



SAMOA OCEAN STRATEGY

2020–2030

**INTEGRATED MANAGEMENT FOR A HEALTHY
AND ABUNDANT FUTURE OF SAMOA'S OCEAN**





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Dedicated to the memory of Ms Sue Miller-Taei, our dear friend and Pacific Ocean warrior.

ACKNOWLEDGEMENTS

“The development of this document has been guided by the leadership of the Ministry of Natural Resources and Environment and would not be possible without the help of many stakeholders. We would like to thank our regional partners the Secretariat of the Pacific Regional Environmental Programme, International Union for Conservation of Nature and the Pacific Community for their support and contributions. Special thanks to Conservation International for their technical and financial support, and role in co-coordinating the Strategy development and review process.

We thank all key national stakeholders who participated in the series of consultations and reviews of the Samoa Ocean Strategy, including government agencies, civil society organizations, academic institutions and private sector partners. Your constructive inputs, ideas and opinions have greatly contributed to the development of the Samoa Ocean Strategy and helped shape a collective vision for Samoa's ocean. We recognized the voices of our community through various representations during the nationwide community consultations and are most grateful for their valued contributions and endorsement to the development and future realization of the Samoa Ocean Strategy.



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FOREWORD

It gives me great pleasure to present the first Samoa Ocean Strategy. This integrated policy framework will support Samoan stakeholders to effectively manage, conserve and ensure longstanding economic, subsistence and cultural benefits from our ocean into the future.



Today, many of Samoa's 200,000 people rely directly on the land and sea for food and income. Stemming from our oceanic past, we remain connected and dependent on our vast oceanic resources. Our lagoons and barrier reefs bring tourists from around the region and the world and provide sustenance to Samoan communities along our coasts.

We have witnessed many increasing demands on our marine resources from a variety of sectors. As leaders in Polynesia, Samoa has developed a comprehensive strategy towards integrated management of our Exclusive Economic Zone (EEZ), to support economic growth, protect important ecological habitats, and safeguard important sources of protein and income for Samoans.

This Strategy encompasses the many uses and values derived from Samoa's ocean, including subsistence and commercial fishing, marine transport, recreation and eco-tourism, as well as addresses problems that threaten the health and prosperity of our ocean. Managing these demands and addressing threats is critical to the protection of Samoa's marine environment, as well as our cultural prosperity.

The Samoa Ocean Strategy has developed a comprehensive set of solutions to guide oceans management through 2030. This will require collaboration and partnership across all government ministries, with districts and communities, Non-Governmental Organizations, development partners, as well as key private sector stakeholders. Together, Samoa will implement this Strategy for integrated management of its ocean.

Sincerely,

A handwritten signature in black ink, reading "Tuilaepa Sailele Malielegaoi". The signature is fluid and cursive, with a long horizontal line above the first name.

Hon. Tuilaepa Lupesoliai Sailele Malielegaoi
Prime Minister of Samoa and Minister of Natural Resources and the Environment

ACRONYMS

CBD	Convention on Biological Diversity
CI	Conservation International
CIM	Community Integrated Management
CO₂	Carbon dioxide
DRR	Disaster Risk Reduction
EBA s	Ecosystem-Based Approaches
EEZ	Exclusive Economic Zone
EIA	Environmental Impact Assessment
FAD	Fish Aggregating Devices
FPO	Framework for a Pacific Oceanscape
FRDP	Framework for Resilient Development in the Pacific
GDP	Gross Domestic Product
GOS	Government of Samoa
IUCN	International Union for Conservation of Nature
IUU	Illegal, Unreported and Unregulated
MAF	Ministry of Agriculture and Fisheries
MFAT	Ministry of Foreign Affairs and Trade
MNRE	Ministry of Natural Resources and Environment
MPA	Marine Protected Area
MSP	Marine Spatial Planning
NDC	Nationally Determined Contributions
NOSC	National Ocean Steering Committee
PUMA	Planning Urban Management Agency
S.A.M.O.A. Pathway	SIDS Accelerated Modalities of Action
SDGs	Sustainable Development Goals
SDS	Samoa Development Strategy
SIDS	Small Island Developing States
SOS	Samoa Ocean Strategy or “the Strategy”
SPREP	Secretariat of the Pacific Regional Environment Programme
SUNGO	Samoa Umbrella Non Government Organisations
TK	Traditional Knowledge
UNCLOS	United Nations Convention on the Law of the Sea
UN	United Nations
UNFCCC	United Nations Framework Convention on Climate Change

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EXECUTIVE SUMMARY

Samoa has long recognised the Pacific Ocean as a source of social and economic benefit which has sustained its communities for generations. The ocean remains a primary resource for food and livelihoods that requires responsible stewardship. As a large ocean state, Samoa requires tools, resources and planning to effectively manage its vast ocean area.

The Samoa Ocean Strategy (SOS) outlines a pathway towards sustainable management of Samoa's ocean and marine resources. The Strategy defines prioritized thematic areas that encompass the ecological, cultural and socioeconomic values that Samoans derive from their ocean. To safeguard these values, key problems or threats to the current health status of the ocean are also identified. The Strategy then describes various contributing factors that negatively impact ocean values, and ultimately, identifies integrated management solutions required to reduce impact of the identified threats and advance effective ocean stewardship.

The SOS outlines the necessary steps to advance ocean priorities with government and other stakeholders and provides a platform for engagement of all relevant partners and donors, international organisations, private sector, civil society and communities.

It is intended that this Strategy will catalyze and inspire cooperative efforts to improve the management of Samoa's ocean for its communities and their sustainable economic growth.



The majestic Lady Gaulofa sailing in full traditional rigging, in Hawaiian waters.
Photo: Rui Camilo, Okeanos Foundation.



INTRODUCTION

The ocean is the source of life. It has sustained Samoa and its people for generations and remains critical to the economy, culture and wellbeing of the nation. Samoa's ancestors were master ocean navigators thousands of years ago, establishing a profound and enduring connection with the sea. This deep bond remains central to the nation's culture and traditions, which are rooted in respect for and reliance on its ocean.

With the ocean comprising 98 percent of its territory, Samoa is a large ocean nation. It is home to exceptional marine habitats, such as seamounts, coral reefs, mangroves, and oceanic basins, which contribute significantly to the national economy and the identity of the Samoan people.

Some of the key benefits derived from Samoa's ocean include:

- Fishing holds great economic value. Finfish catch has an annual estimated value of WST 89 million (USD 37 million equivalent) and invertebrate catch has an annual estimated value of WST 86 million (USD 36 million equivalent) in income generated;
- Coastal mangrove forests and coral reefs act as natural barriers to tsunamis and violent storms and provide a significant source of biodiversity, food security and pollution control;
- Coastal mangroves and seagrasses play an important role in sequestering and storing carbon dioxide (CO₂) from the atmosphere;
- Offshore habitats such as canyons, seamounts, water columns and the seabed offer additional goods and services such as nutrient cycling, carbon storage and sequestration, mineral resources, high biodiversity and others;
- Offshore fishing provides an important source of income, livelihood and foreign revenue;
- Samoa's ocean and coastal marine habitats attract international tourists, bolstering the national economy; and
- Samoa's offshore waters serve as a highway for global and regional ships and migratory species.

However, the ocean environment is facing many challenges such as habitat destruction, overfishing and pollution which are reducing vital oceanic ecosystem services and benefits to people such as food security, livelihood opportunities, and climate regulation; this is especially important as climate change is leading to increases in ocean temperatures, sea levels, and frequency and intensity of natural disasters causing coastal inundation.

Samoa, like other Pacific Island nations, is on the front lines of these challenges. The pathway selected for ocean management will define the welfare of the next generation, and generations to come. The choice is clear – the unsustainable management and use of marine resources needs to be replaced with integrated sustainable-use and management of Samoa's ocean.

The Samoa Ocean Strategy (hereafter referred to as the Strategy) aims:

- to secure a future of sustainable development, management and conservation of Samoa's ocean and all resources within, living and non-living;
- to catalyze and guide an integrated approach to ocean governance that reinforces traditional resource management alongside central government management, accounting for and respecting all users and the shared benefits of Samoa's ocean;

- to consider inputs from various sectors and resource users and integrate existing relevant strategies and policies. It also aims to ensure alignment to, and support of, Samoa's economic development and socio-cultural goals;
- to outline an integrated framework for the management of Samoa's sovereign waters and all living and nonliving marine resources through to the year 2030. It aims to embrace global and regional initiatives, science-based knowledge, and Traditional Knowledge (TK) as key tools and resources; and
- to emphasize the climate adaptation and mitigation benefits provided by Samoa's marine and coastal ecosystems that strengthen resilience and reduce vulnerability of coastal populations. It also aims to acknowledge the economic and food security benefits received from the ocean, and consider the full array of interactions within an ecosystem, and the importance of maintaining these critical functions.

Overall, the Strategy seeks to ensure the sustainable and integrated management of Samoa's marine resources, which will foster, promote and determine the social, cultural and economic prosperity of its people.



NATIONAL, REGIONAL AND GLOBAL POLICY CONTEXT

The management of Samoa's ocean resources is guided by multiple sectoral strategies and policies implemented by different line ministries. A key piece of legislation is the Fisheries Management Act of 2016 which outlines principles for integrated management of Samoa's fisheries resources. It is guided by the precautionary approach and values of sustainable development as tenets for marine resource use. These, combined with the cultural values of Fa'aaloalo (Respect), Alofa (Love) and Tautua (Service) which are the foundation of the Fa'asamoa (*Samoan way*), represent the principles which will guide the implementation of the Strategy

Also critical for the Strategy is its alignment with the *Samoa Development Strategy 2016–2020* (SDS) which presents Samoa's development vision, its medium-term national development goals and the different sector plans¹. The environment is one of the four key priority areas within the SDS. This includes an emphasis on the interconnectivity between island and ocean areas, and the need to balance sustainable production and protection of marine resources and supporting prosperity for all Samoans. The Strategy shall provide input in the review of the SDS post 2020 on ocean and marine related interest.

The Government of Samoa (GOS) has aligned the intent in this Strategy to multiple national commitments including ocean related climate change interventions outlined in *Community Integrated Management Plans (CIM Plans)*. CIM Plans are linked to the SDS and are envisaged as blueprints for climate change interventions that include community ocean priorities across all development sectors reflecting the programmatic approach to climate resilience adaptation taken by Samoa. The Strategy further supports Samoa's capacity to manage its EEZ as a sanctuary for turtles, sharks and whales; complete the marine spatial planning for Samoa's ocean and strengthen its protected area networks; promote coherence in ocean related activities within multiple sector plans; and support national reporting to regional and international conventions including to the *Convention of Biological Diversity (CBD)*.

At the regional level, the Pacific Ocean has been a powerful catalyst for Pacific regionalism. As the *Blue Pacific*, Samoa and the Pacific Island Forum members recapture the collective potential of our shared stewardship of the Pacific Ocean based on an explicit recognition of our shared ocean identity, ocean geography, and ocean resources. It aims to strengthen collective action as one 'Blue Pacific Continent' by putting the Blue Pacific at the centre of regional policy making and collective action for advancing the Forum Leaders' Vision for the Region.

To realise this vision, the Strategy upholds the values and principles within the *Framework for Resilient Development in the Pacific (FRDP)* which envisions the Pacific as a place of 'peace, harmony, security, social inclusion and prosperity' and those within the *Framework for the Pacific Oceanscape (FPO)* which aims to protect, manage and sustain the vast array of cultures and traditions of the Pacific and ensure the natural integrity of more than 40 million square kilometres of the world's ocean surface, hosting the largest array of marine biodiversity on Earth². It adopts a 'whole domain' approach to management of large-scale marine systems in the Pacific, essentially considering management of a country's entire EEZ. Created in 2005, the FPO was endorsed by 23 Pacific nations and territories as a policy document addressing climate and ocean management.

¹ Government of Samoa. (2016). *Strategy for the Development of Samoa 2016/17 – 2019/20*. Apia, Samoa.

² Pratt, C. & Govan, H. (2010). *Our Sea of Islands, Our Livelihoods, Our Oceania. Framework for a Pacific Oceanscape: A Catalyst for Implementation of Ocean Policy*. Apia, Samoa: Secretariat of the Pacific Regional Environment Programme (SPREP).

The development of a national ocean strategy was made a political priority when announced as a voluntary commitment towards *Sustainable Development Goal (SDG) 14: Life Below Water* at the United Nations Oceans Conference in New York in June, 2017³.

At the global scale, the Strategy aligns with Samoa's global commitments to international and multilateral conventions and platforms including the *CBD*; *United Nations Framework Convention on Climate Change (UNFCCC)*; *United Nations Convention on Law of the Sea (UNCLOS)*; *SDGs*; and the *S.A.M.O.A.⁴ Pathway*. It further supports Samoa's efforts to implement the *UN Fish Stocks Agreement*, *Convention for the Conservation and Management of Highly Migratory Fish Stocks in the Western and Central Pacific Ocean (WCPFC Convention)*, *the Convention on Wetlands (RAMSAR)*, *the International Coral Reefs Initiative* as well as actions prioritized in *Samoa's Nationally Determined Contributions (NDCs)* to the Paris Agreement under the UNFCCC.

The Small Island Developing States (SIDS) Action Platform highlights the need and opportunity for integrated ocean management strategies, enabling a shift from single-sector policies to integrated management policies which include the multitude of activities that occur within the marine ecosystem.

As one of Samoa's voluntary commitments to SDG 14, the Strategy further supports the integrated implementation of other UN Ocean Conference voluntary commitments including:

- Enhancing management of Samoa's fisheries through improved scientific information and knowledge;
- Ensuring Samoa's EEZ is free from destructive fishing through prohibition and regulation of fishing methods and gears;
- Marine Protected Areas (MPAs) and Samoa's marine sanctuary;
- Effective implementation of monitoring, control surveillance and enforcement programmes for Samoa's fishery waters;
- Enhancing the protection, conservation and management of sharks, whales, dolphins and turtles in Samoa's EEZ;
- Samoa's community-based fisheries management programmes;
- Community integrated management plans;
- Waste segregation, storage and disposal at source;
- River and coastal health ecosystem monitoring;
- Avoid, intercept and redesign our ocean plastics;
- Samoana Folauga; and
- Ocean Health Network for Samoa.

The implementation of the Strategy supports the fulfillment of Samoa's Aichi Targets under the CBD as outlined in the National Biodiversity Strategy and Action Plan (NBSAP) and recognizes the importance of the ocean climate nexus which is key to the aim of the Ocean Pathway.

A detailed explanation on how the Strategy is aligned with National, Regional and Global frameworks can be found in Annex 1.

³ United Nations. (2017). *Samoa National Voluntary Commitments during the Oceans Conference, 5–9 June 2017 UNHQ, New York*. Retrieved from: <https://www.un.int/samoa/news/samoa-national-voluntary-commitments-during-ocean-conference-5-9-june-2017-unhq-new-york>.

⁴ United Nations. (2014). *SIDS Accelerated Modalities of Action (SAMOA) Pathway*. Retrieved from: <https://sustainabledevelopment.un.org/samoapathway.html>.

A VISION FOR SAMOA'S OCEAN

VISION

Samoa's ocean remains healthy and abundant through integrated management, robust coordination, and respectful use and stewardship that supports cultural, social and economic opportunities for Samoa's people.

PURPOSE

The Samoa Ocean Strategy 2020–2030 aims to foster a longer-term integrated vision to guide the sustainable and integrated management of Samoa's ocean and its resources. It should help integrate, complement, support but not undermine, existing ocean related national strategies and sector plans.

It serves as a guiding framework and tool for Samoa to meet its commitments described in marine related national and international agreements, by setting common goals and objectives for all the actors involved. This includes a range of stakeholders, from national government policy makers and industry heads, to small-scale coastal fishers, tourism operators and subsistence communities.

To ensure its effectiveness, it is critical that the Strategy acknowledges, then actively builds upon, the existing mechanisms for coastal and ocean management in Samoa. This will avoid duplication of efforts and ensure vertical and horizontal alignment of the integrated management solutions proposed.

Through these efforts, the Strategy's vision and purpose will help to safeguard resilient marine ecosystems that support sustainable development for Samoa's people.



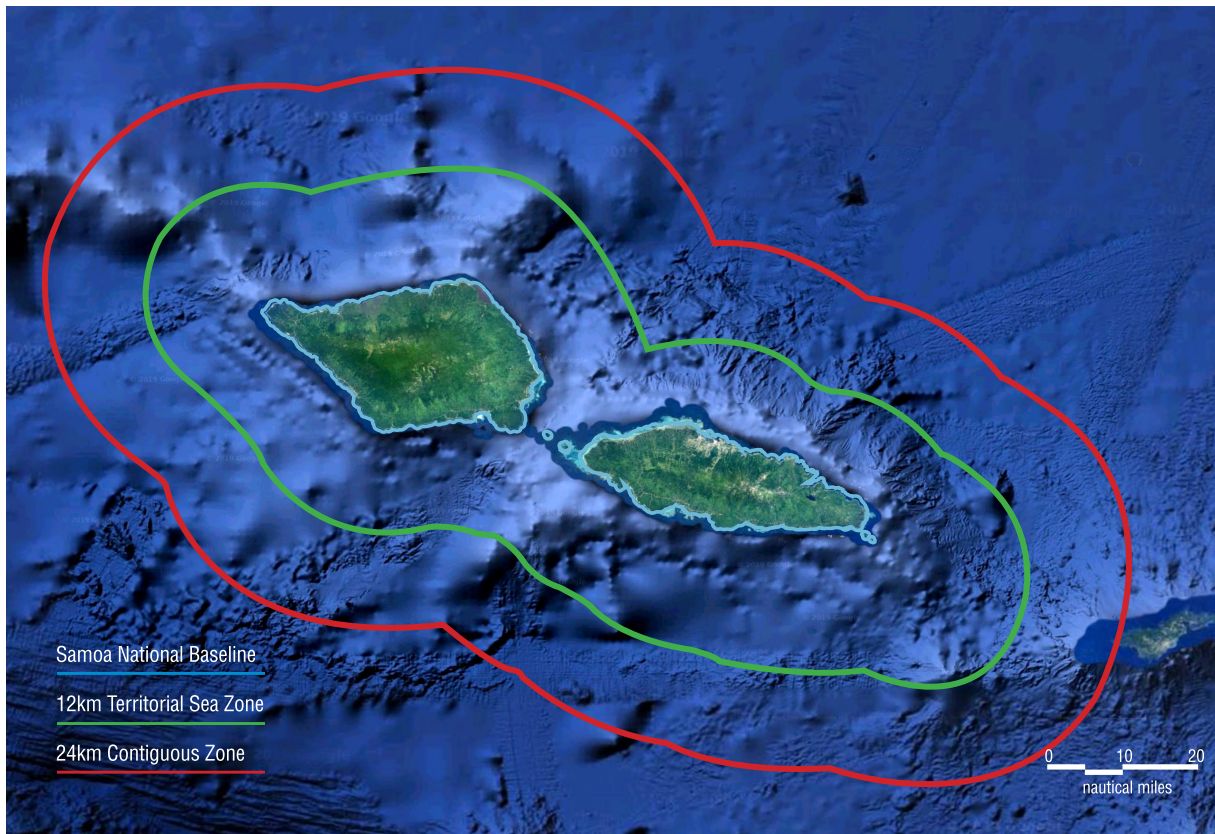


FIGURE 1. Samoa’s territorial sea baseline and basis of the EEZ claim representing the geographic scope for the Strategy.

GEOGRAPHIC SCOPE

The scope of the Strategy encompasses the whole of Samoa’s territorial sea, contiguous seas and EEZ claim based on the finalized archipelagic baseline points⁵ recorded in the GOS Maritime Zones Order of 2017. Figure 1 provides a visual representation of the different areas within Samoa’s 120,000 square kilometers EEZ included in the Strategy.

APPROACH

The Strategy is the GOS’s overarching framework for the integrated management of its sovereign waters and all living and nonliving marine resources through to the year 2030. It embraces global and regional initiatives, science-based knowledge and TK as key management tools and resources. It acknowledges that economic, social and cultural benefits people rely on are dependent on ocean health. It recognises how climate adaptation and mitigation benefits of marine and coastal ecosystems support resilience and reduce vulnerability. It also acknowledges the full array of interactions within an ecosystem, including humans, rather than considering single issues, species, or ecosystem services in isolation.

The Strategy has been developed under the leadership of the Ministry of Natural Resources and Environment (MNRE) in collaboration with a local partner, Conservation International (CI). The development of the Strategy was guided by the methodological framework of the Open Standards for the Practice of Conservation, which uses a multi-stakeholder and consultative approach to define complex problems and design integrated solutions. The Strategy was designed through a step-by-step process, beginning first with identification of the important values of Samoa’s ocean,

⁵ Government of Samoa. (2017). *Maritime Zones Order 2017*. Apia, Samoa.

the prominent threats which must be addressed or reduced to safeguard ocean values, and finally the identification of integrated management solutions, delivered through a series of time-bound and measurable goals and objectives.

A series of five national stakeholder consultations were conducted to design the Strategy. The first consultation was internal to government and included representatives from all sectoral ministries. This consultation served to define and guide the structure and goals of the Strategy's development process, as well as the Strategy itself. Two national consultations were conducted with government, and other stakeholders, including local NGOs, international NGOs, regional organizations, academic institutions and local civil society groups. Two consultations were held with community representatives on Upolu and Savai'i, which reviewed priorities identified in the Strategy and ensured they reflect those identified by communities during the 2019 national review of the Community Integrated Management Plans. The list of stakeholders consulted during the process and key steps of the Strategy's development is enclosed in Annex 2.

A comprehensive overview of the Strategy design process is included below.

STEP 1 Defining Thematic Areas

A desktop assessment of Samoa's ocean was undertaken to form six thematic briefing papers that were circulated for government and stakeholder inputs. The SOS thematic areas represent what people value in their ocean. The ocean values encompass a range of elements from cultural to recreational services, transport to fishing and can include a single species or an entire marine habitat. For example, coral reef ecosystems provide a range of ecosystem services and benefits to coastal communities as well as urban centers, supporting fish stocks for food security, and providing marine resources for livelihood and income generation. Similarly, single species such as turtles are essential links in Samoa's marine ecosystems assisting to maintain the health of critical habitats such as sea-grass beds and coral reefs, which are also fundamental to commercial species of interest such fish, lobsters, shrimps and tuna. Additionally, turtles have cultural significance and tourism value. In Samoan culture, they are also known as 'I'a Sa or sacred fish and their consumption is restricted to high chiefs and priests during special occasions. Turtles are often included in Samoan myths folklores, legends and songs of past.

STEP 2 Identifying Threats

In addition to identifying values of the ocean, it was critical to identify threats that negatively impact Samoa's ocean values. The identification of threats guided stakeholders towards effective solutions for threat mitigation. Threats that jeopardize Samoa's ocean values were identified throughout the stakeholder consultations, as well as the contributing factors to these threats. For example, downstream sedimentation poses a direct threat to the health of coastal coral reefs, and unsustainable land-based activity, or poor land-use management, is a contributing factor to increased sedimentation. The identification of direct threats and contributing factors helped stakeholders to design and prioritize the most important and effective solutions to reach their goals. Similar threats were grouped and, where possible, addressed collectively by the same solution.

STEP 3 Designing Integrated Management Solutions

As noted above, after identifying the direct threats and contributing factors, integrated management solutions were developed to address or minimize these threats. Thirteen solutions were identified, each with a set of objectives and goals to measure progress and success of implementation. Examples of integrated marine management solutions include traditional and modern marine resource management and knowledge and information systems, to protect and ensure sustainable production within Samoa's ocean over the next ten years.



PRIORITIZED THEMATIC AREAS

Samoa joins other island states of the Pacific region in pro-actively and collectively addressing the problems that threaten the health of its ocean. Through this Strategy, the GOS commits to focus efforts on the six equally prioritized thematic areas.

Thematic areas represent VALUES. These include all the ecological and socio-economic attributes that define the value of the ocean to Samoan people. Long-term goals for each thematic area have been developed and indicators for each goal can be found in Annex 3.

OFFSHORE WATERS

Samoa’s offshore waters provide a range of benefits to the people of Samoa, contributing to the economic and social wellbeing of the country. These include but are not limited to commercial fisheries, employment, transport and food security. The definition of offshore waters for the purpose of this Strategy includes all waters from the ‘reef slope’ to the EEZ boundary. Samoa’s offshore waters include the full range of geomorphological features (such as seamounts, canyons and trenches), the seabed, (Figure 2), and the water column above the seabed (pelagic, demersal and benthic), as well as all species such as tuna. The offshore waters are fundamental to the people of Samoa and hold significant cultural value. Samoa currently has offshore commercial fisheries and tuna fisheries fleets active within their EEZ including domestic and foreign fleets. The sustainable management of Samoa’s offshore waters will require an integrated and multi-sectoral approach, working with a range of ministries on shipping, transport, and fisheries within Samoa’s EEZ.

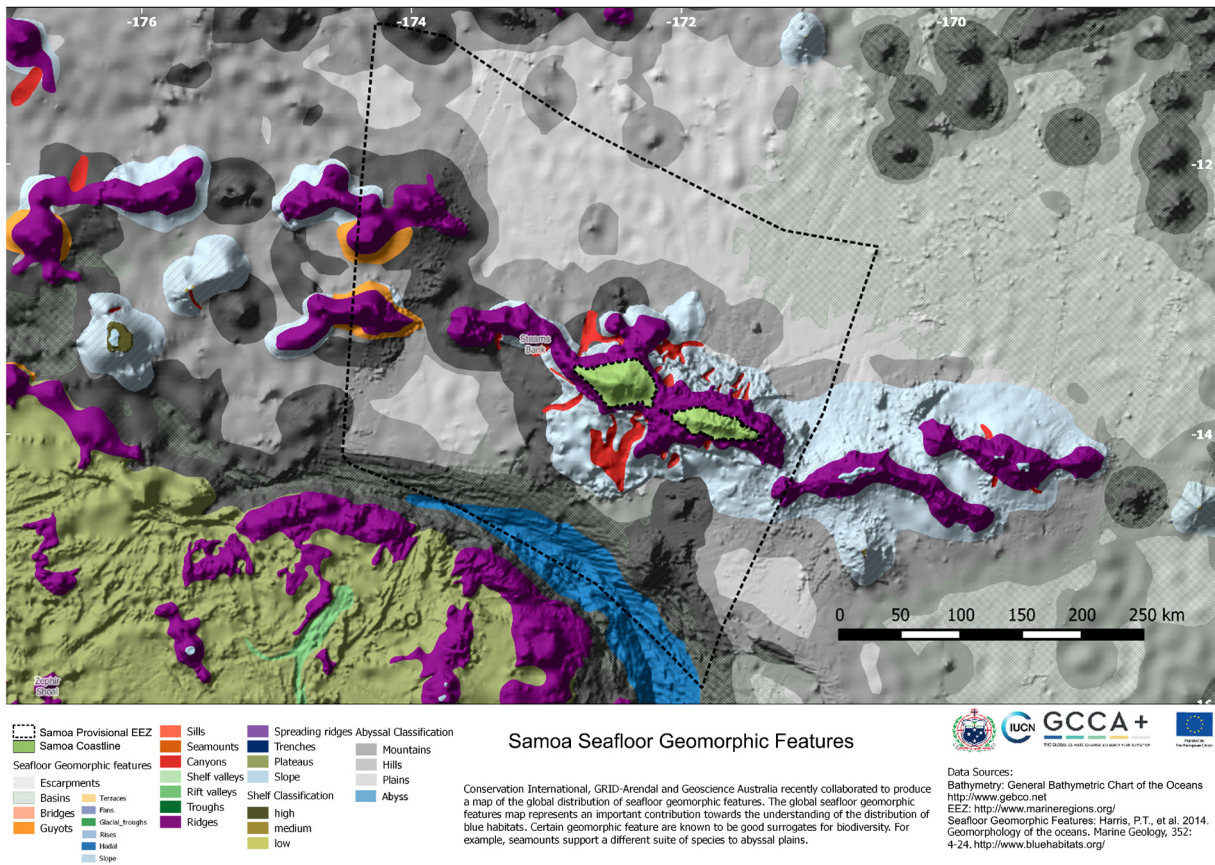


FIGURE 2. Seabed of Samoa’s ocean.

MARITIME SAFETY AND SECURITY

Maritime safety and security are cornerstones of safe, secure and clean shipping. The recent Maritime Transport Ministers Meeting hosted by Samoa in September 2019, emphasised the need for safety of domestic ships and security within our national waters. It is critical to protect the right to safety at sea by ensuring stronger measures are in place to enforce safety standards on domestic shipping. Our national waters must be secure from illegal activities that threaten the lives of those exercising their right of peaceful use of the ocean and its resources. Enhanced surveillance at sea and at ports must be strengthened to ensure domestic and foreign-going ships meet international standards of safety and security. Decarbonisation in maritime shipping is a priority for Samoa to deliver our NDCs. Improved coordination, surveillance and enforcement remain critical to ensure security of our national waters from illegal activities and transnational crimes.

SPECIES OF SPECIAL INTEREST

Marine migratory species are a vital part of Samoa's ocean and are species of special interest. Samoa's EEZ contains the following marine migratory species: elasmobranchs (sharks, manta and other rays), cetaceans (whales and dolphins), seabirds, and marine reptiles (marine turtles). While forms of protection are in place for all of these marine animals, these are inadequate to secure their populations. Many species of special interest continue to experience rapid declines caused in part from pollution, by-catch and targeted over-extraction. Additional research and monitoring are necessary to better understand the status of these species in Samoa, as well as the key drivers causing their population declines. The economic importance of tuna is well known and because they are migratory, they are managed through specific regional and national agreements which are already being effectively implemented.

MARINE COASTAL ECOSYSTEMS AND SPECIES

The marine coastal ecosystems and species thematic area encompasses coastal marshes, wetlands, beaches, seagrass meadows, mangroves (Figure 3), and coral reefs including the high biodiversity associated with these habitats such as fishes, invertebrates and seaweeds. Samoa's marine and coastal ecosystems are important for coastal communities and urban centers for a range of reasons, from recreation to food security.

Samoa has a limited number of fringing reefs at varying depths and locations around the archipelago. The reefs were significantly impacted by natural disasters in the 1990s and 2000s including cyclones and a tsunami. Samoa is known to have 50 hard coral species (Kramer, 1995;⁶ and Gosliner et al., 1996)⁷, with many reefs providing habitat for a healthy and diverse fish fauna and other marine life.

Mangroves provide many positive benefits to Samoan communities, including firewood, dyes, fish breeding grounds, coastal pollution control and protection from storm surges. The current total area of mangroves in Upolu and Savai'i is 374 hectares (Percival, 2018)⁸. Samoa contains three large mangrove areas, and the nation's largest stand is in the eastern coast, close to the capital, Apia. This is also the most threatened mangrove area, mainly from coastal development and waste.

⁶ Kramer, A. (1995). *The Samoa Islands* (Vols 1 & 2) (T. Verhaaren, Trans). Auckland, New Zealand: Polynesian Press.

⁷ Gosliner T. M., Behrens D. W. & Williams G. C. (1996). *Coral Reef Animals of the Indo-Pacific: Animal Life from Africa to Hawaii Exclusive of the Vertebrates*. California, United States of America: Sea Challengers.

⁸ Percival, J.E.H. (2018). *The Importance of Seascape Structure on Fish Communities in the Mangroves of Samoa*. Graduate School of Global Environmental Studies Kyoto University, Japan.

The other two large mangrove areas are located on the south of Upolu Island in Sataoa/Sa’anapu and Le Asaga Bay. These are in better condition than Apia’s mangroves.

Halophila ovalis, *H. ovalis* ssp. *bullosa*, and *Syringodium isoetifolium* are the only seagrass taxa recorded from Samoa⁹ albeit more research is needed to document their locations and distribution.

These ecosystems are home to many coastal marine species. Many direct threats are impacting these ecosystems and species such as pollution (originating from land and vessels), overfishing, other forms of unsustainable harvesting, sand mining, land reclamation and erosion. They are also threatened by climate change, including acidification and warming/rising seas. Mangroves in Samoa are not included in a specific policy to enhance current efforts in their management.

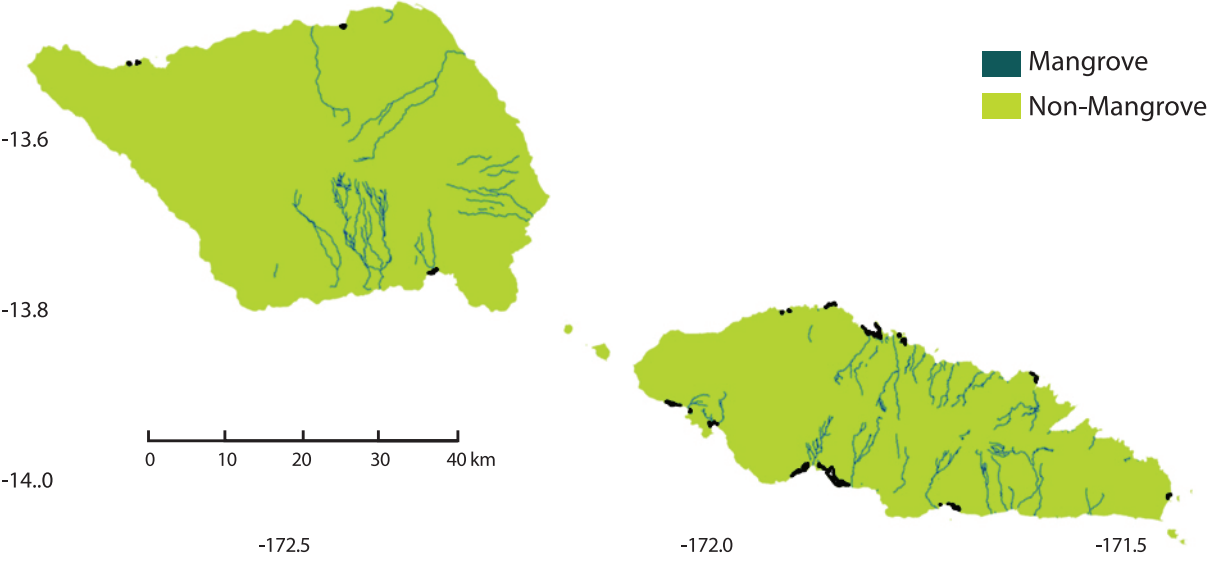


FIGURE 3. Distribution of mangroves in Upolu and Savai'i (mapped from the satellite data captured between 2016 and 2017). (Percival, 2018).

FOOD SECURITY

Food security “exists when all people, at all times, have physical and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life”¹⁰.

Food security from marine resources is a vital thematic area for the people of Samoa. As the vast majority of people in Samoa live in close proximity to the coast, roughly 90% of locally sourced protein consumed in Samoa comes from the ocean. Future food security for Samoa will be dependent on effective and sustainable management of resources of all the marine ecosystems. Additionally, with over 80% of the population being coastal residents, local cash economies are highly reliant on fishermen and women accessing coastal seafood to support income for individual households.

⁹ Posa A. Skelton & G. Robin South (2006) Seagrass biodiversity of the Fiji and Samoa islands, South Pacific, New Zealand Journal of Marine and Freshwater Research, 40:2,345-356, DOI: 10.1080/00288330.2006.9517426
¹⁰ Gibson, M. (2012). Food security – a commentary: what is it and why is it so complicated? *Foods*, 1(1), 18-27.

Table 1 provides information on Samoa’s current fish consumption and future fish demand to ensure food security for the next generations¹¹:

TABLE 1. Current fish consumption and future fish demand for Samoa.

Current annual per capita fish consumption (kg) for Samoa, determined from household income and expenditure surveys (HIES)	87.4 kg (At National Level)
Current percentage of annual per capita fish consumption derived from subsistence fishing and purchases of fish in urban and rural areas of Samoa, determined by household income and expenditure surveys	44% (Subsistence) 56% (Purchased) (At National Level)
Forecasts of fish required in Samoa (tonnes) to meet per capita consumption of fish for good nutrition (nutritional base), and to maintain current rates of fish consumption (expected demand)	By 2020: (At National Level) Nutritional base: 6,380 tonnes Expected demand: 15,210 tonnes By 2030: (At National Level) Nutritional Base: 6,840 tonnes Expected demand: 15,600 tonnes

The productivity of Samoa’s coastal fisheries is unique within Pacific islands nations because it is not tied to the area of shallow water coral reefs but to the deeper coastal water areas (depths of 200-300 meters) which support substantial stocks of reef fish¹². This unique marine feature is important to estimate the sustainable coastal fisheries production for the nation which is fundamental for the future food security of Samoa. Management actions led by the Ministry of Agriculture and Fisheries (MAF) are already in place to ensure the sustainable use of coastal and offshore marine resources, such as the use of Fish Aggregating Devices (FADs), aquaculture, development and the establishment of village fish reserves. However, strengthening monitoring and law enforcement is a vital solution to maintain the delicate balance between exploitation and conservation of habitats and fish stocks for food security.

Finally, sustainable aquaculture practices are recognized as important sources of protein to ensure Samoan food security against the effects of climate change in the future, but also alternative forms of income for villagers.

¹¹ Bell, J.D., Kronen, M., Vunisea, A., Nash, W.J., Keeble, G., Demmke, A., Pontifex, S. & Andrefouet, S. (2009). Planning the use of fish for food security in the Pacific. *Marine Policy*, 33, 64-76.

¹² Government of Samoa. (2013). *Priority adaptations to climate change for fisheries and aquaculture in Samoa*. Workshop in Solomon Islands.

OCEAN KNOWLEDGE

Modern ocean sciences and TK remain an essential resource necessary to inform management approaches and develop solutions, particularly to meet escalating threats from climate change. TK is the information that people in a given community, based on experience and adaptation to a local culture and environment, have developed over time, and continue to develop. These include TK associated with biological or genetic resources encompassing knowledge, innovations, know-how, skills and practices, teachings and learnings that are developed, sustained and passed on from generation to generation, often forming part of a community's cultural or spiritual identity. The cultural traditions of resource management are also increasingly recognized as sustainable. Modern generations of Samoans have lost some traditional practices in the pursuit of modern methods and technology. This Strategy combines traditional methods and knowledge with modern science.

To promote these approaches, an education effort directed toward the next generation will be implemented, reinforcing the participatory approach in decision making to further strengthen local and national governance.





THREATS TO SAMOA'S OCEAN

Many threats negatively impact the health of Samoa's ocean. Thirteen of these threats and their contributing factors are identified as key problems for the health of Samoa's ocean resources. To improve the status of Samoa's ocean health and attain the ten-year Vision, the Strategy aims to develop effective integrated management solutions which can reduce or eliminate the identified threats.

The 13 main threats that were identified are divided in six groups.

FISHING

There are two main threats related to fishing activities that are impacting thematic areas such as offshore waters and marine coastal ecosystems and species:

- Unsustainable extraction, fishing equipment and methods; and
- Illegal, Unregulated and Unreported (IUU) fishing activities.

Key contributing factors lie in limited resources which include the lack of funds and capacity to sustain effective enforcement of existing regulations. Samoa's equipment, technology and staff capacity are poor. Other important contributing factors include the lack of awareness and knowledge, and ineffective rules and regulations for the protection of endangered species.

POLLUTION

There are two main threats related to pollution in Samoa's ocean:

- Land-based pollution; and
- Pollution from vessels, ports and dry docks.

There is a need to introduce new pollution reduction technologies, as well as to build local capacity for effective monitoring and tracking of pollution.

Introduction of new technologies to reduce carbon emission from ships is inevitable. With new technologies, there needs to be capacity development in these areas to be able to understand them and to impart knowledge. The revolution of renewable energy onboard ships will require local expertise particularly when alternative energy reducing fuel consumption reduces high costs of diesel and fuel by ships. Port re-development to greener and cleaner ports will inevitably require expertise to ensure proper operation, maintenance and, importantly, to impart knowledge and information.

Land-based pollution is mainly caused by discharge into rivers and inadequate waste management on land, and can be addressed through other avenues. Plastic pollution is also a major threat to oceans and to fish species. In January 2019, Samoa implemented legislation to ban single-use plastic bags and straws with plans to expand list of banned items to include other hazardous plastics including but not limited to Styrofoam.

UNSUSTAINABLE DEVELOPMENT

Some development threats are highlighted and can be summarized in four main threats to Samoa's ocean, including

- Local mangrove forest clearing;
- Unsustainable sand mining development;
- Unsustainable coastal development; and
- Potential for unregulated deep-sea mining.

Contributing factors for mangrove-forest clearing range from ineffective management policies to low consideration and value placed on mangrove ecosystems. For sand mining/dredging, the lack of information on beach status and lack of monitoring are the main contributing factors. Unsustainable coastal development is driven by poorly enforced policies. Finally, deep sea mineral mining has been deemed to be not-economically viable for Samoa through studies done in the 1990s, however, unregulated deep-sea mining has been identified as a potential future threat which needs to be addressed immediately through improved best practices for exploration and updated biological data of the seabed ecosystems.

CLIMATE CHANGE

Threats related to climate change are:

- Coastal erosion; and
- Coral bleaching.

Climate change is understood to be the most prominent threat facing Pacific Islands states and coastal communities across the region. The impacts of climate change are cross-cutting and effect the health and prosperity of all sectors. However, some direct threats related to climate change can be addressed at local, national and regional levels. Coastal erosion and coral bleaching have been identified as the two main climate change related threats in Samoa, and these can be managed at national level through adaptation and mitigation solutions supported by improved monitoring and enforcement.



KNOWLEDGE AND DATA

Two threats related to knowledge and data have been identified:

- Limited Integration of traditional knowledge (TK); and
- Limited modern ocean science.

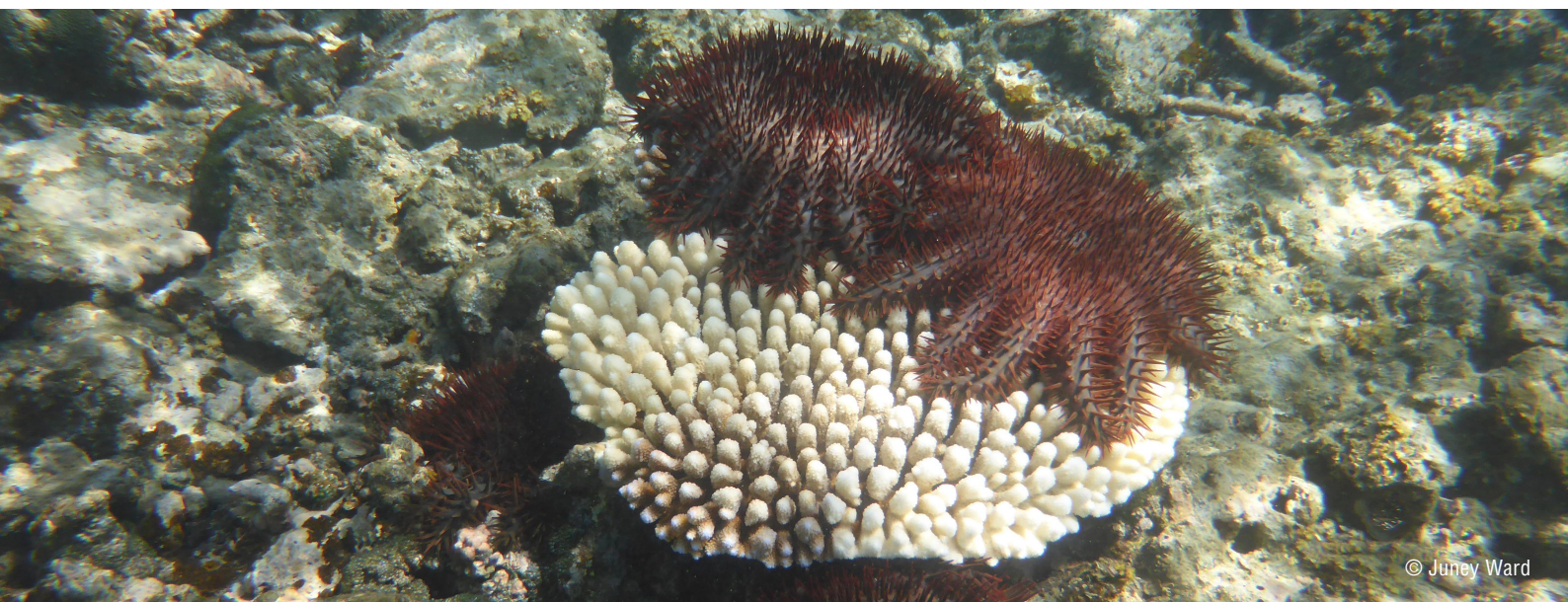
Knowledge and data are fundamental for informing current and future management decisions. In Samoa, TK is not considered alongside ocean science to inform and guide management decisions in the ocean. The lack of integration of TK and ocean science is identified as a cross-cutting issue that affects ocean health and management at the national level.

Some of the contributing factors to the absence of TK valuation include general lack of awareness and lack of inclusion of TK in national school curricula. Furthermore, new data and information are required to augment the current knowledge in the field of marine sciences through gap analysis and research. Strengthening data collection, storage and sharing among ministries and other partners has also become a priority. Finally, there is a need to enhance overarching coordination of communication among ministries, and out to local communities. The current context creates barriers for effective management of Samoa's ocean and requires investment in resources and capacity to facilitate improvements in the integration, collection, storage, sharing and communication of ocean knowledge and ocean science.

INVASIVE SPECIES

Intentional and unintentional introduction of invasive species is an important direct threat to the health of offshore waters, effective maritime security and transport, health of marine coastal ecosystems and species, and food security.

Biosecurity has focused on countering the negative impacts of invasive species, especially by improving monitoring and law enforcement in ports.



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INTEGRATED MANAGEMENT SOLUTIONS

Multiple stakeholders undertake activities in Samoa’s shared ocean space. To minimize conflicts within the ocean space, this Strategy promotes integrated management that addresses the critical need to engage and unite all relevant ocean stakeholders in a coherent manner that promotes sustainable use and conservation by including all, but not limited to government, civil societies, private sector and local communities. A total of 6 key Strategic Priorities for intervention have been identified and a further 13 Integrated Management Solutions (referred from hereon as “Solutions”) have been developed and outlined below, to address many interrelated factors which collectively threaten the integrity and health of marine environments in Samoa’s ocean.

STRATEGIC PRIORITIES	INTEGRATED MANAGEMENT SOLUTIONS
A. Governance and Coordination	1. Create a National Ocean Steering Committee (NOSC)
	2. Formally define Samoa’s Maritime Boundaries
B. Financial Sustainability	3. Develop Sustainable Ocean Financing Mechanisms
C. Research and Data Collection	4. Improve scientific research, data collection and monitoring within Samoa’s ocean
	5. Complete a Marine Spatial Plan (MSP) For Samoa’s ocean
D. Monitoring and Surveillance	6. Strengthen monitoring, control, surveillance and enforcement across Samoa’s ocean
	7. Strengthen the national MPA network
	8. Establish effective protection and management of endangered marine migratory species
E. Policy and Legislation	9. Strengthen policy and legislation for Coastal Ecosystem Services protection
	10. Integrate Ecosystem-Based Approach (EBA) into existing climate change adaptation management plans and initiatives
	11. Review existing policies and establish legislation where appropriate to manage risks posed by deep-sea and seabed exploration
F. Awareness and Capacity Building	12. Strengthen effectiveness of coastal management using traditional knowledge, innovation and marine science
	13. Improve Waste and Marine Pollution management at national level

For each Solution, a timeline with objectives and goals has been developed.

A. GOVERNANCE AND COORDINATION

1. Create a National Ocean Steering Committee (NOSC)

Establishing the NOSC is an essential overarching governance need for the Strategy. Membership of the NOSC will be senior representatives drawn from all key relevant Ministries with mandated responsibility of maritime affairs and marine resource management plus a representative from Samoa Umbrella for Non-Governmental Organisation (SUNGO). A key initial step in the process of establishing the NOSC is the nomination of an independent Ministry to chair the committee. Nominations for consideration to this role is the Ministry of Foreign Affairs and Trade (MFAT) or a rotating chairmanship amongst the member Ministries. The chairing Ministry will provide a leading role in the coordination of all national agencies with a responsibility to the Solutions of the ocean Strategy and monitoring progress.

The detailed governance and reporting lines of the NOSC remain to be confirmed. It is anticipated that the existing responsibilities and reporting structure for existing national marine-related committees and working groups are modified to report into the NOSC. This should improve alignment of all activities regarding Samoa’s ocean.

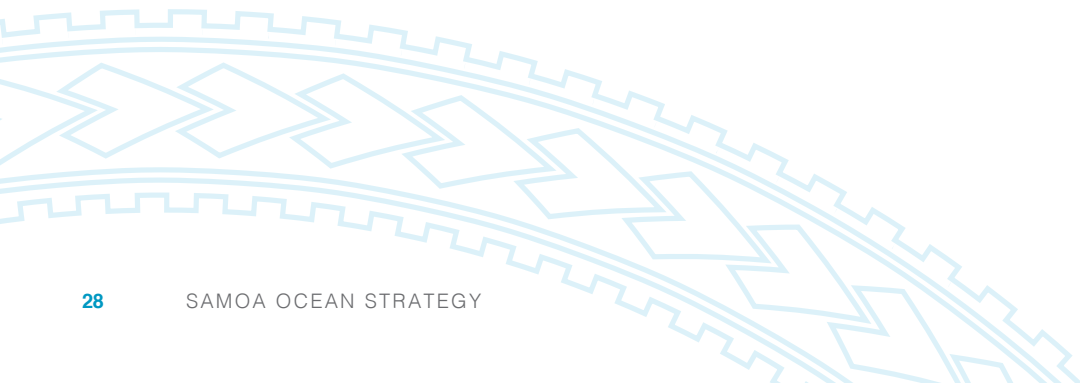
Key responsibilities for the NOSC include but are not limited to:

- Coordinate, monitor and evaluate implementation of the SOS;
- Identify and support lead agencies responsible for the various aspects of implementation including planning, consultation, monitoring, compliance, enforcement and review;
- Establish clear lines of communication to support coordination and engagement of all stakeholders at all levels;
- Clarify where necessary responsibilities are attributed to the different agencies dealing with ocean affairs; and
- Encourage participation of both public and private institutions, non-governmental and governmental organisations, and civil societies in the Strategy implementation.

The Committee will seek to establish a Technical Working Group composed of technical officials of Ministries, inter-governmental and non-governmental agencies approved by the NOSC to provide technical support to inform the coordination and implementation of the Strategy on the ground.

The NOSC will operate transparently and engage in inclusive decision-making which embraces and welcomes inputs and suggestions from national civil societies organizations, academia and regional entities.

THEMATIC AREAS	OBJECTIVES	GOALS
All thematic areas	By 2020, NOSC members are identified. By 2021, the National Ocean Steering Committee is established, and the first meeting is held.	By 2021, establish a multi-sectoral National Ocean Steering Committee.



2. Formally define Samoa's Maritime Boundaries

The on-going negotiations with the United States of America (American Samoa), Tonga, New Zealand (Tokelau) and France (Wallis & Futuna) to finalize Samoa's Maritime Boundaries are essential for the realization of the Strategy because they will define the geographical scope of the Strategy itself. The aim is that by 2025, the boundaries with all neighboring countries will be agreed.

Samoa and the Pacific Leaders have also highlighted the importance of preserving Members' existing rights stemming from maritime zones, in the face of sea level rise, noting the existing and ongoing regional mechanisms to support maritime boundaries delimitation. Samoa, with the Blue Pacific, has committed to a collective effort, including to develop an international law with the aim of ensuring that, once a Forum Member's maritime zones are delineated in accordance with the UNCLOS, the Member's maritime zones could not be challenged or reduced as a result of sea-level rise and climate change.

THEMATIC AREA	GOAL
Offshore Waters	By 2025, Samoa's EEZ boundaries are finalized, ratified and notified to UNCLOS, and included into the Maritime Zone Act.

B. OCEAN FINANCIAL SUSTAINABILITY

3. Develop Sustainable Ocean Financing Mechanisms

The Strategy will deliver on a number of goals and objectives by 2030, including setting up systems, processes and mechanisms for the integrated management of Samoa's ocean. A key component of this is ensuring availability of adequate financial resources and institutional capacity beyond 2030. Through this Solution, Samoa will seek to identify sustainable and innovative financing mechanisms and resources to safeguard Samoa's ocean in perpetuity. The NOSC will select appropriate options from a range of potential ocean financing mechanisms and sources. Innovative ocean sustainable financing mechanisms are increasingly being used around the world and will greatly benefit the delivery and long-term sustainability of the Strategy.

THEMATIC AREAS	OBJECTIVES	GOAL
All thematic areas	<p>By 2021, the costs of SOS implementation are defined.</p> <p>By 2023, a business plan is developed for Samoa's ocean.</p> <p>By 2025, the legal and institutional considerations for ocean financing are established.</p> <p>By 2030, the identified and legitimated ocean financing mechanism/s are in place and implemented.</p>	By 2030, design and establish sustainable ocean financing mechanisms to support management and development of Samoa's ocean.

C. RESEARCH AND DATA COLLECTION

4. Improve scientific research, data collection and monitoring within Samoa's ocean

The need to address information and knowledge gaps drives this Solution which aims to improve research and monitoring of important ecological and biological marine ecosystem features including:

- Seamounts and seabed (ecological processes);
- Marine migratory species (including population status of whales, dolphins, marine turtles, sharks, mantas and seabirds);
- Marine coastal species (including population status of sea cucumbers, reef fishes, lobsters, crabs and giant clams); and
- Marine coastal ecosystems (including coral reefs, mangroves, coastal marshes, beaches, seagrass meadows).

Included are partnerships with national and regional academic institutions, such as the National University of Samoa and the University of the South Pacific as well as additional international academic institutions. Additionally, the formulation of a targeted science strategy is an important step to deliver on this Solution.

THEMATIC AREAS	OBJECTIVES	GOALS
All thematic areas	<p>By 2021, partnerships and collaboration with national, regional and international academic institutions and research centers are implemented.</p> <p>By 2022, a science strategy is established.</p> <p>By 2025, current knowledge and data gaps relating to the marine ecosystems filled and effective scientific monitoring is in place.</p>	<p>By 2030, ocean science, data and information are sufficiently available to significantly inform management actions.</p> <p>By 2030, the scientific knowledge underpinning sustainable development is generated through partnership and education.</p>

5. Complete a Marine Spatial Plan (MSP) for Samoa's ocean

Marine Spatial Planning is needed within Samoa's ocean to identify areas for production and human use, as well as important areas for protection and conservation actions.

MSP includes designing how people use the ocean in time and space to minimize user-conflict and maintain ecosystem health. This is especially important in Samoa where over 90% of the nation is ocean, and where livelihoods, food security, cultural wellbeing and economic dependencies are intertwined with the marine environment.

Creating the MSP involves an integrated (cross sectoral) and participatory public process of identifying and achieving economic, social and ecological objectives in a transparent and organized way. And therefore, MSP is key to achieve integrated ocean management.

THEMATIC AREAS	OBJECTIVES	GOALS
Offshore Waters	By 2021, special marine areas for the MSP are identified and accepted.	By 2023, 100% of Samoa's offshore waters (including whole of EEZ) are mapped via a Marine Spatial Plan. By 2023, 100% of Samoa's coastal marine areas are mapped via a Marine Spatial Plan.
Marine Coastal Ecosystems and Species	By 2021, baseline data are collected and stored with provision for open access.	
	By 2022, all desired ocean zones are defined and accepted.	
	By 2023, the legal and institutional basis for the MSP is established. By 2023, the MSP is finalized and ready to be implemented.	

D. MONITORING AND SURVEILLANCE

6. Strengthen monitoring, control, surveillance and enforcement across Samoa's ocean

This Solution addresses the need to increase capacity and funding towards the implementation and monitoring of illegal and unsustainable activities, both inshore and offshore. It aims to train more personnel, increase use of modern technology, and strengthen collaboration internally within and across relevant ministries and with neighboring and regional countries. In this way, more effective monitoring and enforcement will result in increased compliance to address IUU fishing practices in offshore and coastal waters, reduce pollution from vessels and transnational crime, and increase sustainable use of marine resources.

THEMATIC AREAS	OBJECTIVES	GOALS
Maritime Safety and Security	By 2022, key government officers and community members are identified and trained in monitoring and enforcement.	By 2030, effective monitoring is in place to reduce IUU occurrence in Samoa's Ocean by 50% compared to 2020 levels (including all coastal, offshore and migratory species).
	By 2022, modern technologies in monitoring and enforcement are tested in Samoa's ocean.	By 2030, air and marine pollution from ships and ports are reduced by 50% compared with 2020 levels of carbon emissions levels.
Marine Coastal Ecosystems and Species	By 2022, monitoring collaborations with regional and international partners are strengthened and resources leveraged.	By 2030, transnational crime through Samoa EEZ is reduced by 80% from 2020 levels.
	By 2024, resources increased to strengthen monitoring and enforcement in Samoa's ocean.	By 2030, 100% of Samoa's registered vessels comply with international safety standards and international security regulations to prevent maritime casualties and incidents.
Food Security	By 2025, coastal and offshore monitoring and enforcement activities are increased.	By 2030, the number of reported incidents of incursions and/or interceptions of invasive and/or alien species in Samoa's ocean (maritime transport, ports and dry docks) is reduced by 80% from 2020 levels through enhanced biosecurity controls.
		By 2030, monitoring and enforcement are strengthened to enable detection of any changes including positive population and diversity trends for species of high value and low abundance (including sea cucumbers, giant clams, fishes, lobsters and crabs).
		By 2030, monitoring and enforcement are strengthened in order to effectively protect coral reefs and mangroves to enable positive trends in their area cover and recovery from die-back due to bleaching, acidification, and natural disasters.
		By 2030, fish habitats and stocks are effectively managed to meet the future expected demands for fish in Samoa (15,600 tonnes at national level).

7. Strengthen the national MPA Network

Aichi Target 11 under the CBD, and supported by Target 14.5 of the SDGs, aims to protect at least 10% of national coastal and offshore areas within an ecologically representative and well-connected system of MPAs by the year 2020. Many countries will not meet the 10% target. However, the rate of MPA coverage has accelerated since 2006 and several countries, such as Palau, will exceed the Aichi Target of 10% by 2020. Moreover, the South Pacific is second in the global ranking for MPA coverage and this is the result of great effort and commitment by Pacific SIDS in ensuring the protection of their marine domain and to meet the 10% Target.

In 2016, during the International Union for Conservation of Nature (IUCN) World Conservation Congress, IUCN members agreed to create a new ambitious target for marine conservation at the global level: (by 2030) “urgently increase the ocean area that is effectively and equitably managed in ecologically representative and well-connected systems of MPAs or other effective conservation measures. This network should target protection of both biodiversity and ecosystem services and should include at least 30% of each marine habitat. The ultimate aim is to create a fully sustainable ocean, at least 30% of which has no extractive activities”¹³.

This commitment is under-pinned by a “joint statement on post-2020 global diversity framework” which has been signed by the largest environmental organizations in the world and set a 2030 New Deal for Nature and People which has at its core the 30% target.

The new 30% target has been set to go beyond the insufficient 10% target for 2020 which has been criticized for not being able to protect sufficient biodiversity, preserve ecosystem services and achieve socio-economic priorities¹⁴. Moreover, the net socio-economic benefits of expanding the MPA coverage from 10% to 30% based on cost-benefits analysis has increased markedly. In fact, the total ecosystem services benefits (coastal protection, fisheries, tourism, recreation and carbon storage) of achieving 30% MPA coverage ranges between USD 719–1,145 billion, compared with USD 622–923 billion with 10% coverage¹⁵.

The current level of marine protection of Samoa’s ocean through the establishment of MPAs is low and limited to the coastal habitats (Figures 4 and 5). Demarcating maritime boundaries will improve Samoa’s ability to expand MPAs beyond coastal waters into the offshore waters within the EEZ. This opportunity allows Samoa to achieve the sufficient level of protection of 30% recommended by the international community of scientists as a guide for the 2030 Agenda.

THEMATIC AREAS	OBJECTIVES	GOALS
Offshore Waters	By 2021, Samoa commits to protecting 30% of its waters.	By 2025, 30% of Samoa’s ocean is included in ecologically representative and well-connected systems of MPAs.
Coastal Ecosystems and Species	By 2021, a Memorandum of Understanding (MOU) is signed between the GoS and partners identified to support implementation of Samoa’s 30% commitment.	By 2025, 100% of seamounts within the Samoan EEZ are protected or sustainably managed.
Food Security	By 2022, MPAs are identified based on the MSP. By 2023, coastal and offshore marine areas suitable for protection are mapped and approved by all stakeholders. By 2025, 30% of Samoa’s ocean included in MPAs.	By 2030, an official network of coastal and community-managed areas, including fish reserves and MPAs, is established.

¹³ IUCN. (2016). *Increasing marine protected area coverage for effective marine biodiversity conservation*. The World Conservation Congress, Hawai’i, United States of America.

¹⁴ O’Leary B.C., Winther-Janson, M., Bainbridge, J.M., Aitken, J., Hawkins, J.P., & Roberts, C.M. (2016). Effective Coverage Targets for Ocean Protection. *Conservation Letters*, 9(6), 398-404.

¹⁵ Brander, L., Baulcomb, C., van der Lelik, J.A.C., Eppink, F., McVittie, A., Nijsten, L., & van Beukering, P. (2015). The benefits to people of expanding Marine Protected Areas. Institute for Environmental Studies, VU University Amsterdam, Netherlands.

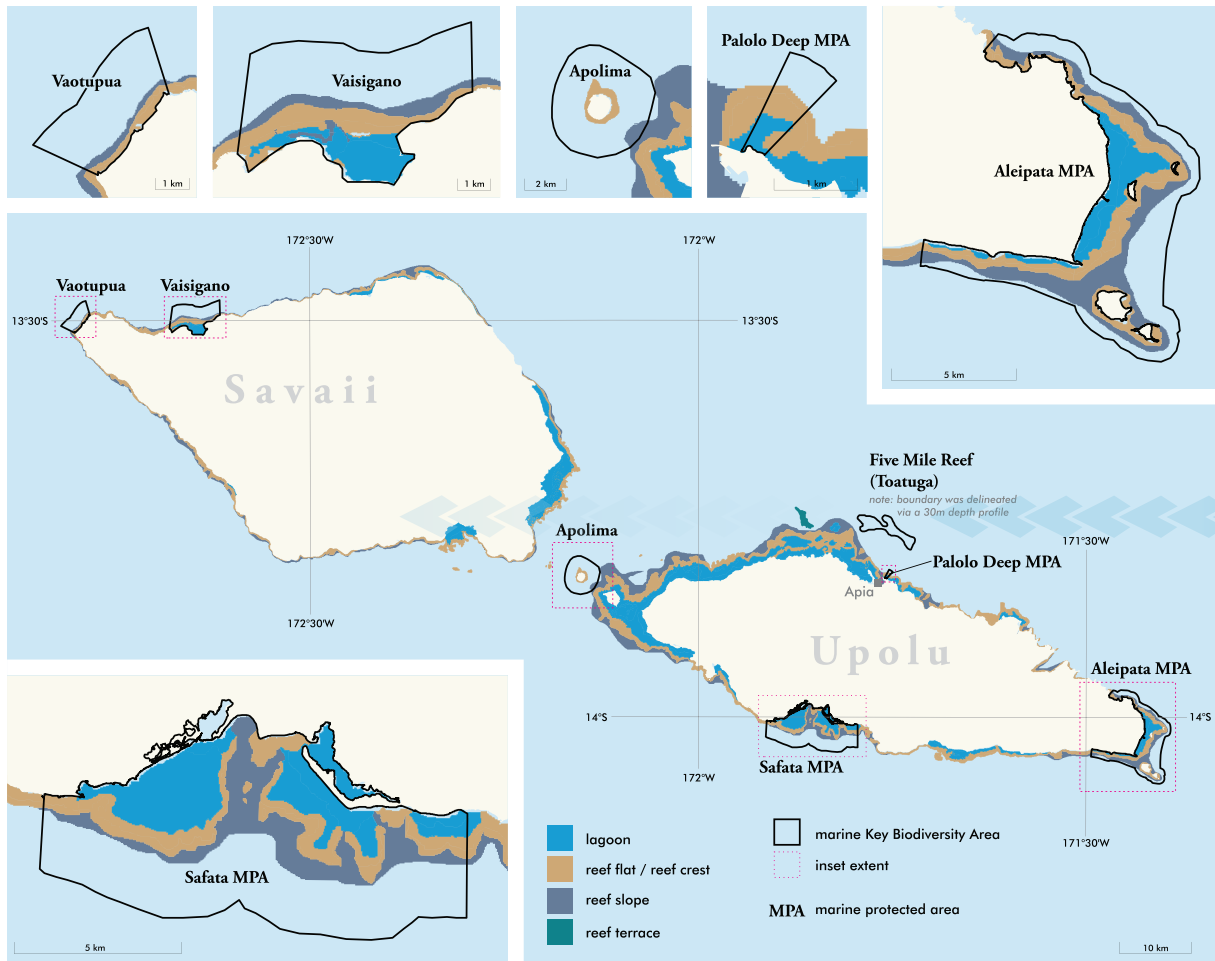


FIGURE 4. The current MPA coverage in Samoa and the location (CI-Pacific Islands Programme, MNRE & SPREP, 2010).

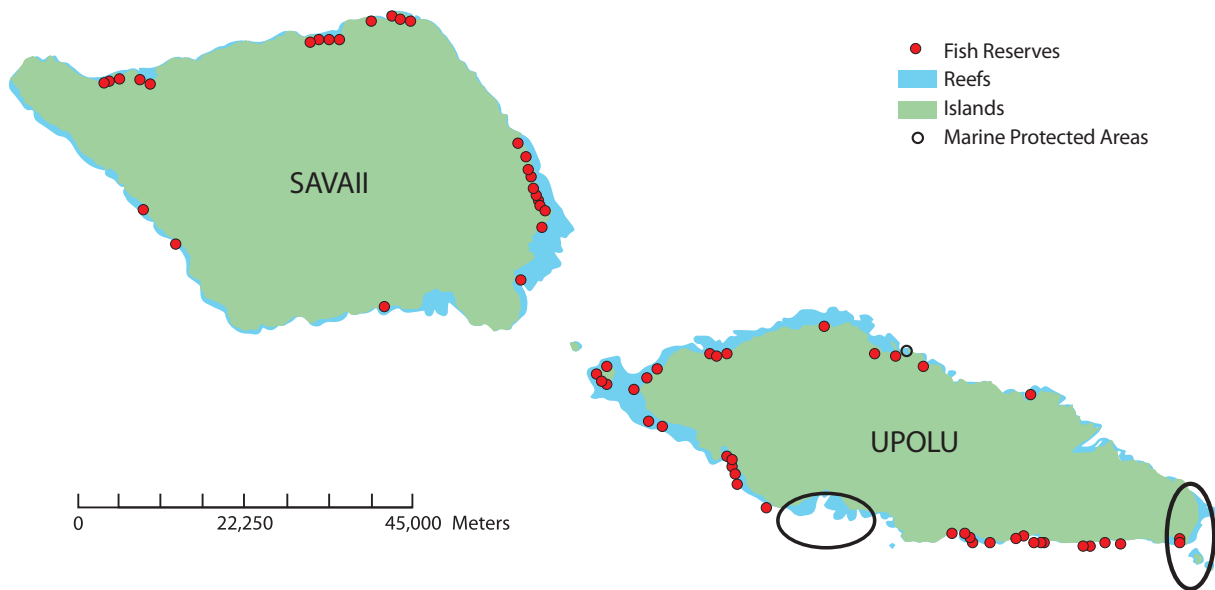


FIGURE 5. Map of Samoa indicating Fish Reserves and Marine Protected Areas established (2013)

8. Establish effective protection and management of endangered marine migratory species

This Solution aims to address the need for strong legislative frameworks for the conservation of endangered marine migratory species including: whales, sharks, mantas, seabirds and turtles.

A total of 12 species of cetaceans have been confirmed in Samoa's ocean.

The seasonal humpback whale population for Samoa remains low. There is an estimate of 3,520 humpback whales found in Oceania and very likely only a few hundred migrate through Samoa's ocean each year. Assessments of population abundance, habitat use, residency pattern and genetic diversity for both whales and dolphins are needed to enhance the protection of these endangered animals.

The three marine turtle species found in Samoa are the Green turtle (*Chelonia mydas*), Hawksbill turtle (*Eretmochelys imbricata*) and the Leatherback turtle (*Dermochelys coriacea*). The marine turtle that nests in Samoa is the critically endangered Hawksbill turtle. The main turtle nesting sites are on the Aleipata Islands and it is known that there is a decline of turtles coming to nest. The overall population of Samoa's marine turtles is in decline due to by-catches, pollution and illegal harvesting.

Preliminary results from surveys undertaken in Aleipata and Faleailili showed only reef and tiger sharks are present. More effort in research for shark population dynamics is needed to inform their protection.

THEMATIC AREA	OBJECTIVES	GOALS
Species of Special Interest	<p>By 2025, the population status of whales, sharks, dolphins, mantas, marine turtles and seabirds is identified and feasibility for ecotourism explored.</p> <p>By 2026, an Integrated Management Plan for whales, dolphins, sharks, mantas, marine turtles and seabirds is developed and endorsed.</p>	<p>By 2030, monitoring systems to support sustainable management of migratory species are established and their interaction with humans is regulated through a licensing system.</p> <p>By 2030, the movements of all marine migratory species within Samoa's ocean are comprehensively understood and these species are effectively protected.</p> <p>By 2030, there is a 50% reduction in reported and recorded incidents of individual or vessel by-catch, harvesting or vessel strikes for any marine migratory species compared with 2020 levels.</p>



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E. POLICY AND LEGISLATION

9. Strengthen policy and legislation for Coastal Ecosystem Services protection

This Solution is a reflection of the current weak protection of coastal ecosystems and the services they provide. Coastal ecosystems include coral reefs, mangroves, coastal marshes/wetlands, beaches, and seagrass meadows. The protection measures of this Solution include conservation mechanisms and provisions in the sectoral and cross-sectoral legislation regulating activities which may impact all coastal ecosystems. The fragmentation of the legislation relating to coastal ecosystems hinders their effective management and protection.

THEMATIC AREA	OBJECTIVES	GOALS
Coastal Ecosystems and Marine Species	By 2022, data on status and distribution of coral reefs, mangroves, beaches, coastal marshes/wetlands, beaches and seagrass meadows have been collected, mapped and summarized.	By 2026, coastal ecosystems services are valued and protected through national policy that reflects TK and science-based approaches.
	By 2022, all relevant policies and legislation on coastal management are reviewed to identify gaps.	By 2030, policy is in place which enables effective protection of coral reefs and positive population and diversity trends for species of high value and low abundance (e.g. sea cucumber, giant clams, fishes, lobsters and crabs).
	By 2023, a coastal ecosystems services analysis is conducted and completed.	By 2030, mangrove forests are effectively protected or restored through national policy to maximize climate change adaptation and mitigation benefits for coastal communities.
	By 2025, existing legislations and policy framework on coastal ecosystem services protection are reviewed and any gap policies are put in place for implementation.	
	By 2025, TK is incorporated in 100% of relevant marine and terrestrial management policies.	



10. Integrate Ecosystem-Based Approach (EBA) into existing climate change adaptation management plans and initiatives

Due to climate change, many reefs in the Pacific region have been losing an average of 1% of live coral per year. Impacts of this magnitude cannot be addressed locally, but adaptation and mitigation actions are possible to limit the damages of climate change. On the other hand, local human uses, which are currently negatively affecting coral reefs and contributing to their decline, can be managed.

Mangrove forests are essential, supporting coastal ecosystems and contributing to the sequestration and storage of CO₂, coastal protection, food production and biodiversity. Traditionally, mangroves have been harvested for wood and to clear land for houses and other amenities. Only recently has the significant role of these biodiverse and carbon-rich coastal ecosystems been recognized. Hence, the recent imperative for policies aimed at their protection. In Samoa, policies and legislation are needed for the conservation of mangrove forests at national level.

This Solution aims to address the effects of climate change through adaptation and mitigation. It is impossible to address the drivers of climate change including the increase in greenhouse gas emissions which are caused by global scale drivers. However, it is critical to develop local adaptation plans that include an EBA to addressing climate change impacts.

THEMATIC AREAS	OBJECTIVES	GOALS
Food Security Coastal Ecosystems and Species	By 2025, current legislation Planning & Urban Management Agency (PUMA) and policies (Ecosystem Impact Assessment-related) are revised to include coral reefs and highlight EBA to climate change issues.	By 2025, 100% coastal management and community protection initiatives adopt an EBA and Disaster Risk Reduction (DRR) strategies.
	By 2025, 100% of degraded coral reef areas are identified and have Restoration Plans developed.	By 2030, EBAs contribute to increased resilience of marine species (e.g. sea cucumbers, reef fishes, giant clams etc.).
	By 2025, 100% of vulnerable coastal areas are identified and have Restoration Plans to maximize climate change resilience and adaptation benefits.	By 2030, marine habitats are effectively protected or restored through EBAs to maximize climate change adaptation and mitigation benefits for coastal communities.



11. Review existing policies and establish legislation where appropriate to manage risks posed by deep-sea and seabed exploration

The presence of seamounts in Samoa’s ocean has been confirmed, although the ecological processes and functions that regulate these important locations for food production and biodiversity remain unexplored. Mineral resources have been identified in the seabed of Samoa’s EEZ and exploration activities for the future exploitation of these resources may be initiated, thus posing potential threats to the deep-sea ecology of the offshore ocean.

Studies conducted in the 1990s for deep sea mineral potential in Samoan waters concluded that deep sea mining is not economically viable for Samoa. However, the information on the ecology of seamounts and seabed of Samoa is limited. For this reason, the proposed Solution will ensure that best practices for seabed exploration are followed and that appropriate regulations are in place to improve management and preserve the biodiversity of deep sea ecosystems.

THEMATIC AREA	OBJECTIVES	GOAL
Offshore Waters	<p>By 2024, 100% of seafloor and seamounts in Samoa’s EEZ are mapped.</p> <p>By 2027, the ecological significance, processes and functions of 100% of Samoa’s deep-sea ecosystems are understood and integrated into management considerations.</p>	<p>By 2030, 100% of ecologically significant deep-sea areas within the Samoan EEZ are protected or sustainably managed in order to maintain ecological processes, representativeness and functions.</p>



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F. AWARENESS AND CAPACITY BUILDING

12. Strengthen effectiveness of coastal management using traditional knowledge, innovation and marine science

Coastal communities in Samoa rely heavily on their marine resources for food, livelihoods, coastal protection, cultural benefits and other importance ecosystem services. Improving coastal management is critical to maintain these services and addresses illegal or unsustainable activities that can lead to coastal resource depletion. This Solution addresses the need to increase awareness of and respect for the marine environment among current and future generations. This will be facilitated through the revival of TK as well as through the integration of marine science into community-base management. Innovative and experiential education models can be used to spread TK among youth and other stakeholders, and integrate modern marine science into traditional resource management. This Solution will seek to facilitate TK transfer to new generations of Samoans and secure Samoa’s marine assets and cultural heritage for a more sustainable future.

THEMATIC AREAS	OBJECTIVES	GOALS
Marine Coastal Ecosystems and Species Ocean Knowledge	<p>By 2023, all communities and nationally based academic institutions are involved in TK and contemporary marine science data acquisition and analysis.</p> <p>By 2027, 100% of students in Primary and Secondary schools have engaged in TK and contemporary marine science education.</p> <p>By 2028, 100% of students and youth of schools have deeper knowledge, connection and respect of Samoa’s marine environment.</p> <p>By 2028, 100% of communities have increased understanding of traditional environmental knowledge and modern marine ecology.</p>	<p>By 2030, TK is recorded, preserved and applied in cultural and conventional activities, such as resource management, weather forecasting and seasonal calendars.</p> <p>By 2030, 100% of coastal communities demonstrate increased knowledge and compliance with natural resource management regulations that lead to positive population and diversity trends of high value species and habitats (e.g. coral reefs, mangroves, reef fishes, giant clams etc.).</p>



13. Improve Waste and Marine Pollution management at national level

This Solution addresses the current inadequate system of waste management at village and national level in order to reduce solid waste and land-based pollution impacts to marine coastal ecosystems. Agriculture is a key driver of pollution, stemming from the use of fertilizers, pesticides and other land-use management approaches. The uptake of organic agriculture offers a solution to reducing land-based pollution and its impacts in coastal areas. Samoa is already advanced in the production of organic agriculture and value-added organic products. In addition, the management, reuse and recycling of plastics at the national and village level are key challenges for waste management in Samoa. Best practices for recycling and reuse of materials should be identified and integrated into the appropriate local and national level plans, including the village CIM plans.

THEMATIC AREA	OBJECTIVES	GOAL
Food Security	<p>By 2023, 80% of district in Samoa have received awareness and educational programs on waste management.</p> <p>By 2025, 100% of villages in Samoa have received training in organic production system.</p> <p>By 2025, 60% of village CIM Plans have integrated waste management plans reflecting waste minimization programs.</p> <p>By 2025, organic production is increased by 50% from 2020 levels.</p> <p>By 2026, 50% of households have access to recycling system.</p> <p>By 2028, 50% of villages in Samoa have established organic production system.</p>	<p>By 2030, land-based pollution affecting coastal food sources is decreased by 80% from 2020 levels.</p>



APPENDICES

ANNEX 1

SUMMARY TABLE OF STRATEGY ALIGNMENT TO NATIONAL, REGIONAL AND GLOBAL COMMITMENTS

	SOS SOLUTION 1	SOS SOLUTION 2	SOS SOLUTION 3	SOS SOLUTION 4	SOS SOLUTION 5	SOS SOLUTION 6	SOS SOLUTION 7	SOS SOLUTION 8	SOS SOLUTION 9	SOS SOLUTION 10	SOS SOLUTION 11	SOS SOLUTION 12	SOS SOLUTION 13
SDS (PAs)*	PA 4	PA 4	PA 4	PA 4	PA 4	PA 1, 3 & 4	PA 4	PA 4	PA 4	PA 1, 2 & 4	PA 4	PA 2 & 4	PA 4
NESP (ESPO)+	1.5.3.5		1.5.1.3			1.5.1.2 1.5.1.14 1.5.1.28 1.5.2.2 1.5.3.1 1.5.3.3	1.5.1.11 1.5.1.12 1.5.1.13	1.5.1.1 1.5.1.4 1.5.1.8 1.5.1.18 1.5.1.19 1.5.1.20 1.5.1.21 1.5.1.24 1.5.1.25	1.5.1.5 1.5.1.6 1.5.1.7 1.5.1.17	1.5.1.10 1.5.3.2 1.5.2.4		1.5.1.9 1.5.1.15 1.5.1.16 1.5.1.26 1.5.1.27 1.5.2.1	1.5.2.3
FPO (SPs)#	SP 2a, 2b, 2c, 2d	SP 1a, 1b	SP 2c, 5a, 5b, 5c, 5d		SP 3b					SP 3a	SP 6a, 6b	SP 3c	SP 3a, 4a
FRDP^ (Goals)						Goal 2				Goal 1 & 3			
SAMOA Pathway (OSSAs)!		OSSA f				OSSA g, i, k, l, p	OSSA o			OSSA e	OSSA e, n	OSSA h	OSSA d
SDG 14 (Targets)				SDG 14.3		SDG 14.1, 14.4, 14.6, 14.A	SDG 14.5		SDG 14.2	SDG 14.2	SDG 14.C	SDG 14.7, 14.B	SDG 14.1
AICHI (Targets)	Target 17		Target 3, 20			Target 5, 6, 8, 9	Target 5, 11	Target 12	Target 5, 10, 14	Target 5, 6, 10, 15	Target 5	Target 1, 5, 18, 19	Target 7, 8
Samoa SDG VCs (OA)&	OA 16754 ¹⁶		OA 18442 ¹⁷			OA 18433 ¹⁸ 18307 ¹⁹	OA 16998 ²⁰	OA 16498 ²¹				OA 18298 ²² 16994 ²³ 17006 ²⁴	OA 17836 ²⁵ 16990 ²⁶ 16986 ²⁷

* Samoa Development Strategy (Priority Areas)

+ National Environment Sector Plan (End of Sector Plan Outcomes)

Framework for a Pacific Oceanscape (Strategic Priorities)

^ Framework for Resilient Development in the Pacific

! SIDS Accelerated Modalities of Action Pathway (Oceans and Seas Supporting Actions)

& Samoa SDG Voluntary Commitments (Ocean Action)

¹⁶ Ocean Health Network for Samoa

¹⁷ Enhancing management of Samoa's fisheries through improved scientific information and knowledge

¹⁸ Effective implementation of Monitoring, Control, Surveillance and Enforcement programmes for Samoa's fishery waters

¹⁹ Ensuring Samoa's EEZ is free from destructive fishing through prohibition and regulation of fishing methods and gears

²⁰ MPAs and SAMOA Marine Sanctuary

²¹ Enhancing the protection, conservation and management of sharks, whales, dolphins and turtles in Samoa's EEZ

²² Samoa's Community-based Fisheries Management Programme

²³ Community Integrated Management Plans

²⁴ Sa Moana Folauga

²⁵ Avoid Intercept Redesign our ocean plastics

²⁶ River and Coastal Health Ecosystem Monitoring

²⁷ Waste Segregation, Storage and Disposal at Source

ANNEX 2

LIST OF STAKEHOLDERS CONSULTED AND KEY STEPS FOR THE DEVELOPMENT OF THE STRATEGY

Government Ministries and Organizations

Ministry of Foreign Affairs and Trade
 Ministry of Agriculture and Fisheries – Fisheries Division
 Ministry of the Prime Minister and Cabinet
 Samoa Tourism Authority
 Ministry of Works, Transport and Infrastructure
 Ministry of Work, Transport and Infrastructures (Maritime, PUMA)
 Ministry of Women, Community and Social Development (Governance Division)
 Ministry of Police
 Samoa Ports Authority
 Samoa Shipping Cooperation
 Samoa Shipping Services
 Ministry of Communications and Information Technology
 Ministry of Education Sports and Culture

Ministry of Natural Resources and Environment
 Division of Environment and Conservation
 Legal Services Division
 Water Resource Division
 Meteorology Division
 Environment Sector
 Spatial Information Agency
 Land Management Division
 Renewable Energy Division
 GEF and Climate Change
 Forestry Division

Inter-Governmental Organizations

Secretariat of Pacific Regional Environmental Programme
 International Union for Conservation of Nature

Non-Governmental Organizations and Academia

Samoa Umbrella of Non Government Organisations
 Samoa Conservation Society
 Samoa Voyaging Society
 Youth Climate Action Network for Samoa
 National University of Samoa

KEY STEPS	DATE
1 st National Consultation (Government Ministries only)	May 2019
1 st Draft of the Strategy and 1 st Round of Comments (Ministries)	June 2019
Revised 1 st Draft of the Strategy and 2 nd Round of Comments (Ministries)	July 2019
2 nd National Consultation (Government and key stakeholders)	August 2019
2 nd Draft of the Strategy and 3 rd Round of Comments (Ministries and key stakeholders)	September 2019
2 nd National Consultations with Communities (Upolu and Savai'i)	October 2019
3 rd National Consultation (Government and key stakeholders)	October 2019
3 rd Draft of the Strategy and 4 th Round of Comments (Ministries and key stakeholders)	October 2019
5 th Round of Comments	November 2019
Final Key Line Ministry Consultation	December 2019
Final Draft Circulated	December 2019
Final Comments Received from Key Line Ministries and Validation of SOS	January 2020
Final SOS Available	June 2020

ANNEX 3

INDICATORS FOR GOALS

GOALS	INDICATORS
By 2021, establish a multi-sectoral National Ocean Steering Committee	<ul style="list-style-type: none"> ▪ Committee established
By 2030, design and establish sustainable oceans financing mechanisms to support management and development of Samoa's ocean	<ul style="list-style-type: none"> ▪ Number of sustainable financing mechanisms legally endorsed and in place
By 2023, 100% of Samoa's offshore waters (including whole of EEZ) are mapped via a MSP	<ul style="list-style-type: none"> ▪ % of Samoa's offshore marine waters mapped via MSP
By 2023, 100% of Samoa's coastal marine areas are mapped via a MSP	<ul style="list-style-type: none"> ▪ % of Samoa's coastal marine areas mapped via MSP
By 2025, Samoa's EEZ boundaries are finalized, ratified and notified to UNCLOS, and included into the Maritime Zone Act	<ul style="list-style-type: none"> ▪ Number of countries with which Samoa has finalized, ratified and notified to UNCLOS its EEZ boundaries
By 2026, coastal ecosystems services are valued and protected through national policy that reflects TK and science-based approaches	<ul style="list-style-type: none"> ▪ National policy on coastal ecosystem services protection legally endorsed
By 2030, policy in place to enable effective protection of coral reefs and positive population and diversity trends for species of high value and low abundance (e.g. sea cucumber, giant clams, fishes, lobsters and crabs)	<ul style="list-style-type: none"> ▪ Coral reefs and species of high value and low abundance included in coastal ecosystem services protection policy ▪ % of healthy live coral cover increase from current status (2019) ▪ Population and diversity trend of high value and low abundance's coastal species
By 2030, mangrove forests are effectively protected or restored through national policy to maximize climate change adaptation and mitigation benefits for coastal communities	<ul style="list-style-type: none"> ▪ Mangrove forests included in the coastal ecosystem services protection policy ▪ % of healthy mangrove forest cover increase from current status (2019)
By 2030, effective monitoring is in place to reduce IUU occurrence in Samoa's ocean by 50% compared to 2020 levels (including all coastal, offshore and migratory species).	<ul style="list-style-type: none"> ▪ Number of IUU reports in Samoa's ocean
By 2030, air and marine pollution from ships and ports are reduced by 50% compared with 2020 levels of carbon emissions levels	<ul style="list-style-type: none"> ▪ Level of greenhouses emissions from ships and ports ▪ Number of inspections of ships in sea and port with positive environmental results ▪ Number of reported discharges/wastes into water from boats
By 2030, transnational crime through Samoa EEZ is reduced by 80% from 2020 levels	<ul style="list-style-type: none"> ▪ Number of transnational crimes reported

GOALS**INDICATORS**

By 2030, 100% of Samoa's registered vessels are following international standard safety and international security regulations in order to reduce maritime casualties and incidents

- % of Samoa's registered vessels that follow safety and security regulations
- Number of maritime casualties and incidents within the Samoan EEZ

By 2030, the number of reported incidents of incursions and/or interceptions of invasive and/or alien species in Samoa's ocean (maritime transport, ports and dry docks) is reduced by 80% from 2020 levels through enhanced biosecurity controls

- Number of reported incidents of invasive and/or alien species in ports

By 2030, monitoring and enforcement are strengthened to enable detection of any changes including positive population and diversity trends for species of high value and low abundance (including sea cucumbers, giant clams, fishes, lobsters and crabs)

- Population and diversity trend of high value and low abundance's coastal species

By 2030, monitoring and enforcement are strengthened in order to effectively protect coral reefs and mangroves to enable positive trends in their area cover and recovery from die-back due to bleaching, acidification, and natural disasters

- % of healthy live coral cover increase from current status (2019)
- % of healthy mangrove forest cover increase from current status (2019)

By 2030, fish habitats and stocks are effectively managed to meet the future expected demands for fish in Samoa (15,600 tonnes at national level)

- Tonnes of fish at national level

By 2030, TK is recorded, preserved and applied in cultural and conventional activities, such as resource management, weather forecasting and seasonal calendars

- Number of cultural and conventional activities in which TK is applied

By 2030, 100% of coastal communities demonstrate increased knowledge and compliance to natural resource management regulations that lead to positive population and diversity trends of high value species and habitats (e.g. coral reefs, mangroves, reef fishes, giant clams etc.)

- Number of reported non-compliance to natural resources management regulations at community level
- % of healthy live coral cover increase from current status (2019)
- Population and diversity trend of high value and low abundance's coastal species
- % of healthy mangrove forest cover increase from current status (2019)

By 2025, 30% of Samoa's ocean is included in ecologically representative and well-connected systems of MPAs

- % of Samoa's ocean designated through ecologically representative and well-connected systems of MPAs

By 2025, 100% of seamounts within the Samoan EEZ are protected or sustainably managed

- % of protected or sustainably managed seamounts within the Samoan EEZ

GOALS**INDICATORS**

By 2030, an official network of coastal and community-managed areas, including fish reserves and MPAs, is established

- Official network of coastal and community-managed areas, including fish reserves and MPAs, established

By 2030, land-based pollution affecting coastal food sources is decreased by 80% from 2020 levels

- Index of coastal eutrophication and floating plastic debris density in coastal areas

By 2030, monitoring systems to support sustainable management of migratory species are established and their interaction with humans is regulated through a licensing system

- Number of monitoring systems in place for marine migratory species
- Number of marine wildlife tour operators with license

By 2030, the movements of all marine migratory species within Samoa's ocean are comprehensively understood and these species are effectively protected

- Number of migratory species included in the Integrated Management Plan

By 2030, there is a 50% reduction in reported and recorded incidents of individual or vessel by-catch, harvesting or vessel strikes for any marine migratory species compared with 2020 levels

- Number of recorded cases of by-catch, harvesting or vessel strikes for any marine migratory species

By 2025, 100% coastal management and community protection initiatives adopt an EBA and DRR strategies

- Number of coastal management and community protection initiatives adopting EBAs

By 2030, EBAs contribute to increased resilience of marine species (e.g. sea cucumbers, reef fishes, giant clams etc.)

- Population and diversity trend of high value and low abundance's coastal species

By 2030, marine habitats are effectively protected or restored through EBAs to maximize climate change adaptation and mitigation benefits for coastal communities

- % of healthy mangrove forest cover increase from current status (2019)
- % of healthy live coral cover increase from current status (2019)

By 2030, 100% of ecologically significant deep-sea areas within the Samoan EEZ are protected or sustainably managed in order to maintain ecological processes, representativeness and functions

- % of protected or sustainably managed ecologically significant deep-sea areas within the Samoan EEZ



