Fisheries in the ESA-IO Region: Profile and Trends

COUNTRY REVIEW

2014

SEYCHELLES

SmartFISH

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SEYCHELLES

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This document was prepared as part of the activities of the Indian Ocean Commission (IOC)SmartFish Programme , under the FAO Fisheries management component, in the monitoring and analysis of major issues with implications for fisheries and aquaculture in the twenty countries from the Eastern Southern Africa-IOC region participating in the Programme. This has resulted in the preparation of twenty country baselines whose the purpose is to serve as easy-to-read and informative references for policy decision-makers, fishery managers, development partners and stakeholders. The baselines inventory and describe for each country the trends in status of fisheries, major social and economic dynamics of relevance to the fishery sector, policy, legal and administrative frameworks, and management regimes The present document relates to the baseline for Seychelles.

The preparation mainly involved Mr Christophe Breuil and Mr Damien Grima, FAO consultants, who made essential contribution in drafting the text and developing infographic for publication on the basis of the analysis of official and grey literature and vast field experience in the region. Much gratitude is due to all SmartFish experts who act as reviser. In particular, Ms Clotilde Bodiguel Chief Technical Adviser of IOC SmartFish activities implemented by FAO, who provided the initiative, was instrumental in the editing and Mrs Florence Wallemacq, Outreach Consultant, assisted in the formatting for publication. Lastly, the editor would like to thank National and Regional Focal Points of the IOC SmartFish Programme for providing complementary data and information.

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BACKGROUND INFORMATION

1 Brief on the National Economy

Key figures on Macro economic data

2014- Source World data Bank - Latest reported data

Population

87,800

2012

Employment to population ratio

unspecified

HDI ranking

46/187

2012

External balance

-566.7

million US $

2011

GDP

1.03

Billion US $

2012

GDP annual growth

2.9 %

2012

GDP per capita

11,758 $

2012

Agriculture % of GDP

2.23 %

2011

The Republic of Seychelles is an archipelago in the western Indian Ocean consisting of 115 islands and spread across an Exclusive Economic Zone (EEZ) of about 1.3 million km^2. The land area is limited to 455 km^2 with a coastline length of about 491 km. Natural resources (apart from fishery resources in the EEZ), land space, arable land and freshwater resources are all limited, and the national economy is largely based on the tourism and fishery sectors and related service activities. Other important sectors of the Seychelles economy include construction and services industries such as information & communication and financial services (OECD et al. 2013).

The main drivers of economic growth and employment have been the tourism industry and the service sector. With the emergence, in the mid-1980s, of Port Victoria as the principal tuna transshipment port for the industrial fleet in the South West Indian Ocean region and, the tuna canning factory (IOT) in the late1990s as the largest national employer, the fishery sector is the most important export sector accounting for an estimated 90 percent of total export revenues. The fishery sector also accounts for an estimated 11 percent of the country's formal employment (OECD et al. 2013).

The Seychelles is a middle-income country. Its population is estimated at 90,000 people, with a growth rate of around 1 percent per year. It should be noted that the population density is high and exceeds 500 inhabitants per km^2 on the main island of Mahé, where almost 85 percent of the people live. In 2012, total GDP in Seychelles was estimated at US $1.03 billion (World Bank). In the same year, the GDP per capita was an estimated US $11,758 (one of the highest in Africa).

National development strategies and plans recognize the private sector as an engine for growth and the shift of the role of the State from implementer to facilitator of economic development. The business environment however, is still challenging in the Seychelles and the country stands at 117 in the ranking of 183 countries in terms of ease of doing business according to the World Bank's 'Doing Business 2013' report. The most problematic factors include difficulty in accessing credit, tax rates, government bureaucracy, restrictive labour regulations and inadequate water supply and excessive energy (OECD et al. 2013).

Inflation has remained well below 10 percent over the last few years.

Seychelles is a member of the Common Market for Eastern and Southern Africa (COMESA), the Indian Ocean Commission (IOC) and the Southern African Development Community (SADC). Seychelles has been operating under the Free Trade Area of COMESA since 2009 and is currently negotiating its participation under the Free Trade Agreement of SADC.

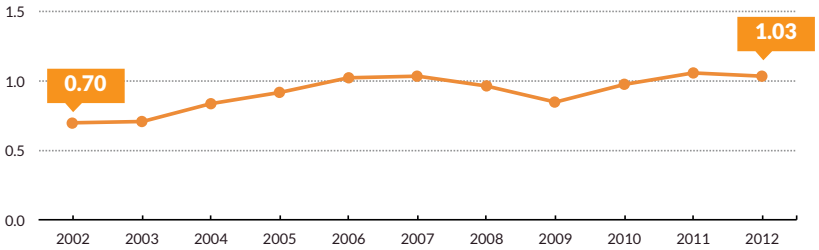
Seychelles has an open-trade regime; 94 percent of imports enter with a 0 percent rate, with an average tariff of 4.6 percent on agricultural (including fisheries) products (African Economic Outlook, 2013). Seychelles' imports of goods and services reached US $1.05 billion in 2011, whilst exports of goods and services (including canned tuna, fish meal, and frozen and fresh fish) reached US $0.48 billion. Seychelles relies heavily on imports and the current account balance was largely negative for a total amount of approximately US $0.57 billion in 2011 (World Bank). Canned tuna represents about 95 percent of the value of exports.

Over the last two decades, Seychelles has successfully promoted a high level of standards and social development. Its Human Development Index (HDI) puts the country in the 'very high human development' category. With an HDI score of 0.806, Seychelles ranked 46th out of 187 countries in 2012.

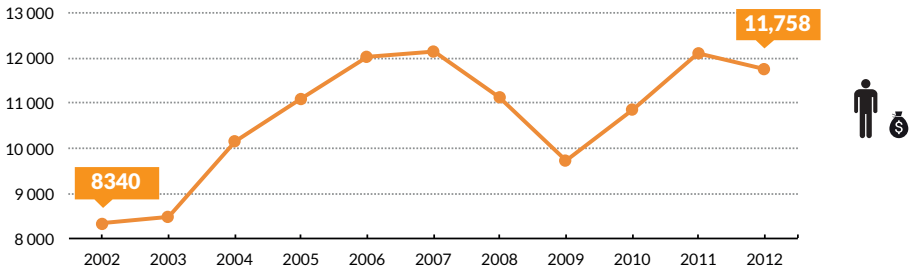
Trends

2014 - Figure 1-5 - Source World Data Bank - Last ten years

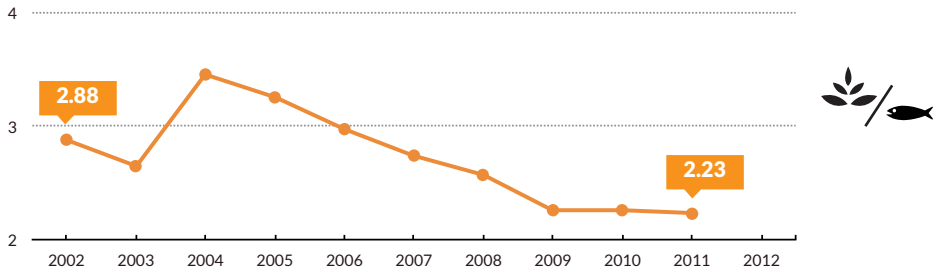
GDP (current billion US $)



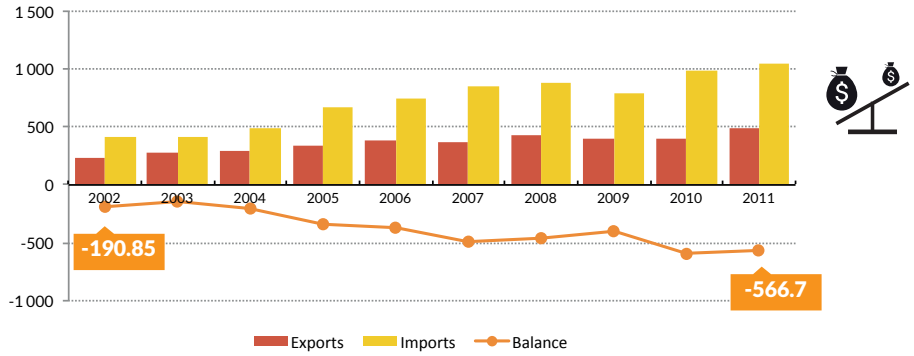
GDP per capita (current US $)



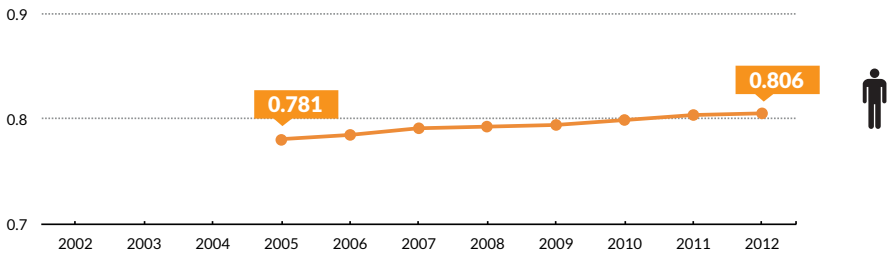
Agriculture % of GDP



Trade balance (current million US $)



Human Development Index



2. Policy and Planning Framework

2.1. General Framework

The overall policy framework is provided in the Seychelles National Strategy 2017 adopted in 2007. The Strategy 2017 provides a template for sustained economic growth through stimulating private sector development and gradually reducing commercial activities of the State with a view to maintaining and improving the standard of living. The mission statement aims to double the GDP of the Seychelles over a 10-year period, focusing on the continuous expansion of tourism and fisheries and developing the financial services sector.

A Medium Term National Development Strategy (MTNDS) for the period 2013-2017 is currently being elaborated to supersede Strategy 2017. The MTNDS will serve as a basis to implement the Comprehensive Africa Agriculture Development Programme (CAADP) Framework and its processes. The CAADP in Seychelles will focus on five broad intervention/investment areas which include: Protection and sustainable use of agricultural land and infrastructure; Agricultural research, irrigation and extension; Sustainable fisheries development; Marketing and trade of agricultural produce and; Food and nutrition security (Catanzano Joseph. Nageon de Lestang Joël. 2013).

2.2. Food Security Strategy

The National Food Security Strategy 2008-2011 was formulated in 2008 in response to the global food crisis of 2007-2008 that occurred in the Seychelles. A review of this document was initiated in October 2010 and the revised Food Security Strategy covers the period 2012-2015. The Seychelles recognizes that food security is a pre-requisite for national socio-economic stability and growth and also highlights priority investment areas in the agricultural sub-sectors of crop and livestock development. It is also recognized that food imports will continue to provide a substantial portion of foods consumed locally and hence, should not be ignored as a major component in national food and nutrition security until such time as the local agricultural sector develops to reduce the need for some imported foods and that fish provides a substantial portion of the protein component of the Seychellois diet (Seychelles CAADP COMPACT / Medium Term National Development Strategy).

Furthermore, one of the guiding principles of the National Agricultural and Fisheries Policy 2003-2013 is to enhance food security and to ensure safe and sustainable agricultural development with due regard to bio-diversity and the environment. Much emphasis is placed on reducing the country's dependence on imported food, optimizing the use of the scarce land resources and promoting the export of traditional crops (FAO National Medium Term Priority Framework of Seychelles, 2007 -2010).

It should also be noted that the government recently initiated a policy review of agriculture and fisheries to revitalize these sectors, reduce import dependency and promote food security (OECD et al. 2013).

In addition to the national policy document, the Indian Ocean Commission developed a Regional Food Security Strategy in 2012 covering its 5 members: Comoros, Madagascar, Mauritius, Reunion (France) and Seychelles, which has also been reviewed with significant inputs specific to Mauritius. One of the main findings, from an assessment of the integration of fisheries and aquaculture in food security and nutrition strategies and plans (Kurien John, Lopez Rios Javier. 2013) at the regional level, is that in the IOC region – where fish is central to the economy and diet – the food security policy document does not adequately reflect the role of fish and fisheries. A specific chapter on fisheries and aquaculture, with an action plan for fish and food security, has therefore been developed.

With regards to the Seychelles, the following findings deserve to be mentioned:

- One of the goals of the strategy for the country is to develop the fisheries sector as a driver of the national economy, increasing domestic production and promoting exports, with an increase in national stakeholders in the sector.

- Development of the export sector must pay special attention to not deviate production that was originally destined for the domestic market and high added value through tourism. This implies a regular global socio-economic survey on the use of national production in terms of, added value for tourism, profits from exports, local employment and local consumption.

- Special attention should be given to the proper scientific management of the more vulnerable resources such as benthic fish on the continental shelf, sea cucumber and octopus and reflection on the seasonal closure of the Mahe Plateau for bottom fish and as well as sea cucumber should be initiated.

- It is important to collate data on reliable fish prices on the domestic market. A potential increase of fish prices would have an adverse impact on food security, and the expected development of the export sector could push prices upwards.

- The development of the aquaculture sector for high value products should be promoted to improve domestic supply and reduce dependency on imported products. The development of aquaculture could also open opportunities for exports.

Launching a tuna by-products industry in Seychelles: Currently there are seven foreign purse seiners registered under the Seychelles flag. From 2007 to 2011, the total catch of these vessels averaged 63,000 MT/year. This represents an annual by-catch potential of 3,133 MT. This could be a stepping-stone for local businesses aside from those involved in animal feed processing. The Seychelles Fishing Authority (SFA) could facilitate collaboration between fleet owners and local businesses. Such an initiative could also be extended to other purse seiner (PS) owners stationed at Port Victoria and could even constitute a pilot development project that calls upon external financial support. The potential by-catch of tuna PSs is estimated at 14,190 MT/year and 85 percent is transshipped in Port Victoria. This approach is crucial under the implementation of the IOTC Tuna By-catch Resolution 2014.

2.3. Fisheries in Public Policies

The strategic vision in the fishery sector is clearly indicated in the Strategy 2017 whose priority goal, as mentioned above, is the creation of wealth (economic growth). The strategic vision in the fishery sector focusses on industrial tuna fisheries in a context where Port Victoria has become a prominent tuna transshipment port for purse seiners (foreign and Seychelles-flagged vessels) operating in the SWIO over the past 20 years. Fishing vessels also use the port to complete any maintenance tasks before loading fuel and supplies.

In particular, the strategic vision for the fishery sector is “to increase the yield, value of the yield and the financial benefit of fisheries to Seychelles by maximizing domestic processing, promoting export and increasing Seychellois stake holding in the industry”. The ultimate goal is “to turn Seychelles from a mainly fisheries trans-shipment hub, into the primary seafood processing centre of the Indian Ocean”.

To achieve this goal, the role of the government is to facilitate increased local and international participation and investment in the sector and put in place measures to enhance its competitiveness.

Infrastructure development is also a key strategy element. In particular, since Port Victoria is a multi-purpose port and current facilities for the fishing industry have proved to be insufficient, a governmental project aimed at significantly extending the port’s capacities for the fishing industry is ongoing.

3. Fishery Resources

The Republic of Seychelles is comprised of an archipelago of 115 islands of which 42 are oceanic granitic and the rest form low-lying coral atolls and reef islands on the outer islands. Most economic activities, including fishing and related activities, are based on the inner granitic islands including the main islands of Mahé, Praslin and La Digue. The land area is limited to 455 km² with a coastline of about 491 km. The natural coastline consists of steep granitic shorelines and flatter plains fringed by coral reefs. The coastal area is characterized by an extensive area of coral reef of some 1,690 km², with numerous coral lagoons. Note that mangroves are scarce, with a total surface area of approximately 29 km². The shelf area is about 31,480 km².

The EEZ covers a surface area of about 1.3 million km² and is at the heart of the migration path of tuna stocks in the Western Indian Ocean. The Seychelles EEZ is bordered by the EEZ of Madagascar, Mauritius, the Glorioso Islands (France), Mayotte, the Comoros and Mafia Island (Tanzania).

Seychelles' coastal waters are sensitive to direct and indirect anthropogenic impacts and natural disasters. Serious coral bleaching was recorded following the 1998 water warming event around Seychelles associated with the El Nino phenomenon; however, encouraging signs of new coral growth have been observed (COFREPECHE. 2013).

The Seychelles fishery sector has three main components: artisanal (domestic), semi-industrial (domestic), and industrial (domestic and foreign). The artisanal fishery is a multi-gear and multi-species fishery worked by local fishers, operating with small, motorized boats targeting mainly demersal and semi-pelagic species in the inshore area. The semi-industrial fishery consists of small (14 to 22 m), locally owned long-liners targeting pelagic species (mainly tuna and swordfish) in deeper waters outside the continental shelf. The industrial fishery is composed of Distant Water Fishing Nations (DFWN) and Seychelles registered tuna vessels, with purse seiners mainly targeting surface swimming tuna (skipjack and yellowfin tuna) and long-liners primarily targeting larger, deep swimming, big-eye and yellowfin tuna.

In the inshore area, demersal fish resources include red snappers (*Lutjanus spp.*), green jobfish (*Aprion virescens*), groupers (*Epinephelus spp.*), and emperors (*Lethrinids spp.*). The main fishing grounds for these species are the Mahé plateau and Amirantes plateau with a mean fishing depth ranging from 25 to 70 m. Lobsters, and holothurians in particular, are also abundant demersal species. In addition, certain medium pelagics such as trevally (*Caranx spp.*) and bonito (*Euthynnus affinis*) are found in the inshore area.

Further off-shore, the pelagic species are dominated by skipjack (*Katsuwonus pelamis*) and yellowfin tuna (*Thunnus albacores*). Other pelagic species include the big-eye tuna (*Thunnus obesus*), marlin (*Makaira spp.*), swordfish (*Xiphias gladius*), bonito (*Euthynnus affinis*), wahoo (*Acanthocybium solandri*), dorado (*Coryphaena hippurus*), sailfish (*Istophorus platypterus*), and shark species.

The fishery potential of commercial value in Seychelles is estimated at about 200,000 MT per year (Failler et al. 2011).

According to WIOFISH classification, which is based on the type of gear used, there were 43 marine fisheries in the Seychelles in 2012, of which 29 were artisanal, 7 were recreational, 4 were small-scale commercial, 5 were subsistence, 4 were for sport fishing, 2 were for tournament fishing, 2 were industrial, 2 were foreign fleet, 2 were semi-industrial and 1 was experimental. Fisheries are multispecies; catch composition data shows 62 different catch items. Most fisheries operate in the general inshore area, in lagoons, on coral reef platforms and in shallow coastal bays.

Additionally, some aquaculture is conducted in Seychelles with mariculture the most prominent due to the lack of land and freshwater resources. Aquaculture activities initiated in the early 2000s have included prawn (*Penaeus monodon*), pearl oyster (*Pinctada margaritifera*) and giant clam (*Tridacna maxima*).

KEY INFORMATION AND FIGURES ON THE FISHERY SECTOR

4. Fishery Sector

4.1. Status of Resources

The management of transboundary tuna and tuna-like species in the Southwest Indian Ocean is undertaken by the IOTC. According to stock assessments made by the IOTC, the species caught in the Seychelles EEZ indicate that the current status of skipjack, yellowfin and big-eye tuna is healthy. On the other hand, albacore tuna is currently heavily exploited and swordfish is still being overfished although recent declines in catch and effort have reduced fishing mortality and halted overfishing.

The lack of data in Seychelles does not enable a satisfactory assessment of the status of other marine stocks, and notably stocks targeted by the artisanal component. The Seychelles Delegation made a presentation on the status of some fishery resources at the 5th Session of the SWIOFC Scientific Committee held in Maldives in 2011. It was highlighted that whilst the situation is heterogeneous according to the species or group of species considered, the status of fully-exploited stocks was dominant with some species being over-exploited such as coastal sharks like the red snapper (*Lutjanus bohar*). On the other hand, other species such as the spanner crab (*Ranina ranina*) on the Mahé plateau are under-exploited.

The steady demand for marine resources for local consumption, tourism and export over recent years has led to increased pressure on resources in particular on demersal stocks, and certain demersal fish stocks, in particular around the populated granitic islands, are facing a serious threat of overexploitation. Furthermore, recent assessments indicate that offshore stocks of key target species (e.g. *Lutjanus sebae, L. bohar*) are probably overexploited and declining yields are inevitable, unless robust management measures are put in place.

A recent review of fishery stocks in Praslin (Huntington Tim. 2011) suggests that key inshore demersal fish stocks, supporting trap fisheries on the island, are considered to be fully exploited (e.g. jobfish) or even overfished (e.g. red snapper and rabbitfish) and thus there is limited scope for expansion of fish landings, although there is some scope for expansion further offshore, especially with hand and drop lines.

4.2. Major Fishery Dynamics in Artisanal Sub-Sector

The artisanal fishery in Seychelles is a multi-species fishery exploited by a variety of vessel categories and gear types which interact with each other. The resources vary considerably in their nature, from sedentary to highly mobile migratory species. The fleet is composed of around 400 artisanal boats of different types ranging from 5-7m fiberglass open boats powered by outboard engines to larger 10-15m decked whalers and schooners equipped with inboard engines. Most boats are based on the three main islands of Mahé, Praslin and La Digue.

The most common fishery is the demersal handline fishery, which accounts for approximately 75 percent of total artisanal fish landings and targets most of the important demersal species including red snappers, groupers, jobfish and emperors (about 1,000 MT in 2011) as well as certain semi-pelagic species such as the trevally and bonito (about 750 MT in 2011). The main fishing technique used is the hook and line technique and most fishing vessels are equipped with insulated iceboxes for fish preservation. Fishing units operate in the inshore fishing grounds, around the edges of the Mahé Plateau and the Amirantes Plateau, on the offshore banks and around the southern group of coralline islands. Some boats are equipped with echo sounders and GPS for safety reasons and also

for increased fishing capacity.

The trap fishery is also a common fishery in the inshore area, accounting for approximately 15 percent of total artisanal fish landings. In addition to catching most species targeted by the handline fishery, the trap fishery targets other demersal fish such as rabbit fish (*Siganus spp*), parrot fish (*Scaridae spp*) and goat fish (*Parupeneus spp*). Due to the relatively small size of the mesh used (minimum width of 40 mm) the trap fishery catches a high percentage of juvenile and immature fish, mostly as by-catch.

Other fishing techniques used by the artisanal sub-sector include harpoon (for octopus), encircling nets targeting medium pelagics (about 8.1 percent of total artisanal catch in 2008) and drop line. The sea cucumber fishery involves scuba divers operating from whalers and schooners.

With the exception of the sea cucumber fishery, all artisanal fisheries in Seychelles, are open access and subject to very limited management control. As a result, most artisanal fisheries are faced with increasing problems of overexploitation and overcapitalization. Additionally, the handline fishery is faced with the threat of piracy, which prevents units from operating in the northern section of the Mahé Plateau, which encompasses the most productive fishing grounds. For these reasons, a significant shortfall in fish landings has been observed for the last 5 years.

In 2011, a total of 2,875 MT of fish was recorded for artisanal fish landings, lower than the 3,019 MT landed in 2009. Fish landings over the past 5 years have been lower than the landings of 4000-5000 MT that were averaged annually up to the early 2000s (Catanzano Joseph. Nageon de Lestang Joël. 2013).

In addition to the commercial artisanal fisheries, there is also an important recreational fishery in Seychelles, operating both on the Mahé Plateau itself and up to the edge of the Plateau (by mostly larger and well-equipped sports fishing vessels) as well as on certain outlying islands (in particular on the Amirantes Plateau). The recreational fishery, which involves mostly tourist charters, has developed considerably over the last 10 years.

In the Seychelles, it has become increasingly difficult to talk of 'fishing communities' as fishermen are now deeply integrated into the society and there are no 'fishing villages' so to speak (FAO. 2005-2016).

At the same time, the fishing sector is beginning to show signs of an ageing workforce (55 years on average, according to Failler et al. 2011). Very limited recruitment has occurred within the sector in recent years. Any recruitment that is taking place is for small boats rather than larger ones, which has resulted in increased fishing pressure on inshore resources on the Plateau and on the most valuable economic species, in particular red snappers and groupers (Seychelles Fishing Authority. 2011)

The number of artisanal fishers has remained stable over the last 5 to 7 years at around 2,000 people. The workforce is mostly concentrated in handline (more than 1,000 people), trap (about 350 people) and sea cucumber (about 150 persons) fisheries. In addition, there is an indeterminate number of part-time and recreational fishermen that target the same species and fishing grounds as the commercial artisanal fisheries.

4.3. Major Fishery Dynamics in the Semi-Industrial Sub-Sector

The semi-industrial fishery was introduced in 1995 with the objective of relieving pressure on demersal resources by targeting swordfish and tuna caught in deeper waters outside the continental plateau. In 2002, there was a maximum of 12 vessels involved in this fishery, ranging in size from 14 to 22m with annual landings of 400 MT.

In the mid-2000s, the fishery was affected by a ban on the export of swordfish (imposed by the EU), due to high levels of cadmium in catch. Most of the fishing units switched to targeting sharks, mainly for their fins. In September 2008, a new Fisheries Incentive Regulation was introduced that specified that a vessel on which sharks made up more than 15 percent of the total catch on a particular trip, would not qualify for fuel concessions. As a result of this new regulation, three vessels switched back from shark fishing to fishing swordfish and tuna (Catanzano Joseph. Nageon de Lestang Joël. 2013).

More recently, the semi-industrial fishery has been seriously affected by the threat of piracy which has forced the fleet to fish in the southern part of the Seychelles' EEZ and thus abandon the more lucrative fishing grounds in the northern part.

Thanks to financial incentives provided under the current Fisheries Partnership Agreement (FPA) between the Seychelles and the EU, 12 longliners were recently constructed in Sri Lanka for Seychelles registered boat-owners (Catanzano Joseph. Nageon de Lestang Joël. 2013).

In 2011, the total catch by the semi-industrial fishery was approximately 240 MT.

4.4. Major Fishery Dynamics in the Industrial Sub-Sector

Industrial fishing in the Seychelles' EEZ is conducted by both Seychelles flagged tuna vessels and foreign tuna fleets, in particular European purse seiners and Taiwanese longliners. The purse seiners mainly target surface swimming tuna (skipjack and yellowfin) and the longliners target larger, deep swimming, big-eye and yellowfin tuna. Management of the tuna fisheries is based on the delivery of annual licences with several conditions attached to licensing, including the payment of fees, VMS, declarations for entry/exit of fishing zones, and data reporting in a fishing logbook. Moreover, foreign vessels are not allowed to fish in restricted zones, which are reserved for artisanal fisheries; these are shallow plateau areas, less than 80m deep and around most of the outlying islands of the Seychelles group.

In 2011 a total of 59 fishing licences were issued, of which 34 were for purse seiners and 45 were for industrial longliners. Since some DWFN vessels provide logbooks covering their activities in the whole Indian Ocean, the total catch of tuna in the Seychelles EEZ is not readily available. Total tuna catches by Seychelles licensed vessels in the WIO was 266,600 MT in 2011, of which 258,300 MT came from purse seiners (COFREPECHE. 2013).

The domestic fleet is composed of seven purse seiners that were previously registered in Spain. The national registry for industrial vessels also includes longliners, previously registered in Taiwan. Tuna vessels flying the Seychelles flag can apply for fishing authorization in the Seychelles EEZ under private access agreements.

European vessels operate under the FPA between the Seychelles and the EU, which is a tuna fishery agreement. The existing protocol entered into force in November 2011 and is valid until January 2014. Under this protocol, 48 purse seiners and 18 longliners were authorized to fish in the Seychelles EEZ, for a total reference tonnage of 52,000 MT per year. The financial contribution was EUR 5.6 million per year, of which EUR 2.2 million per year was to support the national fisheries policy. Annual fishing fees paid by vessel owners was EUR 61,000 for tuna seiners, EUR 3,150 for surface longliners below 250 GRT (reference tonnage: 90 MT) and EUR 4,200 for surface longliners above 250 GRT (reference tonnage: 120 MT). In 2011, the number of licences delivered to European vessels was as follows: 21 purse seiners (less than half of the fishing vessels permitted) and 0 longliners (due to piracy, European longliners present in the SWIO area operate further South and West out of the Seychelles EEZ). In the same year, the total catch declared within the Seychelles' EEZ was 40,545 MT, which represents 78 percent of the reference tonnage.

Seychelles also has two fisheries agreements with Asian fleets. One is an agreement with Japan for

longline vessels, which allows 120 vessels to apply for fishing authorization. However, since 2007 no vessels have taken up fishing opportunities under this agreement. The other is an agreement with a private association (Taiwan Deep Sea and Tuna Longline Boat Owners and Exporters Association), which permits any Asian vessel (maximum 120) to apply for fishing authorization if they are affiliated with the association. The licence fee is US $22,000 per year.

Other non-Seychelles and non-EU purse seines, as well as non-Asian longliners, can apply for fishing authorization under private access agreements. For purse seiners, the licence fee is US $120,000 per year and for longliners the fee is US $24,000 per year. Purse seiners making use of this licence have included vessels flying flags from Iran, Korea, Mayotte and Thailand; six fishing licences were issued in 2011. Longliners with licences have included vessels flying the flags of Oman and Tanzania; one fishing licence was issued in 2011.

Piracy has been an issue in the Northern part of the Seychelles' EEZ since the end of the 1990's and this is believed to have affected the overall economy of the country when referring to the increased costs of shipping in Seychelles' waters. From a fishery perspective, the impact of piracy has been particularly high on longliners, which are now mostly operating further south and east and have reduced port calls in Port Victoria. However, the threat of piracy seems to be reducing. The number of fishing authorizations in the Seychelles' EEZ for longliners almost doubled between 2011 and 2012, from 59 in 2011 to 137 up to October 2012 (COFREPECHE. 2013).

The Indian Ocean Tuna Operators Association (IOTOA), representing operators from the industrial tuna fishery in Seychelles, Mauritius and Madagascar, has interest in the various issues of eco-certification and sustainable fisheries/markets and IOC-SmartFish has supported this process through technical studies and workshops, and various communication approaches. Sustainable tuna fisheries is particularly pertinent, especially in the light of momentum in major global retailers, as well as a growing interest from consumers to understand and demand more information about where fish are sourced and how sustainable resources might be. IOC-SmartFish commenced support to the IOTOA with a mission to investigate possible approaches to developing and establishing an eco-certification scheme that is specific to the group of tuna vessel operators and fish processors working in the Western Indian Ocean region. Eco-certification is assurance that fishery products are from fisheries that have functional harvest rules that protect target fish resources as well as the environment.

Recommendations included a presentation of options for the IOTOA to move forward with the proposition and a long-term plan for eco-certification. A follow-up mission was carried out to investigate the possibilities and practicalities of enhancements in IOTOA fish processing, specifically with regards to energy conservation, use of alternative energy sources, water conservation, solid/liquid waste disposal and mitigation of any aesthetic impacts. All seven processing companies in the region received reports on these subjects. The major tuna companies were from the Seychelles, Madagascar and Mauritius.

Additional recommendations from these missions highlighted the low level of awareness of tuna industry stakeholders on issues concerning tuna resources, the bycatch of tuna fishing, and the need for and benefits of resource management and eco-certification. Recommendations also included the need to raise awareness of the tuna industry for stakeholders in the region in terms of eco-certification, tuna research, current regional/national regulatory initiatives, and other important issues concerning tuna management. It was recommended that the IOTOA communicate basic information on these subjects to tuna industry stakeholders, including vessel operators. To this end, a simple but effective booklet was prepared as an effective tool in raising awareness of stakeholders on issues such as: the nature/limitations of the resource, current issues and the way forward. The booklet entitled "Tuna for Tomorrow" is available in both English and French.

An associated supporting study for the industry (co-supported by ACP FISH II) looked at markets for bycatch from the industrial tuna industry. The tuna by-products market study was the first to

investigate the trade and marketing drivers to reduce discards of non-target commercial fish species in the main offshore tuna fisheries notably, purse seine and long line fisheries in the Indian Ocean. The intention was to inform national policy makers and the relevant stakeholders of participating countries - Comoros, Kenya, Madagascar, Mozambique, Mauritius, Seychelles and Tanzania - about markets for tuna bycatch in the offshore tuna purse seine (PS) and long line (LL) fisheries of the Indian Ocean (IO). It aimed to provide information on current use and trade practices as well as on the prospects and challenges of market development for tuna bycatch for relevant regional state and non-state stakeholders in beneficiary countries.

4.5. Fishery Production

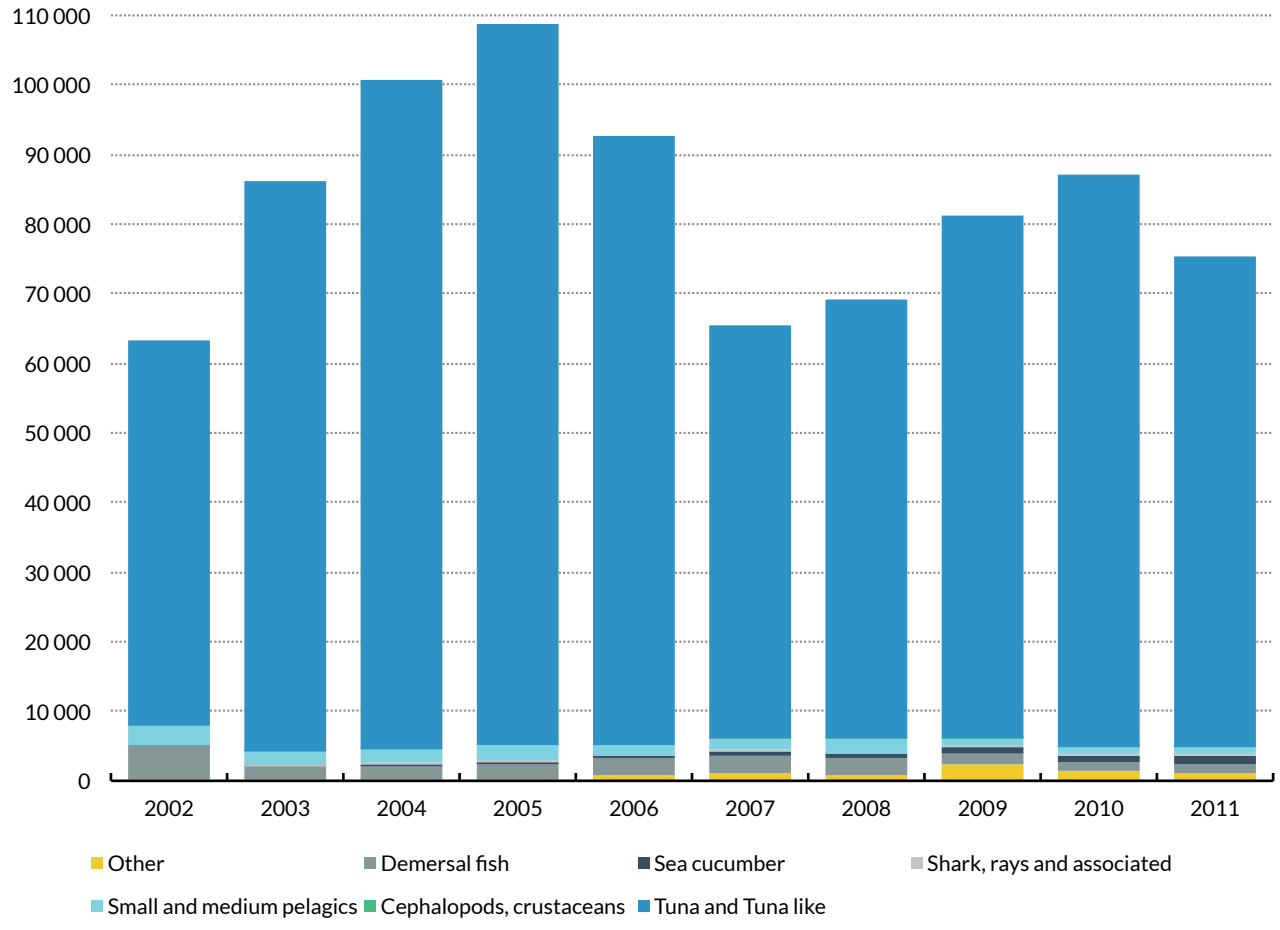
Following the significant development of the industrial tuna fishery since the late 1990s, the Seychelles have produced a considerable quantity of fish. According to FAO FishStat, the tuna catch by Seychelles flagged vessels has varied between 70,000 MT and 80,000 MT since 2009.

Production from the artisanal and semi-industrial fleet has been stagnating in recent years around 3,000 MT per year. It should be noted that there is a strong seasonal pattern to artisanal fisheries catches in the Seychelles, with catches tending to be highest around the inter-tropical monsoon periods of March-May and October-November, when sea conditions are most conducive to fishing (De Lestang. 2011).

In addition to the domestic catch, fishery production by DWFN tuna purse-seiners in the Seychelles'

Domestic inland fish production in Comoros (in tons)

2014 - Figure 6 - Source FAO FISHTAT J (2002-2011)



EEZ may be more than 45,000 MT considering that EU vessels declared a total catch of about 40,500 MT in 2011.

WIOFish data indicate that the most important contributing species to these catches are skipjack and yellowfin tuna.

4.6. Fish Utilization

Tuna is omnipresent in the Seychelles, from transshipments in Port Victoria to canning and local consumption by residents and tourists. This is due to the strategic geographical position of the Seychelles serving as a port base for the tuna fishing fleet in the SWIO.

Approximately 85 percent of the tuna catch from purse seiners operating in the SWIO were transshipped in Port Victoria in 2011 (213,338 MT were landed and transshipped in 2011). Of this amount, around 65,000 MT were landed for processing by the Indian Ocean Tuna Ltd. (IOT) canning factory (Catanzano Joseph. Nageon de Lestang Joël. 2013). It is estimated that the IOT, which is one of the largest tuna canneries in the world, buys about 20 percent of all tuna landed or transshipped in the Seychelles and produces 1.3 million cans of tuna per day (COFREPECHE. 2013). Skipjack, yellowfin and bigeye tuna are the main canning species. Tuna and bycatch that is not off-loaded either goes into containers for forward transportation on cargo vessels or into refrigerated vessels known as 'reefers'.

The production of canned tuna averaged 30,000 MT per year in the period 2008-2011 (Seychelles Fishing Authority. 2011). Other industrial fishery products include fish meal (4,100 MT in 2011) and fish oil (770 MT in 2011).

The artisanal and semi-industrial fisheries have traditionally provided the major source of protein for the Seychellois population and most of the catch is consumed fresh and is sold in the district markets, of which the most important is Victoria. High quality species, such as red snapper, are usually sold to the main export and fish processing companies and are then sold on to hotels or exported fresh on ice to Reunion and Europe. It should be noted that in recent years an increasingly lucrative export market has developed for high quality fish products. In this context, a labeling programme for artisanal fisheries products in the Seychelles focused on the hook and line fishery has developed since 2010 with the support of the Fishing Boat-Owners Association (FBOA).

Occasionally fish is frozen for distribution, mostly for the lower end of the market. With regard to the local market, fish processing is limited and mainly focuses on the smoking of marlin and sailfish, e.g. for the hotel market. Some vessels fishing in the southern group of islands undertake longer trips and seasonally salt fish for sale on the main islands. The shark fishery exports to the Far East. Sea cucumbers are salted and also exported to the Far East (Defaux V.Hjort A. 2012).

The two small fish processing companies (Oceana Fisheries Co. Ltd and Sea Harvest Pty. Ltd), which buy fresh fish from artisanal and semi-industrial fishers, also buy frozen (wet and dry) bycatch from the purse seiners for processing for the local and international markets. Bycatch from the EU fleets may include dorado, bonito kingfish, trevally, barracuda, sailfish, marlin and shark (COFREPECHE. 2013).

According to Catanzano Joseph, Joël Nageon de Lestang, 2013, there is a lack of a marketing strategy and insufficient product diversification for artisanal fisheries, mainly due to the existence of only two fish processing companies which "dictate the marketing/pricing policy, and local fishers are almost totally dependent (at least for now) on these two establishments".

4.7. Infrastructures

As mentioned above, a governmental project aimed at extending the capacities of Port Victoria for

the fishing industry is on-going. This project includes the construction of a fishing quay (120m long and 30m wide) and the provision of an office and services related to the fishery sector.

For the artisanal and semi-industrial fisheries, a new fishing port located at the Providence Industrial Estate in Victoria was recently constructed and opened in 2011. Two ice-making facilities, operated by private companies, are in place but occasionally face shortages. Besides Victoria, the Seychelles Fishing Authority owns three other ice-making facilities on Mahé and another can be found on the island of Praslin.

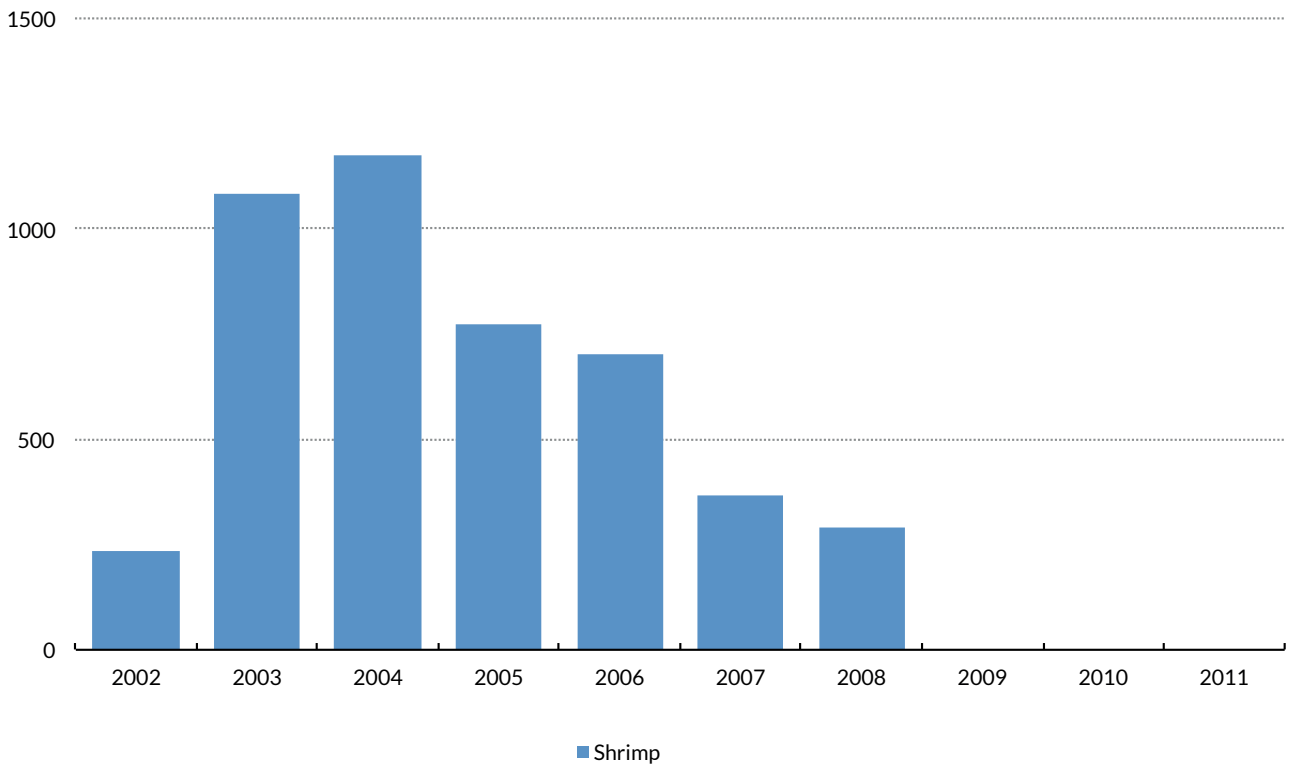
Other landing sites for artisanal and semi-industrial fisheries in the country have limited and rudimentary shore-based facilities.

5. Aquaculture Sector

The aquaculture sector in Seychelles is fairly recent and is still in its infancy stage. Development of the sector started in 1989 with a pilot project to grow black tiger prawns (*Penaeus monodon*) on Coëtivy Island, situated approximately 130 km from the main island of Mahé. It later grew into a fully-fledged commercial, integrated project based on 200 grow-out ponds supplied by two hatcheries. The brood stock for the hatchery had to be flown in from Madagascar at considerable expense. The prawns were processed in a factory also located on Coëtivy Island. Shrimp feed was produced at the animal feed factory located on Mahé (Catanzano Joseph. Nageon de Lestang Joël. 2013). Peak production levels were achieved in 2003 and 2004 with a total annual production of approximately 1,000 MT of prawns. The farm ceased all operational activities in December 2008

Aquaculture production in Seychelles (in tons)

2014 -Figure 7 - Source FAO FISHTAT J (2002-2011)



due mainly to high operating costs and lack of economic viability.

Giant clam (*Tridacna maxima*) and pearl oyster (*Pinctada margaritifera*) farming started on Praslin in 1993 and 1995, respectively. To date, Seychelles is the only country in the Western Indian Ocean region that has a commercial giant clam farm; the clams are reared in four raceways. Although the quality of pearls produced from the black-lipped pearl oyster match the quality of those obtained from the Pacific islands, the pearl farm has been facing difficulties keeping up production due to the high loss of pearl oysters on the grow-out lines.

During its peak period, the aquaculture sector employed up to 400 people.

The Seychelles Fishing Authority (SFA) recently commissioned the development of a master plan for marine aquaculture development, which remains a key government policy goal (Huntington Tim. 2011).

6. Fish Import and Export

Import

Fish imports are dominated by the import of frozen tuna to supply the canning factory. In 2009, the Seychelles imported a total of 64,310 MT, valued at approximately US $87.5 million, according to FAO FishStat data.

Most recent data indicate that the Seychelles imported 68,000 MT of frozen fish in 2011 worth about US $120 million, with frozen tuna representing 99 percent of overall fish imports in volume and 98 percent in value. Smaller quantities of fresh fish, molluscs and crustaceans and prepared fish for local consumption and the tourism industry made up the remainder of fish imports. In 2011, the total volume of fish and fishery products imported was 68,712 MT (COFREPECHE. 2013).

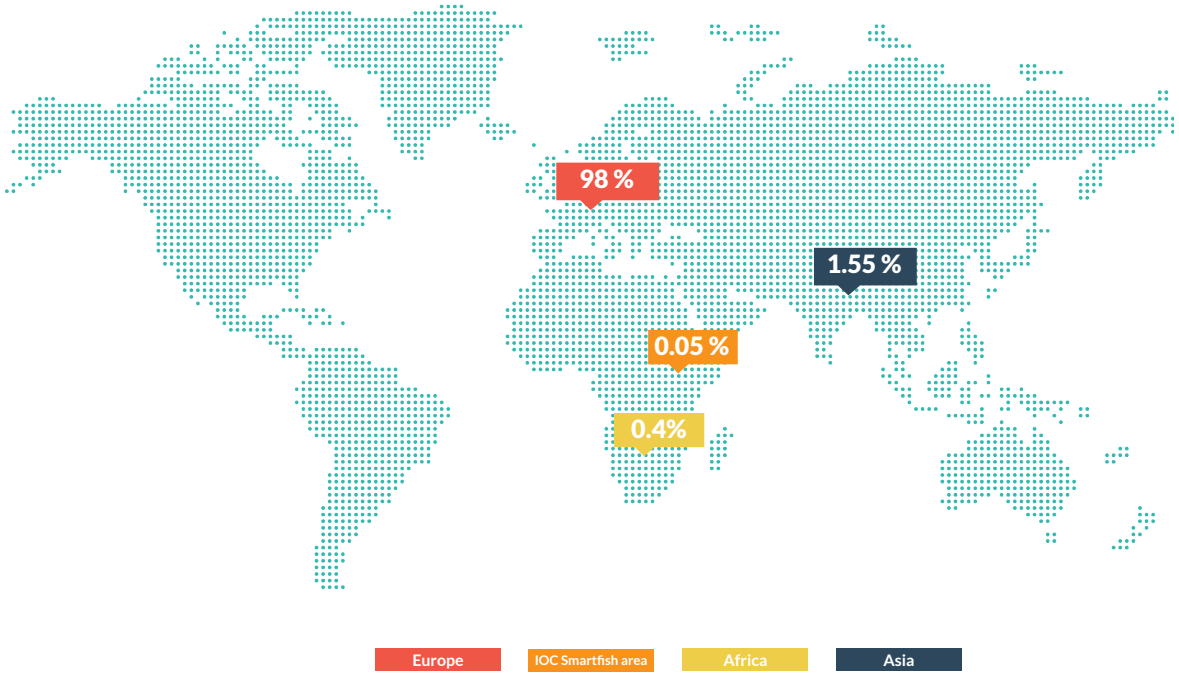
Export

As mentioned above, the production and export of fish and fishery products, in particular canned tuna, constitute a very important economic activity for the Seychelles. Other fish products include fresh and frozen fish (including tuna loins), dried shark fin and sea cucumber, fish meal and fish oil. In 2009, the Seychelles exported a total of 47,500 MT valued at about US $210.2 million, according to FAO FishStat data. EU markets are the main destination.

More recent data indicate that Seychelles exported a total of 36,920 MT of fish and fishery products in 2011. The export of canned tuna to the EU represented 31,283 MT in 2011, for a total value of about US $240 million (COFREPECHE. 2013).

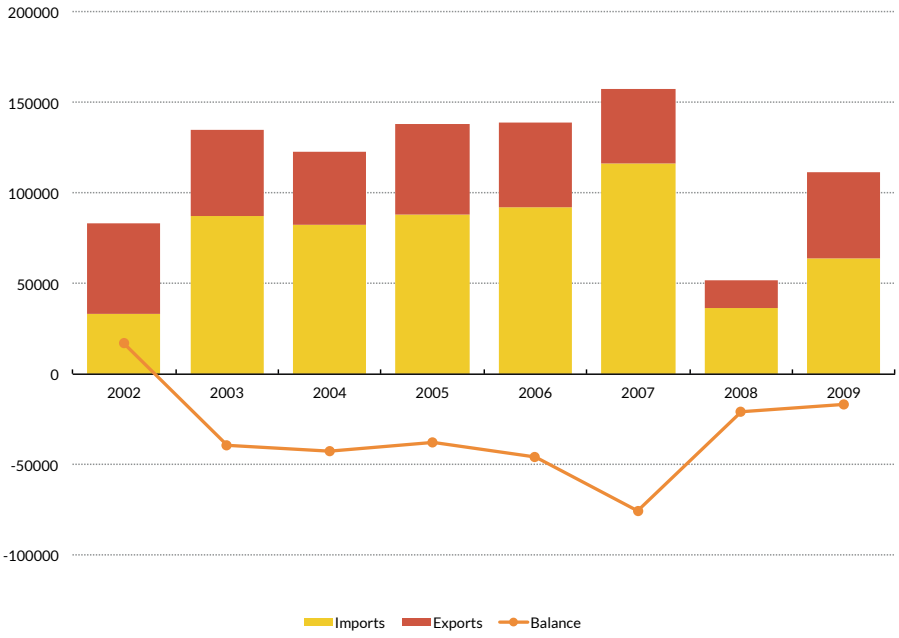
Destination of fish exports from Seychelles (% of $)

*2014 - Figure 8 - Source COMSTAT (ref year 2012) - *NES : not elsewhere specified*



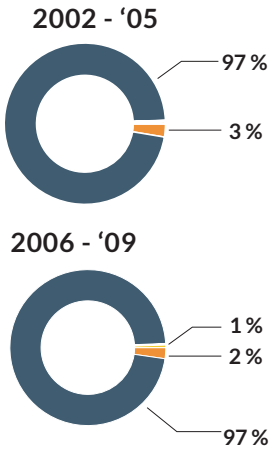
Fish trade balance in Seychelles in volume (in tons)

2014 - Figure 9 - Source FAO FISHTAT J (2002-2009)



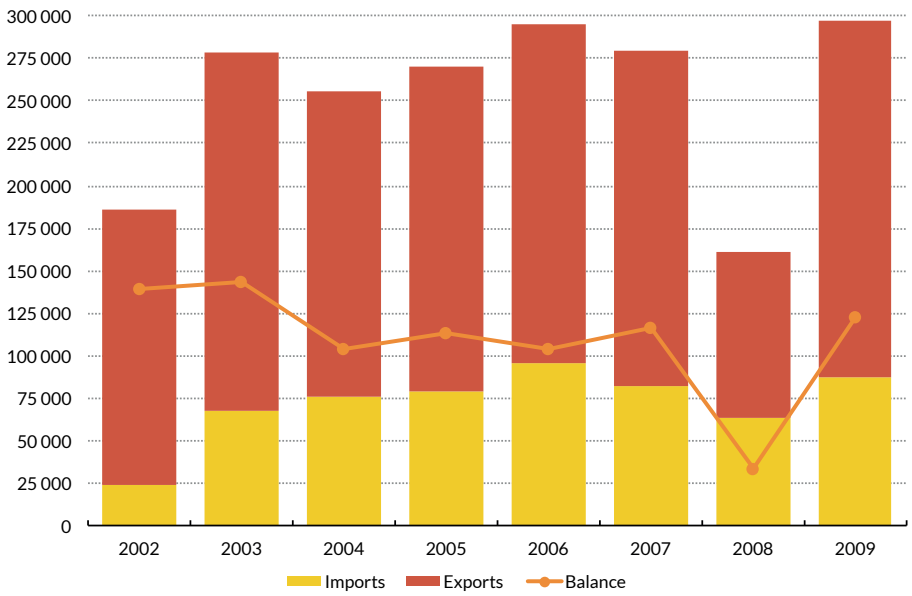
Fish Imports by category in Seychelles in value (% of $)

2014 - Figure 11 - Source FAO FISHTAT J (2002-2009) - Average period



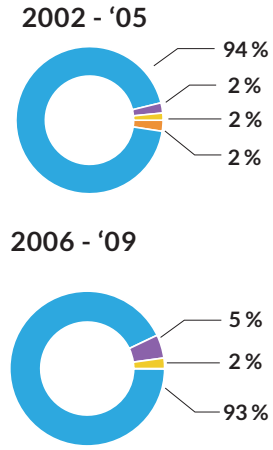
Fishtrade balance in Seychelles in value (in '000 US $)

2014 - Figure 10 - Source FAO FISHTAT J (2002-2009)



Fish Exports by category in Seychelles in value (% of $)

2014 - Figure 12 - Source FAO FISHTAT J (2002-2009) - Average period



7. Contribution of the Fishery Sector to the Economy

Fishing has traditionally played an important part in the life of the Seychellois people and the fisheries sector plays a major role in the socio-economic development of the country. It provides important revenue and foreign exchange earnings from exports, and is an invaluable source of animal protein. The fishery sector as a whole is the second most important sector - after the tourism sector - both in terms of foreign exchange earnings and employment.

Although industrial fisheries constitute a major pillar of the Seychelles' economy (a total of 213,338 MT of tuna and tuna-like species were landed and transshipped in 2011 in Port Victoria), the artisanal fisheries remain of great importance in terms of food security, employment and cultural identity (Catanzano Joseph. Nageon de Lestang Joël. 2013).

The total fish production of the domestic fleet reportedly ranged between 70,000 and 85,000 MT for the period 2008-2011. According to SFA data, the industrial component, composed of purse seine and longline vessels, represented approximately 95 percent of the total.

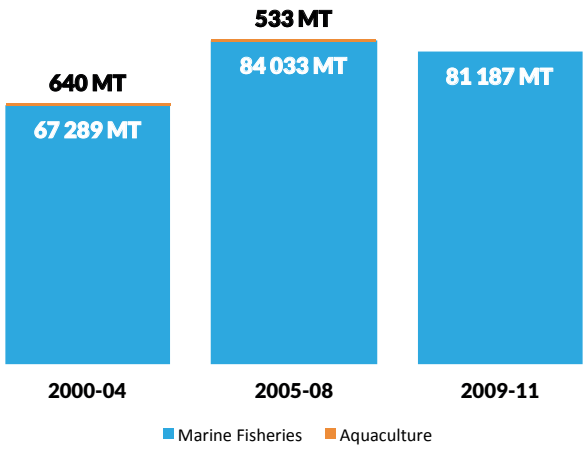
Domestic Fish production of the main fisheries in Seychelles (in tons)

2014 - Figure 13 - Source SFA annual report (2011)

	2008	2009	2010	2011
Artisanal Catch	4,777	3,019	2,595	2,875
Semi-Industrial Catch	0,233	0,329	0,295	0,238
Pure Senne Catch	56,380	68,339	75,787	63,211
Longliner Catch	6,795	8,323	6,659	7,565
TOTAL	**68,185**	**80,010**	**85,336**	**73,889**
Share of Industrial	93%	96%	97%	96%

Total volume of fisheries and aquaculture production in Seychelles (in tons)

2014 - Figure 14 - Source FAO Fishtat J (2000 -2011)



Contribution of the fishery sector to GDP is difficult to appreciate given the difficulty to estimate the contribution of the overall fisheries sector and related activities. Contribution of the fishery sector represents close to 5 percent of GDP (OECD et al. 2013). On the other hand, the fishery sector including related activities contributed an estimated 30 percent of GDP in 2005. However, the threat of piracy is believed to have significantly reduced this contribution. Nevertheless, the fisheries sector is still the second largest contributor to GDP and is based on industrial tuna fishing activities and the canning factory, which generate around 15 percent of GDP (Catanzano Joseph. Nageon de Lestang Joël. 2013).

The largest contribution of the industrial tuna fishing industry comes from expenditure by vessels owners on goods (e.g. fuel, berthing, fees, and food supplies) and services in Port Victoria, which now serves as a regional hub for the purse seine tuna fleet. Thanks to the on-going extension of the capacity of Port Victoria to service the industrial fleet, improved facilities and services will be available in the future.

Payments made through fishing agreements and private access agreements for tuna resources in the Seychelles' EEZ also contribute significantly to the national economy in terms of budget revenue. Total payment made to the Seychelles by the EU and EU fleets, including for access to resources and support to the sector programme, was estimated at EUR 6.8 million in 2011 (COFREPECHE. 2013). Other non-EU foreign fleets contribute an estimated US $3 million per year (OECD et al. 2013). The contribution of Seychelles flagged tuna vessels to budget revenue is not known.

The trade of fish is also an important income-generating activity for the country and significantly important for the inflow of foreign exchange. The gross trade balance surplus of fish and fishery products was about US $229.2 million in 2011 (COFREPECHE. 2013). In 2011, fishery exports accounted for 99 percent of food exports, and in terms of total exports they represented 90 percent; on the other hand, fishery products accounted for 25 percent of imports of food and agriculture products, and 14 percent of total imports in the same year (Kurien John, Lopez Rios Javier. 2013).

In terms of employment, direct and indirect employment in the fishery sector was an estimated 5,000 people in 2011, representing around 11 percent of total formal employment in the country (Seychelles Fishing Authority. 2011). The number of full- and part-time commercial fishers varies between 1,300 and 1,400, primarily due to the seasonal mobility associated with this sector. Employment in the fishery sector also includes people employed in fish processing, export activities, net repairs, ship chandelling, vessel and marine equipment repairs and maintenance, etc. The IOT canning factory is by far the largest single employer in the country with a workforce of over 2,500 workers.

Amongst the IOC countries, Seychelles is the one with Comoros where fisheries play a leading role in food security. According to FAO estimates, fish accounted for 47 percent of total animal protein intake in the country in 2009. This figure is greatly above the African average (19.1 percent).

Fish consumption is also high with an annual per capita consumption of 57.4 kg in 2009, the highest in the African region (9.4 kg) and amongst the highest in the world. Imports of tuna, including bycatch from the industrial tuna fleet, play a strong role in the supply of fish for food.

Fish consumption in Seychelles (in live weight)

2014 - Figure 15 - Source FAO Fish and fishery product, world apparent consumption FAO STAT (2000 - 2009)

	Total fish supply quantity	Fish supply per capita	Fish protein per capita
2008 - 09	4,934 MT	57.4 kg/y	16.8 g/day
2004 - 07	5,015 MT	59.7 kg/y	17.875 g/day
2000 - 03	4,582 MT	56.9 kg/y	17.5 g/day

POLICY, INSTITUTIONAL AND LEGAL FRAMEWORK OF RELEVANCE FOR THE FISHERY SECTOR

8. Fishery Policy and Planning

The current Fisheries Policy of Seychelles (2005) is a revision of the 1986 policy. With reference to this policy document, the long-term policy objectives of the Government of Seychelles in the sector are "the promotion of sustainable fisheries development and the optimization of the benefits from the fisheries sector for present and future generations". Its principal focus is the promotion of sustainable management and responsible fisheries, providing food, employment, income from foreign exchange earnings, and protecting the marine ecosystem.

In particular, the Fisheries Policy (2005) aims to pursue the following objectives: Conservation and management of marine resources to ensure the long-term viability of the industry; Maximize employment; Maximize revenue from fisheries and related activities (with emphasis on improving fish quality and health standards to meet export requirements and value addition); Maximize foreign exchange earnings; Promote safety at sea; Maintain Port Victoria as the main tuna landing/transshipment port in the Western Indian Ocean.

Since early 2013, IOC-SmartFish has supported a revision process of the current fisheries policy. The first step was to assist with the preparation of a Statement of Intent (SOI) to support national fisheries priorities for the Seychelles fishing policy. The general objective of the SOI was to outline a draft Fisheries Development Strategy for Seychelles to 2020.

- Fisheries policy and planning in the Seychelles is also influenced by the sector support programme under the FPA between the Seychelles and the EU. Under the current protocol, sector support programme receives EUR 2.2 million per year. The three core areas of the programme are as follows:

- Improvement of the management of artisanal and industrial fisheries - activities include the development of management plans, the establishment of a fisheries development fund (credit facilities for longliners), support for MCS, improvement of the observer programme and cooperation with international bodies;

- Development of fisheries infrastructure, to the benefit of both the artisanal and semi-industrial sub-sector and the industrial sub-sector (with reference to the construction of an industrial tuna fishing quay at Port Victoria);

- Capacity building, including fish inspection and fisheries training.

The main issues that were derived from the preliminary diagnosis/analysis of the fishery sector can be summarized as follows:

- The fishery sector is a very 'extraverted economy' because the pre-harvest sector, including major investments, are foreign-owned and the main economic advantages are based on access right agreements and the indirect economic contribution of the fishing port and fish processing activities linked to the operation of the foreign fleet;

- The sector has the potential to make an enhanced economic contribution to the Seychelles economy, with associated social and environmental benefits;

- Fishery institutions have to be restructured, reinforced and a closer working relationship developed to optimize the benefits for the general public as well as for recreational and

professional fishers;

- Two major issues need to be addressed simultaneously: 1. Control the level of fishing pressure; 2. Reduce negative economic impacts and risks from foreign investments (foreign agreements) and their potential effects on the fisheries.

In conclusion, the Statement of Intent highlights that given the Seychelles' macro-economic objectives to overcome the financial and structural macro-economic problems of the country, a new vision of fisheries management, based on the 'potential wealth of Seychelles fisheries', has to be promoted and implemented on a step-by-step basis to have a positive impact and attain sustainable national objectives, in line with the Comprehensive Africa Agriculture Development Programme. In this context the potential wealth of Seychelles fisheries can be correlated to the concept of the 'Blue Gold Economy', which is being promoted by President Michel.

The proposed Statement of Intent supports the government's priorities of economic transformation through the improvement of environmental, social and economic benefits obtained by Seychelles from the nation's natural resources, and the impact of fisheries on the maritime sector. It details the outcomes, direction, priorities and services of the ministry responsible for fisheries from 2013 to at least 2020. The ultimate objectives of the SOI are to achieve a more equitable distribution of public and private investments and responsibilities in the fisheries sector, leading to a more sustainable and equitable management of the natural wealth. (Statement of Intent to Support National Fisheries Priorities for the Seychelles Fishing Policy. Catanzano Joseph. Nageon de Lestang Joël. 2013)

9. Institutional Framework

9.1. Fisheries Administration

The Ministry of Natural Resources and Industry (MNRI) is responsible for all fisheries related matters. The MNRI replaced the Ministry of Environment and Natural Resources in 2010. Its mandate is to set out fisheries policy guidelines in Seychelles.

The Seychelles Fishing Authority (SFA) is the executive arm of the MNRI. The SFA was formed in 1984 by the Seychelles Fishing Authority (Establishment) Act "to develop the fishing industry to its fullest potential and to safeguard the resource base for sustainable development". The mandate of the SFA is to perform management, planning, development, scientific and training functions, as well regulatory functions, involving conducting surveillance in collaboration with the coastguard in relation to fishing operations in the Seychelles' EEZ, monitoring the catch of all fishing vessels, and carrying out scientific and development research (FAO 2005-2016).

The SFA is a parastatal organization, for which the President appoints a Board of Directors. It employs over 120 staff.

A new structure for the SFA is under development. The proposed structure would comprise five Divisions with few changes with regards to the Divisions (Catanzano Joseph. Nageon de Lestang Joël. 2013). The Project Section would expand to incorporate the Port Administration Unit and a new Fisheries Management and Evaluation Division would be created, to be headed by a Chief Fisheries Officer.

9.2. Fisheries Research

The Research and Development Section of the SFA is responsible for "undertaking research activities in order to generate scientific information for the management of fisheries". The main areas of research that the SFA has been involved in relate to demersal line and trap fishery

resources (annual stock assessments using YPR and production models for key indicator species), assessments of deep water resources for development (e.g. deep water shrimp and snapper), and ecological research on problems such as the impact of coral bleaching on reef fisheries. The SFA also conducts periodic stock assessments for sea cucumbers, as part of its fisheries management plan.

In parallel, the SFA actively participates in international research projects involving close partnerships with foreign research institutes. With regard to tuna fisheries, the SFA has participated in oceanographic research, climate research and biological and behavioural studies. The SFA also routinely collects length-frequency data for yellowfin, bigeye and skipjack tuna through port sampling and supplies data to the IOTC sampling programmes.

Whilst local academic-based research is currently limited to the area of fisheries, the new Seychelles University, which opened in 2009, could provide a promising opening for the future development of ocean and fisheries research-based teaching (COFREPECHE. 2013).

Recent projects have included :

- SEYSHA (From Behavioural Ecology, to Spatial Management for the Conservation of Sharks in the Seychelles), supported by IRD (*Institut de Recherche pour le Développement*);
- South West Indian Ocean Fisheries Project (SWIOFP) and the Agulhas-Somali Current Large Marine Ecosystem Programme (ASCLME), a GEF-funded programme supporting an ecosystem approach to fisheries (EAF);
- Mitigating ADverse Ecological Impacts of Open Ocean Pelagic Fisheries (MADE), which focuses on the impact of the use of fish aggregating devices (FAD) in industrial tuna fisheries for bycatch mitigation;
- Indian Ocean Swordfish Stock Structure (IOSSS);
- WIOMSA projects, including a spawning aggregation project which looks at the status of fisheries for aggregating species, including models of MPAs for aggregations, and a project which evaluates the effects of MPAs on fishers;
- Recovery Dynamics of Inner Seychelles Coral and Fish Communities;
- African Monitoring of Environment for Sustainable Development (AMESD);
- Ocean Data and Information Network for AFRICA (ODINAFRICA);
- Seychelles Ocean Temperature Network (SOTN).

9.3. Fisheries Training

The Directorate of Marine Affairs of the Ministry of Transport is responsible for the registration of The principal institution providing vocational training to private sector stakeholders involved in fisheries, outside of on-the-job training provided by fishing companies, is the Maritime Training Centre (MTC) of the Ministry of Education. The Board of the MTC includes fisheries stakeholders.

The MTC offers the following courses: Advanced Certificate in Fisheries Science & Fishing Technology; Advanced Certificate in Navigation & Seamanship; Advanced Certificate in Marine Mechanics; Certificate in Fishing Technology (apprenticeship).

A new MTC is being planned with greater training capacities. The new building, for which funding construction has been approved by the BADEA (Arab Bank for Economic Development in Africa), is

designed to accommodate 200 students a year.

9.4. Other Public Institutions concerned by Fisheries

Other major public institutions involved in fisheries development and management are listed below:

The **Seychelles Ports Authority (SPA),** created in 2004, is the government agency responsible for the management of the country's ports and notably the Port of Victoria. It is estimated that 80 percent of its fees come from the fishery sector. It employs around 100 staff.

The **Seychelles Maritime Safety Administration (SMSA)** is responsible for the registration of all vessels, including fishing vessels.

The **Seychelles Licensing Authority (SLA)** is responsible for the issuance of all fishing licenses, based on recommendations from the SFA. The SLA was created in 1986.

The **Seychelles Coast Guard (SCG)** of the Ministry of Defence participates in MCS activities. The SCG was created in 1994.

The **Seychelles National Park Authority (SNPA)** of the Ministry of Environment is involved in research activities for marine environmental issues, coral reefs, marine mammals, etc. The SNPA was created in 2009.

The **Seychelles Bureau of Standards (SBS)** is responsible for setting sanitary norms and other norms for all Seychelles industries and products. The SBS was created in 2010. It is the competent authority for fish quality control.

Other important institutions include the Development Bank of Seychelles (DBS), which is involved with the provision of loans provision for the fishery sector, the Seychelles Investment Bureau (SIB), which is intended to be a one-stop shop for the promotion of foreign and domestic investment, and the Seychelles International Business Authority (SIBA), which is responsible for offshore investment, and for granting permission to act in the Seychelles investment trade zone.

9.5. Private and Community-Based Institutions

As mentioned above, there are no real community-based fishery organizations in the Seychelles. However, two producer organizations have played a significant role in promoting consultations with the fisheries administration to support decision-making.

The **Fishing Boat-Owners Association (FBOA),** which was created in 2003, now has more than 40 members, longline and hook and line boat owners. The FBOA was recently given an office and a secretary located at the SFA. The association holds regular meetings with the MNRI and the SFA. The FBOA has actively participated in discussions to obtain concessions on duty exemption for fishing material and safety equipment, and assisted fishermen with obtaining compensation for the repair of vessels and the replacement of equipment damaged in the tsunami disaster. Interestingly, the FBOA has also promoted a South-North cooperation project (with French partners) for the labeling of hook and line fishery products in the Seychelles.

The **Praslin Fishermen Association (PFA)** was created in 2009. The objective of the PFA is to improve fisheries management practices on Praslin Island by promoting fisheries co-management arrangements. The ACP Fish II project, in close collaboration with the PFA, recently supported a study to identify potential sites for fisheries development on Praslin Island (POSEIDON, 2011).

A more specific producers' organization was also created in the context of the drafting of a fisheries management plan for sea cucumbers, namely the **Sea-Cucumber Association**. It was created in 2005 with the technical support of the FAO. This association has been closely involved in the

fisheries planning and management process.

10. Legal Framework

10.1. Fisheries Legislation

The main pieces of fisheries legislation are the Fisheries Act of 1986 (amended in 1997 and 2001), which regulates the fishing conditions for Seychelles flagged and foreign fishing vessels, the Licences (Fisheries) Regulations (Ed. 1991), which complete the Fisheries Act and define the practical conditions attached to fishing authorizations, and the Maritime Zone Act of 1977, which, inter alia, sets out the different limits of Seychelles' maritime zones, the territorial sea, archipelagic waters, the contiguous zone as well as the EEZ and the continental shelf.

Other pieces of legislation that are of relevance for the management of the fishery sector are the Seychelles Licensing Authority Act of 1986, as licences under the Fisheries Act are issued by the Seychelles Licensing Authority, the Environment Protection Act (1994), the National Parks and Nature Reserves Act (1969), which provides the legal instrument to establish and manage marine protected areas and the Public Officers (Protection) Act of 1976, as this Act provides protection for fisheries officers.

Two other pieces of legislation of relevance must also be mentioned. The first is the Export of Fisheries Products Act of 1996, which defines the legal obligations of those wishing to export fishery products. The other is the Agriculture and Fisheries Incentive Act of 2005 and Regulations of 2007, which makes provision for fisheries stakeholders to benefit from fiscal and financial incentives.

It should be noted that Seychelles ratified the 1982 UN Convention on 16 September 1991, and became a party to the FAO Compliance Agreement on 7 April 2000 and the 1995 UN Fish Stocks Agreement on 20 March 1998 (Snijman Phil. 2011).

More importantly, a new Fisheries Bill was prepared in 2011. The Fisheries Bill is a more detailed and updated instrument than the current law and is intended to respond to local, regional and international developments, such as the incorporation of provisions required to implement the IOTC resolution on Port State Measures and other IOTC resolutions. Moreover, given that the Fisheries Act of 1987 does not provide an adequate legal framework for MCS from a compliance and enforcement point of view, the Fisheries Bill is a huge improvement in this regard (Snijman Phil. 2011).

It should also be highlighted that the Fisheries Bill also makes provision for the SFA to take over the licensing function of the Seychelles Licensing Authority.

10.2. Other Elements in relation to Legal Aspects

Seychelles is a member of the Indian Ocean Commission (IOC), the Southern African Development Community (SADC), the Indian Ocean Tuna Commission (IOTC), the Southwest Indian Ocean Fisheries Commission (SWIOFC), and it has also signed the South Indian Ocean Fishing Agreement (SIOFA). Seychelles is also a member of a bilateral commission, namely the British/Seychelles Fisheries Commission (BSFC). All these institutions and arrangements contribute to fisheries management, with particular reference to the exchange and sharing of scientific data.

As mentioned above, there is a Fisheries Partnership Agreement between the Seychelles and the EU, the protocol of which was valid until January 2014. This agreement was part of the tuna network fisheries agreements in the Indian Ocean and allowed EU vessels, mainly from Spain and France, to fish in the Seychellois waters.

There are also two Asiatic agreements for longline fishing, one with the Japanese Government and one with a Taiwanese association. Both have been extended every year since 2008.

Finally, it should be noted that there is a bilateral cooperation agreement between the Seychelles and Mauritius including reciprocal access to each other's waters (COFREPECHE. 2013).

FOCUS ON FISHERIES MANAGEMENT AND RELATED ISSUES

11. Administrative Functions

Fleet registration and management

A mechanism linking vessel registration and the issuing of fisheries licences is in place; the Seychelles Maritime Safety Administration (SMSA) is responsible for conferring the flag, and the SFA is responsible for authorizing the issuance of a licence (currently issued by the Seychelles Licensing Authority - SLA). However, the practical mechanism, which has MSA submitting flag applications of fishing vessels to SFA for approval (the condition being that a fishing licence will be issued to the vessel), is not enshrined in a formal piece of legislation or inter-institutional agreement (NPOA-IUU, 2007).

Both the SFA and the SMSA keep a register of fishing vessels.

Authorization to fish

The Licences (Fisheries) Regulations of 1987 define the various categories of fisheries licences, conditions of the licence and the various fees for both local and foreign licences.

Currently, fishing licensing in the Seychelles is carried out by the Seychelles Licensing Authority (SLA). As mentioned above, the new Fisheries Bill may give the future responsibility of issuing licences to the SFA. This would obviously strengthen the SFA's capacities to more effectively manage and control the fisheries.

It should be noted that the SFA is currently the authority granting authorization to fish in the high seas.

With respect to artisanal fisheries, access to most fisheries is through licensing and one fishery (hook and line) also requires fishers to be registered. In particular, a licence is mandatory for all vessels wishing to fish, with the exception of vessels of less than 7m with no mechanical propulsion systems and not exploiting a particular resource (i.e. holothurians). However, according to De Lestang, licensing regulations have never been enforced to date and only 60 percent of commercial fishing vessels comply with these regulations. In most cases, commercial fishers operate without any kind of licence.

Fisheries Monitoring

In the industrial and semi-industrial sub-sectors, the Fisheries Monitoring Centre (FMC) of the Department of MCS of the SFA is responsible for the processing the catch report data of fishing vessels. The FMC is also responsible for the delivery of Catch Certificate Schemes necessary for the export of fish to EU markets.

In the artisanal sector, the statistical system is weak due to lack of capacity and staff motivation at the SFA level (Catanzano Joseph. Nageon de Lestang Joël. 2013). The Catch Assessment Survey (CAS) that was originally implemented in1985 is now obsolete and a new database, which would supersede the present statistical system, should be introduced soon.

12. Fisheries Management Systems

There is a clear division of fisheries management systems in Seychelles. The first system refers to the management of artisanal and semi-industrial fisheries and related demersal and small pelagic resources, and is of a purely national concern. The second system refers to the management of oceanic tuna and tuna-like species and involves the IOTC for the elaboration and adoption of management measures and the Seychelles authorities for enforcement of MCS measures. Although all fisheries are officially managed through the licensing of vessels, it is only in the industrial fisheries that effort controls are applied through entry limitation.

The **artisanal fishery is open access** and excess fishing effort, especially in inshore areas, has led to localized over-exploitation (Per Erik Bergh. 2011). Indeed, there is a strong tradition of open access, with fishing rights considered as a birth right by all Seychellois (Catanzano Joseph. Nageon de Lestang Joël. 2013).

The main **fishing regulations** can be listed as follows:

- Spatial restrictions and closures in addition to MPAs: mother ship ventures (with dories) are prohibited on the Mahé and Amirantes plateaus and are only restricted to some offshore banks in the southern islands group; industrial tuna fishing vessels operate in restricted zones to preserve artisanal fisheries;

- Temporal restrictions: restricted fishing periods are in force for the Indian mackerel gill net fishery with no fishing allowed at night; lobster and the sea cucumber fisheries have closed seasons;

- Gear restrictions: demersal trawling in Seychelles' waters is prohibited; there are technical specifications for traps (minimum mesh size of 40mm, use of biodegradable material for mouths); technical specifications exist for shark fisheries (catching sharks with nets is not allowed, all vessels with an LOA above 24ms must keep the fins attached to the carcass); deep-water monofilament gillnets are prohibited; it is prohibited to use destructive fishing techniques such as the use of explosives, noxious substances, spear guns and inshore gillnets.

Additionally, fishery controls include the establishment of **marine protected areas (MPAs) and reserves** around the granitic islands where most fishing within the boundaries is prohibited or limited. Unfortunately, certain MPAs have proved to be difficult to monitor, mainly due to the lack of trained personnel and financial constraints, and most MPAs have been designated arbitrarily without consultation with the local communities, which could explain the poor levels of voluntary compliance.

Generally speaking, most regulations are ignored by fishers and are not enforced by the authorities. Most infractions go undetected and when they are, perpetrators usually go unpunished; in the last ten years the number of perpetrators convicted of fisheries or environmental crimes is negligible (Catanzano Joseph. Nageon de Lestang Joël. 2013). In addition, voluntary compliance is weak mainly as a result of the lack of awareness of local communities of the need to promote the management and conservation of marine resources.

The legal framework allows for the possibility of the SFA to promote **fisheries management plans (FMP)**. In addition to technical management measures such as closed seasons, closed areas, gear specifications, fishing methods and gear types or specification of species, FMPs may include schemes for limited entry into the fishery subject of an FMP. Participation of stakeholders and, where necessary, consultations with regional fisheries institutions, is encouraged.

As of now, the more advanced FMPs relate to the sea cucumber fishery. The first draft FMP was technically validated in 2007 and is currently partially implemented. Entry limitations, by freezing

the number of fishing licences (25 in total), as well as seasonal closures are operational. The FMP envisages setting a shared quota system for the four major species of sea cucumber, with a total allowable catch (TAC) set for each species, to be divided equally among all licence holders. Individual quotas would also be potentially transferable, subject to the authorization of the SFA. This quota system has yet to be implemented. The IOC-SmartFish supported the SFA in promoting the sea cucumber FMP.

Another FMP is currently being prepared with the support of the FAO EAF Nansen project. The management unit of this FMP is "the artisanal and recreational demersal fisheries in the Seychelles".

Furthermore, a Seychelles National Plan of Action for the conservation and management of sharks was adopted by the SFA in 2007. The missions of this plan of action are "to establish the necessary capacity, systems and databases to enable the informed adaptive management of shark stocks in Seychelles, and to implement an active and progressive precautionary approach to the management of targeted and non-targeted shark fishing effort that takes into account the transitional needs of stakeholders".

13. Fisheries Control, Surveillance and Enforcement

Fisheries control and surveillance in the Seychelles is the responsibility of the MCS Department of the Fisheries Management Division of the SFA, which is in charge of ensuring compliance with the provisions of the Fisheries Act (2001) and Regulations.

The MCS Department is based at the Fishery Monitoring Centre (FMC), which monitors the movement of licensed fishing vessels through the use of a functioning satellite dependent vessel monitoring system (VMS). The VMS was installed in 2002 and is operational for all national and foreign fishing vessels larger than 12m. It should be noted that in 2011, about 50 of the artisanal fleets were still waiting for transponders to be installed (Per Erik Bergh. 2011).

Other activities of the FMC include the processing of catch report data, the authorization for the landing of catch outside Seychelles' waters, and ensuring that the licensing unit maintains an updated register of licensed local and foreign fishing vessels.

Seven enforcement officers (inspectors) carry out the daily enforcement of the national laws; inspecting vessels for compliance and undertaking patrols within either national or regional areas alongside the National Coastguard who provide the patrol equipment together with a leased fisheries patrol vessel.

The SFA has good infrastructure with good facilities conducive to carrying out MCS operations. Office space is adequate, computers with an internet connection are available, and transport and fuel are not considered a limiting factor. Inspectors are uniformed and the offices are ideally situated in the harbour, very close to the fishing industry where landings, transshipments and processing takes place (Per Erik Bergh. 2011). Moreover since 2007, joint-surveillance patrols within the EEZ of the IOC five member countries were initiated and supported by the IOC's "*Plan regional de Surveillance de Pêche*" (PRSP) also funded by the EU. The PRSP and IOC-SmartFish have been collaborating on funding joint surveillance patrols mainly through grants.

In 2011, the MCS Department of the SFA consisted of 22 people, including 7 dedicated inspectors, 5 observers employed for the industrial tuna fishery, 5 officers working in the FMC, 2 officers dealing with licensing and 3 officers working with the VMS. Training is a priority for the SFA and basic courses are provided on an ad-hoc basis in relation to law, VMS operations, as well as inspection procedures (Per Erik, Bergh, 2011). In March 2014, a regional VMS system was inaugurated by the IOC. With this system, the five countries share information in real time on vessel positioning and movements.

Seychelles received a grant of EUR 294,200 to conduct a joint fisheries surveillance mission within the waters of the ESA-IO region. Areas patrolled consisted of the Seychelles, Madagascar, Comoros, Mauritius, Reunion and Tanzania Economic Exclusive Zones and a total of 33 fishing vessels were inspected at sea and thirty six vessels were detected by air surveillance missions, during both the national and joint regional patrols.

The competent authority for MCS implementation was the Seychelles Fishing Authority (SFA) and the planning coordination with other countries was done in collaboration with the IOC's "*Plan regional de Surveillance de Pêche*" (PRSP) and IOC-SmartFish.

14. Major Issues relating to IUU Fishing

In general, fishing regulations are well-enforced and compliance is good with regard to the industrial tuna fisheries. There is however potential illegal fishing by foreign unlicensed vessels including transhipment at sea, under-reporting by licensed fishing vessels, and non-compliance by Seychelles flagged foreign vessels (Per Erik Bergh. 2011). It should be noted that the last case of poaching by foreign unlicensed vessels was in 2010. IOC-SmartFish supported the Seychelles to improve compliance with IOTC conservation and management measures. This support included specific capacity building to comply with the IOTC resolution on Port State Measures. Whilst most IOC countries have not yet ratified the FAO Port State Measures Agreement, the IOTC resolution is largely based on the FAO Agreement. Seychelles are at the stage of accession since the 19 June 2013.

The IOC-SmartFish programme, in collaboration with the Indian Ocean Tuna Commission (IOTC), conducted PSM training in 2013 for Seychelles fisheries inspectors and officers of the Fisheries Monitoring Centre.

The objective was to provide technical support to the Seychelles for the implementation of the IOTC PSM resolution 10/11 and to facilitate and strengthen the implementation of the PSM Resolution, thus ensuring the long-term conservation and sustainable use of tuna resources.

The expected output is to improve PSM interagency requirements and skills to conduct effective port state inspection based on the existing IOTC conservation and management measures for PSM. A total of fifteen personnel were trained and given the necessary tools and equipment to improve their performance.

In contrast, in the semi-industrial and artisanal fishery, notably the inshore fishery, compliance and enforcement are very weak. The main IUU activities in the artisanal fishery are fishing during the closed season, fishing in MPAs and the use of unlicensed fishing gear (Per Erik Bergh. 2011).

An advanced draft NPOA-IUU covering all fisheries was developed in 2007. The NPOA-IUU, although still awaiting approval, has been partially implemented. The forthcoming enactment of the Fisheries Amendment Bill will enable the SFA to proceed with certain aspects of the NPOA (Snijman Phil. 2013).

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COUNTRY REVIEW - 2014

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