



Ministry of Finance,
National Planning and Trade



Funded by the European
Union



SEYCHELLES NATIONAL AQUACULTURE POLICY 2023 – 2027

TABLE OF CONTENTS

BACKGROUND.....	3
CONTEXT	6
LEGISLATIVE AND ADMINISTRATIVE FRAMEWORK	8
IMPORTANCE OF AQUACULTURE	9
CHALLENGES.....	10
VISION.....	10
GOALS AND OBJECTIVES	10
THE SCOPE OF THE POLICY	11
RESPONSIBLE AUTHORITIES AND POLICY REVIEW	11
THE POLICY STATEMENTS.....	12
Policy 1: Good governance in the aquaculture sector.....	12
Policy 2: Environmentally sustainable aquaculture in the Seychelles.	13
Policy 3: Co-ordinated support for the development of the aquaculture sector.....	14
Policy 4: Investment policy for the aquaculture sector	15
Policy 5: Aquaculture products and marketing policy	16
Policy 6: Building human capital throughout the value chain	17
Policy 7: Research and development in the aquaculture sector.....	18
DEFINITIONS AND ABBREVIATIONS	19
References.....	21

This document may be cited as:

Government of Seychelles (2022). Seychelles National Aquaculture Policy 2023-2027. Ministry of Fisheries and the Blue Economy, Mahe, Seychelles. 26p.

BACKGROUND

Seychelles has a proud history of being keenly aware of the importance of its beautiful yet fragile environment. Article 38 of the Constitution of Seychelles states that it is “the right of every person to live in and enjoy a clean, healthy, and ecologically balanced environment,” and that the state undertakes the responsibility of instituting measures to protect, preserve, and improve the environment and to ensure the judicious and sustainable use and management of Seychelles’ natural resources. Article 40 of the Constitution of Seychelles dictates that “it shall be the duty of every citizen of Seychelles to protect, preserve, and improve the environment.” The Government of Seychelles has furthered this dedication by enacting several policies to ensure the long-term protection of the environment. The first national Environmental Management Plan (EMP) was prepared in 1989, resulting in the EMP of Seychelles (EMPS) 1990-2000. The success of the EMPS 1990-2000 led to the second-generation action plan, viz. the EMPS 2000-2010. The EMPS 2000-2010 was closely aligned to environmental and sustainability principles, emerging from the UNCED Rio Summit in 1992 and was superseded by the National Biodiversity Strategy and Action Plan (NBSAP) (2015-2020). Both decadal long environmental management plans resulted in significant advances in environmental legislation, conservation and management actions, capacity building and outreach. Following closely on the heels of the EMPS 2000-2010, the Government published the Seychelles Sustainable Development Strategy (SSDS) 2012-2020.

The vision of the SSDS (2012-2020) is “To contribute to the realisation of the nation’s economic, social and cultural potential through an innovative, knowledge-led approach, being mindful of the need to conserve the integrity of the Seychelles natural environment and heritage for present and future generations”. It follows that environmentally responsible production of aquaculture products, coupled with the green and ecologically sustainable image of the country, provides Natural Strategic Advantage for marketing farmed aquatic products from the Seychelles globally.

The SSDS is one of the cornerstones of the Seychelles National Aquaculture Policy (SNAP), which aims to guide the development of the sector in a manner congruent with the 'triple bottom line' objectives of ecologically sustainable development (economic prosperity, environmental quality and social justice).

Seychelles has a relatively long history of marine aquaculture. A prawn farm on Coëtivy was established in 1989 by the Island Development Company (IDC) and the Seychelles Marketing Board (SMB) and managed by the SMB. The farm was large, consisting of two hatcheries and around 200 ponds and occupying an area of around 86 ha, with a workforce of around 350 people. Prawn feed was produced on Mahé and this feed was also exported to Madagascar and elsewhere. In 2004, production of *Penaeus monodon* (Black Tiger Shrimp) peaked at 1200 tonnes per annum, but subsequently declined to just under 400 tonnes. Disease free broodstock were imported from Madagascar and Mozambique. The product was held in high esteem internationally and locally. For various, mainly economic reasons, the farm was closed in 2008. An integrated land use plan has since been prepared for Coëtivy by the IDC and prawn farming was re-initiated in 2023.

Pearl (oyster) farming in Seychelles was started in 1980 and continues on Praslin in the Curieuse Marine National Park. Black lipped (*Pinctada margaritifera*) and winged oysters (*Pteria penguin*) are farmed for the production of round and half pearls, respectively. Nuclei are imported from Japan and Australia and implanted by foreign specialists. Harvesting of round pearls occurs 2 - 3 years after implantation and their size varies from 8 to 12mm. Average nacre thickness is 1.3 mm and the colour varies from black, greenish-black to grey. Wild spat collection occurs throughout the year, although peak settlement occurs in October. The concession covers an area of around 19ha. Giant clams (*Tridachna maxima*) were also produced on the pearl farm for the ornamental trade, but high transport costs led to the termination of the clam operation.

Despite these initiatives, aquaculture did not develop further in the Seychelles. This was largely a consequence of the country being unaware of opportunities and a historically bountiful supply of fish that precluded the need for alternative forms of fish production.

This changed in 2007 when ReCoMaP commissioned a rapid assessment of the potential and desirability of aquaculture in several WIO countries. Seychelles was one of the target countries of the project. Based on the strength of the findings of this assessment the Seychelles Fishing Authority (SFA) (with the assistance of ReCoMaP) in 2009 commissioned a more comprehensive Scoping Study to assess the potential for aquaculture in greater detail. The Scoping Study included preliminary assessments of potential sites, markets, fish price, candidate species, availability of infrastructure as well as institutional and human resources, and defined the need for and the scope of a Master Plan for the rational development of the sector.

To realize the potential of aquaculture in the Seychelles, the Cabinet of Ministers, in April 2009, sanctioned the development of a Mariculture Master Plan (MMP). In May 2011, the SFA commissioned the MMP with the overall goal “**To enable Seychelles to develop a sustainable mariculture sector that is integrated into the country’s economic vision and respects the unique and sensitive nature of the marine environment**”, underpinned by enabling legislation, efficient institutional structures, well trained human resources and attractive incentives for local and foreign direct investment.

The SFA adopted a phased approach for the development of the MMP. The MMP process commenced in May 2011 with a stock-taking and diagnostic survey. The project was interrupted in September 2011 and resumed in July 2013 and was then completed in a further four, 6-month long, phases at the end of January 2016. The proposed aquaculture development zones were subjected to a comprehensive Environmental and Social Impact Assessment (ESIA), which commenced in February 2016 and was submitted for evaluation to the Ministry of Environment, Energy and Climate Change in December 2016. An environmental authorization to proceed with aquaculture in the Seychelles was granted by the Ministry in early February 2017, subject to certain conditions and the ESIA associated Environmental Management Plan (EMP).

The MMP process has produced a comprehensive platform for the practical launching of an aquaculture industry. This includes the “Fisheries (Aquaculture) Regulations” of 2021 (which are currently under revision), a single entry / exit aquaculture license application system, standard and special conditions for aquaculture licenses, a suite of Aquaculture Standards for the various types of farming opportunities, designated land and sea-based aquaculture development zones, and biosecurity protocols.

Financially feasible aquaculture investment opportunities on the inner and outer Islands include: finfish cage culture, sea cucumber and prawn farming in ponds, sea urchin farming, the farming of ornamental fish, the farming of certain sea weeds, the production of hard and soft corals, and the ranching (as well as stock enhancement) of sea cucumbers and other suitable species. The Seychelles has a rich marine biodiversity and it is most likely that other suitable and financially feasible farming opportunities will be identified, such as sponges and other invertebrates for pharmaceutical, nutraceutical and cosmetic purposes.

Finfish farming in cages is a means to mitigate climate change impacts on fisheries by augmenting the local supply of preferred fish for human consumption. Pearl oyster farming in Seychelles is undertaken using anchored surface long lines and mid-water frames and long lines. Similar systems can also be used for the farming of other filter feeding molluscs, sponges or seaweed.

Ranching of sea cucumbers, or other suitable species such as sea urchins or scallops, on the inner or outer islands, either separately or in integrated multi-trophic aquaculture (IMTA) systems are further opportunities. Ranching entails the release of hatchery reared juveniles into suitable environments and their ultimate harvest for economic gain by an operator who has leased an area for such purposes.

Aquaculture has also been identified as an economic diversification strategy for several outer islands, including Coëtivy, Desroches, Poivre and the Alphonse group. Promising aquaculture opportunities for these islands have been identified, all of which are subject to Environmental Authorisation.

CONTEXT

Mindful of the exploitation levels of fish stocks in the artisanal fishery and the fundamental need for environmentally responsible development, the SNAP has been developed within the context of the National Food and Nutrition Security Policy 2013, the Seychelles Sustainable Development Strategy (SSDS) 2012 - 2020, the National Biodiversity Strategy and Action Plan 2015 - 2020, the Seychelles National Development Strategy 2019 - 2023, the National Biodiversity Strategy and Action Plan (NBSAP) 2015-2020, the Coastal Management Plan 2019 - 2023, the Seychelles Blue Economy Strategic Policy Framework and Roadmap 2018 - 2030, the Seychelles Marine Spatial Plan initiative, the Ecosystems Approach to Aquaculture development¹ and the need for economic diversification in the country.

The Blue Economy Roadmap underscores the economic potential of Seychelles' vast Exclusive Economic Zone of just under 1.4 million km². More specifically, the strategy integrates conservation and sustainable use of ocean resources, the development of aquaculture and sea ranching, oil and mineral wealth extraction, bio-prospecting, sustainable energy production and marine transport, as well as branding Seychelles as a 'Blue' tourism destination. Fundamental to its approach, the blue economy propagates a principle of equity, which ensures that the people of the Seychelles optimize on the benefits received from the oceans that surround them whilst also protecting them. By harmonizing ecosystem-related economic values into economic modelling, the blue economy has the potential to pioneer a transformation to a new paradigm of sustainable development that appreciates oceanic ecosystem services and products as drivers of development, rather than commodities to be exhaustively exploited².

Government is further mindful of the risks and challenges of sustaining its largely import-based food security. These include international food price volatility, uncertainties in global food systems, climate change, local land and water allocation and use policies, natural disasters (tsunami, storms, volcanic eruptions), piracy at sea, regional conflict and war, economic disruptions of the tourism and fisheries sectors, energy prices on cost of production, labour policy and other unforeseen global occurrences like the volcanic ash that disrupted international trade/travel flows in early 2012.

Moreover, Seychelles is also following through with its resolve and commitment to the CAADP Compact to allocate to agriculture and fisheries, including aquaculture, the necessary resources for improved performance and productivity – from commercially intensive production systems through to smaller scale operations across the entire fisheries and aquaculture value chain.

The fisheries sector, comprising the large industrial fishery for tuna and tuna like species, the semi-industrial fishery and the artisanal fishery, is one of the most important pillars of the country's economy. Fish plays a vital role in the nutrition of the people. Per capita fish consumption is high, variably reported to be between 56 and 65 kg per annum and fish contributes 35-40% of protein consumed by Seychellois. The locally consumed fish is obtained mainly from the artisanal fishery with a small contribution from the semi-industrial fishery. The artisanal fishery targets a diverse group of species

ranging from hand-line caught demersal and semi-pelagic fish, small semi-pelagic fish caught in encircling nets, small and juvenile demersal fish caught in traps, and lobsters and octopus. The artisanal fishery, except for rock lobster, is an open access fishery for Seychellois, but since 2022 has entered a new management regimen with output restrictions under the Mahé Plateau Trap and Line Fishery Management Plan. Management plans for all commercially exploited species, as well as for several experimental fisheries, are now in various planning stages or nearing completion.

Most of the demersal species in the semi-industrial fishery and nearly all the species that comprise the artisanal catch are either fully or over exploited^{3,4}. This means that even if the stocks were managed sustainably, the artisanal fishery will not be able to meet the local demand for fish in the future. To maintain the present per capita consumption rate means that the future deficit will have to be made up by aquaculture and imports.

In view of the above and the need for economic diversification, Government recognizes the need for the rapid but orderly and responsible development of aquaculture in the Seychelles. To this end the government of the Republic of the Seychelles has encouraged the coordination of policy, aligning legislative and institutional structures, and driving and tracking aquaculture development progress. Interventions to date include;

- a. Promotion of a Sector Development Plan that underpins the development of aquaculture in the Seychelles.
- b. The finalization of a regulatory framework to ensure robust governance of the sector, comprising the Fisheries (Aquaculture) Regulations, 2020 and the adjunct Seychelles Aquaculture Standards;
- c. The structuring of institutional roles and responsibilities;
- d. Funding of sector development costs;
- e. Attracting private and institutional investment capital to pioneer the sector;
- f. Promoting public and institutional awareness of aquaculture;
- g. Land allocation and developing infrastructure required to support the expansion of the sector;
- h. Creating opportunities for local investment and participation throughout the aquaculture value-chain.
- i. Human resource development
- j. Promoting and funding of aquaculture research
- k. Promoting international collaboration

Moreover, the Government of Seychelles is fully aware of the potential environmental impacts of aquaculture and for this reason supports the development of the sector within the context of the “Ecosystems Approach to Aquaculture”¹. This approach responds to three principles:

- i) Aquaculture should be developed within the context of conserving ecosystem functions and services (including biodiversity) with no degradation of these beyond their resilience capacity,

- ii) Aquaculture should improve human well-being and equity for all relevant stakeholders; and
- iii) Aquaculture should be developed within the context of (and integrated with) other relevant sectors.

LEGISLATIVE AND ADMINISTRATIVE FRAMEWORK

The Fisheries Act of 2014 and the *Fisheries (Aquaculture) Regulations, 2020*, provide the legal framework for the development and management of environmentally responsible and sustainable aquaculture and sea-ranching on the inner and outer islands, the territorial waters, and the exclusive economic zone of the Republic of Seychelles.

Part III, Sub-part 7, Section 34 (1) of the *Fisheries Act of 2014* stipulates that the SFA shall manage the development of aquaculture and sea-ranching in the Seychelles on the basis of an Aquaculture Sector Development Plan.

The Act authorises the Authority to issue licenses that are subject to compliance with the regulations. In summary, the Act:

- Delegates the management of the development process to the Seychelles Fishing Authority;
- Ensures that no aquaculture may be undertaken without a license granted by the Seychelles Fishing Authority;
- Requires that license holders operate according to the Regulations;
- Indicates conditions associated with licenses.

The Fisheries (Aquaculture) Regulations 2020, and the adjunct *Seychelles Aquaculture Standards* provide the rules for issuing licenses and the conditions of such licenses and are the legal instruments that guide and control the development of the sector in an environmentally responsible and sustainable manner.

The Fisheries (Aquaculture) Regulations 2020 serve to underpin the Aquaculture Sector Development Plan, which aims to:

- Stimulate growth in the aquaculture sector, including sea-ranching
- Realise the market potential of the aquaculture sector
- Maximise the socio-economic contribution of aquaculture for the people of Seychelles
- Establish an enabling institutional environment for the aquaculture sector to grow
- Ensure the environmentally responsible development of the aquaculture sector
- Stimulate research to develop appropriate aquaculture technologies
- Develop the necessary industry support services
- Develop the required human capacity for the development of the sector.

In addition, there are several other acts that the sector must also comply with. These are the

Environment Protection Act 2016 (No. 18 of 2016) that provides for the protection, preservation and improvement of the environment and the regulation of effluents.

The *Animal and Plant Biosecurity Act 2014 (No. 10 of 2014)* in so far as the importation of marine animals or plants are concerned.

Environment Protection (Impact Assessment) (Amendment) 2013 that triggers the requirement for EIAs and that stipulates that environmental authorisation is granted by the responsible Ministry before any aquaculture development and or operations can commence.

Nature Reserves and Conservancy Act 2022 (No. 3 of 2022) that governs the establishment and operations of aquaculture enterprises in multi-use marine protected areas.

The *Export of Fisheries Products Act 2010* and associated regulations ensure for exports to be undertaken only from aquaculture processing establishments that operate under a permit granted by Seychelles Bureau of Standards. The Act details banned substances, permitted veterinary medicines, unfit products, monitoring and reporting requirements. The Act also serves the important role of ensuring that export aquaculture products produced in the Seychelles are of a standard that will uphold the Seychelles reputation for quality seafoods in external markets.

The sector will also be developed in accordance with relevant international and regional agreements to which Seychelles is a signatory. Those having a bearing on aquaculture operations include:

- The Nairobi Convention
- The Convention of Biological Diversity; including its subsidiary Nagoya Protocol on Access to Genetic resources and benefits sharing
- The Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)
- The *Codex Alimentarius*
- SADC Regional Aquaculture Strategy and Action Plan (2016-2026)

IMPORTANCE OF AQUACULTURE

Aquaculture will have to contribute to the future protein requirements of the country and will diversify the seafood platter of the Seychelles. The Ocean Health Index has ranked Seychelles' waters first in Africa. This provides the emerging aquaculture sector with a significant natural strategic advantage for marketing high quality and high value, niche products.

Within the context of the Blue Economy, aquaculture has the potential to become a pillar of the national economy, contribute significantly towards the GDP of the country, and provide high caliber employment opportunities.

CHALLENGES

The principal challenge for the Government is to ensure that within the provisions of the *Fisheries Act 2014* and the *Fisheries (Aquaculture) Regulations 2020* and the adjunct *Seychelles Aquaculture Standards*, aquaculture development, operation and management is ecologically sustainable and internationally competitive, and that the new sector generates economic and social benefits for the Seychelles.

Other challenges that face the development of the sector in the Seychelles include:

- The availability of suitable sites on land and at sea;
- Establishment of a world class research and development facility;
- Development of the required scientific and technical capacity;
- Mitigating the impacts of aquaculture on the marine and terrestrial environments;
- Cross-sectoral issues such as the perceived loss of visual amenity and exclusivity for tourist operators through the establishment of aquaculture operations;

The local market for aquaculture products in the Seychelles is small and will not provide a profitable outlet for the products. Most of the products will therefore be exported. Gaining access to the highly competitive international markets represents the biggest challenge facing investors, and can only be achieved through enabling Government policies.

VISION

The vision for aquaculture in the Seychelles is:

A small but internationally competitive, knowledge-based industry, contributing to local food security and supplying international niche markets for high value fish products, which is guided by international best management practices in accordance with the principles of the Ecosystems Approach to Aquaculture.

The Regulator will ensure that all investors in aquaculture on the inner and outer islands operate in a responsible manner and to respect the environment in which they work.

GOALS AND OBJECTIVES

The overall goal of the policy is:

To guide and comprehensively support an effectively managed and environmentally responsible aquaculture industry that contributes towards food security and the creation of wealth in the Seychelles.

The policy has the following objectives:

- Support the development of the industry;
- Stimulate the growth of the industry;
- Promote good governance in the aquaculture sector;
- Seek responsible investors in the industry;
- Realise the market potential of the aquaculture sector;
- Maximise the socio-economic contribution of aquaculture;
- Promote and provide an enabling platform for development of aquaculture at small, medium and large scales;
- Develop an enabling institutional environment that facilitates investment in aquaculture;
- Adopt, adapt and develop suitable and sustainable aquaculture technologies;
- Develop the necessary industry support services;
- Implement an effective human capacity development programme for the future well-being of the sector;
- Improve public awareness of the benefits and potential of aquaculture for the country;
- Promote aquaculture as an important element of integrated coastal management;
- Develop an aquaculture industry compatible with responsible stewardship of the coastal environments and their natural resources;
- Establish aquaculture as a supplementary source of fish for the domestic market;
- Encourage future operators to co-manage the sector with the Regulator.

THE SCOPE OF THE POLICY

At present aquaculture in the Seychelles is nascent. Hence, the policy is broad and developmental in nature and addresses matters of a general, as well as of a specific nature. The broader policy matters are those that address governance, ecological sustainability and responsible aquaculture practices. The more specific matters are those that address farming of fish that are fed, the farming of filter feeding (extractive) organisms and for sea-ranching and land-based aquaculture activities.

RESPONSIBLE AUTHORITIES AND POLICY REVIEW

The Seychelles Government is responsible for policy development and oversight. The policy was developed on the back of the Sector Development Plan and is implemented by the Seychelles Fishing Authority through the Ministry of Fisheries and the Blue Economy

Government recognizes that local and international framework conditions change over time and that the aquaculture sector in the Seychelles, as elsewhere, will face an altered suite of challenges, posed by amongst others, climate change, globalization, demographic changes on the Islands and increasing pressure on, and demand for, natural resources. Consequently, and to remain relevant and adequately focused on the sustainable development of the sector the Ministry will review the SNAP every five years.

The first review of the SNAP (2018-2022) was undertaken in August 2022. Stakeholder involvement, including the public and the private sectors and civil society, was central to the revision of the policy.

THE POLICY STATEMENTS

Policy 1: Good governance in the aquaculture sector

Regulation in the aquaculture sector should be fit for purpose and applied in a fair, equitable and efficient manner that embodies the values of transparency, accountability, ethics, animal welfare and stakeholder participation. The beneficial outcomes from the aquaculture sector shall be equitably shared to the good of all Seychellois and sustainably delivered within a culture of best practice and continuous improvement.

The *Seychelles Fisheries Act (2014)* provides for the appointed Authority to manage the development of aquaculture in accordance with the Aquaculture Sector Development Plan. Aquaculture operations are subject to Regulations that include the requirement for a License that in turn contain further appropriate provisions and reference Standards. Therefore, to achieve the objectives of this policy and to ensure good governance, the Government, through the Authority, will:

- Promote aquaculture development on the basis of the Ecosystems Approach to Aquaculture, the FAO aquaculture guidelines for governance and sector development⁵ as well as the relevant provisions of the SADC Protocol on Fisheries, the Guidelines for Aquaculture Management in SADC and the SADC Regional Aquaculture Strategy and Action Plan (2016-2026);
- Refine the Regulations, as and when required, and develop co-management strategies for aquaculture in the Seychelles;
- Remain abreast of global Best Management Practices in marine aquaculture and to inform the industry of new developments to ensure that the industry is ecologically sustainable and becomes internationally competitive;
- Encourage the development and adoption of voluntary codes of conduct;
- Ensure that all sea based aquaculture or ranching activities will be restricted to ADZs or to inshore and offshore areas that have been identified as being suitable for the activity by the Authority, and which constitute areas where there will be no user conflict;
- Undertake a mid-term review of policy implementation.

Policy 2: Environmentally sustainable aquaculture in the Seychelles.

The aquaculture sector shall be developed in harmony with the marine environment and with priority applied to issues related to the conservation of biodiversity and to other marine resource users. Aquaculture shall be developed in accordance with The Ecosystem Approach to Aquaculture and a conservative, phased and adaptive expansion strategy applied to ensure that capacity limits are practically established and never breached. All negative impacts to ecosystems, cultural heritage sites or valued-scenery shall be avoided.

Several economic sectors in the Seychelles rely on its pristine, unpolluted marine environment. For aquaculture, the environment is the basis for the sectors' strategic natural advantage. Therefore, compliance with the Regulations and Standards is critical to maintaining this advantage and the confidence of the market.

Delivering environmental sustainability is predicated on the establishment of capacity limits that consider the broader ecosystem. To this end, an Environmental Authorisation is required for all aquaculture operations on the inner and outer islands or in the territorial waters and the EEZ of the Seychelles. To encourage investment and to establish a solid baseline to capacity limits a comprehensive ESIA and Environmental Management Plan (EMP) has been completed for the Inner Islands Aquaculture Development Zones that all operators must comply with and be audited against. This policy, as implemented in accordance with the Regulations and requisite Environmental Management Plans, will:

- Ensure that the sector is developed within conservative capacity limits from the outset;
- Limit sector expansion under a phased approach that adapts limits based on data records from existing operations;
- Promote ecologically sustainable practices and technologies that minimise waste and environmental damage;
- Ensure that, with the exception of penaeid prawns on Coëtivy, the farming of any species not native to a particular island or island group will not be cultivated on that island or island group;
- Ensure that the cultivation or development of genetically modified organisms will not take place on any island or within the EEZ of the Seychelles;
- Ensure that commercial aquaculture in Seychelles can only be practiced at sea or on-land in seawater;
- Facilitate the use of renewable energy sources in aquaculture, particularly wind and solar energy;
- Promote the adherence to the *OIE Aquatic Animal Health Code* (the Aquatic Code) of 2014 of the World Organisation for Animal Health;
- Institute and manage an animal health programme in line with the requirements of the Aquatic Code;
- Support the training of veterinarians in fish health management;

- Undertake research to improve the understanding of fish diseases, parasites, pathogens and vectors in the Seychelles;
- Participate in regional initiatives to improve the understanding of marine diseases and fish / environment interactions in aquaculture;
- Promote and participate in the development of *Regional Aquaculture Standards* that promotes the health of farmed fish in the Western Indian Ocean region.

Policy 3: Co-ordinated support for the development of the aquaculture sector

The aquaculture sector shall be developed with the holistic support of government departments and agencies. Co-ordinated interventions shall ensure that enabling infrastructure, legislation and funding solutions are developed to ensure that the strategic outcomes of the Aquaculture Sector Plan are achieved.

Recognising the complexity surrounding the development of a new industrial sector, support activities will require aligned inter-departmental efforts by government. Multiple cross-cutting issues are important for the establishment of the sector and must be effectively addressed through a co-ordinated approach, including:

- Foster cooperation with other departments to align regulatory, spatial and environmental guidelines;
- The identification and securing of suitable land-based sites for aquaculture development;
- Skills development and transfer;
- Planning for alternative solutions to meet energy requirements;
- Provide the capital and annual recurrent costs for the implementation of the sector development plan;
- Support the Authority in seeking financial support from international partners for the development of advanced aquaculture research facilities;
- Support the Authority in seeking financial support from international partners for specific R&D programmes;

Policy 4: Investment policy for the aquaculture sector

The aquaculture sector shall be developed incrementally to a scale that will deliver the desired strategic outcomes for the Seychelles, including national economic diversification, enhanced resilience to external shocks and improved food security. Responsible domestic and international private sector investment shall be attracted to capitalise both small and industrial scale operations to achieve a globally competitive sector that will result in quantifiable social and economic benefits.

Recognising the ramifications of aquaculture for food security, employment, business development and for the social good and acknowledging that the development of a new industrial sector requires attention in selecting the correct private sector partners to drive the initiative, taking care of the environment, and also facilitating the involvement of small and medium scale farmers thereby ensuring that value-chain opportunities are made accessible to all Seychellois the Government, through the Authority, where applicable, will:

- Promote, encourage and facilitate private sector investment in aquaculture and sea ranching;
- Promote and support in particular the development of sustainable small and medium scale aquaculture operations to increase the supply of fish on the local market;
- Facilitate investment in large scale, export orientated aquaculture;
- Promote and support the development of the aquaculture value chain by local entrepreneurs
- Establish funding sources to support local entrepreneurs;

- Promote the profile of the Seychelles as an aquaculture investment destination of choice for environmentally conscious entrepreneurs;

- Encourage farmers to participate in decision-making processes, monitoring procedures, and research;
- Enable foreign participation in the investment and development of responsible aquaculture in the inshore and land based ADZs through Joint Venture partnerships;
- Facilitate the development of industrial scale aquaculture operations in the offshore zone through FDI.

Policy 5: Aquaculture products and marketing policy

The aquaculture sector will produce a diverse basket of premium, value-added products to meet local demand volumes, in a manner that balances stakeholder interests, and for export to international niche markets. The quality of aquaculture products will be of a standard that upholds and reinforces the attributes of the Seychelles brand and of which the Seychelles can be justifiably proud.

The global seafood market is competitive, and consumers are increasingly demanding full traceability on the source of products and the manner in which they were produced. For producers these market dynamics allow for strong branding opportunities and premium prices in niche markets. It is essential that the Seychelles brand for aquaculture products is built on strong attributes, and that producers are aligned to the highest standards of production and processing.

The Seychelles Bureau of Standards (SBS), through the Fish Inspection and Quality Control Unit (FIQCU), is responsible for fish inspections and the setting of standards. The SBS administers the *Codex Alimentarius*¹⁰ and adheres to the SADC Regional Guidelines for Food and Safety Management¹¹.

The FIQCU is the competent authority that certifies fishery products from Seychelles and undertakes Hazard Analysis and Critical Control Points (HACCP) audits and inspections of approved establishments to ensure compliance with the Seychelles Export of Fishery Products Act (1996) and the relevant EU regulations.

Government recognises that the SBS and FIQCU will, in addition to their present duties, have to deploy resources to aquaculture products as these come on stream. To support aquaculture products development and marketing, the Government will:

- Promote and facilitate value adding of aquaculture products to maximize social benefits;
- Promote Seychelles aquaculture products at international trade fairs and through information systems;
- Establish new bilateral trade agreements where these are necessary;
- Provide the necessary fiscal incentives for producers to be competitive;
- Promote domestic trade in aquaculture products;
- Encourage certification of aquaculture enterprises and support marketing campaigns of Seychelles aquaculture products;
- Strengthen the capacity of the FIQCU such that the institution is able to deal effectively with the needs of the aquaculture sector and in particular with the implementation of real time “farm to fork” traceability systems;
- Empower FIQCU to monitor the safe use of chemicals and other drugs of importance in aquaculture according to international Best Management Practices.

Policy 6: Building human capital throughout the value chain

Modern marine aquaculture is a technology and knowledge driven industry. For the Seychelles aquaculture industry to compete successfully on international markets requires that the sector has access to suitable and well-trained scientists and technologists who are capable of adapting and also developing new homegrown technologies to improve production, product quality and promotion, and to ensure the wellbeing of farmed species and the environment.

To ensure the development of an environmentally responsible aquaculture sector it is necessary to secure the services of scientists and technologists in a number of disparate disciplines. Amongst others, these include aquaculture engineering, nutrition, biochemistry, microbiology, veterinary science, aquaculture technology, marine ecology and biology, environmental science, physical and chemical oceanography, as well as general business, HR and financial management. Except for environmental science and management, these critical scientific fields of study are not offered by the University of the Seychelles. Hence it is incumbent upon the Ministry and the SFA to ensure that young people are informed of the career prospects and provided with training opportunities abroad. For this to be realised, Government and the responsible authority will:

- Identify the skills gap and capacity building needs to match the demand of the aquaculture industry and the capacity needs for aquaculture research in the disciplines listed above;
- Implement an aquaculture career guidance programme at schools to acquaint students with the wide range of occupational opportunities relevant to tropical aquaculture;
- Encourage the responsible ministry for education and human resources development, the University of Seychelles and the Seychelles Maritime Academy to develop curricula for and provide aquaculture managerial and technical training opportunities; Provide scholarships and bursaries for students to study abroad at appropriate Universities or other institutions of higher learning;
- Identify and establish links with the leading international research and teaching Universities and institutions in tropical aquaculture to provide opportunities for young Seychellois to be trained in scientific, technical and managerial disciplines;
- Provide skills development and training programmes throughout the value chain.

Policy 7: Research and development in the aquaculture sector

A new marine aquaculture industry is dependent on research and development across various fields. In particular, the development of genetically diverse broodstock populations of high value native species, the reproduction of such species, a focus on aquaculture / environment interactions and the development of novel IMTA combinations are of strategic importance to the development of an internationally competitive industry.

Some of the challenges facing the development of aquaculture in the Seychelles include, amongst others, the absence of appropriate research facilities, research capacity and the resources with which to establish these. Recognizing that aquaculture is a knowledge-based activity and that research is a fundamental pivot for the development of the sector, the Government will:

- Facilitate the mobilization of resources for the development of advanced aquaculture R&D facilities;
- Assist small and medium scale operators with technical know-how to launch and maintain their operations;
- Promote short, medium and long-term research planning and priority setting for the development of aquaculture with international partners;
- Strengthen arrangements for delivery of aquaculture research and development findings;
- Monitor the social and economic impacts of aquaculture development;
- Promote, facilitate and support local research in collaboration with international partners that supports the development of aquaculture in Seychelles;
- Facilitate and support the development of technical aquaculture cooperation agreements with international partners.

DEFINITIONS AND ABBREVIATIONS

“ADZ” means an Aquaculture Development Zone, a zone that has been designated for the purposes of aquaculture on land or at sea.

“Aquaculture” is defined in the Fisheries Act 2014 under Part 1 (Clause 2) as (a) the cultivation, propagation or farming at sea or on land of fish from eggs, spawn, spat, fingerling or seed; and (b) includes the rearing and ranching of fish taken from the wild or imported into Seychelles.

“Aquaculture Standard” means an adjunct legal directive to the *Fisheries (Aquaculture) Regulations 2021*.

“CAADP” means the Comprehensive Africa Agriculture Development Programme, which is a continental initiative that aims to help African countries eliminate hunger and reduce poverty by raising economic growth through agriculture-led development.

“CITES” means the Convention on International Trade in Endangered Species

“EEZ” means the exclusive economic zone is defined as the area ranging from 12 to 200NM from the coast.

“EIA” means Environmental Impact Assessment as defined in the Environmental Impact Assessment Regulations 1996.

“Environmental Authorisation” means the authorisation by a competent authority of a listed activity. or specified activity in terms of the Environmental Management Act.

“EMP” means Environmental Management Plan.

“Ecologically Sustainable Development” means development that meets the needs of the present, without compromising the ability of future generations to meet their needs and which is compatible with the continuing functioning of essential ecological processes.

“Ecosystems Approach to Aquaculture” is a strategy for the integration of the activity within the wider ecosystem in such a way that it promotes sustainable development, equity, and resilience of interlinked social and ecological systems.

“Ecosystem” is a dynamic complex of plant, animal and micro-organism communities and their non-living environment interacting as a functional unit.

“ESIA” means an Environmental and Social Impact Assessment

“EU” means the European Union.

“FAO” means the Food and Agriculture Organization of the United Nations.

“FDI” means Foreign Direct Investment.

“Finfish” means a bony fish belonging to the Class Osteichthyes, as distinguished from a shellfish.

“FIQCU” means the Seychelles Fish Inspection and Quality Control Unit, a division of the Seychelles Bureau of Standards.

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

“GDP” means Gross Domestic Product.

“Genetically modified organism” is an organism whose DNA been modified in the laboratory in order to favour the expression of desired physiological traits or the production of desired biological products.

“HACCP” means Hazard Analysis and Critical Control Points. It is a systematic preventive approach to food safety from biological, chemical, and physical hazards in production processes that can cause the finished product to be unsafe, and designs measurements to reduce these risks to a safe level.

“HR” means Human Resources.

“IDC” means the Islands Development Company Ltd.

“IMTA” means Integrated Multi-Trophic Aquaculture that is defined as “a system that uses various complementary groups of animals occupying different positions in the food chain and that provide the by-products, including waste, from one aquatic species as inputs - (fertilizers and food) for another. In other words, farmers combine fed aquaculture (e.g., fish and shrimp) with inorganic extractive (e.g. seaweed) and organic extractive (e.g., sea cucumbers or shellfish) aquaculture to create balanced systems either for environmental remediation (bio-mitigation), economic stability (improved output, lower cost, product diversification and risk reduction) or social acceptability”.

“Mariculture” means aquaculture in the marine environment and can be used as a synonym for marine aquaculture.

“MMP” means the Mariculture Master Plan

“Native species” means a species that occurs, or has historically occurred, naturally in a free state in nature within the archipelagic waters of the islands but excludes a species that has been introduced into such waters because of human activity.

“Nutrition security” is when food security is combined with education, a sanitary environment, adequate health services and proper care and feeding practices to ensure a healthy life for all household members” (UNSCN 6th Report on the World Nutrition Situation).

“OIE” means the World Organisation for Animal Health with headquarters in Paris, France.

“Pathogen” is a disease producing organism.

“Penaeid prawn” means a marine prawn or shrimp belonging to the family Penaeidae, e.g. the black tiger prawn, *Penaeus monodon*, is a penaeid.

“Population” is a subset of individuals of a species that are characterised by geographic isolation, pattern of movement or levels of genetic difference that indicates only limited exchange with other such groups.

“R&D” means research and development.

“ReCoMaP” means the Regional Programme for the Sustainable Management of the Coastal Zones of the Indian Ocean. ReCoMaP, an initiative of the Indian Ocean Commission (IOC) and funded by the European Union, was a regional programme for the sustainable management of the coastal zones of seven regional countries of the Indian Ocean, namely Mauritius, the Seychelles, Madagascar, the Comoros Islands, Kenya, Tanzania and Somalia.

“Restocking” is the release of cultured juveniles into wild population(s) to restore severely depleted spawning biomass to a level where it can once again provide regular, substantial yields. This may also involve reestablishing a commercial species where it is locally extinct due to overfishing, or release of juveniles reared in “conservation hatcheries” to help restore endangered or threatened species.

“SADC” means the Southern African Development Community.

“SBS” means the Seychelles Bureau of Standards.

“SFA” means the Seychelles Fishing Authority.

“SMB” means the Seychelles Marketing Board.

“SNAP” means the Seychelles National Aquaculture Policy.

“SSDS (2012-2020)” means the Seychelles Sustainable Development Strategy 2012 – 2020.

“Sea ranching” is the release of cultured juvenile sea cucumbers, sea urchins, or scallops into unenclosed marine environments for harvest at a larger size in “put, grow, and take” operations. The released animals are not expected to contribute to spawning biomass, although this can occur when the size at harvest exceeds the size at first maturity, or when not all the released animals are harvested. Sea-Ranching is normally undertaken by the private sector or co-operatives in areas specifically set aside for ranching and where access is restricted.

“Stock enhancement” is the release of cultured juvenile sea cucumbers, urchins, fish or scallops into wild population(s) to augment the natural supply of juveniles and optimize harvests by overcoming recruitment limitation.

“WIO” means the Western Indian Ocean

References

- ¹ FAO 2010. Aquaculture development. 4. Ecosystem approach to aquaculture. *FAO Technical Guidelines for Responsible Fisheries*. No. 5, Suppl. 4. Rome, FAO. 2010. 53p.
- ² Agrippine, M., Anganuzzi, A., Burrige, G., Marie, M.T., Michaud, P. and Robinson, J. (Eds.). 2014. *The Blue Economy: Seychelles’ vision for a Blue Horizon*. Ministry of Foreign Affairs. Seychelles. 71p.
- ³ FAO. 2008. Report of 2nd session of the scientific committee 2007. South West Indian Ocean Fisheries Commission. *FAO Fisheries and Aquaculture Report No. 875*. Rome. Pp 60-62.
- ⁴ Gutierrez, N. 2015. To conduct a risk assessment to identify threats to demersal stocks and stock assessments for the key demersal fish stocks. *Mainstreaming biodiversity management into production sector activities*. GOS-UNDP-GEF Report. 70p.
- ⁵ FAO 2017. Aquaculture development. 7. Aquaculture governance and sector development. *FAO Technical Guidelines for responsible Fisheries*. No.5. Suppl. 7. Rome, Italy. 50pp.