Seychelles Wetlands Policy and Action Plan 2019-2022

ECOSYSTEM-BASED ADAPTATION
THROUGH SOUTH-SOUTH COOPERATION
Enhancing Capacity, Knowledge and Technology Support
to Build Climate Resilience of Vulnerable Developing Countries

Ministry of Environment
Energy & Climate Change

UNEP

ADAPTATION FUND

This document may be cited as:

Government of Seychelles (2019). Seychelles Wetland Policy and Action Plan 2019-2022.

Contents

Acronyms and Abbreviations 4
FOREWORD 1
Introduction 2
International Obligations 3
National Strategic and Policy Documents 4
Legal Foundations 6
Scope 8
Vision Statement 8
Goal 8
Policy Commitments 8
Policy Objectives 9
  Policy Objective 1 9
  Policy Objective 2 9
  Policy Objective 3 9
  Policy Objective 4 9
  Policy Objective 5 9
  Policy Objective 6 9
Policy Implementation 9
References 11
Annex 1: Action Plan for Wetlands in the Seychelles 13
Annex 2: Wetlands in Seychelles 18
Annex 3: Ramsar Convention in the Seychelles 26
Annex 4: Internationally Important Wetlands in the Seychelles 28
Annex 5 National Policy and Legislation Influencing Wetland Policy 32

Acronyms and Abbreviations

CBD	:	Convention on Biological Diversity
EBA-SSC	:	Ecosystem-Based Adaptation through South-South Cooperation
EIA	:	Environment Impact Assessment
EMPS	:	Environment Management Plan for Seychelles
EPA	:	Environment Protection Act
GEF	:	Global Environment Facility
GoS	:	Government of Seychelles
IOSEA	:	Indian Ocean Southeast Asia Sea Turtle MOU
IUCN	:	International Union for Conservation of Nature
LUP	:	Land Use Plan
MEECC	:	Ministry of Environment, Energy and Climate Change
NBSAP	:	National Biodiversity Strategy and Action Plan
NPNCA	:	National Parks and Nature Conservancy Act
NPOA	:	National Plan of Action for Sharks
PA	:	Protected Area
PAA	:	Protected Area Act
PAN	:	Protected Area Network
SDG	:	Sustainable Development Goal
SFA	:	Seychelles Fishing Authority
SLRRA	:	State Land and River Reserves Act
SSDS	:	Seychelles Sustainable Development Strategy
TCPA	:	Town and Country Planning Act
UNFCCC	:	United Nations Framework Convention on Climate Change
UNESCO	:	United Nations Educational, Scientific and Cultural Organisation

FOREWORD

Wetlands are critical habitats worldwide and perhaps even more important to the Seychelles as small islands vulnerable to climate change. Wetlands provide our nation with vital ecosystems services: the overwhelming majority of our water comes from natural wetlands sources; coastal wetlands absorb storm waters from both land and sea and will provide important buffers to sea level rise; coastal wetlands provide nurseries for fish species that are important to commercial and artisanal fisheries and in-shore reefs make a key part of the Seychelles tourism product.

More over the biodiversity in and around wetlands is special and irreplaceable, some of the most beautiful and unique environments are the riverine forests found within the National Parks and new species to science are still being discovered in our rivers and wetlands.

Yet wetlands are under pressure, pollution, coastal squeeze, coral bleaching, and poorly planned development, illustrated by the fact that coastal wetlands are now considered the most threatened habitat in the Seychelles. We therefore need to act now to protect and manage these natural resources.

Provisions are made for the protection and management of wetlands under various legislation ranging from protected area, fisheries and development control ordinance, and this document pulls together these diverse elements in to one coherent policy. This builds coherently on the recent progress in developing protected area and Integrated Water Management policies and associated draft legislation.

This document goes a step further developing an action plan for policy implementation, the themes of the action plan relate directly to the policy objectives and actions focus on clear time defined outcomes. The action plan captures some important activities already being implemented related to the expansion of protected areas and the restoration of coastal and lowland wetlands and identifies the most important actions required to enable sustainable management.

Significantly the policy and action plan acknowledges the crucial role that communities now have in managing water resources and wetlands. An increasing number of civil society groups are now active and involved in habitat rehabilitation, litter cleaning and tree planting. This action plan endorses and enables the adage act "think globally, act locally"

Introduction

Wetlands are important ecosystems. They provide habitat for animals and plants and support a diversity of life. They are crucial to the functioning of the environment by protecting our shores, reducing the impacts of floods, absorb pollutants and improving water quality. They also provide an important range of environmental, social and economic services. Their importance is recognised through the international treaty for the conservation and sustainable use of wetlands, also known as the Convention on Wetlands or Ramsar Convention.

In Seychelles, "wetland" is defined as *an area of mangrove, marsh, swamp or water (including springs, rivulets and rivers and constructed wetlands), which are permanent or temporarily submerged under fresh, brackish or salt water that is static or flowing, including areas of marine habitat to the full extent of the intertidal zone*. By definition, wetlands make up a meaningful proportion of the EEZ. These include shallow marine systems, mangroves and intertidal, coastal wetlands and freshwater systems and these deliver vital ecosystems services. These services include supporting healthy fisheries, coastal protection disaster mitigation and climate change resilience and fresh water. Protection of the different types of wetlands are therefore crucial.

There are four categories of wetlands; inland wetlands (including rivers and streams, lowland and upland wetlands), coastal wetlands (incl. mudflats and mangroves, seagrass and reef flats), coral reefs and constructed wetlands (include reservoirs). The wetlands are being threatened by a number of natural (e.g. climate change), biological (e.g. alien invasive species) and anthropogenic factors (e.g. pollution, reclamation). For the past 200 years, there have been significant loss of wetlands due to the pressures of development. Details on the status and trends are provided in Annex 2.

The Seychelles National Wetland Conservation and Management Policy was initially developed in 2005 in response to the loss of wetland. Its main aim was to address and reverse the degradation of wetlands in the Seychelles. The Policy is outdated and there is a need to review and include the country's national obligation under the different multilateral agreement which Seychelles is party to.

This new Wetland Policy 2019 - 2022 acknowledges that wetlands are essential for sustainable development and that wise use is paramount. The policy also recognises that many if not most of the tools to enable wise use are available and attempts to draw the multi-sectorial assets together under a single policy as associated action plan.

The action plan, provides the framework for policy implementation, and captures existing programmes of work, sets ambitious targets and grasps new opportunities such as the involvement and leadership of civil society to manage local resources of national importance.

This policy was compiled on behalf of the Ministry of Environment, Energy and Climate Change (MEECC) under the auspices of the GEF-funded project, Ecosystem-Based Adaptation through South-South Cooperation (EBA-SSC) and the Adaptation Fund Ecosystem based Adaptation in the Seychelles (EBA Project).

International Obligations

Seychelles is party to **Multilateral Environmental Agreements (MEAs)** with relevance to the management of wetlands in Seychelles. Prominent among these agreements are the:

- Ramsar Convention, with its specific focus on and definition for wetlands;
- Convention on Biological Diversity (CBD) its work programmes, specifically those on inland waters, marine and coastal biodiversity and the Aichi Biodiversity targets;
- The Bonn Convention on Migratory Species including: the Indian Ocean South East Asia (IOSEA) sea turtle agreement, the Dugong MoU and the Sharks MoU[1] both of which make provisions for management of pertinent critical habitats;
- The UNESCO World Heritage Convention;
- The Nairobi Convention for the Protection, Management and Development of the Marine and Coastal Environment and its pertinent protocols;
- The South African Development Community protocols on Fisheries and Wildlife Conservation;
- Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) pertaining to the trade or export of some species, of relevance are marine turtles, some sharks and rays, Humphead wrasse *Cheilinus undulates.*

There are also the 2030 Sustainable Development Goals which should guide the country's approach to sustainable development.

Of the above the CBD and its Aichi Biodiversity targets are addressed by the NBSAP described in the *National Strategic and Policy Documents* section whilst the approach to wetland management is more thoroughly addressed under Ramsar. The Bonn, World Heritage and Nairobi Conventions and SADC Protocol commitments are largely covered by the NBSAP, PA Policy, the SSDS and the specific management of certain PAs.

The key international obligations for wetlands therefore are to be found under the **Ramsar Convention.** The Ramsar Convention is an intergovernmental treaty which provides the framework for national action and international cooperation to ensure the conservation and wise use of wetlands (Annex 3). At present, there are 168 parties and Seychelles became a party to the Convention on the 22nd March 2005. To date, three sites have been designated as wetlands of international importance. Accession to the Ramsar Convention places various obligations on Parties.

[1] Soon to be signed by Seychelles.

National Strategic and Policy Documents

Seychelles has several strategic plans and policy documents with relevance to wetlands, these include: the Seychelles Sustainable Development Strategy 2012-2020 (SSDS), the National Biodiversity Strategy and Action Plan 2015-2020 (NBSAP), district land use plans, fishery plans, the national Blue Economy Concept, the Protected Area Policy (GoS 2014b) and the ongoing marine spatial planning process. The most salient are reviewed below.

1). Seychelles Sustainable Development Strategy 2012-2020 (SSDS).

The SSDS directly addresses wetland management issues, reflecting the national awareness of the importance of these matters (GOS 2012; GOS 2012a). It has recently been determined that its content will be rolled into the new National Development Strategy. The SSDS includes an Action Plan composed of 13 thematic areas (Programmes) see Annex 5.

2). Seychelles National Biodiversity Strategy and Action Plan 2015-2020 (NBSAP).

The NBSAP (GoS 2014d) is the Seychelles action plan for the implementation of its commitments under the Convention on Biological diversity. The 2015-2020 document was structured to mainstream the Aichi biodiversity targets. The document identifies lowland wetlands as the most endangered ecosystem type in Seychelles[2].

3). District Land Use Plans

Land Use Planning Guidelines were finalised in 2013 and plans were drafted for all 25 districts. The ultimate intention being to make all the plans statutory, under the Town and Country Planning Act and its intended successor the Physical Planning Act.

The LUP guidelines and draft regulations recognise 6 categories of no-development zone, of which 5 pertain to wetlands (see Annex 5 for details).

4). Fishery Plans

The 2014 Fisheries Act makes provision for Fishery Plans to be regulated into law. Therefore, fishery plans such as the demersal fishery management plan (SFA 2015) for the Mahé Plateau and the new National Plan of Action for the Conservation and Management of Sharks (NPOA)(SFA 2016) may through proposed fishery management measures have direct relevance to the management of the coastal environment. Intertidal zones and coastal wetlands can be of particular importance as nursery grounds for fishery and ecologically important species.

5). National Blue Economy Concept

The Seychelles government produced a Blue Economy concept paper in 2013 (GoS 2013a)[3] which was endorsed by the 2014 Third International Conference on Small Island Developing States in Apia, Samoa. The paper sets out the concept in the form of seven issues and seven opportunities (see **Table 1**), the issues identified clearly have relevance (shaded) to marine wetland management.

[2] A National Biodiversity Policy is now in the early stages of formulation and provides an opportunity to enhance the national recognition and protection of wetlands.

[3] A national position paper was also produced (GoS 2013).

Table 1: Blue Economy Wetland Management Analysis			
Issues		Opportunities	
a	Sustainable use of biodiversity	a	Shipping and port facilities
b	Food security	b	Fisheries
c	Unsustainable fisheries	c	Tourism
d	**Climate change – Acidification, Blue carbon**	d	Aquaculture
e	Marine and coastal tourism	e	Energy (renewable blue energy)
f	Pollution and marine debris	f	Biotechnology
g	Governance and International cooperation	g	Submarine mining

6). Seychelles Protected Area Policy

The Seychelles Protected Area (PA) Policy (GoS 2014b) was completed in 2013 approved in 2014. Its vision is *"To have a Protected Areas System on the land and in the sea that protects and conserves high conservation value, comprehensive and ecologically representative examples of the Seychelles' natural diversity and cultural heritage and that provides ample opportunities for the fair and equitable sharing of the benefits arising from the sustainable use of these resources."* It sets out the process to update Seychelles Protected Area Network (PAN) The PA Policy, once supported by revised legislation, offers considerable scope to support wetland management and EBA processes.

7). Water Policy

A Seychelles National Water Policy and National Integrated Water Resource Management (IWRM) Plan were approved by Cabinet in July 2017. The new policy provides the guiding framework for the management of Seychelles' water resources in accordance with IWRM principles. In the process of developing the Policy and IWRM Plan it became clear that the development of a new, IWRM-based legal framework for water management is required, notably a new National Water Act which will replace the Public Utilities Corporation Act (1982) and Water Regulations (1979), which is limited to the regulation of water supply and management of sewerage and waste water.

The Water Policy and associated Water Bill represents reform in the national approaches to water management including sustainable use, allocations of water to maintain ecosystem integrity, protection of catchments and control of pollution (see Annex 5)

Legal Foundations

Seychelles has a complex legal framework pertinent to the governance of wetland areas, made more so by key pieces of legislation being under a protracted process of review. Governance of the development cycle is based primarily upon the Town and Country Planning Act (TCPA) (GoS 1972) and the Environment Protection Act (EPA) (2016), its 1996 Environmental Impact Assessment (EIA) Regulations (GoS 1996) and related Sensitive Areas Atlas (Duncombe 1996 & 1996a). Legislation that provides areas, including wetlands, with different categories of protected/development status are the 1969 National Parks and Nature Conservancy Act (NPNCA)(GoS 1969, amended 1982), State Land and River Reserves Act (SLRRA)(1903, amended 1976) and the Nature Reserves regulations of the Wild Animals and Birds Protection Act (WABPA)(1966). Legislation also relevant in the context of wetlands are the Shell Reserves and Fishery Reserves under the Fisheries Act (2014).

1. Primary Legislation

The TCPA establishes the Planning Authority which reviews and rules upon planning applications. The Act sets out the required standards for structures in terms of their design, materials, location, proximity to environmental features and safety requirements.

The EPA (GOS 2016) and its EIA regulations set out criteria for the provision of environmental authorisation for development proposals including the need for category I or II environmental impact assessments depending on the proposed development's scale, nature and its location relative to important environmental features. The EIA regulations identify 22 categories of Sensitive Area including *inter alia* wetlands, coastal zone and beaches.

The two laws are intended to be complimentary and balance each other in the pursuit of sustainable development. The effective parallel operation of the two laws has been problematic on occasion however, in particular because clause 10 of the TCPA allows the Minister responsible for the land use portfolio to overrule all other decisions or objections. This is now balanced by an equivalent superseding provision, Section 81(3), in the EPA 2016.

The EPA is also of note due to Section 15: Regulations for Protection of Water and Section 28: Declaration of Coastal Zone and its Protection both of which, though not previously utilised, offer excellent scope for the protection of wetlands and the mitigation of climate change.

2). Secondary Legislation.

i). The National Parks and Nature Conservancy Act (1969, amended 1982) (NPNCA).

The NPNCA (GoS 1969) is the principal national legislation for the creation of Protected Areas (PAs) for conservation purposes and forms the main structure of Seychelles Protected Area Network (PAN). The Act sets out four categories of PA which allow for varying degrees of human activity: Strict Natural Reserve (that has never been applied), Special Reserve, National Park and Area of Outstanding Natural Beauty.

The NPNCA specifies various penalties for infringements. See **Annex 5** for summary of the areas protected and their relevance to "wetland" conservation and management. In 2013 a new Protected Areas Policy (GoS 2013b) was approved to be accompanied by new legislation. A new National Parks and Nature Conservancy Bill is currently in the final stages of development.

ii). State Land and River Reserves Act (1976).

The State Land and River Reserves Act (formerly the 1903, Crown Land and River Reserves Act) (GoS 1976) lists 146 rivers and rivulets on Mahé, Praslin and La Digue. The water courses are listed for protection in recognition of their importance for water provision and socioeconomic development. The Act defines rivers and an area of vegetation either side of them, the size of which depends on altitude, as reserves to provide a minimum level of catchment protection. This legislation is currently under review with the intention of developing a new State Land Act.

3). The Wild Animals and Birds Protection Act (GoS 1961)(WABPA), The Wild Birds Protection (Nature Reserves) Regulations (GoS 1966).

The Regulations define a Nature Reserve as: "any island or place declared in the schedule hereto to be a nature reserve" and protect the majority of bird species, their eggs and nests. See Annex 5 for summary of the areas protected and their relevance to "wetland" conservation and management.

4). The Fisheries Act (2014).

A new Fisheries Act (GoS 2014a) was promulgated in 2014 to replace its 1986 predecessor. However, the pertinent PAs were carried over from the old act to the new. The Act designates:

i. Four shell reserves (1987 Shell Reserve Regulations), two on the coast of Mahé and one each on Praslin and La Digue, and
ii. Three fishery reserves, on reefs adjacent to the main islands, where net use of any kind banned over the prescribed reef areas.

See Annex 5 for summary of the areas protected and their relevance to "wetland" conservation and management.

5). The Protected Areas Act (GoS 1967) (PAA).

The PAA is specifically designed to exclude persons/public access from certain areas. Its intended purpose being to manage areas for the purposes of national security. It has however also been utilised to declare two PAs for environmental reasons.

Scope

The Purpose of the Wetland Policy is to:

1. Provide a basis for the sustainable management of wetland resources in order to provide ecosystems services, increase climate change resilience and enhance biodiversity
2. Drew together diverse legislation and policies to provide a coherent frame work for wetland management
3. Fulfil the country's commitment to MEAs including, but not limited to, The Ramsar Convention

Vision Statement

"The wetlands of the Seychelles are managed sustainably to improve ecosystem services, to increase resilience to climate change and to deliver biodiversity"

Goal

The conservation and sustainable use of wetlands as a fundamental contribution to Seychelles' Sustainable Development

Policy Commitments

The Government of Seychelles shall:

1. Protect wetlands because of their roles in providing diverse environmental services ranging from the provision of fresh water, disaster risk reduction, the specific unique biodiversity status of our freshwater ecosystems, and the socioeconomic and ecological importance of our coastal wetlands;
2. Take appropriate actions to fulfil its international obligations in the domain of wetlands as set out in *inter alia* the Ramsar Convention, the Convention on Biological Diversity and the Convention on Migratory Species in so much as they pertain to Seychelles and its national circumstances;
3. Implement its national commitments as set out in the Seychelles Sustainable Development Strategy, the National Biodiversity Strategy and Action Plan and as embodied in the national pursuit and development of the Blue Economy
4. Adopt the principles of Ecosystem based Adaptation whereby the conservation, sustainable management and restoration of ecosystems can help people adapt to the impacts of climate change, where existing biodiversity cultural or landscape values shall not be negatively impacted by such intervention.
5. Protect, restore and enhance wetlands with the support of and implementation by Government Agencies, Arms' Length Bodies, NGOs, CBOs and other civil society groups.
6. Take actions to reduce the imminent threats to wetlands, namely Invasive Alien Species, over-exploitation and built development and develop legislation, regulation and policy to mitigate these threats.
7. Facilitate the protection, restoration and recreation of wetland systems by supporting local, national and international funding instruments including the allocation of international donor funds for biodiversity conservation and Ecosystem-based Adaptation.

8. Commit through the development, implementation and periodic review of the Action Plan to the conservation and sustainable use of its wetlands, including the designation and management of protected area classifications to conserve endemic and threatened wetland biodiversity and to cooperate internationally as appropriate to further those ends.

Policy Objectives

Policy Objective 1

Promote and facilitate research and monitoring that will enable a comprehensive inventory of wetlands to be compiled, provide information to guide management and to measure change over time, especially related to climate change.

Policy Objective 2

Ensure that wetlands are effectively protected by increase and enhance implementation of legislation including improved area coverage, the development and implementation of management plans and legal enforcement.

Policy Objective 3

Implement the restoration, rehabilitation and recreation of wetlands to enhance biodiversity, improve water security, increase climate change resilience and benefit public access and legislation.

Policy Objective 4

Strengthen and align wetland management to National Plans and Policies and ensure that opportunities to fulfil the commitments to MEAs are maximised and reported.

Policy Objective 5

To engender the involvement of Civil Society including NGOs, CBOs and other groups in the management and safeguarding of wetlands and engender active participation in catchment management and the wise use of water resources.

Policy Objective 6

To increase public understanding and support for sustainable management of wetlands though education and awareness.

Policy Implementation

The policy will be implemented through the **Wetland Action Plan 2019 -20 (Annex 1)** which is a detailed, verifiable and time defined implementation plan based on the Policy Objectives.

Guiding Principles:
The Action Plan should be implemented within the context of the following operational principles:

- *The Precautionary Principle*
- *The Ecosystem Approach*
- *Ecologically Sustainable Development*
- *The Interdependence of Humans and Biodiversity.*

Institutional Framework:

- The Department of Energy & Climate Change has a key role in facilitating and coordinating the work of actors and should act as a central repository for information however the scope of the work is beyond the capacity of any one institution;
- The action plan is intended to guide and empower stakeholders to contribute to the conservation and sustainable use of wetlands. Wherever practical grass roots, non-governmental and private sector agencies should be encouraged to participate in and lead actions in this plan.
- Though various studies of different wetlands have been undertaken in the past; structured scientific data regarding ecosystem function, services, health and productivity are still lacking. This lack of structured data represents a key obstacle to the conservation and sustainable use of wetlands. Further studies undertaken in a sound scientific manner are required; however, a paucity of scientific data should not prevent the protection and conservation of wetlands under precautionary principles.
- Wetlands as defined in this policy are diverse and numerous cutting across many governance structures and portfolios. It is very important therefore that thorough stakeholder analyses are undertaken prior to each action to ensure that all affected parties are properly integrated.

Duration, Monitoring and Review
The Policy and Action Plan has an intended duration of 5 years (2019-2022). Implementation of activities should be reviewed in year 3 to enable optimisation of implementation within the timeline. The review should also provide the basis for revision of the Policy and action plan in year 4 to provide for the next cycle.

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Annex 1: Action Plan for Wetlands in the Seychelles

In this Action plan the term "wetland" is defined as follows:

"Wetland" means an area of mangrove, marsh, swamp or water (including springs, rivulets and rivers and constructed wetlands), which are permanent or temporarily submerged under fresh, brackish or salt water that is static or flowing, including areas of marine habitat to the full extent of the intertidal zone.

Objective	Activities	Wetland type	Implementation agency, organization or project	Time -line	Priority	Notes
Policy Objective 1: Promote and facilitate research and monitoring that will enable a comprehensive inventory of wetlands to be compiled, provide information to guide management and to measure change over time, especially related to climate change.						
A wetland inventory maps and documents all known wetlands	Compile a comprehensive national wetland inventory	All	CAMS with other actors	2019 - 22	High	Inventory identifies protected status, designation, EIA status(possibly link to spatial database developed with ICS)
Poorly known upland wetlands are documented	Survey biodiversity and hydrology of poorly known upland wetlands on Mahe, Praslin and Silhouette	Upland	EBA Project, SNPA,	2019 - 20	High	Surveys on Praslin should prioritize work on amphibian fauna
Document Lowland wetlands (Phase 1)	Survey and map lowland wetlands on Mahe, Praslin, Silhouette and La Digue	Lowland	CAMS, EBA project, MCSS, GEF	2019 - 20	High	
Document Lowland wetlands (Phase 2)	Survey and map lowland wetlands (small islands)	Lowland	CAMS, private island owners / managers, ICS	2020 - 22	low	
Establish baselines for river flow on selected rivers	Implement flow monitoring in **two** Catchments	Rivers	EBA Project / PUC/ UniSey	2019 - 20	Med	Mare aux Cochons/ Mont Plaisir - planned or underway through the EbA
Improve information	Undertake water, substrate biodiversity and ecological function assessment on selected sites	Mudflats and mangroves	CAMS. MCSS, UniSey, GVI, SNPA	2019 -22	Low	(e.g. Port Launay and Curieuse)

available on coastal wetlands		lagoons and seagrass beds				
Improve understanding of coastal wetlands importance to fisheries	Assess importance to fisheries (survey nursery grounds etc.)	Mudflats and mangroves; Reef flats; Lagoons and seagrass beds	SFA	2019 -22	High	
Improved information on coastal wetland biodiversity	Assess importance of coastal wetlands for native and migratory species (birds). Collate data on water birds	Mudflats and mangroves; reef flats; lagoons and seagrass beds	ICS/SIF, SBRC, Schools Wildlife clubs / school participation	2019 - 22	Med	Migratory shorebirds IBAs are mostly on Outer islands / Island database can be used to manage data
Improved information available to inform inshore marine protection	Identify priority reef flats for management and or protection and assess value of current Shell Reserves/ Benthic mapping	Coastal Reef flats Lagoons and seagrass beds	CAMS, MCSS, ICS UniSey, SNPA	TBA	Low	A large exercise, noting this would probably extend below low water mark
Policy Objective 2: Ensure that wetlands are effectively protected by increase and enhance implementation of legislation including improved area coverage, the development and implementation of management plans and legal enforcement.						
Priority list of currently unprotected sites to be included in PAs	Identify a shortlist of currently unprotected sites Recommend sites for protection based on biodiversity and ecosystem service provision	All	CAMS	2019 -19	High	From Phase 1 wetland survey Upland surveys
Protection of priority wetlands	Promote the PA designation of following known priority sites: • La Plaine Hollandaise • upper Caiman Catchment	Upland, lowland	SNPA, MCSS; PCU, CAMS (R2R project, EBA project)	2019 -19	High	Established priority for protection Relies on PA legislation enactment * Outer Islands Project Objective

	• Anse Police Wetlands • Farquhar* • Poivre* • Alphonse/ St Francois* • Desroches* • Denis Island** • North Island**					** Protected Area Finance Project Objective
Complete management plans For existing protected wetlands	Morne Seychellois (Mare aux Cochons)* Praslin National Park Curieuse* Recif Island*	All	PCU, SNPA, DOE (PA finance Project)	2019 -19	High	* Plans under development (PA Finance)
Complete management plans for proposed protected areas	Farquhar* Poivre* Alphonse/ St Francois* Desroches* Denis North Is	Coastal	ICS, GIF, PCU (Outer island Project/ PA Financing Project)	2019 -19	High	*Plans under development under OIP and ** PA Finance
EIA processes reduce risks to wetlands from inappropriate development	EIA regulations are implemented for all wetlands, wetland inventory used	All	Planning, MLUH, CAMS	Ongo ing	High	
Policy Objective 3: Promote the restoration, rehabilitation and recreation of wetlands to enhance biodiversity, improve water security, increase climate change resilience and benefit public access and legislation.						
Restore, rehabilitate or recreate 10 wetlands	Restore wetlands in at least 5 catchments (Marshes, rivers) and 3 Coastal Areas re-profiling	Upland, Lowland, mudflats and mangrove	EBA Project; SSC project	2019 - 21	High	EBA: Baie Lazare, Mont Plaisir, Caiman River catchment, Fond B'Offay, Mare aux Cochons / NE Point and Anse Royale. Anse Boileau and Cap Samy
Policy Objective 4: Strengthen and align wetland management to National Plans and Policies and ensure that opportunities to fulfil the commitments to MEAs are maximized and reported.						

Wetlands areas are included and protected under Land Use Plans	Liaise with MLUH to ensure wetlands (using inventory) are incorporated in to land use plans	All	CAMS – all stakeholders	2019 - 22	High	Ensure appropriate classifications and use of buffer zone to protect adjacent areas
Inclusion of wetlands in NBSAP	Ensure wetland priorities are included in next NBSAP	All	CAMS – all stakeholders	2020		Contingent on time line for NBSAP
Align Wetland Policy with Water Policy and Implementation of the Water Act	Representation on the Rivers Committee (interim) Participation in the board of the new proposed regulator (Energy and Water Commission)	All inland wetlands	CAMS (and other stakeholders)	1018 - 22	High	Representation of Wetland interests
Legislative review includes river protection	Assess status of river reserves and identify scope for enhancement of status	Rivers	PUC, River Committee	Pending review	Low	State lands and Rivers reserve act may be repealed. Status of LUPs will have a bearing (esp on Praslin)
Improve (existing) Ramsar Site coverage	Review extent of Ramsar site in Mare aux Cochons and consider extending the extent to include the catchment	Upland and Coastal	SNPA, CAMS,	2019 -20	Med	
Increase a representative selection of Ramsar sites	Prepare RITs to increase the number of Ramsar sites from 3 – 6 (to include 1 upland wetlands system, lowland and 1 Coastal)	All	CAMS, SNPA, ICS, MCSS	2019 -22	High	Potential sites include Praslin upland wetlands, Anse Police and a seabird islands all qualify
Policy Objective 5: To promote the involvement of Civil Society including NGOs, CBOs and other associations in the management and safeguarding of wetlands and engender active participation in catchment management and the wise use of water resources.						
Establishment Water Shed Committees	Watershed Committees are registered as CBOs and active on at least 4 catchments	Rivers, freshwater wetlands	EBA Project, R2R project	On going	High	WSCs are active in Baie Lazare, Caiman River, Fond Boffay and Mont Plaisir
Watershed Committees represented on Rivers Committee	Reps on Rivers Committee and proposed board of the regulator TRASS SCHOOLS WCS	Freshwater	EBA project	Ongoing	High	2 reps on rivers com

Policy Objective 6: Increase public understanding and support for sustainable management of wetlands though education and awareness.						
Celebrate relevant international environment days	World wetlands Day, World Mangrove Day, World Water Day, Biodiversity Day, Environment Day	All	CAMS, SIF PCU, other actors	2019 - 22	Med	
Increase the number of compatible wetland activities	Support groups organizing activities including: bird-watching, mangrove kayaking, planting native species, restoration of wetlands, litter picking	All	CAMS, NGOs, Water Shed Committees, Port Launay Environment Club etc.	2019 -22	Med	Port Launay Environment Club may be a good model
Tourists involvement / hiking	Increase the number of tourism related activities related to wetlands including hikes / Kayaking etc	All	CAMS, NGOs, SNPA	2019 -22	Med	
Ecosystem service based education	Provide specific educational materials regarding Ecosystem based service provision	All	CAMs / EBA Project	2019 - 22	Med	Materials related to freshwater and climate change resilience
Produce technical guides and Information boards	Produce specific educational materials (printed, video, on line) detailing how to rehabilitate wetlands	All	CAMS / EBA project			
Web based resources	Create or adapt a website focused on wetlands for the Seychelles (e.g. Facebook)	All	CAMS	2019 - 22	Med	

Note the *implementation agency* column in the table is indicative and identifies current projects/ ongoing works, areas of interest to certain organisations but is not a formal commitment or obligation to carry out works, where there is not a statutory obligation.

Annex 2: Wetlands in Seychelles

Status, Trends and Threats to Wetlands

Inland wetlands:

- Rivers and Streams
- Upland wetlands (>250m ASL)*
- Lowland wetlands (<250m ASL)*

Coastal wetlands:

- Mudflats and mangroves
- Seagrass (in intertidal zone)
- Reef flats
- Coral reefs (in intertidal zone)

Constructed wetlands

- Human-made wetlands (reservoirs)

1). Inland Wetlands

The isolation of the Seychelles plus the great antiquity of the granitic islands means inland waters are of significant global biodiversity interest, they are however, to date, still relatively poorly studied.

i). **Rivers and streams**. 146 water courses on the islands of Mahe, Praslin and La Digue are listed for protection under the State Lands and River Reserves Act (1976)(GoS 1976) in recognition of their importance for socioeconomic development. Increasing demand for water means that ever greater quantities are being extracted from the upper reaches of water courses with ramifications for downstream biodiversity. The lower reaches of watercourses in many regions have been affected by human activity including enrichment and chemical pollution, canalisation and reclamation of flood plains etc… A 2003 study (Valade *et al* 2004) of the lower reaches of 12 selected permanent water courses (7 on Mahé and 5 on Praslin) identified 12 native species of crustacea, including the endemic crab (*Seychellum alluaudi*) and 17 native species of fish including the endemic *Panchypanchax playfairii* and the discovery of a new endemic species *Parioglossus multiradiatus.* Additional research is required on more widespread streams, their higher reaches and in particular on freshwater invertebrates to assess the true biodiversity interest of these habitats.

ii). **Highland wetlands** are not well documented. Three sites are well known: Mare aux Cochons on Mahé, La Plaine Hollandaise on Praslin and the Mare Aux Cochons on Silhouette. All three sites were historically subject to extensive agricultural use and related species introduction but such activities have long since ceased. Rehabilitation work has been

undertaken at the Mahé Mare aux Cochons site which lies within the Morne Seychellois National Park and was designated a Ramsar site in 2010. The Silhouette site, also called Mare aux Cochons, lies within the Silhouette National Park (declared in 2010). The third highland wetland is La Plaine Hollandaise on Praslin Island, this area is currently unprotected by national legislation, though it has been earmarked for designation.

More wetlands are known but not well documented, this includes a marsh on Montagne Planneau (upper Caiman River) which is currently unprotected and several recently mapped on Praslin wetlands including Glacis Nwar which are in the National Park. These sites appear to be important for two recently discovered amphibians the unnamed "Praslin Sooglossid" frog and the recently described *Hypogeophis pti* Small Praslin caecilian both of which are likely to have very small ranges.

iii). **Lowland wetlands** are recognised as the most threatened habitat type in Seychelles (GoS 2014 & 2014c). It is estimated that some 90% of lowland wetlands have been lost to reclamation since the colonisation of the islands in 1770. Wetlands were a characteristic feature of many of the original coastal plains of the granite islands. Coastal dune formations created natural basins to the landward that prevented free drainage resulting in the formation of extensive inland wetlands. These habitats were historically used for agricultural purposes such as rice production. However as agricultural patterns and development pressures changed these areas were increasingly drained to meet the demand for flat land and this trend has continued into the 21st century. The largest remaining wetlands are Grande Barbe on Silhouette, Police Bay on Mahé and "La Mare Soupap" on the west coastal plain of La Digue. In 2010 Grande Barbe was, to a greater extent, incorporated into the Silhouette National Park, but it lies on the boundary adjacent to area that has been earmarked for tourism development. Police Bay, which represents the last undeveloped lowland hydrological system on Mahé had been identified for tourism development, from the information gathered during the EIA consultation and after, the public showed much interest in the management and protection of the species and ecosystems present in the area, government decided to declare a large part of the area protected.

La Mare Soupap, although in part protected, lies in the centre of human development and habitation and hence faces diverse pressures (e.g. pollution and dumping) and has been significantly canalised in recent years. Other smaller and vestige lowland wetland areas on populated islands in the central archipelago are subject to ongoing ad-hoc reclamation, canalisation, dumping and pollution meaning this habitat and its natural denizens are in a particularly perilous state. To counter this wetland creation and rehabilitation initiatives have been undertaken on some smaller islands such as North, Fregate and Aride but these are far too small to replace the variety of lowland wetland habitats lost and continuing to be lost on the larger islands. Structured scientific research is required to assess the biodiversity interest and overall status of lowland wetlands so that priority measures can be undertaken to protect this most threatened of national habitat types.

Table A2.1: Description and Status of Inland Wetlands		
Habitats	**Typical/Key Native Species**	**Status**
Lowland wetlands	**Flora:** i). Native: *Cyperus spp, Eleocharis dulcis, E. Variegata, Fimbristylis spp, Polygonum senegalense, Terminalia catappa Typha javanica, etc...* **Fauna:** i). Endemic: *Hypogeophis rostratus,* ii). Native: *Ixobrychus sinensis, Gallinula chloropus*. Terrapins *Pelusios subniger parietalis, Pelusios castanoides intergularis* (status as native / non native debated)	Most threatened habitat type in Seychelles due to reclamation, drainage/canalisation, pollution and dumping. Estimated more than 90% lost in the last 200 years and ongoing. Important habitat for endemic/indigenous biodiversity and migrant birds. Increasingly important for ecotourism.
Highland wetlands	**Flora.** i). Endemic: *Allophylus sechellensis, Campnosperma seychellarum, Canthium sechellense, Gynura sechellensis, Mimusops sechellarum, Pandanus hornei, Randia lancifolia, Verschaffeltia splendida etc..* **Fauna.** i). Endemic: *Trichoptera spp, diverse molluscan spp* - both endemic and indigenous[4] *Pachypanchax playfairii, Grandisonia spp, Hypogeophis pti Sooglossus spp etc*	Poorly described 3 sites documented and several other little known. At least three sites fall within National Parks on Mahe, Praslin and Silhouette and two further sites have been proposed for protection. One site has undergone some rehabilitation. Vital areas for water catchment capacity and maintenance. Provides important habitats for endemic biodiversity. Increasing importance for ecotourism.
Rivers and streams	**Fauna. i).** Endemic: *Allolestes maclachlani, Ecnomus maheensis, Hughscotiella auricapilla, Leptocnemis cyanops, Oxyethira sechellensis, Praslina cooperi, Seychellum alluaudi, Pachypanchax playfairii, Parioglossus multiradiatus, Hypogeophis rostratus, Tachycnemis seychellensis etc…* ii). Native. *Caridinia spp, Macrobrachium spp, Septaria borbonica, Sesarmops impressum, Varuna litterata, Neritina gagates, N. Pulligera, Anguilla bicolor, Ardea cinerea, Butorides striatus, Nycticorax nycticorax etc…*	Status of upper and mid-reaches of water courses has, in general, improved over the last 50 years with recovering catchment areas. Lower reaches are increasingly canalised and subject to enrichment pollution. Vital for potable water supply. Important habitat for endemic and indigenous biodiversity. Important habitat for diverse and abundant migrant birds.

[4] See Gerlach, J. (2006) for full current account.

Inland wetlands are relatively poorly studied. A detailed Biodiversity assessment of the Grand Police wetland was recently undertaken by the Marine Conservation Society, Seychelles.

2). Coastal Wetlands

i). Mudflats and Mangroves. The original mangrove forests on the East coast of Mahé were rapidly cleared after human settlement and the resulting mud flats progressively reclaimed to meet the need for flat land. Mangroves were also harvested for timber and bark, for example on Aldabra, well into the 20th Century. Total natural mangrove area continued to decline through much of the 20th Century but has been considered relatively stable since the 1980s at approximately 25km^2. The various phases of land reclamation on the east coast of Mahé have served to create lagoons where a limited mangal flora (dominated by *Avicennia marina* and *Rhizophora mucronata)* and fauna has re-colonised, these areas are however subject to repeated and significant disturbance. Despite this the habitat supports significant populations of crabs, molluscs and fish and hence provides important habitat for native and migratory wading birds.
Eight species of mangrove naturally occur in Seychelles. The mangal fauna is characterized by limited species diversity when compared to its continental counterparts. In the central archipelago mangroves are restricted; the last continuous belt exists between Port Launay and Port Glaud on the west coast of Mahé. Curieuse supports a small but diverse mangrove area on its west coast and Praslin retains a few isolated mangrove areas around river mouths and in brackish areas behind the dune crest; other very small areas occur on other islands such as Cousin. In the outer islands mangroves are only found in atoll environments, which provide the sheltered lagoon habitat suitable for their establishment. The most extensive forests are found in Aldabra, Cosmoledo and Astove.

ii). Sea Grass Beds. The extensive shallow submarine banks of Seychelles support significant sea grass areas. Many of the outer islands, such as the lagoons of Aldabra, Cosmoledo and Astove, support large sea grass communities. Sea grass habitats are also common around the granitic islands notably in the St Anne Marine National Park and off Grand Anse-Amities coast of Praslin. A brief survey of inshore sea grass bed substrate around the island of Mahé recorded 58 species of infaunal invertebrates. Sea grass beds are also essential for many marine herbivore species including megafauna such as the Green turtle and the Dugong[5]. Only sea grass in the intertidal zone, however, is considered for the purposes of this policy.

There is evidence that sea grass beds around the populated islands are in decline due to a combination of anthropogenic factors – pollution, reclamation, coastal development and climate change. The historical exploitation of the main sea grass grazers, Green turtles, and ongoing fishery activities mean that the natural grazer/growth balance in sea grass beds has likely been lost leading to changes in community structure and health.

iii). Reef flats. This habitat complex has been subject to intensive disturbance around populated islands. In the central archipelago reef flats are utilised for gleaning fisheries (e.g.

[5] The Dugong (Dugong dugon) is restricted to Aldabra Atoll in the Seychelles.

octopus and shell fish) and shell collecting activities. In the last 25 years significant areas of this habitat have been lost to major land reclamations. Sedimentation and in some areas pollution are also factors of concern.

Most reef flats consist of a patchwork of habitats: areas of sand and gravel interspersed between areas of coral rubble, coral outcrops, sea grass and algal growth. In their natural state these habitats are rich in life and commodity species such as octopus, lobster and sea cucumber. Mollusc fauna can be very rich with Cowries (*Cypraea moneta, C. annulus, C. Lynx, C. caurca and C. helvola* being common), Cones (*Conus leopardus, C. litteratus, C. virgo, C. maldivus, C. betulinus* and *C. quercinus*) readily found in the seagrass; whilst species such as *Bittium zebrum* and *Smaragdia rangiana* can be found in algal mats. Some of the reef flats and lagoon systems support internationally importance aggregations of water birds and qualify as important bird areas

Four Shell Reserves declared in the 1960s were subsequently incorporated under the 1986 Fisheries Act (1987 Shell Reserve Regulations) but the areas are not managed or enforced. Reef flat areas are also covered by other Protected Areas most notably Aldabra Special Reserve, Four outer Islands with extensive reef flats (Poivre, Desroches, Alphonse/ St Joseph and Farquhar) are proposed as protected areas.

v). Coral Reefs. Seychelles has some 1,700 km^2 of coral reef the vast majority of which occurs around the south eastern islands. The El Niño Southern Oscillation (ENSO)-related coral bleaching event in 1998 had a major impact on Seychelles' reefs. The reefs of the central archipelago were particularly badly affected with some 90% coral cover mortality. Fast growing Acroporas and Pocilloporas suffered most and a phase shift from live coral cover to coral rubble/macroalgae dominated-reefs was initiated. The outer islands were in general less badly affected with coral mortality more in the region of 40-50% and it has been postulated that this may reflect greater resilience due to reduced anthropogenic stress and an existing natural adaptation to greater temperature fluctuations. For the purposes of this policy however only coral growing within the intertidal zone is considered which outside of that covered by the reef flat category above can be considered a marginal habitat. In 2016 a third major bleaching event occurred which has reduced live coral coverage to generally less than 40% around the inner islands.

Table A2.2: Description and Status of Coastal Wetlands

Habitats	**Typical/Key Native Species**	**Status**
Mudflats and Mangroves	**Flora:** *Avicennia marina, Bruguiera gymnorhiza, Ceriops tagal, Lumnitzera racemosa, Rhizophora mucronata, Sonneratia alba, Xylocarpus granatum, Xylocarpus moluccensis etc…* **Fauna:** *Terebralia palustris, Bivalvia spp: Gafrarium tumidum & pectinatum, Ctena divergens etc... Littorina scabra, Cardisoma carnifex, Scylla serrata, Geograpsus spp, Metopograpsus spp, Sesarma spp, Uca spp etc...*	Though significantly reduced from historical occurrence on populated islands mangroves areas are now stable or recovering in most areas. Mudflats have been lost to and altered by reclamation along the east coast of Mahé.

	Periopthalmus kalolo, P. argentilineatus, Sula sula, Fregata spp, *Dryolimnas aldabranus, Ardea cinerea*, *Butorides striatus*, *numerous wading bird species,*	Important habitat for diverse and abundant migrant birds.
Sea grass	**Flora:** *Cymodocea rotundata, Cymodocea serrulata, Enhalus acocroides, Halodule uninervis, Halophila ovalis, Syringodium isoetifolium, Thalassodendron ciliatum, Thalassia hemprichii.* Algae: *Caulerpa spp, Codium spp etc...* **Fauna:** Diverse species of invertebrates e.g.: polychaete worms, amphipods, molluscs, crustacean, bivalves, Gastropods *etc...* Grazing fish species e.g. *Siganus spp*. *Chelonia mydas, Eretmochelys imbricata, Dugong dugon*.	There is evidence of decline in near shore sea grass beds around the main populated islands.
Reef flat	**Fauna:** *Bursa bufonia, B. cruentata. Cerithium zebrum, Conus leopardus, C. litteratus, C. virgo, C. maldivus, C. betulinus*, *C. quercinus. Cypraea moneta, C. annulus, C. Lynx, C. caurca, C. helvola*. *Rissoina ambigua, R. plicata. Smaragdia rangiana. Strombus gibberulus, S. mutabilis*. Holothuridae, lobster, octopus.	Important habitat for migrant birds. Important for gleaning fishing practitioners and as a leisure resource.
Coral Reef	Fauna: Scaridae (23 species of Parrot fish: *Serranidae*, Lutjanidae, *Amphiprion fuscocaudatus* (endemic), Octopus, lobster *spp*, *Eretmochelys imbricata*, more than 400 coral species. Diverse elasmobranch populations including: *Carcharhinus amblyrhynchos, C. melanopterus, Triaenodon obesus, Himantura uarnak etc...*	Severely degraded by 1998 bleaching event (90% loss of live coral cover on Mahe plateau and 50% on outer banks). Important habitat for diverse biodiversity and specific assemblages. Recreation for local population.

Table A2.3: Trends in Coastal Wetland Habitats

Habitat	Trend	Notes
Sea Grass	↓	**↘:** Evidence of localised decline in inshore grass beds around main populated islands due to factors such as reclamation, dredging, siltation and pollution.
Reef Flat	↓	**↘:** Extensive land reclamation around the main granitic islands. **↘:** Excessive disturbance, utilisation and increasing pollution.
Coral Reef	↓	**↘:** Ongoing loss of rugosity and phase shift following 1998 bleaching event. **↘:** Recurrent bleaching events 2002, 2003, 2010 inhibiting recovery. **↘:** Anthropomorphic stresses on intertidal zone coral includes: overfishing, sedimentation and physical damage and reclamation.

Mudflats and Mangroves	↔	↗: Direct exploitation of mangroves has ceased and some localised natural expansion in area has been noted. ↗: Mangrove recolonisation of the east coast of Mahé. ↘: Mangroves and mudflats on Mahé east coast are disturbed and subject to periodic clearance and pollution events.

3. Constructed Wetlands

Constructed (artificial) wetlands are included in this review, in part, because the integration of water and environmental policy reduces the distinction between natural, human enhanced and human-made wetlands and because the number of modified or enhanced wetlands is increasing. Human-made wetlands (worldwide) include freshwater wetlands such as canals, reservoirs, flood attenuation ponds, and saline / tidal exchange systems. For the sake of simplicity, this category primarily refers to wetlands constructed or extensively modified after 1950, to avoid confusion over sites which were modified historically such as the turtle pond on Curieuse or flooded guano pits.

Within the Seychelles two conventional water storage reservoirs exist; La Gogue Dam built around 1976 in the northern part of Mahé, can presently hold one million cubic metres of water and capacity is being increased to 1.6 million cubic metres by raising the dam by 6 m. The smaller Rochon Reservoir at Sansouci has a capacity of 50,000 cubic metres of water.

La Gouge is fed by water abstracted from other catchments, including Rochon; however, a barrage and pipe is being constructed to abstract water from the Mare aux Cochons River to recharge the reservoir.

Gabion barrage wetlands are being built under the Ecosystem Based Adaptation project and one was completed in 2019 in the Baie Lazare Catchment on Mahe. The construction using rock filled gabions results in a semi-porous structure and water can leak in to the river. The structure(s) result in more even river flows between periods of rain and dry.

The wetland at Roche Caiman is also a constructed wetland, arising from the settlement ponds used during land reclamation.

4. Key Threats to Wetland Habitats

i). For Inland Wetlands the primary threat is change in land use; this is particularly prevalent in lowland wetlands and water courses. A secondary threat is posed by Invasive Alien Species and again this is particularly prevalent in lowland wetlands. Climate change poses a cross-cutting threat from change in occurrence and density of rain fall, rising sea levels and related salt water incursion, and the “squeezing” of species niches which in such small land areas may have little scope for migration.

ii). For the coastal wetland including seagrass, reef flats and coral reefs, over-fishing constitutes the primary threat augmented in the populated islands by pollution and habitat

conversion or reclamation. Climate change is a cross-cutting and complicating factor; raised sea temperatures threaten corals and impact upon the distribution and life-cycles of various species, rising sea levels and increased storm surges threaten wetland habitats. Raised levels of atmospheric carbon dioxide a key driver of global climate change is also driving acidification of marine environments which is a longer term threat to marine biodiversity.

Table A2.4: Key Threats to Wetland Habitats

Ecosystem type	**Threats**	**Direct and Indirect Drivers of Threats**	**Implications**
Inland Wetlands	Drainage/Canalisation	Economic development Lack of planning, management and enforcement capacity.	Loss of biodiversity and environmental services, increased sedimentation in marine environment.
	Sedimentation	Change in land use, deforestation. Lack of management capacity	Decline in water quality and related loss of biodiversity and environmental services.
	Pollution	Economic development Lack of awareness Lack of management capacity	Decline in water quality and related loss of biodiversity and environmental services.
	Invasive Alien Species	Lack of awareness	Loss of biodiversity and environmental services.
Coastal Wetlands	Over Exploitation	Economics Lack of management capacity, inappropriate incentives.	Unsustainable exploitation of resources, extensive future income loss and impact upon livelihoods, cost of living etc... Potential phase shift in some habitats.
	Pollution	Economic development Oil exploration and extraction. Lack of management capacity	Impact upon localised coastal habitats and production (much broader threat of oil shipping and exploration).
	Reclamation and/or coastal development	Need for flat land to support infrastructure development	Loss of nursery habitats for key species More sedimentation and pollution.
	Coral Bleaching	Climate Change, Sedimentation, pollution, over exploitation etc...	Economic loss in artisanal fisheries and tourism industry, rise in cost of living, potential for ecosystem phase shift and increased coastal erosion.
	Sea Temperature change	Climate Change	Change in occurrence and distribution of pelagic resources, change in weather patterns, increased frequency of coral bleaching events etc...
	Sea Level Change	Climate Change	Loss of biodiversity, coastal erosion, potentially disastrous socioeconomic impact as development centred on coastal plains.

Annex 3: Ramsar Convention in the Seychelles

This objective is embodied in four main commitments[6]:

1. A Party is required to designate at least one site for inclusion in the list of Wetlands of International Importance and promote its conservation as part of the process of accession. A Party is further expected to continue to "designate suitable wetlands within its territory" for the list. Parties are to monitor their listed sites and communicate changes in ecological character to the Ramsar Secretariat. Seychelles has to date had three wetland sites designated to the list of Wetlands of International Importance: Aldabra Atoll, Port Launay mangroves and the highland wetland Mare aux Cochons on Mahé.
2. Parties are required to include wetland conservation considerations into their national land use planning with a view to promoting as far as possible "the wise[7] use of wetlands in their territory" (Article 3.1.).
3. Parties also undertake to establish nature reserves in wetlands, whether or not they are internationally important, and promote training for wetland research and management.
4. Parties also commit to share information and consult with other parties regarding the implementation of the Convention especially as it pertains to transboundary wetlands, shared water systems, and shared species. For Seychelles only the third category of shared species is likely to apply.

Ramsar Sites are Aldabra Atoll, Mare aux Cochons and Port Launay Coastal Wetlands (Annex 3)

Table 3.1 Ramsar Sites

Number	Name	Year Designated	Type	Criteria	Area
1887	Aldabra Atoll	2010	Atoll, Mangrove and reef systems	1-9 inclusive	43,900 ha landmass: 18 800 ha lagoon area: 14 200 ha marine area (1km buffer region around the atoll): 8900 ha mangrove area: 2000 ha

[6] The Contracting Parties further elaborated their responsibilities in Resolution 5.1 (1993) of the Conference of the Parties (*Framework for the implementation of the Ramsar Convention*).

[7] "wise use", which has been interpreted as being synonymous with "sustainable use".

1905	Mare Aux Cochons	2010	High altitude freshwater wetlands	2,3,4	0.315 ha (open water and immediate area)
1432	Port Launay Coastal Wetlands	2004	Coastal Wetlands / Mangrove	1,2,3,4, 7,8	124ha

Ramsar Criteria:

Criterion 1: A wetland should be considered internationally important if it contains a representative, rare, or unique example of a natural or near-natural wetland type found within the appropriate biogeographic region.
Criterion 2: A wetland should be considered internationally important if it supports vulnerable, endangered, or critically endangered species or threatened ecological communities.
Criterion 3: A wetland should be considered internationally important if it supports populations of plant and/or animal species important for maintaining the biological diversity of a particular biogeographic region.
Criterion 4: A wetland should be considered internationally important if it supports plant and/or animal species at a critical stage in their life cycles, or provides refuge during adverse conditions.
Criterion 5: A wetland should be considered internationally important if it regularly supports 20,000 or more water-birds.
Criterion 6: A wetland should be considered internationally important if it regularly supports 1% of the individuals in a population of one species or subspecies of water-bird.
Criterion 7: A wetland should be considered internationally important if it supports a significant proportion of indigenous fish subspecies, species or families, life-history stages, species interactions and/or populations that are representative of wetland benefits and/or values and thereby contributes to global biological diversity.
Criterion 8: A wetland should be considered internationally important if it is an important source of food for fishes, spawning ground, nursery and/or migration path on which fish stocks, either within the wetland or elsewhere, depend.
Criterion 9: A wetland should be considered internationally important if it regularly supports 1% of the individuals in a population of one species or subspecies of wetland -dependent non-avian animal species.

Annex 4: Internationally Important Wetlands in the Seychelles

Two international classifications for sites of biodiversity importance are applied within the Seychelles these are Important Bird and Biodiversity Areas (IBAs) and Key Biodiversity Areas both classifications identify sites based on the presence of threatened species or large assemblages of species.

Important Bird and Biodiversity Areas (IBAs) are identified as holding internationally important populations birds. An inventory of 20 sites qualifying as IBAs was published in 2001 (Rocamora & Skerrett 2001). In 2014 a further list of Marine IBAs including six islands and nine Marine (at sea) important bird areas were identified, however these have not been formally included in the IBA inventory and hence remain a "shadow list" (Lasseles 2014).

Wetland IBAs are designated if thresholds for populations of water birds are exceeded. These are normally 10,000 breeding pairs or 20,000 non breeding water birds gathered together or 1% of Global or Regional populations of a species, normally scare or endangered species.

Twenty sites qualify as wetland IBAs based on "A4" waterbird population criteria, these include large breeding seabird colonies or populations of non-breeding shorebirds and non-breeding seabirds. A further four IBAs are designated due to the presence of endemic that are not associated with wetlands but these sites contain important wetlands, for example the Mahé Highlands IBA includes the Mare aux Cochons wetland. The IBAs are summarised in Table 6.

Table A4.1 Summary of Important Bird Areas indicating Wetland Interest

Final Code	Site name	IBA Criteria	Designated on Wetland Criteria (A4)	Contain Nationally important wetlands	Protected
SC001	Bird Island (Ile aux Vaches)	A4i, A4iii	Yes		
SC002	Aride Island Special Reserve	A1, A2, A4i, A4ii, A4iii	yes		
SC003	Praslin National Park and surrounding areas	A1, A2		Yes	
SC004	Cousin Island Special Reserve	A1, A2, A4i, A4ii, A4iii	Yes		
SC005	Cousine island	A1, A2, A4i, A4ii, A4iii	Yes		
SC006	La Digue island	A1, A2		Yes	
SC007	Silhouette National Park	A1, A2		Yes	
SC008	Frégate island	A1, A2, A4i	Yes		
SC009	Montagne Glacis - When She Comes	A1, A2		No	

SC010	Mahé highlands and surrounding areas	A1, A2		Yes	
SC011	Conception island	A1, A2			
SC012	African Banks	A4i, A4iii	Yes		
SC013	D'Arros Island and Saint Joseph Atoll	A1, A2	Yes		
SC014	Etoile island	A4i	Yes		
SC015	Boudeuse Island	A4ii	Yes		
SC016	Marie-Louise Island	A4i, A4iii	Yes		
SC017	Desnoeufs island	A4i, A4iii	Yes		
SC018	Farquhar - South Island and islets	A4i, A4iii	Yes		
SC019	Cosmoledo	A4i, A4ii, A4iii	Yes		
SC020	Aldabra Special Reserve	A1, A2, A4i, A4ii, A4iii	Yes		
Additional proposed IBAs					
	Booby Island	A4i	Yes		
	Lilot Fregate	A4i	Yes		
	Recif	A4i	Yes		
	Alphonse	A4i	Yes		
	St Francois Island (inc. Bijoutier)	A4i	Yes		
	Saint Joseph Atoll	A4i, A4ii	Yes		
Marine IBA (proposed)					
	Coastal waters of Aldabra Group	A4i, A4ii, A4iii	Yes		
	Coastal waters of Providence and Farquhar	A4i, A4ii, A4iii	Yes		
	Amirante bank & Trench	A4i, A4ii, A4iii	Yes		
	Seychelles Bank	A4i, A4ii, A4iii	Yes		
	Waters around Ile Platte	not defined	Yes		
	Waters around Coetivy	not defined	Yes		
	Southern Saya De Mahla	A4ii	Yes		
	Asquith Rise	A4ii	Yes		
	Madingley Rise	A4ii	Yes		

Key Biodiversity Areas (KBA) Sites qualify as global KBAs if they meet one or more of 11 criteria, clustered into five categories: threatened biodiversity; geographically restricted biodiversity; ecological integrity; biological processes; and, irreplaceability. The KBA criteria can be applied to species and ecosystems in terrestrial, inland water and marine environments. Although not all KBA criteria may be relevant to all elements of biodiversity, the thresholds associated with each of the criteria may be applied across all taxonomic groups (other than micro-organisms) and ecosystems.

Fifty seven KBAs have been documented for the Seychelles (Senterre *et al* 2010; CEPF, 2014). The inventory was informed by extensive literature reviews and field work in

particular botanical surveys in the granitic islands and collation of existing data from the outer-islands. IBAs, with the exception of the proposed at-sea marine IBAs, are also listed KBAs although the geographical areas do not always align. See Table 7

The summary of the KBAs indicates that 44 KBAs contain wetland of importance, most (37) are coastal wetlands including reefs, lagoons, sea grass beds and 7 are freshwater wetlands or contain freshwater wetlands.

Table A4.2 Summary of Key Biodiversity Areas indicating Wetland Interest

Code	**Site name**	**Wetland present**	**Type**	**Protected**
SYC01	Anse Major / Anse Jasmin (marine area of MSNP)	Y	Coastal	No
SYC02	Anse Source d'Argent-Anse Marron			No
SYC03	Astove	Y	Coastal	No
SYC04	African Banks	Y	Coastal	Yes
SYC05	Cosmoledo	Y	Coastal	Proposed
SYC06	Farquhar - South Island and islets	Y	Coastal	Proposed
SYC07	Fond Azore southern slopes to Anse Bois de Rose			Proposed
SYC08	Fond Diable and Pointe Joséphine			No
SYC09	Fond Ferdinand			Proposed
SYC10	L'Amitié Forest			No
SYC11	Montagne Corail-Collines du Sud dry forests			Proposed
SYC12	Grand Anse-Petite Anse-Fond Piment			No
SYC13	Grand Police wetlands	Y	Freshwater	Proposed
SYC14	Assomption Island	Y	Coastal	No
SYC15	Bird Island (Ile aux Vaches)	Y	Coastal	No
SYC16	Conception island	Y	Coastal	no
SYC17	Cousine island	Y	Coastal	No
SYC18	Curieuse Island	Y	Coastal	Yes NP
SYC19	D'Arros Island and Saint Joseph Atoll	Y	Coastal	Proposed
SYC20	Denis Island	Y	Coastal	Proposed
SYC21	Desnoeufs island	Y	Coastal	Proposed
SYC22	Desroches Island - surrounding reefs	Y	Coastal	Proposed
SYC23	North Island (Ile du Nord)	Y	Coastal	Proposed
SYC24	Providence Island and Bank	Y	Coastal	No
SYC25	Alphonse Island and Lagoon	Y	Coastal	Proposed
SYC26	Félicité Island	Y	Coastal	No
SYC27	Frégate island	Y	Coastal	No
SYC29	Marie-Louise Island	Y	Coastal	No
SYC29	Sainte-Anne Island	Y	Coastal	No
SYC30	Saint-Pierre Island	Y	Coastal	No
SYC31	Iles Boudeuse et Etoile	Y	Coastal	Yes
SYC32	Saint-François and Bijoutier Islands	Y	Coastal	Proposed
SYC33	Ilot Frégate	Y	Coastal	Yes

SYC34	Poivre Lagoon and surrounding reefs	Y	Coastal	Proposed
SYC35	Mont Signal			No
SYC36	Montagne Brûlée-Piton de l'Eboulis			Proposed
SYC37	Montagne Glacis - When She Comes			No
SYC38	Montagne Planneau (Grand Bois-Varigault-Cascade)	Y	(Freshwater)	Proposed
SYC39	Nid d'Aigle (ridge and eastern slopes)			No
SYC40	Recif Island National Park	Y	Coastal	Yes
SYC41	Praslin National Park	Y	(Freshwater)	Yes
SYC42	Silhouette Marine National Park	Y	Coastal	Yes
SYC43	Morne Seychellois National Park	Y	(Freshwater)	Yes
SYC44	Cap Ternay / Baie Ternay Marine National Park	Y	Coastal	Yes
SYC45	Ile Cocos Marine National Park	Y	Coastal	Yes
SYC46	Curieuse Island Marine National Park	Y	Coastal	Yes
SYC47	Port Launay Marine National Park and coastal wetlands	Y	Coastal	Yes
SYC48	Sainte-Anne Marine National Park (SAMNP)	Y	Coastal	Yes
SYC49	Silhouette National Park	Y	(Freshwater)	Yes
SYC50	Aldabra Special Reserve	Y	Coastal	Yes
SYC51	Aride Island Special Reserve	Y	Coastal	Yes
SYC52	Cousin Island Special Reserve	Y	Coastal	Yes
SYC53	La Veuve Special Reserve	Y	(Freshwater)	Yes
SYC54	Kerlan River	Y	Freshwater	No
SYC55	Anse Petite Cour Boulders			No
SYC56	Val d'Endor	Y	Freshwater	No

Table adapted and updated from CEPF Ecosystem Profile

IBAs KBAs and Ramsar: The Criteria for KBAs, IBAs and Ramsar sites are similar and many are the same. Therefore, it is likely that most of the IBAs and KBAs with wetland interests could qualify as Ramsar Sites.

Annex 5 National Policy and Legislation Influencing Wetland Policy

Table 5.1: SSDS Wetland Management Analysis*	
Programme 3	**Land Use Coastal Zones and Urbanisation**
Objective 2.1	Develop and implement an integrated approach to the management of the coastal zone areas
Programme 4	**Biodiversity and Forestry**
Objective 1.1	To develop strategies to conserve, restore and sustainably manage important biodiversity areas which are outside the protected area network
Objective 1.2	To establish a network of protected areas that conserves a representative sample of biodiversity and maintains key ecological processes across the landscape and seascape
Objective 2.1	To strengthen research and improve our understanding of changes in biodiversity and its implications for ecosystem function (especially within the context of global change and ongoing restoration/mitigation processes)
Objective 2.2	To develop a framework for adaptive management based on our improved understanding of ecosystem change
Objective 2.3	To adopt and implement ecosystem-based approaches to halt biodiversity loss and limit or prevent ecosystem degradation
Objective 3.2	Develop and implement forest rehabilitation and restoration programmes (incl. to protect and manage watersheds).
Programme 6	**Fisheries and Marine Resources**
Objective 1.2	To implement integrated management plans based upon available scientific data for demersal resources
Programme 7	**Water, Sanitation and Waste Management**
Objective 1.4	To ensure protection of critical watersheds and forest areas.
Objective 2.1	To minimise pollution caused by wastewater
Objective 2.2	To develop and implement appropriate sewerage treatment systems for Praslin and La Digue.
Programme 12	**Climate Change**
Objective 1.1	To advance our understanding of climate change, its impacts and appropriate responses.

- GOS 2012; GOS 2012a

Table 5.2: Analysis of No-development Zones under LUP Guidelines and draft regulations pertinent to wetlands				
Code	**Sub-category**	**Description and Permitted uses**	**Development density**	**Notes**
P1	National Park	Gazetted National Park area	NDZ	These interpretations are incorrect, National Park does allow for some development whereas Special Reserve is more restrictive.
P2	Marine or terrestrial reserve	All other gazetted areas (special reserves etc) for biodiversity conservation	Limited development zone	
P3	Wetland, marsh, mangrove	All types of wetlands	NDZ	Selection criteria and determination of boundaries not defined. This sub-category overlaps with the sensitive area status imbued to wetlands under the sensitive area atlas of the EIA regulations.
P4	Protected beach front/coastline	Sensitive and scenic coastline, beach areas, protected land/seascapes, recreational use only	NDZ	Potential relevance to EBA measures.

P7	Buffer zones	Areas adjoining PAs or wetlands, river catchment areas, waterlogging and flood risks, steep slopes, parcels banned from development. Biodiversity conservation priority in these zones. Use limited to trails, no agriculture.	NDZ	Judging from LUP maps for Praslin, Anse Royale and La Digue, Buffer zones do not appear to be used to address water logging/flood risks adjacent to wetlands.

Table 5.3 Components of Water Policy 2017 Relevant to Wetlands	
Policy B 1.1	The environment is recognised as a resource base and a legitimate user of water and government adopts all necessary strategies and actions to ensure that the environment is sustained.
Policy B 1.2	The responsible water management authorities should, in their mechanisms for allocating water resources among many users, allocate sufficient water to maintain ecosystem integrity and biodiversity including marine and estuarine life.
Policy B 1.3	The responsible authorities will take appropriate measures to rehabilitate, sustainably manage and protect catchment forests.
Policy B 1.4	The responsible authorities continue to adopt necessary measures to prevent and control pollution (point and non-point sources) of ground and surface waters resulting from inland, coastal or offshore activities.
Policy B 1.5	The responsible authorities follow a source-to sea approach to the management of water resources and takes the necessary measures to prevent negative impacts on the coastal and marine environment.

Table A5.4 Protected Areas Summary	
Legislation: National Parks and Nature Conservancy Act	
Category	**Wetland Interest**
Special Reserves	
Aldabra (Designated 1981)	Managing Agency: Seychelles Island Foundation (SIF) Notes: Largest PA in Seychelles, a UNESCO World heritage site (Biodiversity) since 1982 and a Ramsar site since 2010. Aldabra Special Reserve incorporates highly significant wetlands in the form of mangals, sea grass beds and diverse intertidal marine habitats. The marine area is being extended offshore which will give the Special Reserve a total area in excess of 2,500 km^2. Key Threats: IAS, climate change and proximity to shipping lanes.
Aride (Designated 1975)	Area: Terrestrial 0.68km^2. Marine: Approx. 6.4km^2. Managing Agency: Island Conservation Society Notes: Marine area in the process of being expanded covers significant reef habitats < 6m depth at low tide. Small wetland areas offer scope for rehabilitation. Key Threats: IAS, climate change.
Cousin (Designated 1975) (Also a Nature Reserve from 1966)	Area: Terrestrial: 0.27km^2. Marine: 1.7km^2. Managing Agency: Nature Seychelles Notes: Marine area covers reef habitats below 6m depth at low tide. A small mangrove area occurs on the west coast and there are small inland wetland areas. Key Threats: IAS and climate change.

La Digue Veuve Reserve (Designated 1980)	Area: 7.8 Ha (11.8 Ha). Managing Agency: Seychelles National Parks Authority. Notes: Area of 7.8 Ha extended by purchase of approx. 11ha of contiguous wetlands 1998-2001, this additional area has still to be gazetted. The habitat is highly degraded with significant pollution input and extensive canalisation. Key Threats: IAS, pollution, salt water incursion, climate change.
Recif (Designated 2010)	Area: 0.13km^2. Managing Agency: Environment Department Notes: PA entirely terrestrial includes very small brackish inland wetland. Key Threats: Unknown
National Parks	
Baie Ternay (Designated 1979)	Objective: Protection of reef biodiversity and maintenance of public amenity. Area: Marine 0.86km^2, Terrestrial 0.01km^2. Managing Agency: SNPA Notes: Originally designated for protection of reef biodiversity. Key Threats: Tourism development, climate change.
Curieuse (Designated 1979)	Area: Marine 13.7 km^2. Terrestrial 2.66 km^2. Managing Agency: SNPA Notes: Marine area designated to protect reefs between Praslin and Curieuse. Has significant mangal ecosystem and some small inland wetlands. Key Threats: Climate change, potential tourism/mariculture development.
Ile Coco, Ile La Fouche, Ile Platte (Designated 1997)	Area: Marine 1.65km^2, Terrestrial 0.05km^2. Managing Agency: SNPA Notes: Designated in 1997 to protect the spectacular, shallow coral gardens that occurred there, much of this interest was lost to the coral bleaching event of 1998. Key Threats: Climate change.
Morne Seychellois (Designated 1979)	Area: Terrestrial 31.02km^2. Managing Agency: SNPA Notes: Vital for preservation of water and soil cycles. Incorporates main national catchment area, the mare aux cochons highland wetland (a Ramsar site since 2010) and the Port Launay/Port Glaud mangal ecosystem, though fragmented by tourism development, a Ramsar site since 2004. Key Threats: IAS, climate change, water extraction, tourism development.
Moyenne Island (Designated 2009)	Area: 0.09km^2. Managing Agency: Moyenne Island Foundation Notes: Terrestrial designation. No inland wetlands.
Port Launay (Designated 1979)	Area: Marine 1.54km^2, Terrestrial 0.04km^2. Managing Agency: SNPA Notes: designated to protect representative reef biodiversity. Key Threats: Tourism development, climate change.
National Parks	
Praslin (Designated 1979)	Area: Terrestrial 5.3km^2. Managing Agency: SNPA Notes: with endemic palm forest and unique biodiversity. Designated for soil and water cycle protection incorporates important catchment areas and various rivers and streams. Includes the Vallee-de-Mai (Nature Reserve and World Heritage Site). Key Threats: Forest fire, IAS, climate change, erosion.
Silhouette (Designated 1987 and 2010)	Area: Terrestrial 18.6 km^2. Marine 10km^2. Managing Agency: SNPA/ICS Notes: Marine park includes coral reefs, ref flats, seagrass beds etc… the terrestrial park includes the highland wetland "mare aux cochons" in its entirety and the greater part of the Grand Barbe lowland wetland. Threats: Climate change, IAS, tourism development. Lack of management capacity.
Ste Anne (Designated 1973, amended 1997)	Area: Marine 9.96km^2 Managing Agency: SNPA Notes: Important turtle rookery on St Anne Island, some marine habitats. Key Threats: Ongoing tourism development, pollution, sedimentation.
Area of Outstanding Natural Beauty	
Grande Anse Mahe (Designated 2000)	Area: Not available. Managing Agency: Environment Department Notes: Notable mangrove and watercourse habitats. Key Threats: Climate change, no current management.
Legislation: Wild Animals and Birds Protection Act	
Nature Reserves	
Vallee-de-Mai (Designated 1966)	Area: Terrestrial: 0.19km^2. Managing Agency: SIF Notes: Designated as part of Praslin National Park in 1979. Incorporates important water course and catchment area. Key Threats: IAS

Cousin (Designated 1966)	Area: Terrestrial 0.27km^2. Managing Agency: Nature Seychelles Notes: See listing under Special Reserve.
Legislation: Fisheries Act	
Category	**Wetland Interest**
Shell Reserves	
Mahe: i). Anse-Faure to Fairy Land. ii). North east Point to Carana. Praslin: iii). Pointe Zanguilles to Pointe Chevalier. La Digue: iv). Anse Severe to Anse Grosse Roche. (Designated 1987[8])	Area: (i). 1.08km^2 (ii). 2.99km^2 (iii). 1.74km^2 (iv). 1.58km^2. Managing Agency: Seychelles Fishing Authority (SFA). Notes: Mixed reef flat habitats. No active management. Key Threats: Disturbance, nutrient enrichment, climate change.
Fishery Reserves	
	Area: Area not quantified, boundaries specified. Managing Agency: SFA Notes: Designate reef areas where net use of any kind is banned. Key Threats: Non-enforcement, climate change.
Legislation: Protected Areas Act	
Protected Areas	
African Banks and surrounding reefs (Designated 1987)	Area: unknown Managing Agency: Department of Land Use and Habitat. Notes: by title includes marine wetland habitat to limits of surrounding refs. Key Threats: lack of management capacity, climate change.
Ile Cocos, Ile La Fouche, Ilot Platte (Designated 1987)	Managing Agency: SNPA Notes: See listing under National Park category.

*Designated under the Fisheries Act in 1987, but actually in existence under previous legislation since the 1960s.