report or documentation was presented to Audit to support the above case.

11.18 Through review of the case files, Audit noted that SFA incurs various expenses related to the upkeep of the vessels and crew whilst they are in port awaiting prosecution. These include security services, food, pest control, boat evaluation and assessment amongst others. However Audit noted that SFA was not maintaining requisite records of all the expenses incurred in regards to these vessels apart from a few invoices seen in file.

11.19 Further Audit noted that for the cases that were prosecuted (i.e. Case 3, 4, 6, 7 and 8) Section 70 of the Fisheries Act was applied, whereby their vessel, fishing gear and fish stock were forfeited to pay their fines and to refund SFA for their expenses out of the proceeds from the sale of the forfeited vessels. Audited noted that the proceeds gained from the sale were not always as expected or estimated. For example for Case 3 the value of vessel was estimated at R 250,000 but was sold only for R75, 000. Audit could not establish if SFA could recover the entire amount spent for the up keeping of the vessel and crew due to lack of details of the incurred expenditures mentioned above.

11.20 Audit also noted that records in the SFA case files were incomplete; for example, for Case 6 only the court judgment was sighted in the relevant file, no other supporting documents relating to the investigation of the case was sighted in the file.

Conclusion

11.21 During the period from 2015 to December 2017, eight cases of illegal fishing were registered by SFA. Of which seven vessels were suspected of fishing without a license in contravention to Section 11 of the Fisheries Act. The apprehension of these vessels was done through the coordination between SCG and SFA. However, Audit noted that not all cases reported by SCG was found in SFA records, indicating incompleteness of the SFA records. Audit also noted that expenditure related records were not complete and recovery of the expenses incurred, which are required to be recovered as per rules, is not ensured.

Recommendation

11.22 SFA should maintain complete and up to date records of all cases of suspected illegal fishing vessels and other vessels it attends to or apprehended, as well as records of expenses incurred for the up keep of apprehended vessels.

Management response

11.23 *A mechanism for fast tracking court cases related to illegal fishing needs to be set up. This will reduce the cost incurred for up keeping of vessel and crew. In the meantime SFA will keep relevant records in file of all transaction related to the capture, apprehension and up keep of vessels charged of illegal fishing.*

2. Delay in finalizing joint patrol agreement

11.24 Seychelles has a large EEZ, a size that requires the use of specialized vessels and sufficient resources to effectively identify and neutralize threats such as IUU fishing. Currently the SCG is assisting the SFA with the monitoring of the Seychelles EEZ in regards to IUU.

11.25 SCG has four (4) vessels that conduct such monitoring activity and they work as a team with the SFA to effectively apprehend and convict IUU fishers, and narcotics trafficking and transnational crime offenders where SFA is the legal authority that charges the offenders whilst SGC apprehends the vessels and brings them to port. To further enhance their collaboration, Audit was informed that a draft Memorandum of Understanding (MOU) has been under negotiation since 2016; which was not yet finalized at the time of this report.

Conclusion

11.26 The SFA and the SCG currently work in close collaboration to monitor the Seychelles EEZ and address threats such as IUU fishing. Audit acknowledged that the SFA and SCG is working on an MOU to further strengthen their partnership and collaboration. Audit, however, noted that the process to finalize the document is slow.

Recommendation

11.27 Efforts should be made to implement the MOU so that both parties are aware of their responsibilities under the MOU.

Management response

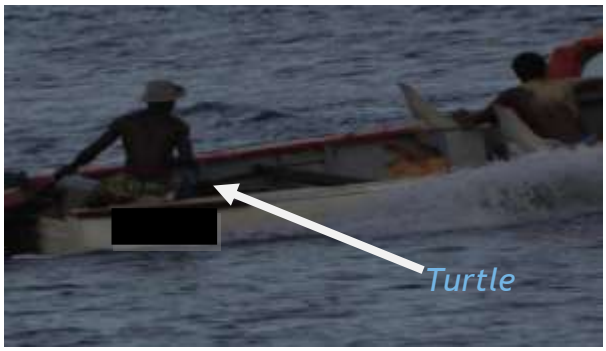
11.28 *SCG; The MOU is still pending at the AGs office, however we are still working in collaboration with the SFA to conduct joint patrols and surveillance.*

11.29 *SFA; We are still in engagement with the AG's office in regards to the MOU and we are still waiting for their response. The finalization and implementation of the MOU is significant for the funding purposes of regional patrols and missions.*

3. Environmental crimes are not processed in a timely manner

11.30 All cases related to environment such as pollution, poaching etc… are processed as part of any criminal case. Under the Environment Protection Act, 2016, Environment Police and other officers of the MEECC are authorized to impose a fine or an Enforcement Notice in breach of a particular clause but the authority to investigate and then prosecute remains with the Seychelles Police Department.

Picture 23: Evidence of poachers with a turtle in their boat



Source: Annual Turtle Monitoring report, Oct 2016- March 2017

11.31 Through various interviews and review of documents Audit was informed that there are cases where clear evidence have been collected in breach of the EPA and other environmental laws. However the cases are not pushed forth due to the Seychelles Police Department having to deal with other types of crimes that are considered more important such as murder or theft, therefore causing a delay in the processing of the case.

11.32 Audit was provided with a list of the status of cases from the MEECC Legal Department and noted that there were 26 cases dated from December 2016 to November 2017 that were still undisposed of which 17 (65%) were still pending including the one presented in ***Picture 23***. Audit noted that most of these cases were relating to unlawful possession of turtle meat, turtle shell, dolphin and lobster.

11.33 In 2015 for a brief period, the judiciary provided a 'Fast Track' court for Environmental and Road Traffic Offences where all of the environment cases were processed and this sped up some of the pending cases, but this court was short-lived and closed in the same year.

Conclusion

11.34 Given that the Seychelles is a nation heavily dependent on its environment and natural biodiversity the need to treat environment related cases as a priority is desirable. The MEECC should work in close collaboration with other sectors

such as the Attorney General's office, Police Department and the Judiciary to address these issues. The re-introduction of the fast-track environment court could be a potential solution to speed up disposal of these pending cases.

Recommendation

11.35 MEECC should work in close collaboration with all relevant stakeholders so that the environment cases are processed in a timely manner.

Management response

11.36 *MEECC acknowledges such challenges and puts forward that stakeholders they work with such as the Department of Police should also treat environmental crimes with equal priority as other crimes to address this issue. The re-introduction of a fast-track environment court could also help, as well as a secure and reliable location where they could store evidence whilst awaiting prosecution.*

Overfishing

12.1 Throughout history, Seychelles islands have fueled its economy with natural resources from its coastal zone by engaging in; the trade of sea turtle and giant tortoises, guano, seabird eggs, shells and fish. These practices have, however, resulted in the depletion of wild stocks and habitat damage[45].

The mistakes of the past indicate that most coastal resources are fragile and are susceptible to overexploitation if their extraction is not control in a sustainable manner. It is to be noted that overcapacity in the artisanal fishing sector have led to localized depletion in stock of high valued species such as snappers and groupers on the Mahe Plateau.

12.2 Fishing has been identified as the main risk activity in Seychelles that contributes to over-fishing and other risks were; the uncontrolled use of Drifting Fish Aggregating Devices (dFADs) in tuna fisheries, the impact of climate change on coral reefs and dredging activities on fish habitat[46] and the marine ecosystem in general.

12.3 The Ministry of Fisheries and Agriculture (MFA) has the mission to ensure 'a food and nutrition secured Seychelles by valorizing natural resources sustainably, allowing participants to derive livelihood and contribute to national wealth creation'[47]. The Ministry formulates policies in regards to various agricultural practices, which is then implemented by its three entities namely the Seychelles Fishing Authority (SFA), the Seychelles Agricultural Agency (SAA) and the Seychelles National Biosecurity Agency (NBA). The SFA focuses on fisheries whilst SAA's objective is to promote inland agriculture and NBA has the responsibility to protect the country from biosecurity threats (e.g. pests, alien and invasive species & diseases)[48].

[45] Proceeding of the National Workshop on Integrated Coastal Zone Management In the Seychelles. http://documents.worldbank.org/curated/en/571491468304270730/pdf/402920Box33885101PUBLIC1.pdf
[46] Gutiérrez, N.L (2015). Mainstreaming Biodiversity Management into production sector activities. To conduct a risk assessment to identify threats to demersal stocks and stocks assessment for key demersal fish stocks.
[47] Ministry of Agriculture and Fisheries Information Leaflet
[48] Ministry of Agriculture & fisheries, leaflet 2017.

12.4 The SFA, is a parastatal organisation with the mandate to promote, organise and develop fishing, fishing industries and fishing resources in Seychelles[49].The fisheries industry is an important means of socio-economic development in the Seychelles, it is a source of employment, trade and most importantly a major source of food security as the Seychelles has one of the highest per capita consumption of fish in the world[50].

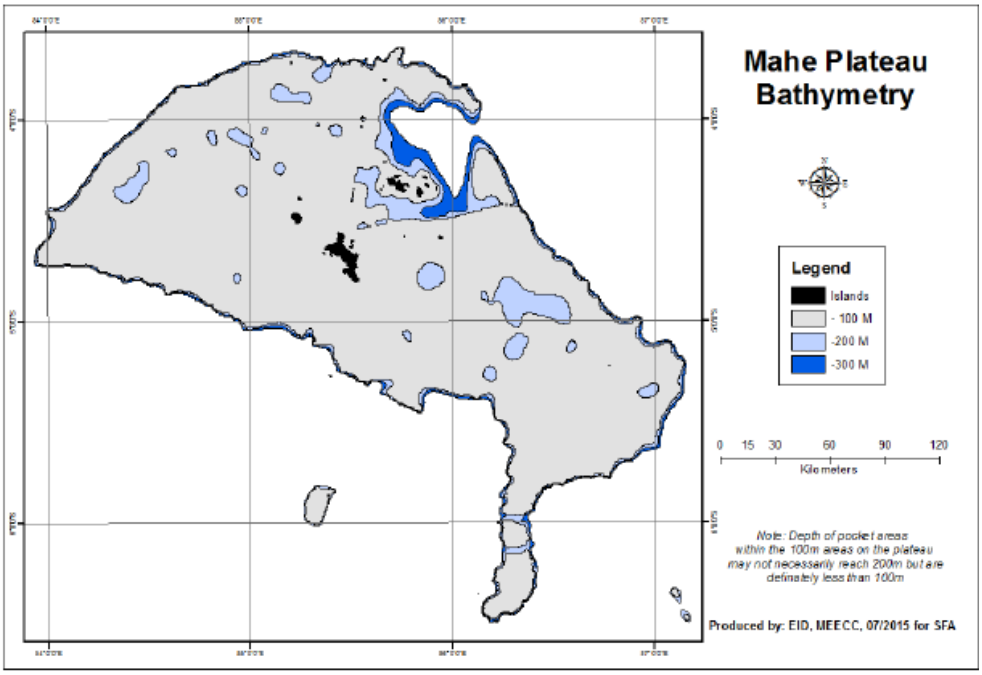
12.5 The Seychelles fishing industry consist of four categories: industrial purse-seiners, industrial long line, semi-industrial long line and the artisanal fishery. Currently all industrial fishing vessels are foreign owned. In 2016, 47 industrial purse seiners were licensed to operate in the Seychelles waters"[51]. They target tuna and tuna-like species and their catch is primarily destine for export. Seychelles has allowed several countries to access resources of tuna and tuna-like species in its waters through various agreements. The management of tuna and tuna like species is undertaken regionally by the Indian Ocean Tuna Commission (IOTC). Port Victoria is the tuna hub in the Indian Ocean where over 90% of licensed purse seiners catch are unloaded every year[52].

12.6 The "industrial and semi-industrial long line fishery" consist of locally-owned fresh tuna long line vessels targeting primarily large pelagic fishes including tuna. Similarly the "artisanal fishery" is restricted to locals and consists of 742 commercial fishing boat as at the end of 2017 of which 42% are Mini Mahe and 15% are whalers and schooners[53]. . This targets demersal species such as snappers, groupers, rabbit fish, emperors, carangues, mackerel, octopus, sea cucumber, spiny lobster, sharks and crabs mainly for the local market demand including the tourism industry (i.e. hotels and restaurants). Some species of groupers and snappers are also earmarked for the export market. Of these species, the capture of lobster (homard) and sea cucumber are regulated, where fishing is allowed only during open season and limited licenses are provided.

[49] SFA Annual Report 2014
[50] 61kg /year in 2003_ SmartFish Programme Report SF 2012/14
[51] SFA Fisheries Statistical Report 2016
[52] Fisheries Strategy 2007-2012
[53] SFA Boat Frame Survey, 2018

12.7 The fishing activity of the artisanal fleet locals (i.e. artisanal and long-liners) are concentrated primarily on the Mahe Plateau which is about 40,000km² with a depth of 50 to 60 meters (***Figure 10***). Some fishing activities do also take place on distant fishing banks such as Amirantes. The semi industrial fleet operates beyond the Mahe plateau, within the Seychelles EEZ, with very little activities on the high seas. Seychellois fishers are also grouped under various fishers associations depending on the type of fishery they practice and their location.

Figure 10: Mahe Plateau Bathometry.



Source: Mahe Plateau co-management plan

1. Monitoring of fish stock is being conducted to assess level of overfishing

12.8 Audit noted that Seychelles is party to various conventions and agreements arrangement that governs the management of marine resources as indicated in *Appendix 8*. Seychelles also has agreements with other regional bodies such as the; the South West Indian Ocean Fisheries Commission (SWIOFC), Southern Indian Ocean Fisheries Agreement (SIOFA) and the Indian Ocean Tuna Commission (IOTC).

12.9 Whilst IOTC deals with the management of tuna and tuna-like species in the Indian Ocean region, SWIOFC covers all marine living resources in the South West

Indian Ocean region, including those under the national jurisdiction of Member States). SIOFA covers fishery resources including fish, in the south Indian Ocean, excluding highly migratory species and sedentary species subject to the fishery jurisdiction of coastal states. Audit noted that being party to these bodies provides an opportunity for Seychelles to disseminate information about fish stock and their management through their scientific committees. Through review of document Audit noted that as at December 2017 Seychelles was up to date with its reporting requirements to both Commissions.

12.10 Audit also noted that the Statistics Department of SFA also compiled a comprehensive annual statistical report that provides fisheries data from all types of fishery. Audit was informed that the data in these reports are compiled from the log books of the various vessels licensed to fish in the Seychelles EEZ, as well as landing and transhipment forms. Audit was informed that the Agency encounters various challenges in collecting data from artisanal fishers since the logbook system is not practical for this sector therefore statistics are gathered via statistical sampling by enumerators located at various landing sites. Audit was also informed that due to lack of staff at the SFA not all landing sites were covered. .

12.11 These data provide significant information about 'fishing effort' and catch in the Seychelles EEZ and are effectively used for stock assessment of various fisheries resources, providing the basis for informed decision to be based upon.

Conclusion

12.12 Audit acknowledged SFA's effort to collect, assess and report on the status of fisheries resources despite the various challenges they face. These statistics are vital to understand the status of the various fish stocks which facilitate better planning and management. In that area Audit noted that SFA is also meeting the requirements of IOTC and SWIOFC scientific community that it is affiliated with. It is anticipated that these data are used towards the effective management of the fish stocks at various level of fishery.

Recommendation

12.13 SFA should continue to maintain proper statistics on Seychelles fish stocks and maintain up to date records with the various bodies that it has agreements with.

Management response

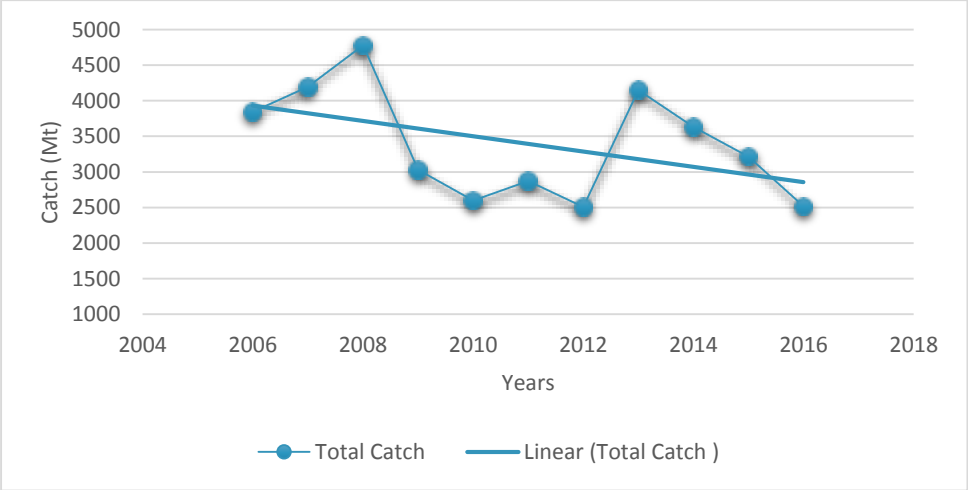
12.14 *A lack of staff in the Statistics section is a limiting factor in regards to what can be achieved. It is crucial that this matter is addressed in the shortest delay if SFA is to remain a leader in fisheries resource management in the region.*

2. Delay in the implementation of fisheries management plans

12.15 Several reports[54] that assess the stock of the demersal and pelagic fisheries, being exploited by the artisanal and semi-industrial fleet in the Seychelles, have indicated a depletion of these resources particularly high value demersal species on the Mahe plateau over the years due to possible over-exploitation.

12.16 Statistical data from the SFA further presents a linear decline of artisanal catch over the past 10 years with a 22% decline from 2014 to 2017 in this fishery (***Figure 11***). This may have a potential impact to national food security given that these fisheries supply the local market.

Figure 11: Total catch in artisanal fishery



Source: SFA Statistical Report 2016

[54] SWIOFC Scientific Report 2015, 2016 and Country Report_ Template_2016, 2018

12.17 Most operations of the artisanal fishery sector are conducted on the Mahe plateau and there is a need for its sustainable management. In line with that, Audit noted that two fisheries co-management plans namely the "*Mahe plateau demersal trap and line fishery co-management plan*" (dated 2015) and "*the Fisheries Co-management plan for the Praslin/ La Digue artisanal trap and line fishery*" (initiated in 2013 and revised in 2015) have been developed which is in line with Part II, of the Fisheries Act 2014 that makes provision for the development of Management Plans of Fisheries in the Seychelles. SFA also informed Audit that these plans have been devised in consultation with local fisher associations involved in these fisheries and other relevant stakeholders. However, Audit was informed that implementation aspects of both the plans are still under consultation hence are yet to be implemented.

Conclusion

12.18 In line with the Fisheries Act the SFA has formulated two co-management plans to ensure the proper management of its high value species of demersal fishery industry to address over-exploitation on the Mahe Plateau that is being used by artisanal fishers. Several reports have indicated the over-exploitation of species being caught by these fishery, hence the need to take measures. Audit acknowledged SFA's efforts to work with the various fishers association and other stakeholders to develop these plans to effectively manage the area. However Audit noted that the process is slow and delaying their implementation

Recommendation

12.19 Considering that the two plans were developed and finalized in 2015, therefore, their implementation have been delayed and thus need to be expedited.

Management response

12.20 *A lack of staff in the Fisheries Management section is a limiting factor in regards to what can be achieved. It is crucial that this matter is addresses in the shortest delay. It is also worth noting that the Fisheries Act had to be*

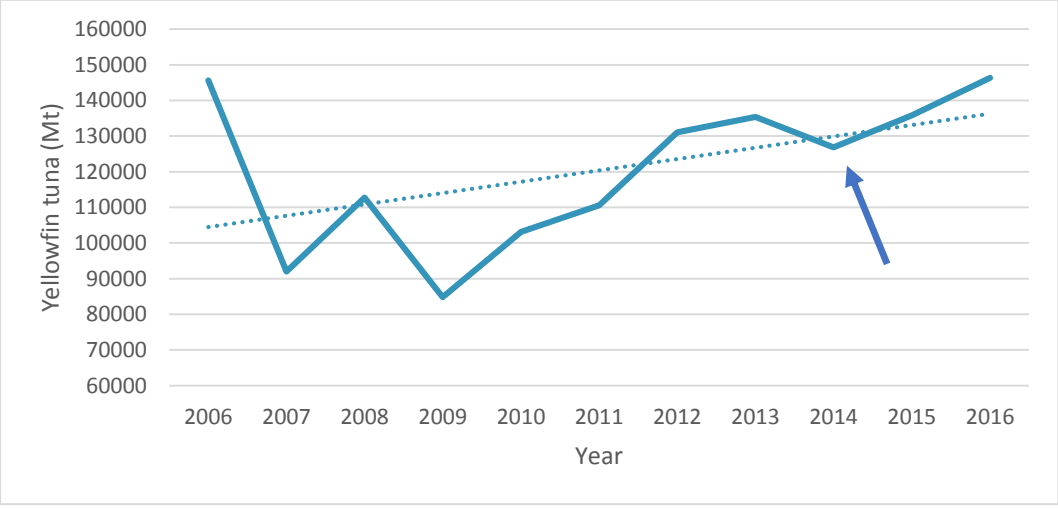
updated to include many international best practices, including co-management, hence the delay in implementation of the management plan. Currently (August 2018),SFA is in the final stage of setting up a fishery Management Committee to oversee the implementation of the Mahe plateau demersal trap and line fishery co-management plan.

3. Implementation of IOTC Resolution 17/01: On an Interim Plan for Rebuilding the Indian Ocean Yellowfin Tuna Stock in the IOTC Area of Competence

12.21 As previously mentioned the Seychelles is a member of the IOTC which regroups various countries of the Indian Ocean and manages resources of tuna and tuna-like species. The IOTC has a number of Working Groups and a scientific committees in place that evaluates the stock status of these species in the Indian Ocean. The Scientific Committee provides recommendation to the IOTC Commission for decision to be taken in regards to conservation and management of these species.

12.22 In recent years the IOTC, have adopted various conservation and management measures to address over-exploitation in the Indian Ocean, particularly in regards to yellow-fin tuna and swordfish. ***Figure 12*** represents the amount of yellow-fin tuna caught by the Seychelles purse seine fleet.

Figure 12: Levels of yellow-fin tuna caught by Seychelles purse-seiners



Source: SFA Statistical Report 2016

12.23 In 2016, the IOTC Resolution 16/01 on an interim plan to rebuild the yellow fin tuna stock was superseded by the IOTC Resolution 17/01. The base year changed from 2014 to 2015 and consequently Seychelles benefited with a further, approximately 10,000Mt of yellowfin.

12.24 The member countries were requested to reduce their yellow fin tuna catch by 15% from a baseline set as per their 2014 or 2015 reported catch. Furthermore, a reduction in the number of dFADs and supply vessel also came into force.

12.25 Through review of documents audit noted that inn December 2017, SFA announced that they would be linearly allocating yellow fin tuna quota for the year 2018 to each registered purse seiners, which will be about 2,555MT per vessel. However the SFA is setting aside a 30% buffer (i.e. 766MT) per vessel based on their good reporting and satisfactory compliance to the measures in place.

Conclusion

12.26 Seychelles is a member of the IOTC and is complying with the various reporting requirements and obligations set forth by the Commission. Data sent from the Seychelles to the Commission allows for the effective monitoring and planning of tuna fish stock and various resolutions are then produced towards the effective management of the species. The same applies for the yellowfin tuna which has shown a decline in recent years and the IOTC resolution 16/01, superseded by 17/01 was established to address this issue. Audit noted that.

Recommendation

12.27 SFA should ensure effective monitoring of yellowfin landings and transhipment to ensure compliance with the IOTC resolution 17/01.

Management response

12.28 *For the first year of the implementation of IOTC Resolution 17/01, SFA struggled to monitor yellowfin catches near real time and to control the quota*

consumption where capacity limitation is a major constraint. SFA urgently need to be provided with sufficient human resource and technical capacity in order to meet the increasing obligations vis a vis the IOTC.

4. Lobster license conditions are not being enforced

12.29 In the Seychelles, lobster (homard) fishery is regulated under Section 19 of the Fisheries Act (Subsidiary Legislation) 2010, where it follows a limited licensing system where few licenses are provided during open seasons.

12.30 The SFA fisheries Research Section collects various data on the lobsters caught as well as conduct various dependent and independent surveys that monitor the stock of the species at harvesting sites around the islands. This data is hence used for stock assessment as well as to determine if the lobster season will be open or closed the next season.

12.31 Part 19 (5C) of the aforementioned regulation states that 'the holder of the license shall not fish, catch or kill a homard which is less than 7.5 cm in carapace length'. Audit reviewed the *Lobster Fishery Information Note 2016*, which provided information on the lobster season 2015/2016. It reported that 44% of the female lobster (p. longipes) caught were smaller than the regulated 7.5 cm. The report recommended that the 2016/2017 season to be open but to strengthen monitoring, control and surveillance to ensure that no undersized lobsters were being caught.

12.32 Audit requested documents relating to the 2016- 2017 season, to verify if these recommendations were met and the following were observed;

12.33 The lobster season 2016- 2017 opened from 1st December 2016 to 28th February 2017. SFA provided 16 licenses of which all were applied for, however one fisher cancelled his license after encountering difficulties with his divers. Hence only 15 fishers had a valid license to fish lobster for that season.

12.34 Audit noted that the condition of the license states that a "license holder shall not fish for, catch or kill lobster which is less than 7.5cm in length".

Additionally Audit was informed that fishers are provided with measuring equipment (i.e. slate, catch and effort logbook and fixed ruler indicating minimum size) to verify the length of lobsters caught. A bond of R 5000 was requested from all the fishers to ensure compliance with the license condition.

12.35 However the 2016-2017 lobster season report indicated that of the lobsters caught, 3697 were sampled for length, of which 1534 were female and 40% of female *P.longipes* were under the required length (i.e. less than 7.5 cm). This indicate that some fishers were in breach of their license conditions and therefore liable to forfeit the R5000 bond, however Audit noted all 15 fishers were refunded their compliance bond.

12.36 Through interview with monitoring and enforcement officials of the SFA, Audit was informed that there was no change in the monitoring approach used for the season 2015/2016 and 2016/2017 as per the request of the 2016 report. Officials also informed Audit that there may have been a lack of communication between the research section and MCS of the SFA to effectively meet the recommendation of the 2016 lobster fishery note.

Conclusion

12.37 The lobster fishery is regulated by the Fisheries (Subsidiary) Regulation 2010 where the lobster fishery season is only opened for a limited period of time and limited licenses are provided. Audit noted that fishers are not abiding to the regulation and undersized lobster are being caught. SFA is also not enforcing the terms of the fisher's license and not reporting fishers in breach of the license condition, since all fishers were refunded their compliance bond.

12.38 Audit notes that even though stricter monitoring and surveillance was recommended for the season 2016/2017 this was not followed through, contributing to smaller-sized lobsters being caught. Audit also noted that there may be a lack of coordination between various sections of the SFA, such as information sharing, joint patrols and monitoring so that the fishers comply with the regulation for the sustainable management of the lobster fishery.

Recommendation

12.39 SFA should ensure that the lobsters caught are as per regulation.



Management response

12.40 *The compliance bond was introduced to ensure that fishers submitted their logbooks and sales record at the end of the season. The bond was not intended for the purpose compliance to the fisheries regulations as the Fisheries Act makes provisions for penalties for breaches of the regulations. Currently, SFA does not have a proper vessel that can be used for patrols and monitoring of fishing activities, therefore hindering the monitoring of the fishery. SFA intends to improve its communication between the various Divisions involved in the management of the resource with the aim of ensuring that the fishery is well managed and monitored to ensure that fishers comply to the Regulations.*

5. Aquaculture is being explored to address overfishing

12.41 Target 14.7 of the SDG aims to increase by 2030 the economic benefits to Small Island Developing States and Least Developed Countries from the sustainable use of marine resources and sustainable management of fisheries, aquaculture and tourism. The SFA defines aquaculture as "the cultivation, propagation or farming at sea or on land of fish from eggs, spawn, spat, fingerling or seed; and includes the rearing and ranching of fish taken from the wild or imported into Seychelles[55]".They promote aquaculture as one of the methods to address overfishing, but the primary objective is to enhance the fish export industry and its contribution to the economy by increasing both the local

[55] http://www.sfa.sc/index.php/fisheries/aquaculture

and overseas market, as stocks of some of the species being considered in the master plan are currently over-exploited[56].

12.42 Various countries have adopted aquaculture successfully to replenish their fish stock, to enhance production and to attain their socio-economic and food security objectives. However, some countries have encountered various negative effects of this practice which have impacted on their environment.

12.43 Aquaculture was introduced in Seychelles in the late 1980s where the outer island of Coetivy was used extensively to cultivate prawns[57], in the mid- 1990s the island also saw the introduction of the Black Pearl and Giant Clam farms on Praslin. Whilst the latter is still in operation the Prawn farm on Coetivy encountered various issues and till date remains an eye sore and a concern for the Government. The adoption of the current Mariculture master plan is receiving different comments from the population. The experts at SFA indicate that the practice will be brought in place in a manner that will mitigate the environmental impacts through the implementation of legislation and monitoring strategies, as well as Best Management Approaches (BMPs) as per the Master plan's Environment Management Plan (EMP).

12.44 Fishers on the other hand, are concerned about the social impact of the practice, fearing that it will inundate the local market leaving insufficient space for them to sell their products. Likewise, the environment impact of an outbreak of a disease (or waste) from the fish tanks will be disastrous to the environment and will have a negative impact to the wild fish stock.

12.45 Audit noted that an Environment and Social Impact Assessment (ESIA) was conducted in 2016 for the master plan. In that process various public and stakeholder consultative meetings have been held to sensitize the public on the master plan, seek public opinions and develop mitigation plans. Audit was informed that this process of sensitization is still ongoing and MEECC provided a

[56] SC SWIOFC Seychelles Summary_2016
[57] Hecht, T. (2013), Aquaculture in Seychelles; History, Current State of play & Lesson Learnt.

Notice of Acceptance (NOA) for the ESIA report in February 2017 with various conditions that has to be abided to.

Conclusion

12.46 Aquaculture is a method being proposed to boost up the fish stock and reduce dependence on wild-fish stocks. However, this method has been found to have potential negative impact both on the aesthetic view of the environment as well as the health of marine life which is a concern for the people of Seychelles.

12.47 Hence Audit is of the view that the proposed aquaculture programme needs to be carefully planned before its implementation and once it is implemented, proper monitoring should be conducted so that the policies and legislations proposed are effectively enforced. Audit acknowledged that the SFA has been taking steps to make the public aware of the plan and to identify its impact on the environment by conducting the Environment and Social Impact Assessment (EISA).

Recommendation

12.48 Audit recommends that the implementation of the project should be done in line with the conditions set forth by the NOA, so as to ensure that all the risks are properly evaluated and mitigated. SFA should ensure that effective monitoring is conducted to ensure adherence to the policies and legislations.

Management response

12.49 *The Audit's report on aquaculture reflects a similar perception as do the public as observed during the lengthy Public Participation Process (PPP) and it re-enforces the need for the Aquaculture Section to intensify its Education and Awareness Campaign to properly educate the public about the approach that Seychelles is taking vis-à-vis what the rest of the world is doing. It is a new activity for Seychelles, one which was done without a proper legislative framework in place in the past and we have spent the last 10 years ensuring that all of what was missing is in place before we launch this sector. Stakeholder engagement remains one of the highest priority and both the aquaculture and fisheries strategy is key in ensuring the smooth transition between the*

traditional fisheries sector and the introduction of the new aquaculture sector in Seychelles.

12.50 *The Food and Agriculture Organisation (FAO) produces a report[58] on State of the World Fisheries and Aquaculture which provides the continuous declining trend in the world's wild capture fisheries and the rise of aquaculture. It also highlights the challenges and the improvements made towards a more sustainable level for both. Seychelles adopted the FAO's Ecosystem's Approach to Aquaculture (EAA) which is the core of how the aquaculture sector is mapped out.*

12.51 *The current outlook for aquaculture is one which is bright if done within certain parameters and that these parameters are respected with the highest discipline. Hence the need to ensure that the regulation is strongly supported by a robust Monitoring, Control and Surveillance (MCS) team. The Aquaculture Section is working hard to ensure enough and adequate human resources are in place to support this framework fully and adhere to the EMP. Work is underway and recruitment and training of several new staff will be completed by end of 2018 to meet the minimum required human resourcing for the launch of the sector in 2019.*

[58] *http://www.fao.org/documents/card/en/c/I9540EN*

Appendices

Appendix 1: Glossary of Terms

Adaptation: Refers to the adjustment in natural or human systems in response to actual or expected climatic stimuli or their effects, which moderates harm or exploits beneficial opportunities.

Beach Nourishment: Also known as beach replenishment is a technique used in coastal management schemes. It involves importing sand off the beach and piling it on top of the existing sand. The imported sand however, must be of a similar quality to the existing beach material so that it can integrate with the natural processes occurring there without causing any adverse effects.

Coastline: Refers to the land along a coast

Coastal Zone: The band of dry and adjacent ocean space (water and submerged land) in which terrestrial processes and land use directly affect oceanic processes and uses, and vice versa.

Climate Change: Refers to any change in climate over time, whether due to natural variability or as a result of human activity.

Dumping: Refers to any deliberate disposal of wastes or other matter from vehicles, vessels, aircraft, platforms or other man-made structures at sea;

Effluent: Refers to waste water or any other liquid with or without particles of matter in suspension therein of domestic, agricultural, trade or industrial origin, treated or untreated, and discharged directly or indirectly into the environment;

Environment: Refers to air, water and land and the inter-relationship which exists among and between air, water and land, and human beings, other living creatures, plants, micro-organisms and property;

Fishing effort: Refers to the amount of fishing gear of a specific type used on the fishing over a given unit of time e.g. hours trawled per day, number of hooks set per day or number of hauls of a beach seine per day.

Integrated Coastal Zone Management (ICZM): Refers to is a process for the management of the coast using an integrated approach, regarding all aspects of the coastal zone, including geographical and political boundaries, in an attempt to achieve sustainability.

Multilateral Environmental Agreements: Refers to a number of legally binding International instruments through which national Governments commit, to achieving specific environmental goals. These instruments may take different forms such as convention, treaty, agreement, charter, final act, pact, accord, covenant, protocol or constitution (for an international organization) between two or more nation states that deals with some aspects of the environment;

Oil Spill: Is the release of liquid petroleum hydrocarbon into the environment, especially the marine ecosystem, due to human activity and is a form of pollution. The term is usually given to marine oil spill where oil is released into the ocean or coastal waters but spills may occur on land.

Oil Slick: Is a layer of oil that is floating over a large area of the surface of the sea, usually because an accident has caused it to escape from a ship or container. It is of less quantity than an oil spill.

Pollutant: Refers to any solid, liquid or gaseous substance or energy present in such concentration as may be, or tend to be, injurious to environment;

Pollution: Refers to the presence in the environment of one or more pollutants;

Ripraps: Refers to rocky structures known as rip rap, rip-rap, shot rock, rock armour or rubble, is rock or other material used to armor shorelines, streambeds, bridge abutments, pilings and other shoreline structures against scour and water or ice erosion.

Rock Armouring: Rock armouring involves the placement of large rocks piled or placed at the foot of dunes in areas prone to erosion or in areas that have been severely eroded. Geo-textile fabric are usually placed behind and across the rock placements. The rocks absorb the wave energy and hold beach material. With time, the accretion of sand could result in the formation of new beaches

Sand dune Management: Sand dune stabilization or sand dune management is used to prevent the loss of sediment on the beach. This method can be further strengthened by coastal re-vegetation whereby selected coastal plants are planted to protect the dune-land vegetation and stability.

Shoreline: Refers to the line along which the ocean meets the land

Timber Pilling: A method that provides a physical barrier protecting unprotected dune-land from the direct hit of surging waves. Geo-textile fabrics are placed behind and across the length of the wooden structures to complement the wooden pilings to trap sand that is washed up with the onshore transport of sediments by wave action. Backfilling with coral fill and sand is implemented to allow the dune-land to recover more quickly than it would to further stabilize dune-land restoration and stabilize timber piling.

Vulnerability: Refers to the degree to which a system is susceptible to, and unable to cope with, adverse effects of climate change, including climate variability and extremes. Vulnerability is a function of the character, magnitude, and rate of climate change and variation to which a system is exposed, the sensitivity and adaptive capacity of that system.

Waste: Refers to garbage, refuse, sludges, construction debris and other discarded substances resulting from industrial and commercial operations or from domestic, individual and community activity;

Water quality: Refers to the characteristics of water which define its use in terms of physical, chemical and biological contents;

Watercourse: Refers to any river, stream, dam, reservoir, water catchment and wetlands;

Wetland: Refers to all freshwater and tidal areas that are or may be submerged or periodically submerged under fresh or salt water, including all bodies or areas commonly referred to as marshes, swamps, beaches and flats;

Appendix 2: Goal 14 targets and Indicators

Target	Indicator
14.2 By 2025, prevent and significantly reduce marine pollution of all kinds, in particular from land-based activities, including marine debris and nutrient pollution	**14.1.1** Index of coastal eutrophication and floating plastic debris density
14.2 By 2020, sustainably manage and protect marine and coastal ecosystems to avoid significant adverse impacts, including by strengthening their resilience, and take action for their restoration in order to achieve healthy and productive oceans	**14.2.1** Proportion of national exclusive economic zones managed using ecosystem-based approaches
14.3 Minimize and address the impacts of ocean acidification, including through enhanced scientific cooperation at all levels	**14.3.1** Average marine acidity (pH) measured at agreed suite of
14.4 By 2020, effectively regulate harvesting and end overfishing, illegal, unreported and unregulated fishing and destructive fishing practices and implement science-based management plans, in order to restore fish stocks in the shortest time feasible, at least to levels that can produce maximum sustainable yield as determined by their biological characteristics	**14.4.1** Proportion of fish stocks within biologically sustainable levels
14.5 By 2020, conserve at least 10 per cent of coastal and marine areas, consistent with national and international law and based on the best available scientific information	**14.5.1** Coverage of protected areas in relation to marine areas
14.6 By 2020, prohibit certain forms of fisheries subsidies which contribute to overcapacity and overfishing, eliminate subsidies that contribute to illegal, unreported and unregulated fishing and refrain from introducing new such subsidies, recognizing that appropriate and effective special and differential treatment for developing and least developed countries should be an integral part of the World Trade Organization fisheries subsidies negotiation	**14.6.1** Progress by countries in the degree of implementation of international instruments aiming to combat illegal, unreported and unregulated fishing
14.7 By 2030, increase the economic benefits to Small Island developing States and least developed countries from the sustainable use of marine resources, including through sustainable management of fisheries, aquaculture and tourism	**14.7.1** Sustainable fisheries as a percentage of GDP in small island developing States, least developed countries and all countries

14.A Increase scientific knowledge, develop research capacity and transfer marine technology, taking into account the Intergovernmental Oceanographic Commission Criteria and Guidelines on the Transfer of Marine Technology, in order to improve ocean health and to enhance the contribution of marine biodiversity to the development of developing countries, in particular small island developing States and least developed countries	**14.A.1** Proportion of total research budget allocated to research in the field of marine technology
14.B Provide access for small-scale artisanal fishers to marine resources and markets	**14.B.1** Progress by countries in the degree of application of a legal/regulatory/policy/institutional framework which recognizes and protects access rights for small-scale fisheries
14.C Enhance the conservation and sustainable use of oceans and their resources by implementing international law as reflected in UNCLOS, which provides the legal framework for the conservation and sustainable use of oceans and their resources, as recalled in paragraph 158 of The Future We Want	**14.C.1** Number of countries making progress in ratifying, accepting and implementing through legal, policy and institutional frameworks, ocean-related instruments that implement international law, as reflected in the United Nation Convention on the Law of the Sea, for the conservation and sustainable use of the oceans and their resources

Source: https://sustainabledevelopment.un.org/sdg14

Appendix 3: Coastal Management Audit Procedures

Table 13: The selected coastal management risks and focus areas (with proposed procedures): *Most pertinent SDGs for this project: 13, 14, 15, 16 & 17*

No	Focus Area	Identified Risks and Impacts	Relevance to SDG's / Targets & *other commitments*	Mitigation Measures	Proposed Coastal Procedure
1	Overall Coastal Management	*1. There is no/ ineffective legislation (not updated) or regulatory requirements to include coastal management and sustainability commitments that includes the SDGs and own (national, local) and other international commitments.* *2. Government systems are not reliable or ready or aligned to the achievement of the SDGs* *Impact: This will result in countries not meeting or conforming to their own as well as international agreed or signatory goals and targets towards conserving and protecting the coastal environment. Subsequent degradation and non-sustainable coastal resources.* *Non-conformance to the SDGs and related targets (or commitments)*	<u>Main SDG focus:</u> *16 - Strong Institutions* *17 - Partnerships for goals* *14 - Life Below Water* *15 - Life on Land* *Consider other relevant SDGs & targets applicable to Coastal / Marine Management*	*-Coastal Management Tools, regulations, legislation, policies, plans, strategies* *-Coastal Resource management and regulations* *-Coastal Developmental aid and assistance* *-Co-operative Agreements / commitments* *-Funding / training / education*	1. Determine and document the Country's main legislation / regulatory requirements and national, provincial, local as well as international commitments, treaties and acts towards managing, protecting and conserving the coastal environment and related resources. 2. Compare and assess the legislation and regulatory requirements against SDG's and targets (as well as other international commitments). 3. Discuss and assess the readiness of national systems and structures in place to report on progress towards the achievement of the SDGs and to Audit their operations and reliability of available data.

				-SDG inclusion in coastal management policies, plans and strategies	
		1. Government is not performing its required environmental management functions to protect the coast and related resources and ascertain sustainability *2. There is no/outdated/ineffective Coastal Management Policies, Plans and Strategies* *3. The country is not effectively managing, monitoring and enforcing its coastal management policies, plans and strategies in accordance to own and international requirements and commitments,* *4. Non- conformance to own and international commitments and goals for effective and improved coastal management* *5. There is no or limited co-operative arrangements between the various spheres of government to manage and protect the coast and related resources* ** There is policies, plans and strategies or effective*	<u>Main SDG focus:</u> *16 – Strong Institutions* *17 – Partnerships for goals* *14 – Life Below Water* *15 – Life on Land* *Consider other relevant SDGs & targets applicable to Coastal / Marine Management*		4. Determine Coastal Management roles and responsibilities (organograms) on the various spheres of government (ascertain available resources vs. needs) 5. Obtain and review the Government's (all spheres) Coastal Management- Policies, Plans and Strategies (overall and particular to the selected risks / focus-areas) for effectiveness towards addressing the coastal risks and impacts. 6. Where there is no coastal management policy / plan or strategies - Ascertain through interviews and review of documented information (available) - how coastal management risks are identified, monitored and addressed to ascertain coastal conservation and sustainable development.

		alternative means to identify, address and monitor coastal management risks (or impacts to the coastal / marine environment) *Impact: Government is not fulfilling its mandate, roles and responsibilities (with no or ineffective policies, plans, strategies, monitoring and enforcement thereof) resulting in uncontrolled or unregulated coastal activities and developments - negatively impacting on the coastal zone and sustainability of its resources.*			
2	Coastal Monitoring and Enforcement	*Illegal or improper activities and developments on coastlines and related resources (with subsequent impacts) will not be detected and addressed timeously and / or here are no or not enough appointed and dedicated officials / resources to monitor and enforce coastal compliance / conformance.* *Impact: Serious and continuous decay and impacts to the coastal zone - resulting in economic losses, social impacts as well as environmental (and resource)*	<u>Main SDG focus:</u> *16 – Strong Institutions* *17 – Partnerships for goals* *14 – Life Below Water* *15 – Life on Land*	*-Coastal Monitoring & Enforcement Tools, regulations, legislation, policies, plans, strategies* *-Coastal Monitoring and Enforcement Resource management*	7. Assess the implementation, monitoring and enforcement of legislation and commitments to own policies, plans and strategies in managing and conserving the coastal environment and related resources (interviews & documentation reviews). 8. Document the available & adequacy of resources (HR, budget, required vessels, vehicles & equipment) for effective monitoring and enforcement.

		degradation and unsustainable resources.	*Consider other relevant SDGs & targets applicable to Coastal / Marine Management*	*-Coastal management education and training* *-Co-operative Agreements* *-Funding* *-Sanctions (as tool of enforcement)*	9. Obtain and document all action (fines & prosecutions & sanctions) for the past 2 financial years completed to coastal polluters or non-compliance to coastal / marine legislation (for current & previous year). 10. Assess / monitor the progress and achievement (interim goals) towards the 2030 SDG goals & associated targets.
3	Climate Change	Risks may include (not inclusive): * Sea level rise and habitat destruction * Effects on marine species and biodiversity * Inland risks * Changes in temperatures and effects * Inappropriate spending and allocation of climate change funding received Impacts: (may include) - Conservation goals and targets not met - Impacts on water quality - Loss of biodiversity - Coral bleaching	Most relevant: SDG 13: Goals and targets to address climate change and impacts therefrom (particular to Marine / Coastal Management)	*-Climate Change Management Tools, regulations, legislation, policies, plans, strategies* *-Climate Change Resource management* *-Education and training on effects and impacts* *-Migratory measures to address / minimise*	11. Assess and document the government's (all levels) efforts and inputs to address climate change (or severe climate impacts) and build resilience to related impacts within its coastal / marine jurisdiction – including the availability of data. 12. Determine through interviews, documentation review and available data what the threat of climate change is to the coastal region. Indicate government's response and effectiveness to these threats. 13. Determine and document Coastal Conservation Goals and Targets with particular focus on climate change (extreme climate events) affects and impacts. Assess

		- endangering coastal communities - pollution = degradation of land and water - unsustainable coastal zones and resources - insufficient resources to address climate impacts & build resilience		*-Co-operative Agreements and commitments* *-Funding* *-Disaster Management - caused by Climate Change*	efforts and inputs (progress) & (effectiveness) towards these goals and targets. 13. Determine international funding to address climate change (extreme climate events) impacts and mitigation measures and Government's conformance to the associated Business Plans and Strategies of funders. 14. Visit identified coastal areas impacted by extreme climate events or impacts – take photographs to substantiate impacts / risks.
4	Over-Fishing	*Overfishing *Destructive fishing techniques *Weak fishing limits *non-protection & regulation of fishing *Limited knowledge of aquatic systems and impact Impact: -Depletion / collapse of fish resources -Destruction of fishing habitats and needs	<u>Main SDG focus:</u> 14: Life below water *15 – Life on Land* *Just consider:* *1: No poverty* *2: Zero hunger* *3: Good health & well-being* *8: Decent work & econ growth* *11: Sustainable cities & communities*	*-Fishery Management and Control Tools, regulations, legislation, policies, plans, strategies* *-Fishing regulations (including policies, plans, strategies and legislation directives* *-Fisheries: Resources for management to manage, implement, monitor and enforce.*	15. Identify the country's fisheries management resources (HR / Funding / Vessels, Vehicles & Equipment) to manage and address over- and illegal fishing and the impacts thereof. Confirm and assess available / reliable data / statistics towards. 16. Document and assess government's monitoring / action / enforcement to fishing legislative requirements …. (to include non-compliances, illegal fishing, overfishing, improper fishing methods and means) and the effectiveness thereof = monitoring & enforcement. Give detail of all action, prosecutions and fines relating (for the past 2 financial years).

		-Loss of supporting systems to fisheries -Increase in illegal and private fishing -Distinction of species -Difficult to manage resources & allocate quotas -Increase fishing pressure -Social and economic impacts to fishing dependent communities and areas -Can lead to or increase poverty	*12: Responsible consumption & production*	*-Rural aid and education re: fisheries over-exploitation and need for sustainability* *-Fishing Co-operative Agreements and commitments* *-Funding*	17. Obtain and assess government's plans, strategies and efforts to address overfishing, improper methods and means used during fishing and the impacts thereof on fish stocks (sustainability thereof). 18. Document & assess the government's conformance to international agreements, treaties and commitments (fishing).
5	Coastal Pollution and degradation	* Pollution to the sea and coastal zone * Aesthetic concerns and degradation of coastal- and marine areas * Water pollution * Inland pollution Impacts: - Effects on tourism - Coastal erosion - Loss of living resources	<u>Main SDG focus:</u> 15: Life on land *Impacts from improper coastal / marine management (life below water SDG 14 / clean water SDG 6))*	*-Coastal / Marine Management Tools, Pollution prevention and mitigation regulations, legislation, policies, plans, strategies* *-Pollution / Waste Resource Management* *-Disaster Management - caused by pollution*	19. Obtain and assess the strategies and database regarding all waste disposals into and within coastal / marine and adjacent areas – ascertain available and reliable data. 20. Consider and document all efforts / actions to sensitize and for awareness campaigns on both companies and citizens in the risks of coastal / marine pollution and how this pollution can be reduced / mitigated. 21. Ascertain compliance to waste related policies, laws and regulations to address and regulate coastal and marine disposal / pollution

		- Habitat and Biodiversity loss and habitat destruction (coastal / marine species & organisms) - Behaviour changes in fisheries - Pollution to rivers, wetlands and other inland natural resources - To health and sustainability of coastal and marine resources - Social, economic and environmental impacts caused by pollution and aesthetic impacts - Increase of extreme weather events and coastal erosion		*-Land Management - to address pollution* *-Pollution / Waste Education / Awareness* -Pollution - Aid & funding to address	22. Determine and assess the monitoring and enforcement of all coastal and marine related pollutions and disposals against the pollution standards – goals and targets (adequacy of resources relating). Focus should be on the last 2 financial years (completed). 23. Determine and document action against contributors (industries and other) polluting the sea and coastal zones 24. Determine and assess the adequacy of infrastructure and resources for effective coastal and marine waste management (including utilisation of resources) 25. Determine and assess the fulfilment of international accords / treaties and commitments to address coastal / marine pollution. 26. Visit identified coastal areas & zones – include documented / reported and known polluted areas – take photographs to substantiate obvious pollutions or where coastal areas free of pollution / aesthetic nuisances. Include other noted / identified impacts to health, safety and sustainable biodiversity.

Appendix 4: Ministries, Department and Authorities involved in the Audit

Ministry	Department	Division/Authority	Focus Areas Covered
Ministry of Environment, Energy & Climate Change.	Department of Energy and Climate Change	Climate Change Adaptation & Mitigation Section (CAMS)	Overall Coastal Management & Climate Change; - Legislation, policies and plans - Mitigation & adaptation strategies (projects)
		National Meteorology Service	Climate change; - Statistics & information
		GIS & Information Section	Overall Coastal Management; - Coastal Information & statistics
		Program Co-ordination Unit (UNDP/GEF) (PCU)	Climate Change & Coastal Degradation; - Renewable Energy projects - Coastal Degradation Projects
		Seychelles Energy Commission (SEC)	Climate Change; - Renewable Energy Projects
		Public Utilities Corporation (PUC)	Coastal Pollution; - Management of Desalination plants and Sewage treatment plant.
	Department of Environment	Legal Department	All Areas; - Fines & court cases - Legislation, Acts, policies related to MEECC.
		Waste, Enforcement and Permit Division	Overall coastal management; - Waste Monitoring and Enforcement - Fines & court cases (oil spills)
		Biodiversity Section	Overall coastal management & Coastal monitoring & enforcement; - Management of marine species - Policies, acts & regulations.
		Seychelles National Parks Authority (SNPA)	Coastal Monitoring & enforcement;

			- Monitoring, enforcement related to Marine Protected Areas. - Provides MEECC with boats and equipment for coastal monitoring (e.g. poaching)
Ministry of Fisheries and Agriculture	Department of Fisheries	Seychelles Fishing Authority (SFA)	Over-fishing, Coastal Monitoring & enforcement; - Policies, Regulations, Fines related to Overfishing.
Ministry for Tourism, Civil Aviation, Ports and Marine		Seychelles Ports Authority (SPA)	Coastal pollution & degradation; - Site visit of industrial ports and related enquiries.
		Seychelles Coast Guard (SCG)	Coastal Monitoring & Enforcement, Coastal Pollution and degradation; - Coastal and EEZ monitoring & enforcement. - Oil spill
		Disaster and Risk Management (DRDM)	Coastal Pollution & Degradation; - Coordination of oil spill and other natural and man-made disasters.
		Department of Foreign Affairs (DFA)	Overall Coastal Management; - MEAs

Appendix 5: National and Sectorial Documents used in the RIA Assessment

National Planning Documents (2):

1) National Development Strategy by Government of Republic of Seychelles (9 October 2015)
2) Seychelles Sustainable Development Strategy 2012-2020 (SSDS) Volume Two: The Action Plan.

Sectorial Strategies (18):

1) Strategy 2017: Creating Our Nation's Wealth Together
2) 2017 Budget Speech
3) National ICT Policy for Seychelles
4) Government of Republic of Seychelles Proposal for National Food and Nutrition Security (NFNSP) Multi Sector Implementation Plan by FAO (December 2015)
5) Seychelles 2012-2020 Tourism Master Plan for a sustainable and responsible tourism by Department of Education (2011)
6) Seychelles National Policy on HIV Aids in the Workplace by Ministry of Labour and Human Resource Development (April 2016)
7) National Employment Policy and Strategies
8) Employment Department Strategic Plan 2011-2015
9) Education Sector Medium-Term Strategic Plan 2013-2017 and beyond by Ministry of Education (November 2014)
10) Inclusive Education Policy (March 2015)
11) Seychelles National Health Policy (May 2015)
12) Seychelles National Health Strategic Plan 2016- 2020 (November 2016)
13) Seychelles Strategy for the Prevention and Control of Non-communicable Diseases, 2016-2025 (2016)
14) National Gender Policy by Minister of Social Affairs, Community Development and Sports (2016)
15) Reproductive Health Policy (Ministry of Health, 2012)
16) Seychelles Strategic Land Use and Development Plan (September 2015)
17) Republic of Seychelles Intended Nationally Determined Contribution (INDC) Under the UNFCCC (September 2015)
18) Seychelles' National Biodiversity Strategy and Action Plan (NBSAP), 2015

Source: Report UNDP, Rapid Integrated Assessment, Seychelles, June 2017

Appendix 6: 12 SDG Target gaps identified by the RIA assessment

Issue Target or Means of Implementation (MOI)	SDG Targets that cannot be mapped or are not sufficiently covered by Seychelles' planning documents
MoI	SDG 5: Gender gaps – • **target 5.A** "Undertake reforms to give women equal rights to economic resources"
MoI	SDG 6: Water and Sanitation gaps – • **target 6.A** "expand international cooperation and capacity-building support to developing countries in water- and sanitation-related activities and programmes"
MoI MoI	SDG 7: Energy gaps – • **target 7.A** "enhance international cooperation to facilitate access to clean energy research and technology", and • **target 7.B** "expand infrastructure and upgrade technology for supplying modern and sustainable energy services for all in developing countries"
MoI	SDG 8: Economy and Decent Jobs gaps – • **target 8.B** "develop and operationalize a global strategy for youth employment and implement the Global Jobs Pact of the International Labour Organization"
Issue Target MoI	SDG 10: Inequalities gaps – • **target 10.7 "**Facilitate orderly, safe, regular and responsible migration and mobility of people, including through the implementation of planned and well-managed migration policies" and • **target 10.A** "Implement the principle of special and differential treatment for developing countries"
Issue Target MoI	SDG 12: Sustainable Production and Consumption gaps – • **target 12.3** "halve per capita global food waste at the retail and consumer levels and reduce food losses along production and supply chains" and • **target 12.C** "Rationalize inefficient fossil-fuel subsidies that encourage wasteful consumption by removing market distortions"
Issue Target	SDG 14: Oceans gaps – • **target 14.6** "prohibit certain forms of fisheries subsidies which contribute to overcapacity and overfishing"
MoI	SDG 15: Biodiversity and Land Ecosystems gaps – • **target 15.C** "Enhance global support for efforts to combat poaching and trafficking of protected species"
Issue Target	SDG 16: Peace gaps – • **target 16.4** "significantly reduce illicit financial and arms flows, strengthen the recovery and return of stolen assets and combat all forms of organized crime"

Source: Report UNDP, Rapid Integrated Assessment, Seychelles, June 2017.

Appendix 7: Environmental MEAs Seychelles is signatory to as of September 2017

	Environment	Signature (S) Accession (A) Acceptance (a) Approval (AA)	Deposition (D) Ratification (R)	Entry Into Force (In Seychelles)	Implementing Department/Agency
1	"Convention on Biological Diversity" Rio de Janeiro Adoption: 05.06.92 EF: 29.12.93	10.06.92(S)	22.09.92(R)	29.12.93	Ministry of Environment, Energy & Climate Change
2	"Cartagena Protocol on Biosafety" to the Convention on Biological Diversity Montreal Adoption: 29.01.00 EF: 11.09.03	23.01.01(S)	13.05.04(R)	11.08.04	Ministry of Environment, Energy & Climate Change
3	"Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization" to the Convention on Biological Diversity Nagoya Adoption: 29.10.2010	15.04.11(S)	20.04.12 (R)	12.10.14	Ministry of Environment, Energy & Climate Change
4	"International Convention for the Prevention of Pollution from ships" Adoption: 02.11.1973 Protocol Adoption: 1978 EF: 02.10.1983	28.11.90(A)	--	18.03.91	Ministry of Environment, Energy & Climate Change

5	"Annex VI Prevention of Air Pollution from Ships" EF: 19.05.2005	17.08.90(a)	--	18.02.91	Ministry of Environment, Energy & Climate Change
6	"Convention on the Prevention of Marine Pollution by Dumping of Wastes and other Matter" or "London Dumping Convention" Adoption: 1972	29.10.84(A)	--	29.11.84	Ministry of Environment, Energy & Climate Change
7	"Protocol to the International Convention on Civil Liability for Oil Pollution Damage" Adoption: 1996	27.07.99(A)	--	23.07.2000	Ministry of Environment, Energy & Climate Change
8	"Protocol to the International Convention on Establishment of an International Fund for Compensation for Oil Pollution Damage" Adoption: 1971	23.07.99(A)	--	23.07.2000	Ministry of Environment, Energy & Climate Change
9	"International Convention on Oil Pollution Preparedness, Response and Co-operation" Adoption: 1990	26.06.92(A)	--	18.10.95	Ministry of Environment, Energy & Climate Change
10	"Convention on Persistent Organic Pollutants" Stockholm Adoption: 22.05.2001 , EF: 17.05.2004	25.03.2002(S)	03.06.2008(R)	03.09.2008	Ministry of Environment, Energy & Climate Change
11	"United Nations Framework Convention on Climate Change" UNFCCC New York Adoption: 09.05.1992, EF: 21.03.1994	10.06.92(S)	22.09.2002(R)	21.03.94	Ministry of Environment, Energy & Climate Change

12	"Kyoto Protocol to the UNFCCC" Adoption: 11.12.1997, EF: 16.02.2005	20.03.98(S)	22.07.2002(R)	16.02.2005	Ministry of Environment, Energy & Climate Change
13	"International Plant Protection Convention" (IPPC) Rome: 01.12.1951, EF:03.04.1952	31.10.96	--	31.10.96	Ministry of Environment, Energy & Climate Change
14	"Revised Text of The IPPC" FAO Conference Adoption: November 1979, EF: 04.04.1991	14.12.2004(a)	--	02.10.2005	Ministry of Environment, Energy & Climate Change
15	"Convention on the Wetlands of International Importance Especially as Waterfowl Habitat" Ramsar, Iran, Adoption: 02.02.1971	22.11.2004(A)	--	22.03.2005	Ministry of Environment, Energy & Climate Change
16	"UN Convention to Combat Desertification in those Countries Experiencing Serious Drought and/or desertification particularly in Africa" Paris , Adoption: 1994	14.10.94(S)	26.06.97(R)	24.09.97	Ministry of Environment, Energy & Climate Change
17	"Convention on International Trade in Endangered Species of Wild Fauna and Flora" Washington, Adoption: 03.03.1973	08.02.77(A)	--	09.05.77	Ministry of Environment, Energy & Climate Change
18	"Amendment to Article 11 of the Convention' (CITES) Bonn Adoption: 22.06.1979, EF: 13.04.1987	18.11.82(a)	--	13.04.87	Ministry of Environment, Energy & Climate Change

19	"Montreal Protocol on Substances that Depletes Ozone Layer" Montreal Adoption: 16.09.1987, EF: 01.01.1989	06.01.93(A)	--	06.04.93	Ministry of Environment, Energy & Climate Change
20	"Amendment to the Montreal Protocol on Substances that Deplete the Ozone layer" London, Adoption: 1990	06.01.93(A)	--	06.01.93	Ministry of Environment, Energy & Climate Change
21	"Amendment to the Montreal Protocol on Substances that Depletes the Ozone layer" Copenhagen, Adoption: 1992	27.05.93(A)	--	14.06.94	Ministry of Environment, Energy & Climate Change
22	"Amendment to the protocol on Substances that Deplete the Ozone Layer" Montreal, Adoption: 17.09.1997	26.08.2002(A)	--	24.11.2002	Ministry of Environment, Energy & Climate Change
23	"Amendment to the Montreal Protocol on Substances that Deplete the Ozone layer" Beijing, Adoption: 03.12.1999	26.08.2002(A)	--	25.11.2002	Ministry of Environment, Energy & Climate Change
24	"Basel Convention on the Control of Trans-boundary Movements of Hazardous Wastes and their Disposal" Geneva, Adoption: 02.12.1946, EF: 05.05.1992	11.05.93(A)	--	11.05.93	Ministry of Environment, Energy & Climate Change
25	"International Convention for the Regulation of Whaling"				Ministry of Environment, Energy & Climate Change

	Washington Adoption: 22. 03.1989, EF: 10.11.1948	19.03.79	--	19.03.79	
26	"Convention on the Conservation of Migratory Species of Wild Animals" or "CMS" Bonn, Adoption: 23.06.1979	26.05.2005(A)	--	01.08.2005	Ministry of Environment, Energy & Climate Change
27	"International Renewable Energy Agency" (IRENA) Bonn Adoption: 26.01.2009, EF: 08.07.2010	08.06.2009(S)	03.05.2011(R)	03.06.2011	Ministry of Environment, Energy & Climate Change
28	"Ban Amendment to the Basel Convention on the Control of Trans-boundary Movements of Hazardous Wastes and their Disposal" Geneva, Adoption:28.11.1995	15.07.2015(a)	--	--	Ministry of Environment, Energy & Climate Change
29	"Amendment to the Kyoto Protocol to the United Nations Framework Convention on Climate Change" Doha	15.07.2015(a)	--	--	Ministry of Environment, Energy & Climate Change
30	"Minimata Convention on Mercury" done at Kumamoto Japan, Adoption: 10.10.2013	27.05.2014(S)	13.01.2015(R)	--	Ministry of Environment, Energy & Climate Change

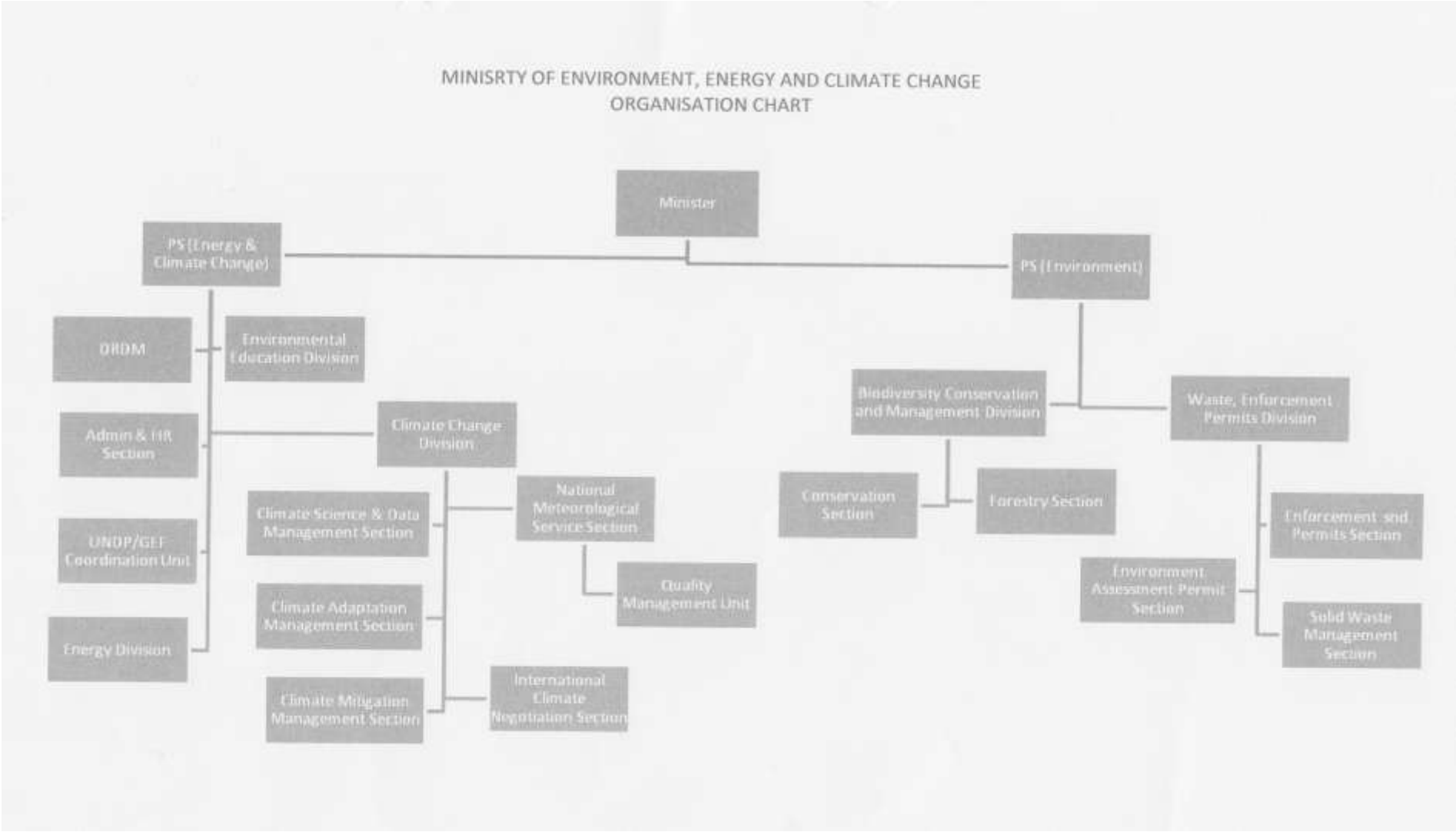
Source: Treaties Section, Department of Foreign Affairs Seychelles

Appendix 8: Fisheries Conventions and Agreements Seychelles is signatory to

		Signature(S) Accession(A) Acceptance(a) Approval(AA)	Deposition(D) Ratification(R)	Entry Into Force
1	United Nations Convention on the Law of the Sea (UNCLOS), 1982	10.12.82	16.9.91(R)	16.11.94
2	UN Convention of Law of the Sea relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks.	04.12.96	20.03.98 (R)	
3	Southern Indian Ocean Fisheries Agreement"(SIOFA) Adoption: 07.07.06	07.07.06(S)	14.01.08(R)	14.02.08
4	Agreement on Port State Measures to "Prevent , Deter and Eliminate Illegal, Unreported and Unregulated Fishing" Banjul, The Gambia Adopted: 22.11.2009	22.09.09(S) 19.06.13(A)		
5	Agreement to Promote Compliance with International Conservation and Management Measures by Fishing Vessels on the High Sea (FAO Compliance Agreement)			

Source: Treaties Section, Department of Foreign Affairs & SFA

Appendix 9: MEECC organizational chart



Appendix 10: Analysis of MEAs activities related to MEECC

Environmental Related Convention	Reporting requirement under the convention (e.g. annual, quadrennial)	Latest report sent by Seychelles	Audit note
1. RAMSAR Convention_ 1971	Annual Reporting	2017_ Port Launay Ramsar site report	In-consistency in reporting. - Only the 2013 and 2017 reports were provided to audit, the other reports in between were not available.
2. Convention of the International Trade of Endangered Species (CITES)	Annual Reporting	2016 CITES Report	In-consistency in reporting. - In July 2017 Audit was provided with the last report for CITES for 2013 and in December 2017 the 2016 report was provided
3. Convention on the Conservation of Migratory species of wild Animals_1983	No Information provided to audit		
4. Vienna Convention and Montreal Protocol for the Protection of the Ozone Layer_ 1985/1987	Annual Reporting by ozone unit	Progress Report January – December 2017	Up to date with reporting.
5. Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal_1989	Annual Reporting	Report 2011 provide _compiling for 2016	In-consistency in reporting. Last report 2011 and now compiling for 2016, reports in between unavailable.

6. Convention on Biological Diversity_1992	In cycles usually every 4-5 years depending on party capacity and resources.	5th CBD National report submitted in August 2014 6th report due 31st December 2018	Up to date with reporting.
7. UN Framework Convention on Climate Change_1992	Every five years	Second National Communication Submitted 2012 Third National Communication due in December 2018.	Up to date with reporting.
8. Rotterdam Convention on Hazardous Chemicals in International Trades_1998	No Information provided to audit		
9. The Stockholm Convention on persistent Organic Pollutants_2001	No Information provided to audit		
10. Minamata Convention on Mercury _2013		Initial Assessment Report 2016	Up to date with reporting.

Source: Compilation of document received from MEECC

Appendix 11: Standard Environment Conditions

SANITARY FACILITIES

SF1 Soakaway pit (s)/Drainfield(s) should be located at least 5 meters from the boundary.
SF2 Soakaway pit(s)/Drainfield(s) should be located at least 15m from the stream/river/marsh/watermark/water course/roadside drain/sea.
SF3 Grease traps should be fitted to kitchen waste water discharge and properly maintained at all times.
SF4 Kitchen wastewater discharge should be hanneled into the septic tank or alternatively into a separate soakaway pit via a grease trap.
SF5 Proper sanitary facilities for the temporary housing for workers on site should be provided and adequate provision should be made for the decommissioning of the facility upon the completion of works.
SF6 Adequately sized septic tank and soakaway pit should be provided.
SF7 Drainfield should be used in preference to soakaway pit due to High Water Table in the area.
SF8 Design of drainfield should be submitted to the Ministry of Environment for approval.
SF9 Proponent should liaise with the PUC Sewerage for wastewater and sewage disposal connection to the Beau Vallon/Victoria Sewerage Network.

EROSION

E1 In the interest of beach preservation, dune lands and coastal vegetation should not be disturbed.
E2 Landscaping should be done with anti-erosion vegetation.
E3 Terrace/Embankment should be trimmed to a safe slope angle and planted with anti-erosion vegetation.
E4 Professionally designed retaining wall should be constructed to contain the earth embankment.
E5 Filter cloth should be used in the rock armouring to minimize wash out of sediments.
E6 Floor level must be raised sufficiently by at least 1 meter so as to minimize the risk of being flooded.
E7 Should there be a need to remove any boulders, it should only be done by the use of wedge/jackhammer so as to minimize any land destabilization.
E8 Appropriate measures should be taken to minimize the risk of erosion from Earthworks.
E9 Parking area should be paved and adequate surface drainage facilities should be provided.
E10 Retaining wall should be constructed prior to cutting of the terrace.
E11 A buffer of 25m from the High Water Mark should be maintained.
E12 Development should be set back a minimum of 25m from the High Water Mark in aid of beach erosion prevention.
E13 Adequate mitigative measures should be taken on site to prevent sediments wash down.
E14 Bunding and rock armouring should be constructed prior to reclamation.
E15 All earthworks to be done during the dry spell.
E16 Retaining wall should be constructed immediately after cutting of the terrace.
E17 Landscaping should be done in concurrent to construction.
E18 Proponent should verify whether all boulders on site are stable.
E19 Permission should be sought from relevant Authority prior to earth cutting.

E20 Provision should be made to allow run-off from the car park to percolate into the ground

DRAINAGE (D)

D1 Adequate storm/surface water drainage facilities should be provided so as not to affect neighboring properties.
D2 Proper guttering and down pipe should be provided to appropriately drain roof water without affecting nearby properties.
D3 Onus is on the proponent to maintain the drain/culvert/bridge/cross drain.
D4 The flow of seasonal stream/rivers should not be disturbed/diverted/altered without approval **Rivers Committee**.
D5 There must be no direct discharge of wastewater into river/seasonal stream/river course/roadside drain/public drain/marsh/swamp/sea.
D6 Drains collecting oil must be served by an oil separator to contain any waste oil and spills that may be generated from the site.
D7 Provision for collection and storage of waste oil/spillage should be provided.
D8 Oil separator is to be adequately maintained at all times.
D9 Drain/culvert/bridge/cross drain should be well maintained at all times

VEGETATION CLEARING (VC)

VC1 Should there be a need to fell/lop any protected trees (name of trees) permission should be sought from the Forestry Section of the Environment Department.
VC2 Endemic species of plants found on site must be protected (name of plants).
VC3 Felling of tree should be kept to a minimum.
VC4 Proponent/Agents should liaise with Forestry Section of Ministry of Environment for removal/lopping of dangerous trees on site.

ACCESS (A)

A1 Access road should be hard-surfaced immediately after earthworks.
A2 Public access to adjoining properties/plots must not be severed or obstructed.
A3 Boardwalk/bridges across dunes must be provided for beach access.
A4 Roadside drain/cross drain/culvert should be provided.
A5 Grill and cross drains should be adequately provided and well maintained at all times.
A6 Should there be a need to construct a vehicular access on the proposed 3 meter right of way, a separate detailed application will have to be submitted for the vehicular access.
A7 Land vehicles should not be driven on the beach or beach dune at any time.

WASTE HANDLING (WH)

WH1 Adequate litterbins should be provided on site.
WH2 Proponent should liaise with Landscape and Waste Management Agency/ Praslin Development Fund for removal of waste.
WH5 Medical waste must be separated from domestic waste.
WH6 Medical waste should be collected according to standards applied by Victoria Hospital and transferred to a designated treatment facility.
WH7 Proper storage facilities for waste oil and other garage waste should be provided.
WH10 An enclosed waste vermin proof solid waste handling facility is to be provided and well maintained at all times on site.
WH11 All plastics, rubber, glass, synthetic and other inorganic waste, construction and demolition waste should not be dumped into the nearby properties but should be

sorted out at source and appropriately disposed at the designated waste disposal site.

SUBDIVISION (SD)

SD1 Proposed plot(s) (plot No.) should be for residential/commercial/industrial use only.
SD2 This authorization is solely for subdivision purposes. Should there be a need to fell/lop any protected trees and to carry out site clearance; necessary permission should be sought from the relevant authorities.
SD3 Each plot should have its own wastewater treatment facilities.
SD4 Separate application is required for construction of access road.
SD5 Proposed plot(s) should not be developed and be kept as a green buffer to the river/dune land/marsh/swamp/remarkable landscape.
SD6 Remainder plots should be kept as a green buffer/open space/natural landscape.
SD7 Due to the load of solid waste expected to be generated from the future residential plots, onus is on the proponent to excise certain plots for the location of bin site to serve the above development.
SD8 Existing bin site should remain as a public domain on plot no ( )
SD9 Any future development (including any future subdivision) of the proposed remainder plots is subject to a separate application and close consultations should be made with officials from the Ministry of Environment & Natural Resources.
SD10 Prior to sub division and allocation of those plots all valuable / commercial trees such as (name of trees) must be retained by the Forestry Section of the Environment Department and the Seychelles National Parks Authority –(SNPA).

NOISE and EMISSIONS

NE1 Onus is on the developer to minimize nuisance by reasons of noise, smell/dirt/dust and fumes to any adjoining properties.
NE2 No open fire should be lit on site without a valid burning permit being sought from the Forestry Section of the Ministry of Environment.
NE3 Onus is on the developer to ensure that noise from the construction site and machineries should comply with the Noise Emission Standard of the Environment Protection Act.
NE4 Normal working hours is to be strictly maintained, i.e. 0800hours to 1600hours during weekdays, 0800hours to 1300hours on Saturdays and strictly no work on Sundays and public holidays.
NE5 Onus is on the developer to take responsibility to notify future clients of the possibility of nuisance emanating from residential activity such as noise and keeping of animals.

OTHERS

O1 Building/Extension must not be used for residential/commercial purposes.
O2 Details of sanitary facilities for temporary workers on site are to be provided.

AESTHETICS

AS1 Roof colour of the proposed building should match with existing surrounding natural environment.
AS2 Trees/hedge should be planted on site to screen the building/boundary wall/retaining wall/containers/structure.

AS3 Colour of the proposed chain link fence should be green/grayish colour to match with existing surrounding natural environment.

CONTAINERS

C1 Containers should be well maintained at all times.
C2 Upon expiry of this permit the container should be removed from the site and appropriately disposed or returned to the container designated area in Port Victoria.
C3A Container should be modified and converted into a permanent structure (with roofing, fresh coat of paint, etc) for better aesthetic value.
C3B Container(s) should be modified with roofing and painted with fresh coat of paint for better aesthetic value.
C4 Container should be roofed and cladded with wooden panel
C5 The Authority reserves the right to instruct disposal of the container if in the opinion of the administrator it is so dilapidated or in any way does not satisfy the above conditions of the Environmental Authorisation.

SIGNBOARD

SB1 A separate planning application should be submitted for a signboard to be installed for the development.
SB2 Signboard to be adequately maintained at all times
SB3 The Authority reserves the right to instruct removal of the signboard if in the opinion of the Administrator it is so dilapidated or in any way does not satisfy the above conditions of the Environmental Authorization.

SATELLITE DISH

SAT1 Onus is on the proponent to maintain the satellite dish at all times.
SAT2 Onus is on the proponent to ensure that the satellite dish does not have any adverse visual impacts to any adjoining properties/surrounding environment.
SAT3 The Authority reserves the right to instruct removal of the satellite dish if in the opinion of the Administrator it is so dilapidated or in any way does not satisfy the above conditions of the Environmental Authorization.

ANTENNA

A1 The proposed antenna should be of a tree like structure.

WATER CONSERVATION

WA1 An adequately sized potable water storage tank should be provided for the proposed development.
WA2 Provision should be made to harvest roof water and store in a holding tank for use in irrigation and other non-potable purposes for reasons of water conservation.
WA3 Provision should be made to harvest roof water or rain water and store in a holding tank or water container for use during construction phases for the reasons of water conservation.

UTILITIES

U1 Onus is on the proponent to immediately reinstate and tidy up the site after excavation works.
U2 No trenches should be left over night.

U3 Onus is on the developer to minimize damage on the vegetation/stream/river/marsh/ roadside drain/sea/wells/boreholes within the area.

U4 Onus is on the proponent to rehabilitate the site after work has completed.

GENERAL

G1 The Ministry of Environment, Energy & Climate Change reserves the right to impose further conditions in addition to the ones imposed by the authorization if during the operational phase of the development: we conclude that the proposal is generating any other adverse environmental impacts not foreseen by this appraisal.

G1A The Ministry of Environment, Energy & Climate Change reserves the right to impose further conditions for the development when issuing Environmental Authorization upon submission of the detailed plans

Note: This authorization makes void Environmental authorization issued on (date of previous EA), for application with reference number (MLUH REF) – (EA NO).

Enclosed facilities should be provided for waste oil.

SEWAGE TREATMENT PLANT

1. Authorization to discharge effluent by mode of irrigation should be sought from the Ministry of Environment Energy and Climate change.
2. Propose STP should meet Effluent standard as per Environment Protection (standards) Regulations, 1995.
3. Should the proponent /agent opt for open irrigation mode regular testing should be done to ensure effluent quality.
   Dry Sludge should be vacuum pump and appropriately dispose of at the designated waste disposal site

- *Authorization to discharge effluent in any water course or on land by mode of irrigation should be sought from the Ministry of Environment Energy and Climate change.*
- **Note:** The environment Department should be involved for occupancy visit of the project. (re to STP)

1. All site clearing has to be done manually (ie no JCB to be used on the said property). (Please note that to reach the site, the JCB will have to construct an access road and in view of the steepness of the terrain. This may result in severe land destabilization and soil erosion to the adjacent school property).
2. Necessary precaution should be taken in the event of any blasting operation.
3. Any blasting operation, trimming of tall trees should be done during the week-ends or school holidays for safety reasons and to minimize the potential risk of nuisance from noise and dust.

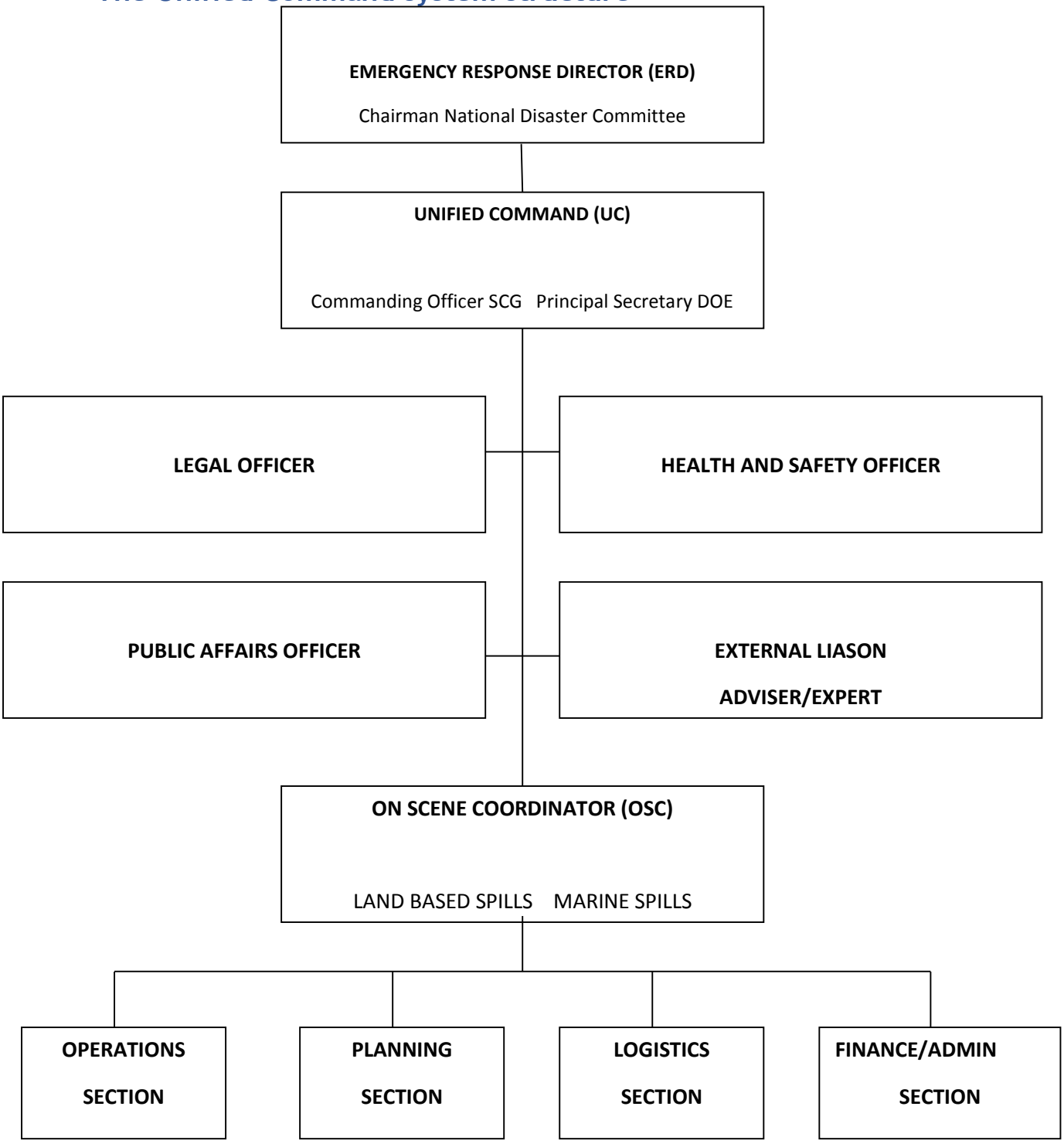
All trimmed vegetation should be well disposed of on the same property

EARTHWORKS

Edition: September 2015

Source: MEECC

Appendix 12: National Oil Spill Contingency Plan
The Unified Command system structure



Source: National Oil Spill Contingency Plan. p.5

Appendix 13: Coastal Projects undertaken by CAMS during the year 2015- 2017

Year 2015	
La Passé rock armouring and beach nourishment. CAMS - CAPEX	Coastal Protection and Erosion Prevention of the Coast.
Anse La Mouche – Phase – III Coastal Rehab works	Topographical survey undertaken and working on designs.
Year 2016	
Anse La Mouche – Phase 1- Coastal Rehabilitation works- Remedial Works.	Rock packing, strengthening of damaged timber pilling. Rock binding and fixing of pathway.
La Passé rock armouring and beach nourishment. CAMS - CAPEX	Sand / beach nourishment.
Anse Gaulette- Erosion and impacts on road structures.	Emergency works – Rock Dumping to protect the coast and road infrastructure from further erosion.
Year 2017	
Anse La Mouche – Phase – III Coastal Rehabilitation erosion protection works	Rock Armouring along the coast to prevent future coastal erosion.
Anse-Gaulette- Topographical Survey- Coastal Protection and Rehabilitation works.	To obtain a detailed topographical survey of the area so that we can decide on what structures to build to protect the coast
Anse-Boileau - Topographical Survey- Coastal Protection and Rehabilitation works.	To obtain a detailed topographical survey of the area so that we can decide on what structures to build to protect the coast.
Anse La Mouche – Phase – III Coastal Rehabilitation works	Installation of benches -Donation of 4 benches from LWMA to beautify the area and also for beach users
North East Point- High Tidal surge	Rock Dumping to prevent the road from being damaged by the high tidal Surge.

Source: CAMS