

SEYCHELLES Marine Spatial Plan

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SeyCCAT Projects Coordinator



**Capacity development in Marine Spatial
Planning Tools and Information
Management in the WIO Region
Mombasa, Kenya,
20 - 24 November 2023**



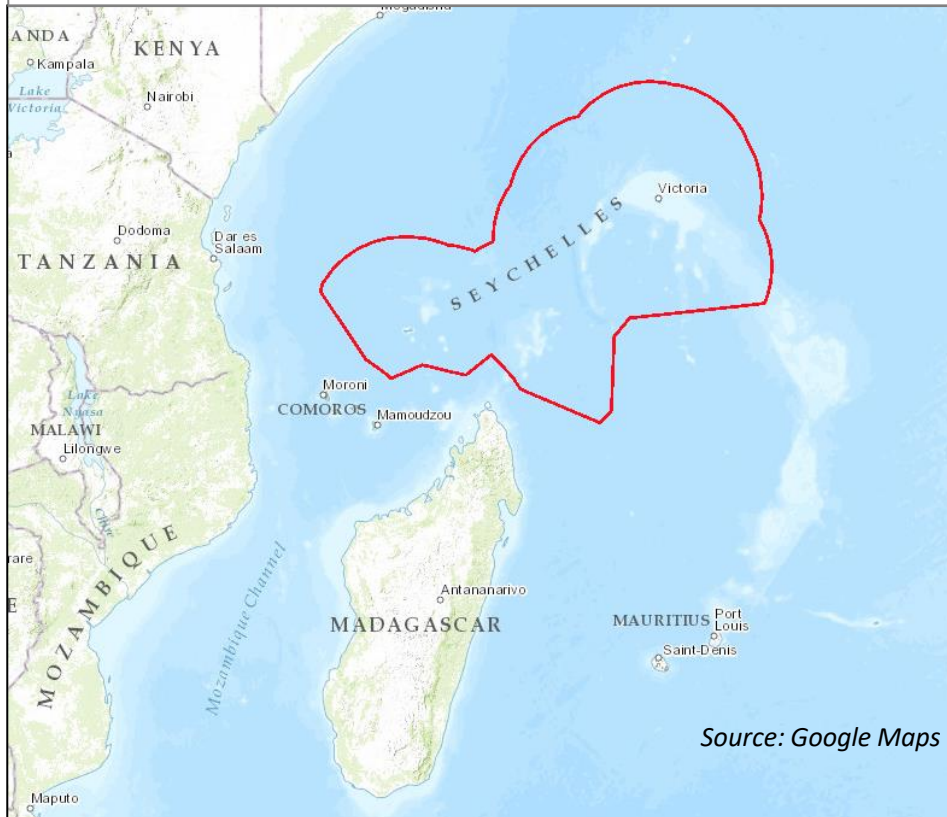
Photo: The Ocean Agency

BACKGROUND

Seychelles Marine Spatial Plan

Seychelles Archipelago

Large Ocean State: 1.35 million km²
Land area: 455 km²
119,000 people (2022)
115 islands



Source: Google Maps

Inner Islands



Photo: Joanna Smith

Outer Islands

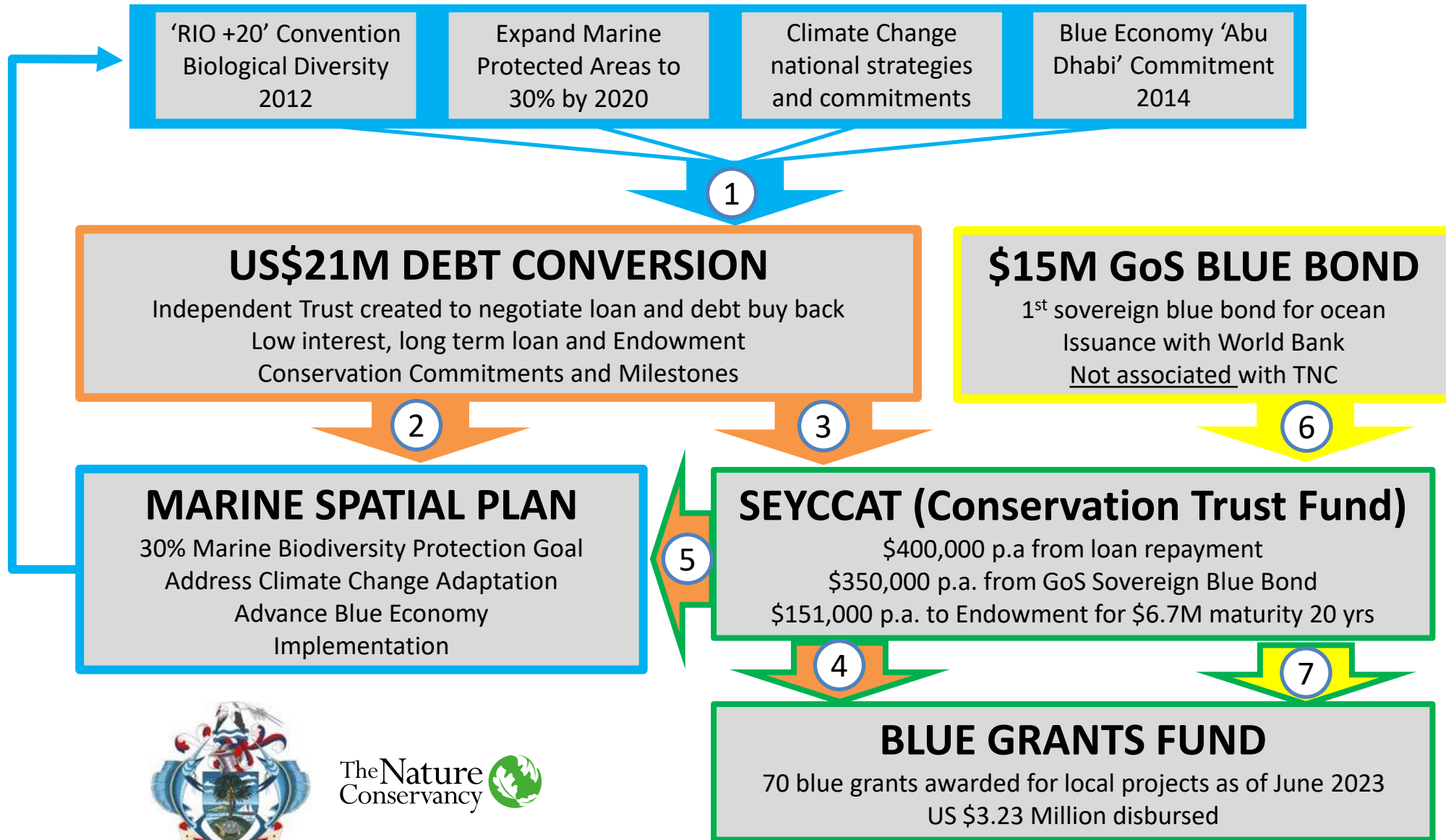


Photo Credit: Abdour Pissi, Seychelles
Ministry of Environment, Urban Planning and
Sustainable Development

Policy and Institutional Framework

- Seychelles Constitution
- Maritime legislation and regulations – numerous.
- National Parks and Nature Conservancy Act
- Environmental Protection Act 2016 and Regulations
- Seychelles NBSAP
- Seychelles Paris Agreement UNFCCC NDCs
- Seychelles commitment to 30% marine protected areas 2012
- Protected Area Policy 2013
- Marxan Modelling: priority areas for protection (GoS-UNDP-GEF)
- Seychelles MSP initiative – led by MACCE
- SeyCCAT Act 2015 Gazetted
- Blue Economy Roadmap
- Nature Reserves and Conservancy (NRC) Act 2022
- Plus more...

Seychelles Ocean Debt Conversion



The Nature Conservancy 



PROGRESS MADE IN DEVELOPING THE SEYCHELLES MSP

Seychelles Marine Spatial Plan

GOALS: Develop a Marine Spatial Plan that

1. Legislates marine protections that are 30% of Seychelles' Exclusive Economic Zone and Territorial Sea
2. Promotes the Blue Economy and other national strategies to support ocean health, local economy, and economic growth.
3. Addresses climate change in coastal and offshore habitats



Photo credit: © Manu San Félix/National Geographic

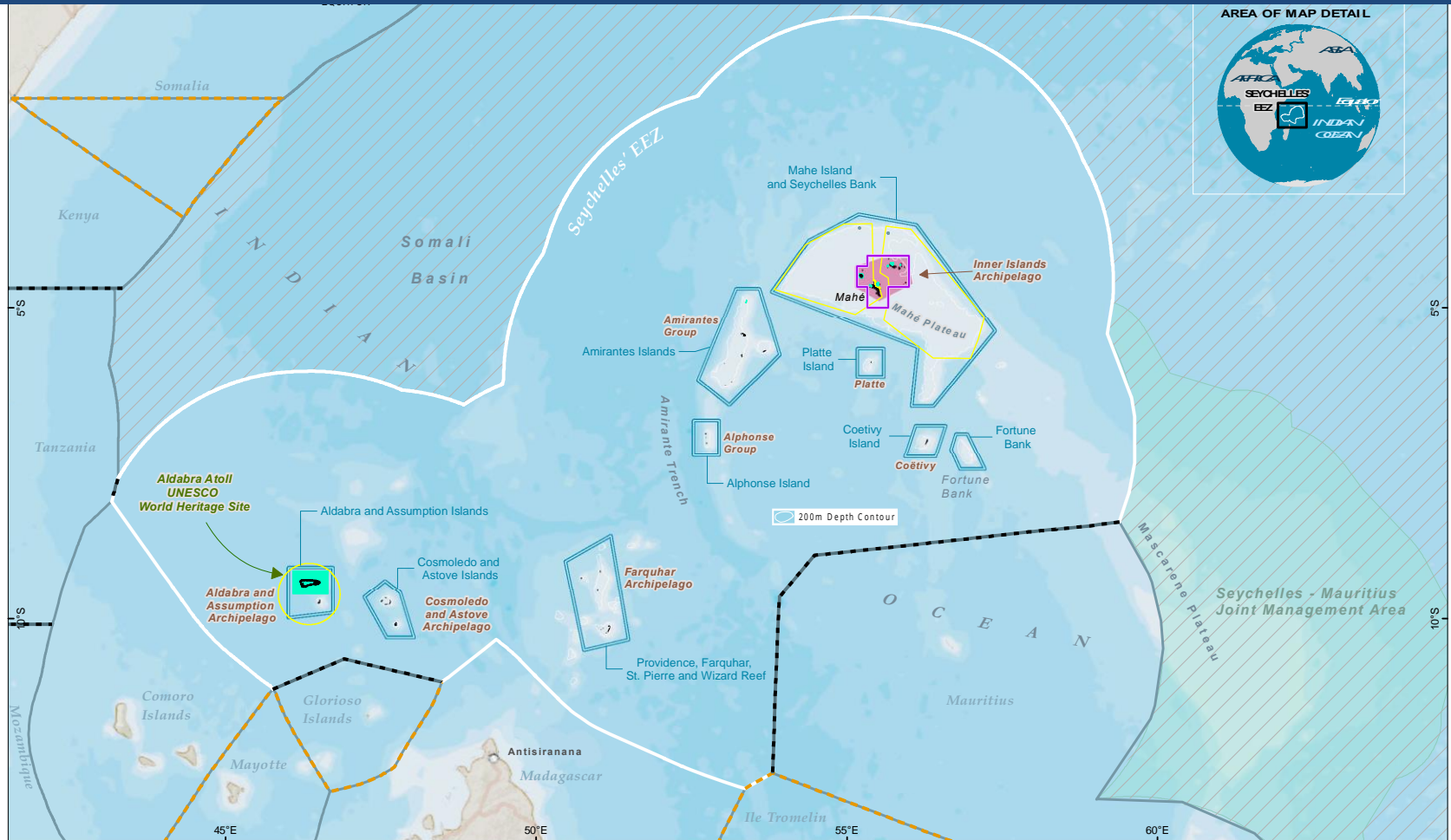


Photo credit: © Jason Houston



Photo credit: © Seychelles News Agency

Marine Spatial Plan is to the EEZ boundary



0 125 250 Km
 NORTH
FOR DISCUSSION PURPOSES ONLY
 Prepared for: Seychelles MSP
 Prepared on: 25 March 2020
 Prepared by: Spatial Support Systems, LLC
 Scale: 1:9,100,000
 Map projection: Cylindrical Equal Area
 Datum: WGS84
 Data Sources: Seychelles Government, MEECC Geodatabase, The Nature Conservancy, ESRI

- Seychelles' Exclusive Economic Zone
- Other Exclusive Economic Zone, Settled
- Other Exclusive Economic Zone, Unsettled
- Other Exclusive Economic Zone, Treaty
- Marine Protected Areas
- Fishing by Foreign Vessels Prohibited
- High Seas
- Area to be Avoided
- Port of Victoria Boundary
- Voluntary Petroleum Exclusion Zone
- Seychelles - Mauritius Joint Management Area

Maritime Boundaries

SMART Objectives Approved for SMSP Goals

Goal 1: Increase Marine Protected Areas by 30 percent.

SMART Objective 1: Identify new marine protected areas for 30% of the Exclusive Economic Zone and Territorial Sea by 2020 by representation of species and habitats and by total area

Goal 2: Support the Blue Economy Agenda

SMART Objective 2: Develop Allowable Activities Tables with sustainability criteria for MSP Zones by 2022 to support the Blue Economy Agenda throughout the Seychelles' coastal and the marine environments.

Goal 3: Climate Change Adaptation

SMART Objective 3: By 2020, develop climate change risk mapping for coral reefs and coastal protection to better understand the most important climate risks in Seychelles, and better understand options for adaptation measures and feasibility of implementing them.



Top to bottom: Helena Sims, Manu San Felix/Nat Geo, Guido Montaldo, Jason Houston

Stakeholder Mapping Developed

ENVIRONMENT

Protected Areas, Climate Change, Biodiversity, Pollution, Restoration

FISHERIES

Industrial, Semi-Industrial, Artisanal, Sports, Subsistence, Recreational

FINANCE

Blue Economy, Finance, Funding, Grants

TOURISM

High Value tourism, Marine Charters

ENFORCEMENT

Coast Guard, Maritime Safety and Security

PETROLEUM

Geophysical Surveys, Oil & Gas Exploration

PUBLIC

Civil Society

INFRASTRUCTURE

Ports, Shipping, Transportation, Utilities, Marinas, Services

AQUACULTURE

Mariculture

RENEWABLE ENERGY

Offshore Wind, Solar Power, Other



Approved SMSP Guiding Principles

Decisions Developed in 2014-2015 by Technical Working Groups. Reviewed and endorsed by Steering Committee and stakeholder workshops

GOVERNANCE & MANAGEMENT

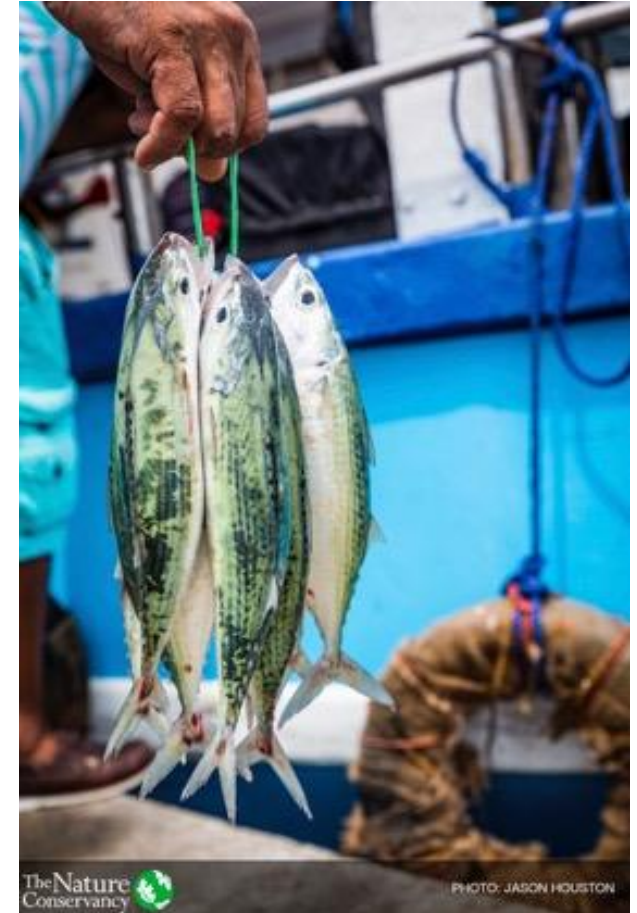
- Abide by National Laws, Regulations, Acts, International Agreements, Policy, Management Plans, Strategies, Action Plans
- Transparency, Inclusivity, Participation
- Integration, Co-management
- Environmental Stewardship
- Equity, Sustainable Development

APPROACH & PRACTICE

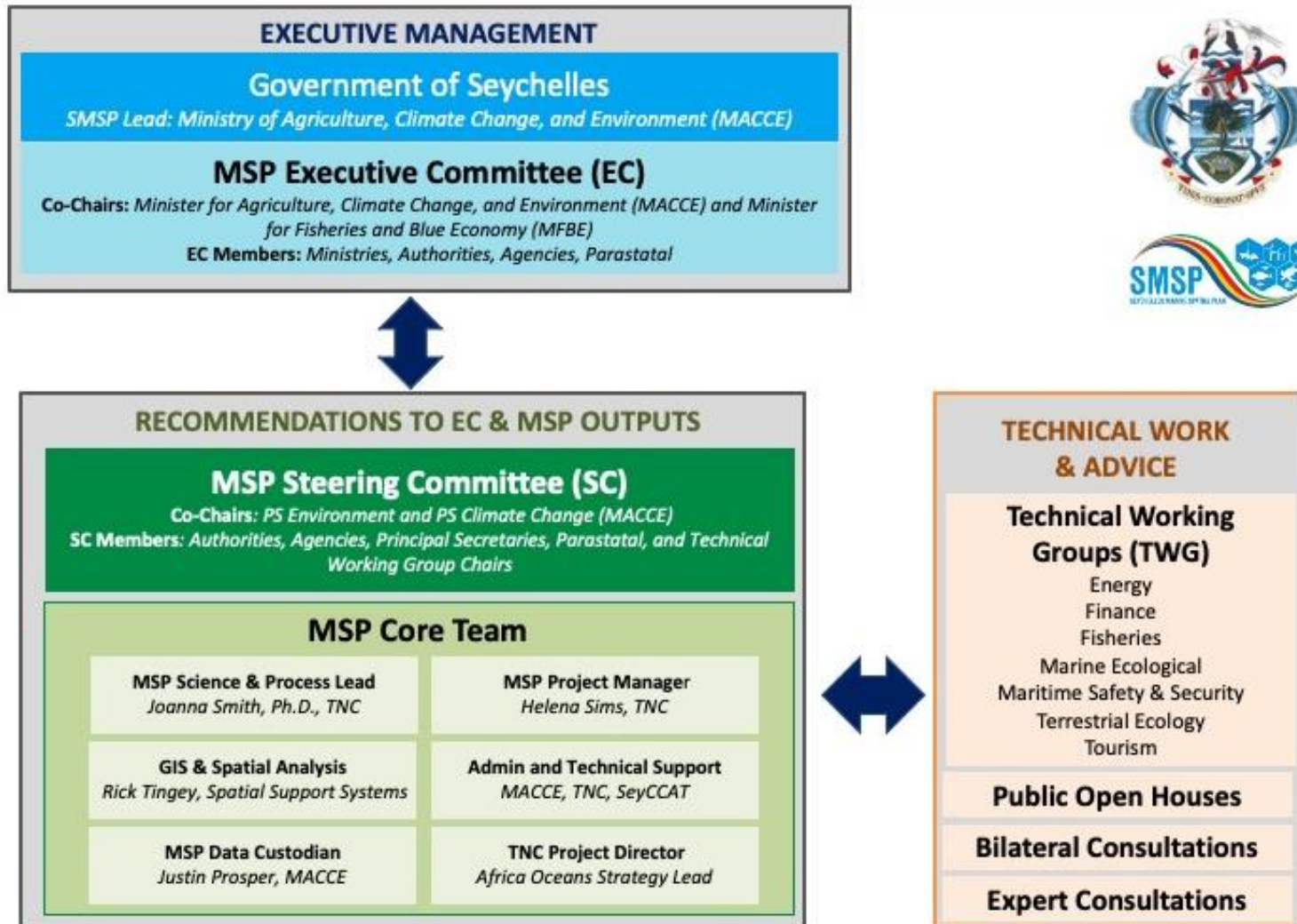
- Use Ecosystem-Based Management
- Use Precautionary Principle
- Balance ecological, economic, social and cultural objectives
- Feasible, Practical, Implementable,
- Financially Sustainable
- Adaptable, Dynamic
- Relevant Temporal and Spatial Scales

Key Outputs Identified

- **Marine Spatial Plan**
 - Zoning Design for 30% marine protection goal
 - Allowable Activities
 - Management Considerations
 - Implementation Priorities
- **Planning tools**
 - Master List of Uses and Activities
 - Compatibility Matrix
 - Spatial data catalogue
 - MSP Atlas
- **MSP Policy**
- **Implementation Financing**
- **Governance Arrangements**
- **Draft Management Plans (not all areas)**
- **Marine Spatial Plan document**

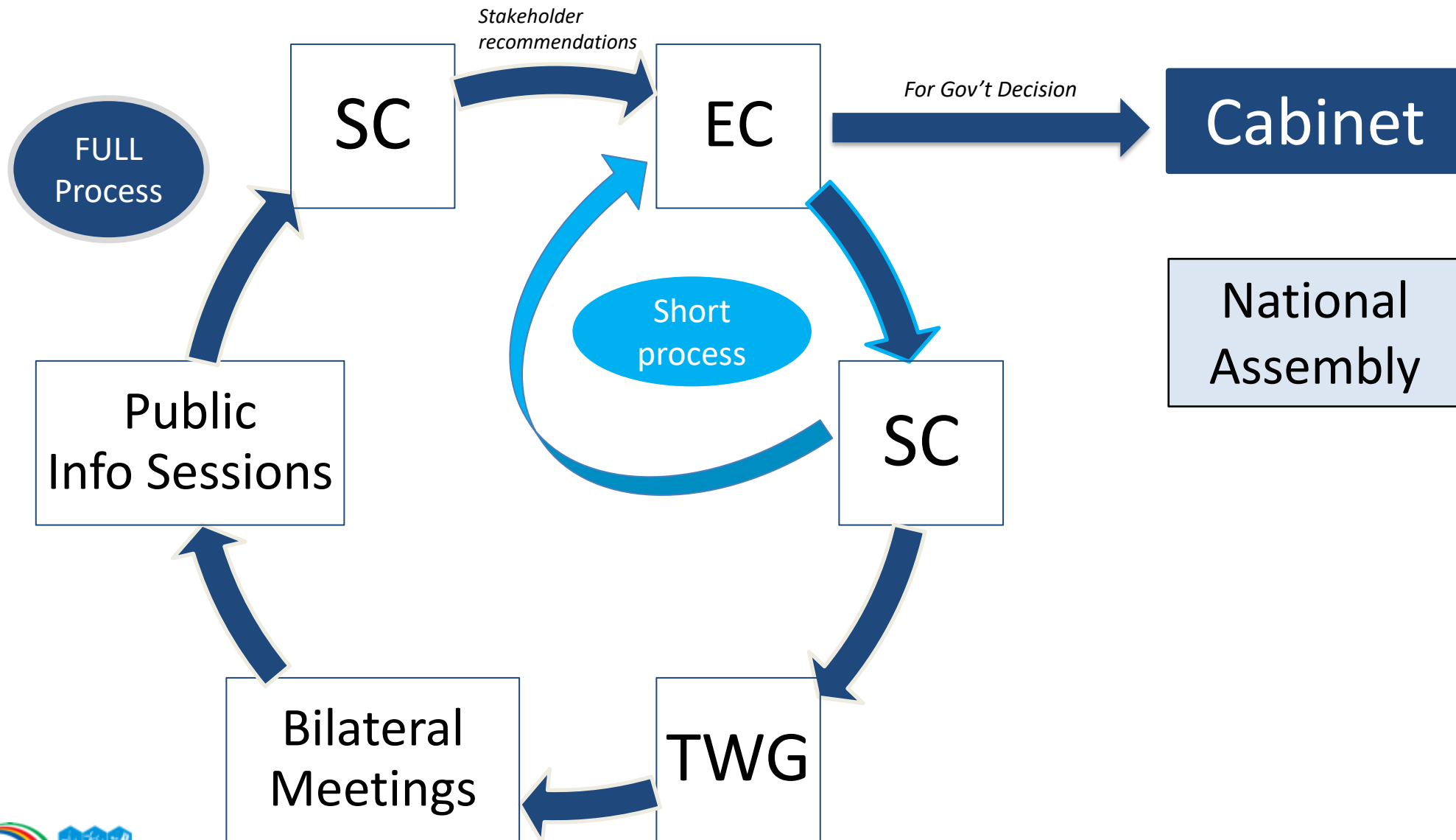


SMSP Decision-Making Framework Developed



Version 8, June 2021

SMSP Iterative Decision-Making Process Developed





GOAL 1: 30% PROTECTION

Seychelles Marine Spatial Plan

Zoning Framework Approved

Zone 1

High Biodiversity Protection

To allocate 15% of the EEZ to provide high protection for marine biodiversity goals, by representative habitats and species. Not suitable for extraction or seabed alteration.

Zone 2

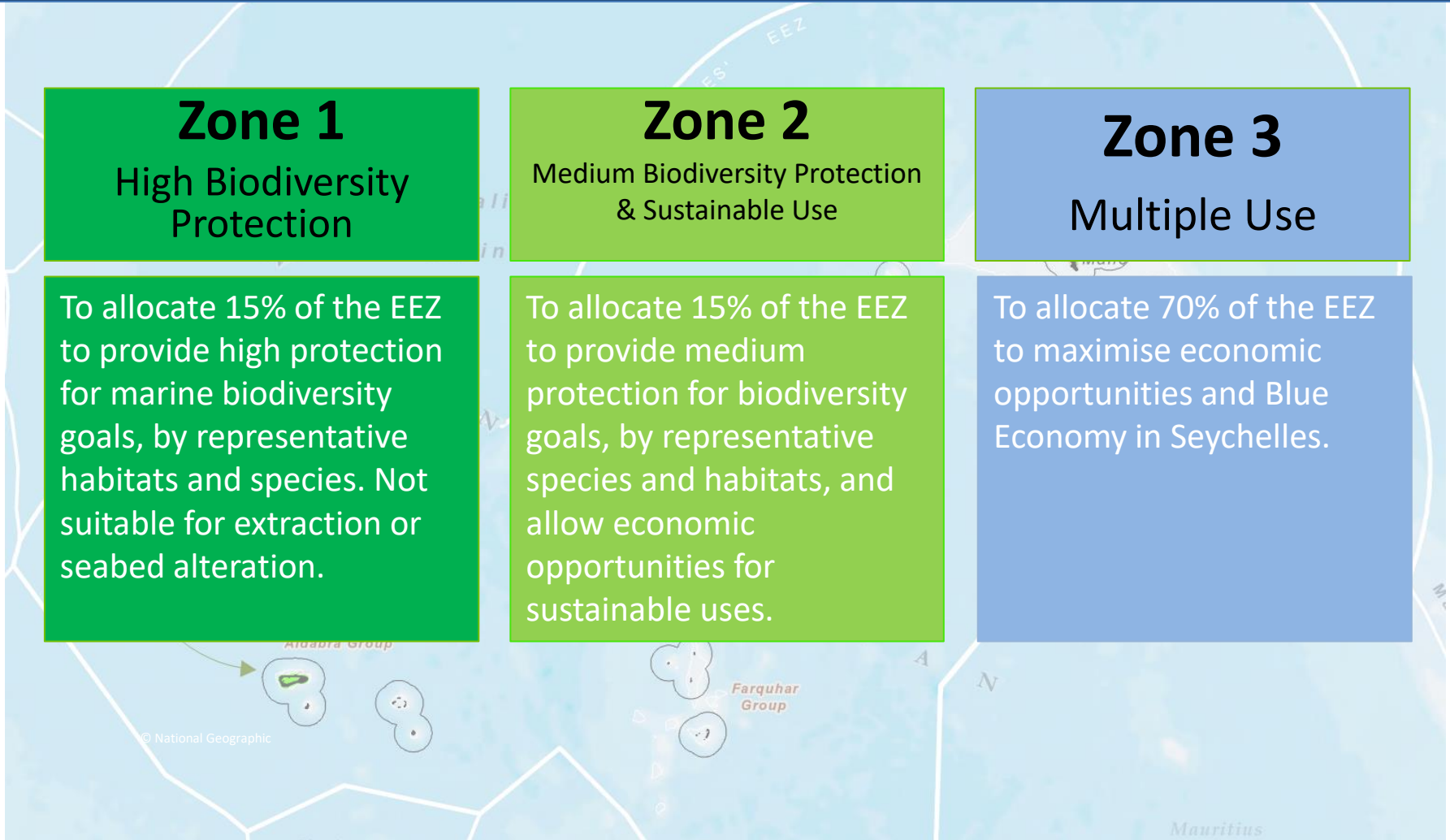
Medium Biodiversity Protection & Sustainable Use

To allocate 15% of the EEZ to provide medium protection for biodiversity goals, by representative species and habitats, and allow economic opportunities for sustainable uses.

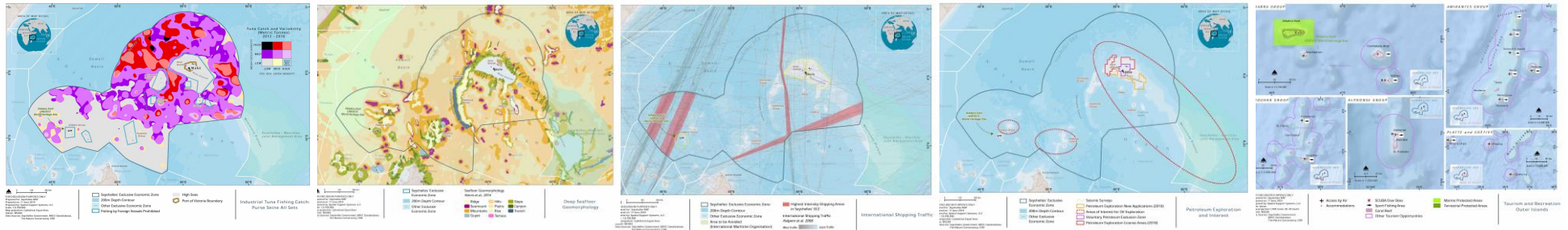
Zone 3

Multiple Use

To allocate 70% of the EEZ to maximise economic opportunities and Blue Economy in Seychelles.



Spatial Data Catalogue Created



FISHERIES

Domestic Fishing
Industrial Fishing
Sport Fishing
Mariculture
Participatory Mapping

BIODIVERSITY FEATURES

Benthic geology
174 "features"
WIOMER Areas of Importance
BirdLife Important Areas
Participatory Mapping

INDUSTRIAL & PUBLIC UTILITIES

Ferries & Shipping
IMO Marine Highways
Ports & Marinas
Renewable Energy
Participatory Mapping

NON-RENEWABLE RESOURCES

Licensed Blocks
Low Gravity Areas
Seismic Surveys
Sand Mining
Participatory Mapping

TOURISM & RECREATION

Marine Charters
Diving, Snorkeling
Viewpoints
Accommodation
Participatory Mapping

Over 100 layers in data catalogue
2 Planning Unit Sizes: Shallow and Deep

Sources: British Admiralty Charts; Fishing Boat Owners Association 2018; Halpern et al. 2006; Harris et al. 2014; Klaus 2015; IMaRS-USF 2005; IMaRS-USF and IRD 2005; Ministry of Environment, Energy and Climate Change 2019; Ministry Land Use and Housing 2014; Ministry of Tourism and Culture 2014; PetroSeychelles 2019; Seychelles Fishing Authority 2018; Seychelles National Park Authority 2014; Seychelles Port Authority 2014; Seychelles Sport Fishing Club 2014; Seychelles Hoteliers Association 2014; Spalding, et al. 2001; The Nature Conservancy 2014; UNEP-WCMC, WorldFish Centre, WRI and TNC. 2010; see also UNDP 2015 for full citations.



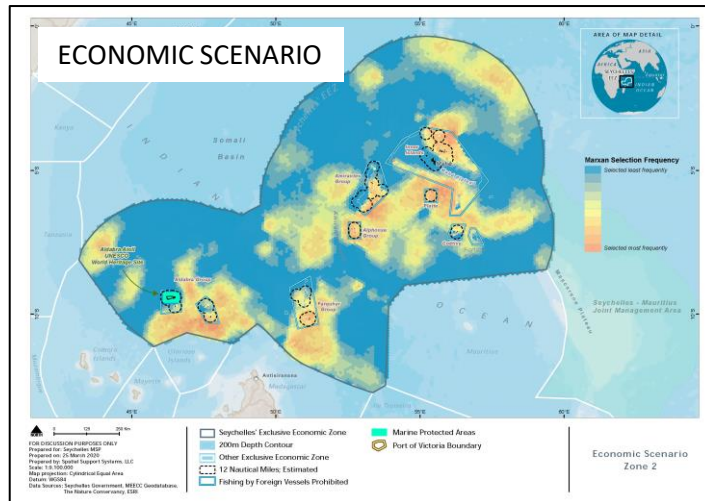
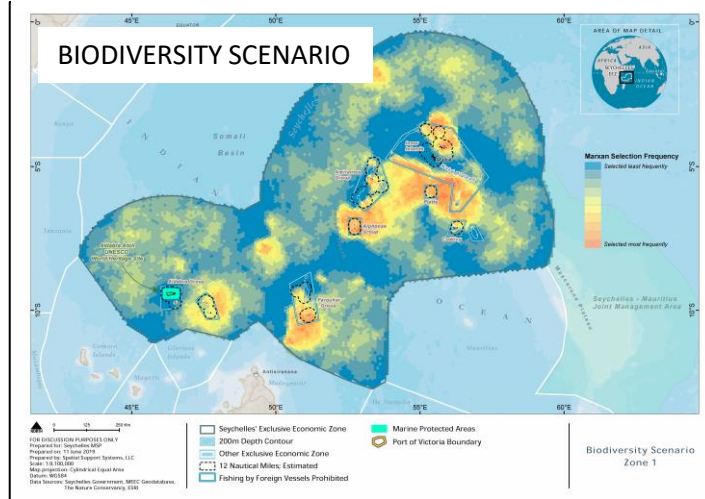
SHALLOW
< 200 M depth
1 km²



DEEP
> 200 M depth
50 km²

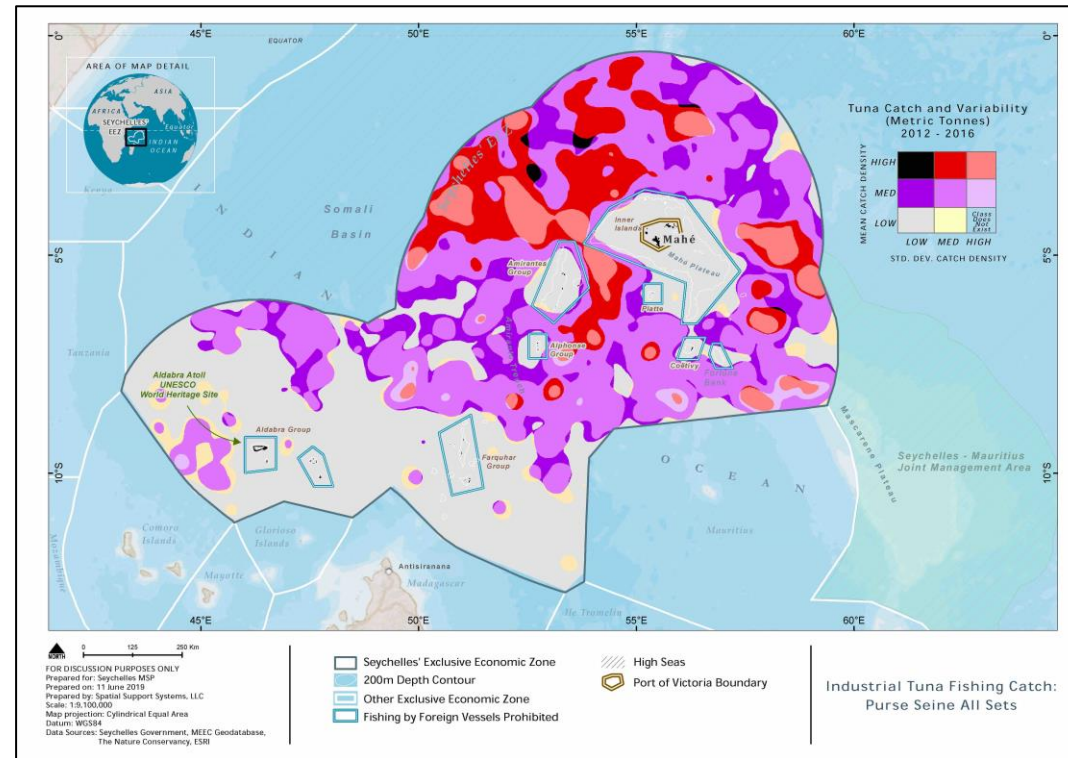
Spatial Analyses Completed

Marxan With Zones: Priority Areas

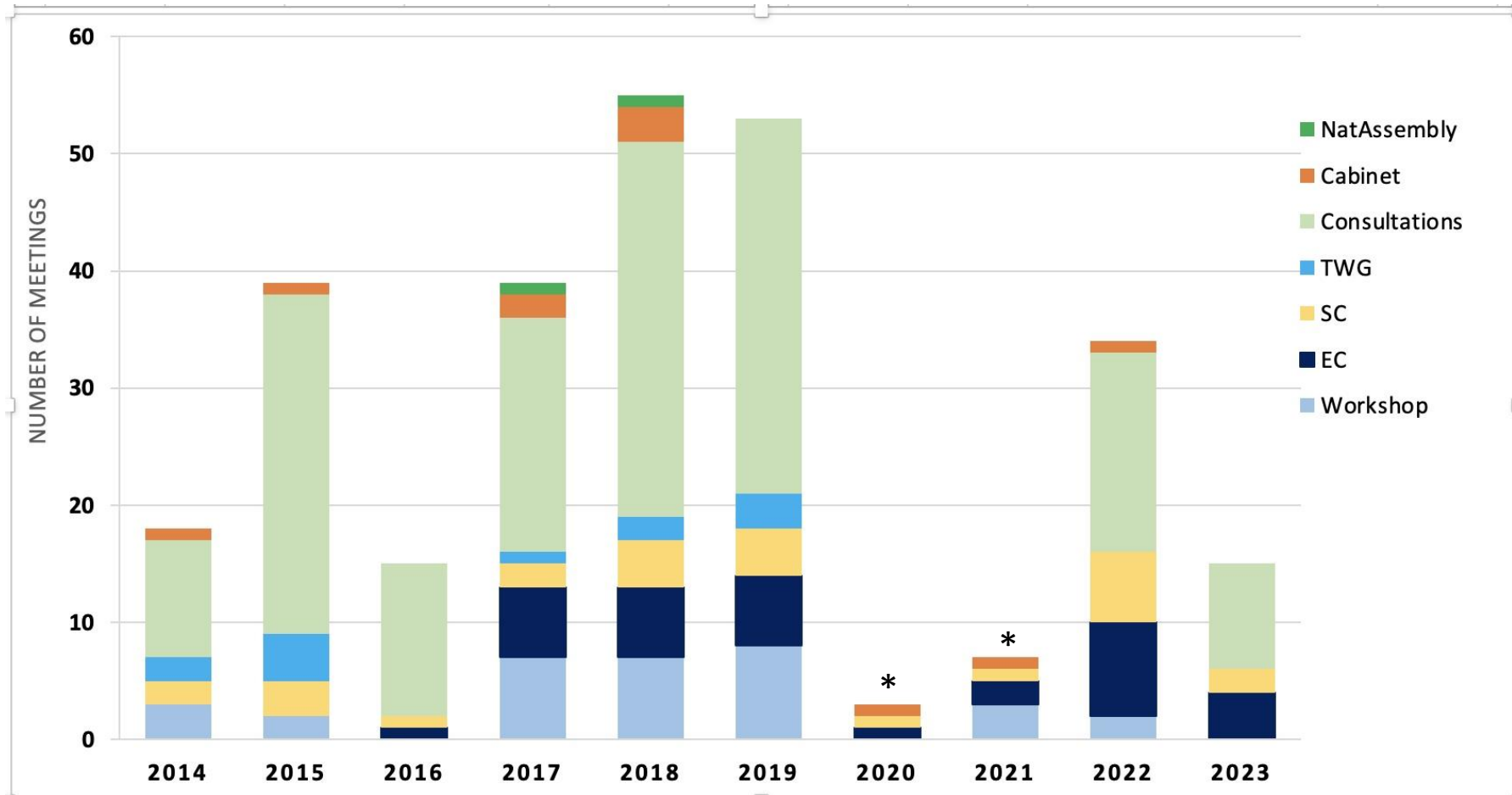


EXAMPLES

Spatial and temporal analyses of fisheries data



Workshops, Consultations, Meetings Held



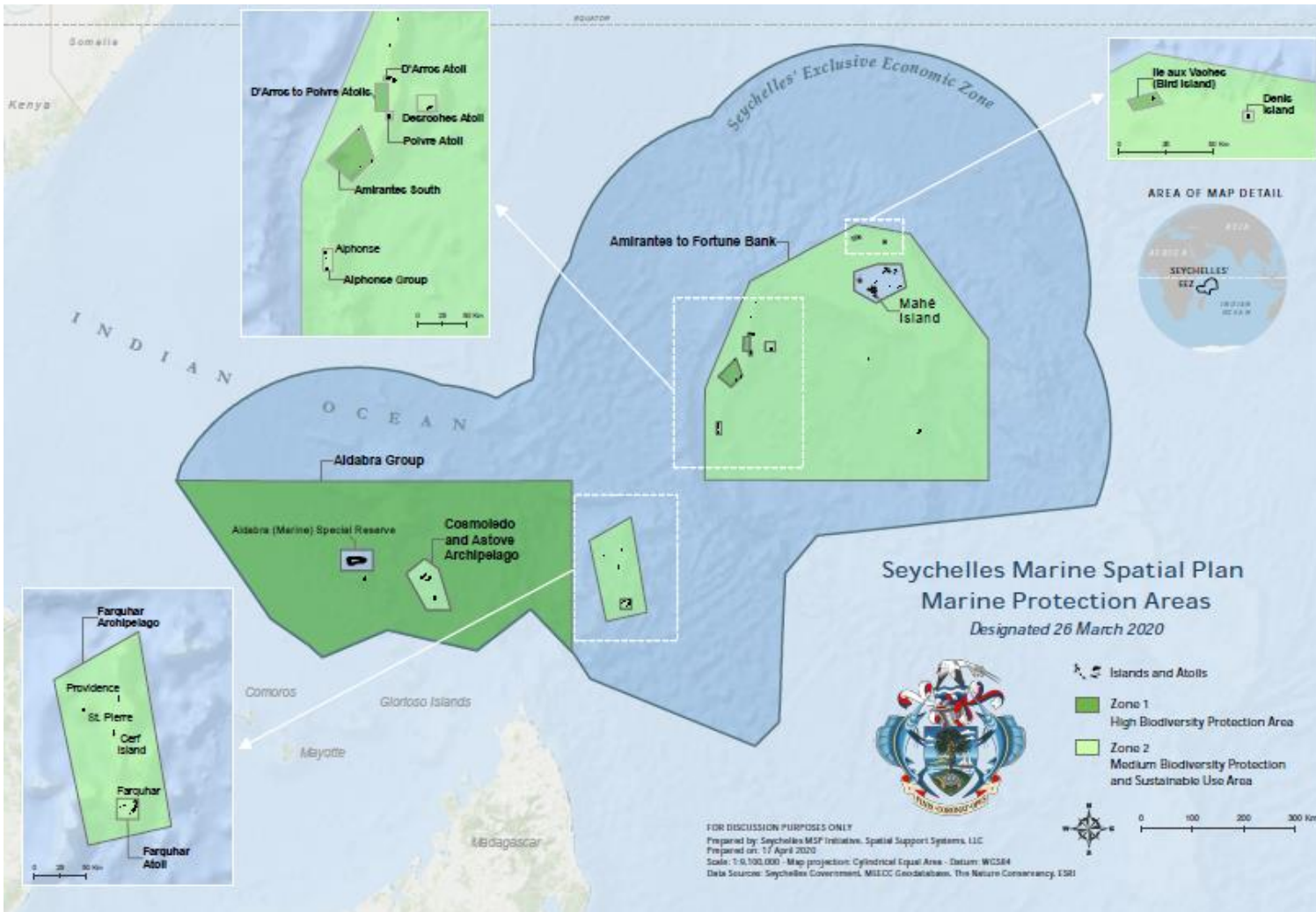
* All virtual meetings not shown during pandemic 2020-2021

Goal 1: Achieved in March 2020

5 Marine National Parks
8 Sustainable Use Areas
Total: 13 Areas

Zone 1: 203,071 km²
Zone 2: 238,442 km²

Legally designated under
Nature Reserves
Conservancy Act (NRC)





GOAL 2: BLUE ECONOMY

Seychelles Marine Spatial Plan

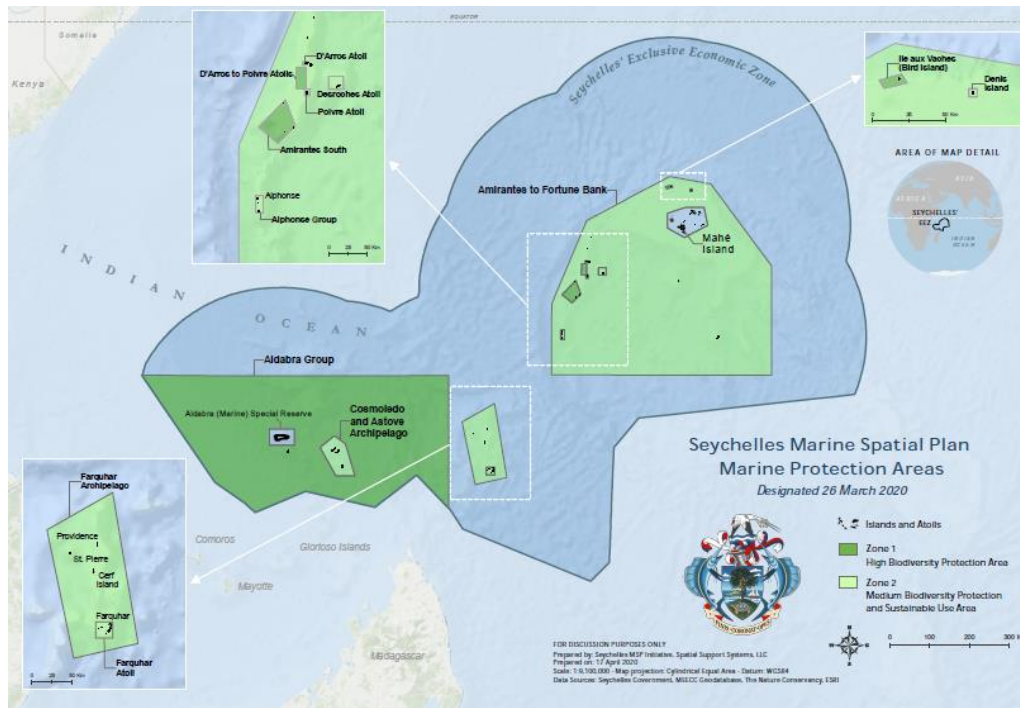
Allowable Activities by Zone Category Developed

52 Marine Activities

14 Codes

36 General Management Considerations

115 Area-based Management Considerations



Seychelles Marine Spatial Plan – Final Draft

FINAL FOR APPROVAL

MSP Zoning Design Allowable Activities Table: Zone 1 (Map 5.45)

Date: 27 June 2023

Legend: A – Allowable; C – Conditional; X – Prohibited. See Codes for superscript numbers. General and Area-based Management Considerations apply to all activities.

Sectors	Marine Activity (Definition in Master List)	Zone 1
Fisheries	Aquaculture Operational	X
	Aquaculture Restorative	C 1.4.5.6,11,23
	Artisanal Fishing (Small-scale Fisheries)	X
	Fly Fishing, blue water	X
	Fly Fishing, lagoon	X
	Industrial Pelagic Longline	X
	Industrial Purse Seine, free schools	X
	Industrial Purse Seine, associated schools	X
	Industrial Purse Seine, supply vessels	C 1.5.14
	Recreational Fishing	X
	Semi-industrial, hand gathering (Small-scale Fisheries)	X
	Semi-industrial, hook & line (Small-scale Fisheries)	X
	Semi-industrial, longline (Small-scale Fisheries)	X
	Sport Fishing	X
Subsistence Fishing	C 1.5.7,11	
Maritime Infrastructure	Ballast Water and Bilge Dumping	X
	Beach Replenishment	X
	Bunkering at Sea	X
	Bunkering at Sea, fishing vessels	X
	Coastal Dredging and Dredge Spoils	C 1.5.19
	Commercial Shipping	C 1.5
	Desalination, boat-based	C 1.5
	Desalination, land-based	C 1.5
	Disposal, Dumping	X
	Ferries and Transportation	C 1.4.5
	Ports, Marinas, Wharves, Jetties	C 1.5.18
	Reclamation	X
	Renewable Energy, deep water thermal	X
	Renewable Energy, solar marine	X
	Renewable Energy, tidal	X
	Renewable Energy, wave	X
	Renewable Energy, wind offshore	X
	Structures, marine other	C 1.4.5.19
	Underwater Cables	C 1.5.19
Non-renewable & prospecting	Bioprospecting Development	X
	Mining, deep-sea	X
	Mining, sand	X
	Mining, shallow	X
	Petroleum Exploration, Drilling, Production, Extraction	X
	Petroleum Development, Production, Extraction	X
	Underwater Cables	X
Tourism & Recreation	Anchorage and Mooring Buoys	C 1.4.5
	Cruise ship	C 1.4.5.11
	Motorised Activities, commercial	C 1.4.5.11,19
	Motorised Activities, non-commercial	C 1.4.5.11
	Non-Motorised Activities, commercial	C 1.4.5.11
	Non-Motorised Activities, non-commercial	C 1.4.5.11
	Tourism Accommodation, terrestrial	C 1.4.5
	Tourism Accommodation, marine	C 1.5
Research	Aquaculture Research	C 1.4.5.6,11,23
	Bioprospecting Research	C 1.4.5.6,11
	Hydrographic Surveys	C 1.4.5.6,11
	Scientific Geophysical Surveys and Research	C 1.4.5.6,11
	Scientific Research and Monitoring	C 1.4.5.6,11

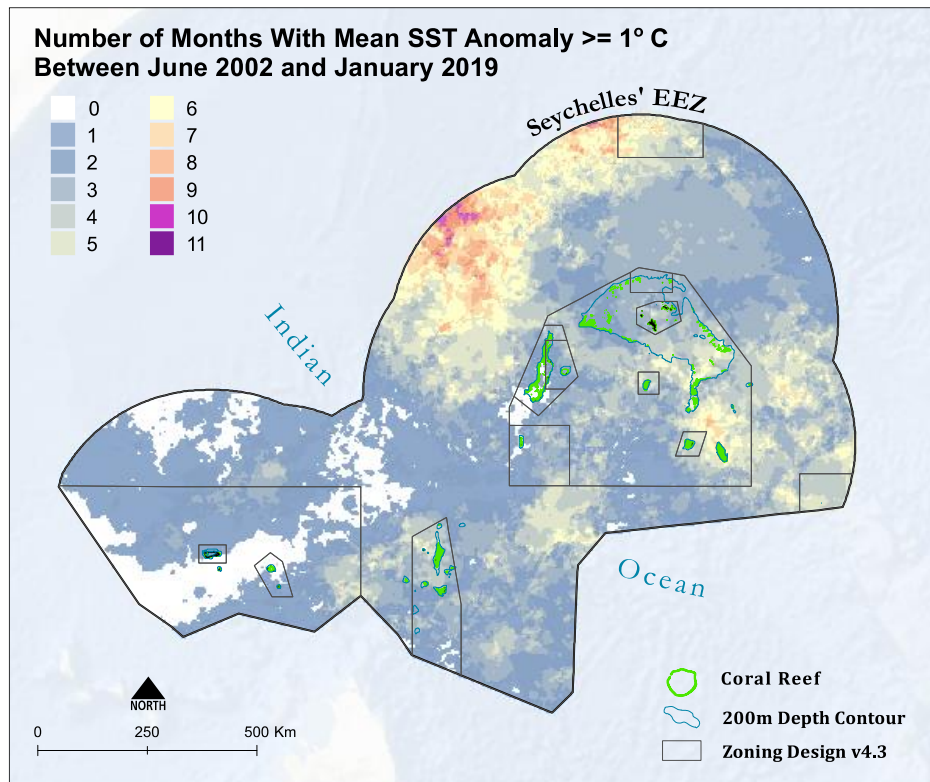
Seychelles MSP Initiative. Information is presented for discussion purposes only. Subject to change upon review and revision. Subject to government approval.



GOAL 3: CLIMATE CHANGE RISK MAPPING

Seychelles Marine Spatial Plan

Climate Change Risk Mapping Developed

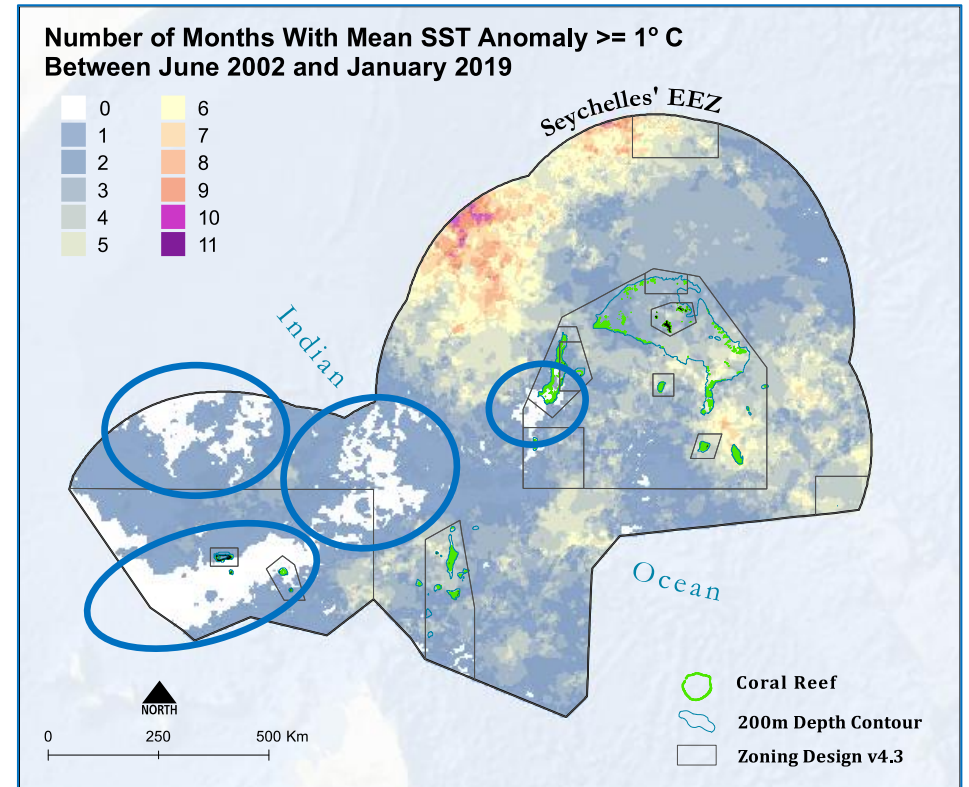
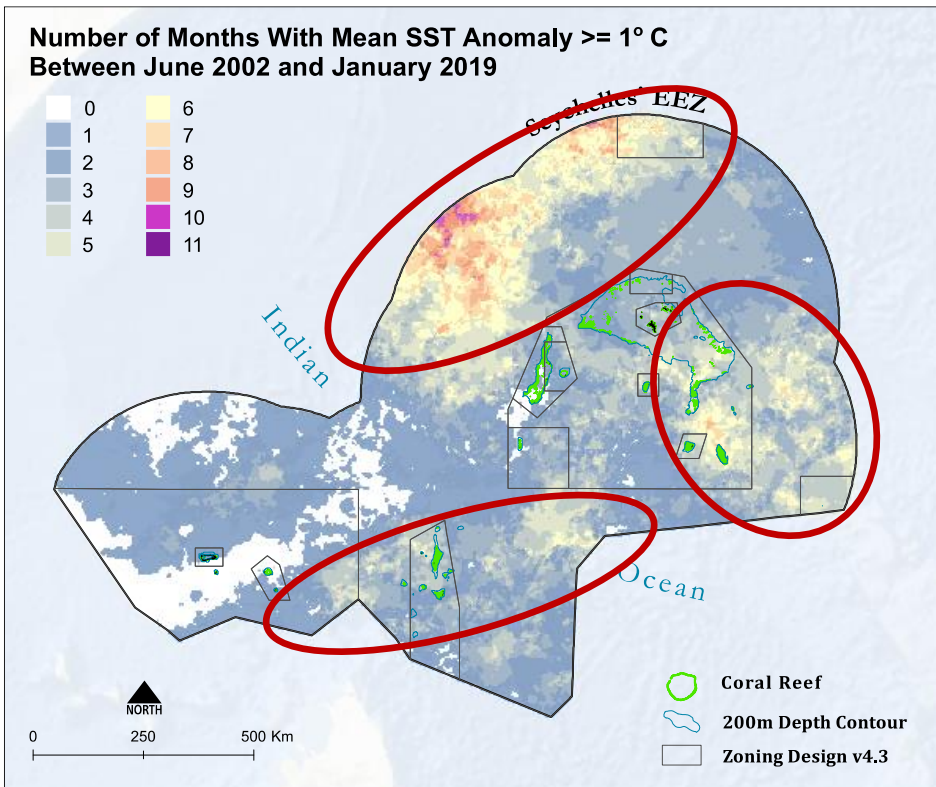


- **Study Question:** Are there persistently warm or cool areas, especially over coral reefs.
- **Methodology:** Count the number of months that a given location averaged greater than or equal to $+1^{\circ}\text{C}$ over the long-term monthly mean temperature.
- **Remote Sensing Data:** 2003-2014 and 2002-2019 Multi-scale Ultra-high Resolution' (MUR) SST Analysis
- If many anomalous $+1^{\circ}\text{C}$ months \rightarrow **thermal impacts**
- If few anomalous $+1^{\circ}\text{C}$ months \rightarrow **thermal refugia**

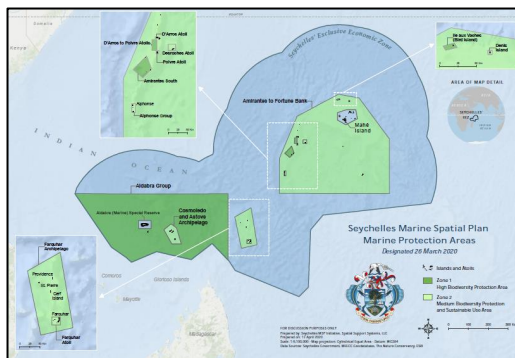
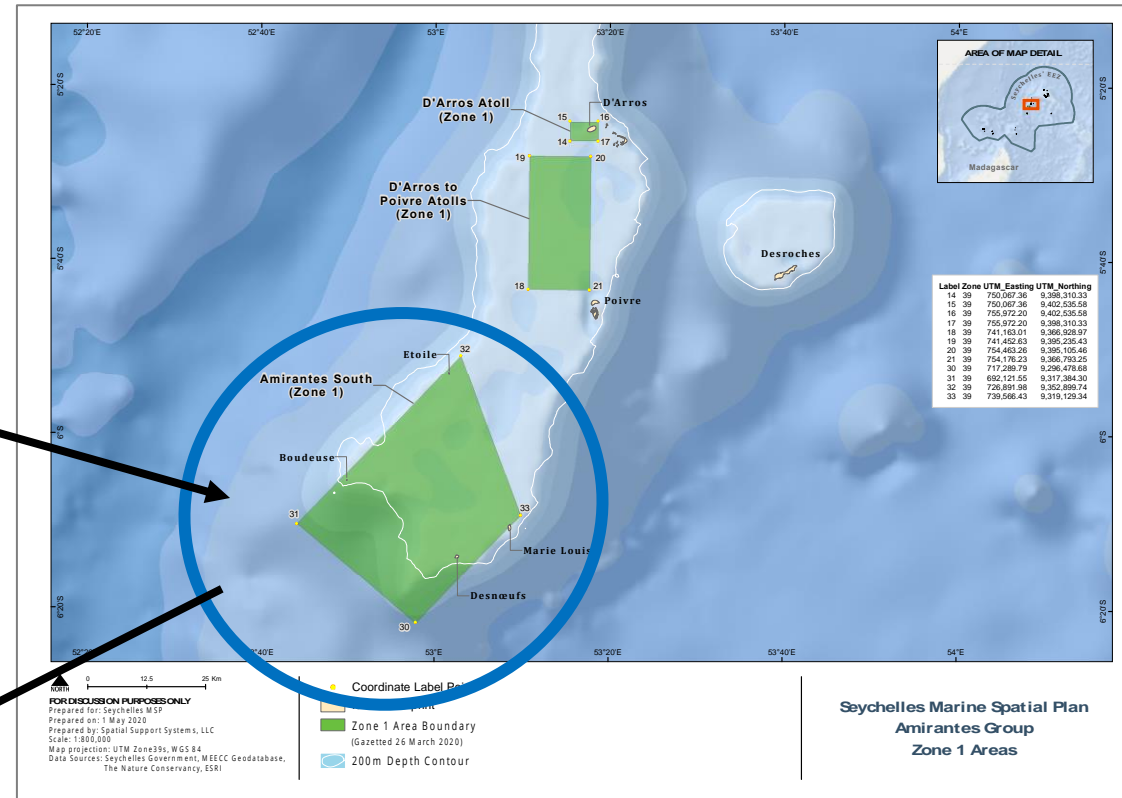
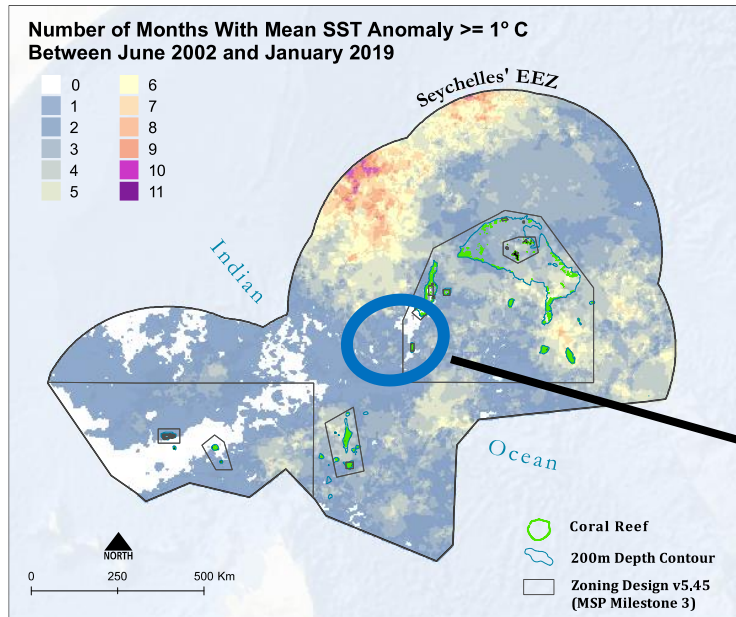
Trends Identified and Applied to Zoning

Persistently warm areas

Persistently cool areas



Goal 2: Achieved in October 2019



The SMSP zoning design includes persistent cool areas in the Amirantes, relative to a long-term monthly average (2003-2014).



FINALISING THE MSP AND STARTING IMPLEMENTATION

Seychelles Marine Spatial Plan

From Zoning to Implementing the SMSP

Complete the Marine Spatial Plan

- Allowable Activity Tables, Codes, Management Considerations, Definitions
- Marine Spatial Plan Document
- Implementation priorities
- Performance Indicators

Complete Legal Components

- Nature Reserves and Conservancy (NRC) Act (2022)
- Regulations for NRC Act
- Marine Spatial Plan - signed into law and legal effect
- Identification of Delegated Authorities

Operationalise Implementation Governance

- Interim governance arrangement (Cabinet decision) - EPA (2016)
- Seychelles Ocean Agency (SOA) regulation (2023)
- Seychelles Ocean Authority Act
- Co-management Agreements per MPA

Draft Management Plans

- Management Framework for Marine Protected Areas
- Management Units for MSP Zones
- Management Plan templates, pilots, plans
- Other sector management plans

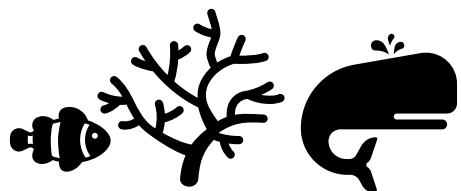
Identify Capacity and Financing Gaps

- MPA Financing and Costing analysis. Version 1 - 2019. Version 2 - 2023-2024
- Socio-economic impact analysis. Industrial Tuna Fishing 2019. Other sectors - 2024
- Business Plans
- Governance Arrangements Costing, Financing and Feasibility
- Capacity gap analysis

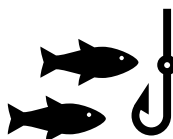
Expected Outcomes by 2025



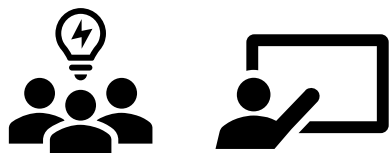
The Marine Spatial Plan is implemented and enforced.



Marine Protection Areas have management plans.



Sustainability criteria for Zones 2 and 3 developed.



Transparent and participatory decision framework in use.



Monitoring of the Marine Spatial Plan for evaluation and assessment.



CHALLENGES AND LESSONS LEARNED

Seychelles Marine Spatial Plan

Challenges to develop an MSP

1. Data layers may not always be available. Use participatory mapping. Use modeled data from publications, such as Harris et al 'Deep-sea Geomorphology of the World'.
2. Reaching agreement or high levels of buy-in takes time. A challenge to schedule meetings often enough to review outputs and meet deadlines and yet not overly burden stakeholders with meetings and workshops.
3. Be prepared for changes within government. Develop briefing packets and schedule briefing sessions with new staff and Ministers.
4. Equitable opportunities to participate and engage for all stakeholders. SMSP developed an honorarium policy for Steering Committee and Technical Working Groups.



Seychelles' Exclusive Economic Zone

200 nautical mile Contour

12 nautical mile Exclusive Zone

Seafloor Geomorphology
Harris et al., 2014

- | | | |
|-----------|---------|--------|
| Ridge | Hills | Slope |
| Seamount | Plains | Canyon |
| Mountains | Rise | Trench |
| Guyot | Terrace | |

Lessons Learned Seychelles MSP

1. Gather lessons learned from other geographies. Learn what did and didn't work. Ask for examples of planning tools and templates. Customise and build upon.
2. Marine spatial plans take time. Give stakeholders time to gather information and prepare comments and inputs.
3. Ensure all sectors participate fully; address equity issues related to engagement, representation and contribution.
4. Engage stakeholders in diverse ways. Workshops, bilaterals, committees, info sessions.
5. Milestones created clear deadlines. Spacing of the milestones allowed for development of supporting science, documents, and assessments.
6. Implementation of the MSP may hold future challenges; prepare for possible scenarios and build flexible outputs that can be adapted.





QUESTIONS

Photo © Warren Andre

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