



INDIAN OCEAN
COMMISSION



SUPPORTING THE IMPROVEMENT OF MARINE FISHERIES GOVERNANCE AND MANAGEMENT IN SEYCHELLES

Economic study on major trends in the tuna industry
and its impact on the seychelles economy
over the 5 year period, 2009-2013



Co-implemented by
Food and Agriculture Organization
of the United Nations



Funded by
the European Union

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Programme for the implementation of a
Regional Fisheries Strategy for the
Eastern and Southern Africa – Indian Ocean Region

Supporting the improvement of marine fisheries governance and management in seychelles

Economic study on major trends in the tuna industry
and its impact on the seychelles economy
over the 5 year period, 2009-2013

SF/ 2015/ 50

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1 EXECUTIVE SUMMARY

As part of the implementation of a regional fisheries strategy for the Eastern and Southern Africa and Indian Ocean region (ESA-IO region), SmartFish is currently supporting initiatives designed to improve fisheries governance in Seychelles. SmartFish's involvement consists in providing technical support to promote the establishment of a Fisheries Economic Intelligence Unit (FEIU) within the Seychelles Fisheries Authority (SFA).

This report describes the mission of the consultant sent by SmartFish between the 5th and 11th of May 2015 to foster the FEIU initiative and the subsequent tool that was developed to "kick start" the intelligence unit.

The objectives of this mission were twofold:

- First, to conduct an economic study on major trends in the tuna industry and their impacts on the Seychelles economy over the period 2009-2013. This was based on data from the repository database recently created by SFA's Statistic Division to support, among others, such analysis. The SFA' repository database was initiated by SmartFish and developed over a period of several months during the previous phase of the programme.
- Second, to provide the yet-to-be formally established FEIU with an economic intelligence tool to monitor and conduct economic analysis in the future, thus contributing to the capacity-building of the unit.

The mission also included a 2-day briefing at the SmartFish Programme Headquarters in Ebène, Mauritius.

Following the mission in Seychelles, an economic intelligence tool was developed, the "FEIU tool", organised around two main components:

- An economic simulation model used to identify the source, distribution and extent of the direct, indirect and primary value added in each segment of the tuna industry (both fishing and processing sectors) – The methodology used in the "FEIU tool's dashboards" is similar to the one the World Bank (2011) used in their model when they provided technical assistance to SFA to improve the management of the tuna industry. The dashboards estimates also draw on up-to-date information linked to the FEIU repository database.
- A series of key indicators to monitor business intelligence in the tuna industry – the "FEIU pivot tables and charts" dynamically linked to the FEIU repository database.

During his visit to SFA in Seychelles and later while developing the FEIU tool, the consultant had the opportunity to test the robustness and completeness of the FEIU repository database; a key element for a successful establishment of the intelligence unit.

One of the expectations of the FEIU unit is that it will contribute not only to a better understanding and assessment of the contribution of the fishery sector to the national economy as a whole but will also report on the performance and contribution of the fishery sector vis-à-vis the Blue Economy.

It is believed this will contribute to a better understanding and acceptance that the fishery sector is a driving force in the national economy capable of attracting potential investors and skilled workers.

The tool previously developed by the World Bank in 2011 in close consultation with the Ministry of Finance and SFA included:

- an economic model of the tuna value chains with key indicators (Excel Spreadsheet model)
- a dashboard summarizing the principal indicators, including data from the economic model, for monitoring the sector.

With the 2015 SmartFish mission, the consultant was able to revisit the 2011 World Bank model and update the 2009 estimates based on the newly-created FEIU repository database. The new estimates reflect a notable shift between industrial tuna fishing methods from purse seiners to industrial longliners (the same tendency seems to hold with the semi-industrial longliners becoming prevalent in the domestic fleet). The number of purse seiners decreased from 55 (32 from the EU) in 2009 to 42 (22 from the

EU) in 2013 while at the same time, the number of Industrial longliners increased from 86 (61 foreign flags outside EU) to 134 (103 foreign flags outside EU) for the same period. This shift in the Industrial tuna fleet composition translates in decreased contribution of direct added value (DAV) from 62.1% of the Primary added value (PVA) in 2009 to 58.8% of PVA in 2013 in favour of indirect added value (IAV) which increased from 37.9% of PVA in 2009 to 41.2% of PVA in 2013.

The contribution of the Tuna fishing industry (including transfer pricing from IOT) to the national economy was estimated at 7.7% of the current GDP in 2009 compared to 6.7% in 2013. The World Bank and the Seychelles National Bureau of Statistics (NBS) estimated in 2009 that the contribution of the Tuna fishing industry could be between 8% and 9 % of the GDP. We note here that the validity of the GDP estimate from the FEIU repository database is a concern, since it does not match the estimates from alternative sources commonly referred to as reputable. The same goes for the exchange rates.

2 BACKGROUND

In 2011, financed by the European Union under the 10th European Development Fund, IOC-SmartFish started the IFRS program to implement a new strategy for the Eastern and Southern Africa and Indian Ocean region (ESA-IO region) with the aim of contributing to an increased level of social, economic and environmental development and deeper regional integration in the ESA-IO region through the sustainable exploitation of fisheries resources.

In Seychelles, the Statement of Intent to support national priorities for the fishing policy (elaborated with technical assistance from the SmartFish Programme) recommended the creation of a Fisheries Economic Intelligence Unit (FEIU) within the Seychelles Fishing Authority (SFA) with the aim to monitor the fishery sector and formulate precise macro-economic objectives.

It was expected that the FEIU should also carry out several economic evaluation studies to be utilized for implementing the strategic policy of the country, starting with a first evaluation of the rent from marine resources targeted by all major national fisheries. As such, the FEIU should focus on the following:

- Calculate an estimated value of the wealth of marine resources by improving the quality of catch data and improving the methodology for data collection and analysis;
- Undertake bio-economic modelling, covering the main types of natural resources available, in support of the elaboration and implementation of fisheries management plans, including co-management arrangements;
- Define and monitor key macro-economic indicators (turnover, employment, contribution to the GDP, market contribution, and contribution to food security)
- Provide advice (technical economic analysis and recommendations) to a Special Strategic Economic Group (SSEG) responsible for taking strategic decisions and communication with government and stakeholders (national and international groups).

While Seychelles is facing institutional changes to support, among others, the Blue Economy, SFA has identified the establishment of an operational Fisheries Economic Intelligence as a top priority.

2.1 The Establishment of the SFA FEIU unit

In the past few years, the Seychelles Fishing Authority (SFA) which is responsible for the management of the fishery, has been endorsing the setting-up of a Fisheries Economic Intelligence Unit within the SFA specifically dedicated to the monitoring of the economic performance of the fisheries sector and the provision of specific assistances to support fisheries management decision-making in the context of the Blue Economy.

The FEIU is primarily a strategic support group which can contribute toward the preparation of public and sectorial decisions for the fishing and aquaculture industries, whilst taking into account the broader national, regional and international dimensions of the matters being considered.

The FEIU's Mandate is therefore articulated around 6 primary functions:

- **Data repository:** Efficiently gather the necessary data and information held by the relevant stakeholder groups to assist in resolving any issue affecting the fishery sector particularly in the context of the Blue Economy.
- **Monitoring:** Monitor and analyse any events and trends which might have an impact on the fishing industry and the broader national economy.
- **Collaborative:** Collaborate with the relevant public and private sectors to strengthen fisheries management policies and planning towards a sustainable use and development of the Seychelles marine resource especially in the context of the Blue Economy.
- **Advisory:** Understand policy, trade and industry issues faced today by the fishing sector and be able to present them in a clear and concise manner.
- **Mediatory:** Promote and facilitate dialogue between fishing industry stakeholder groups to discuss and help resolve issues pertaining to the fisheries and/or aquaculture sectors.
- **Inform and educate:** Contribute to the improvement of the knowledge base surrounding issues and strategic decisions faced by the fishery sector in Seychelles especially in the context of the Blue Economy, thus reinforcing FEIU's informative and pedagogic function.

2.2 Past and present initiatives aimed to boost the FEIU

In 2011, the World Bank (WB) provided technical assistance for tuna industry management. The assistance included the development of an economic intelligence tool to measure direct and indirect benefits generated by the Seychelles tuna industry and to identify potential sources of national growth led by the tuna fisheries. The tool was also developed to provide some 'benchmarking' data that could be used to help the local cannery, the Indian Ocean Tuna Company (IOT) improve their competitiveness, a concern shared by both the public and private sectors.

The tool developed by the WB in close consultation with the Ministry of Finance and SFA included:

- an economic model of the tuna value chains with key indicators (Excel Spreadsheet model)
- a dashboard summarizing the principal indicators, including data from the economic model, for monitoring the sector.

Between July 2013 and August 2014, the SFA recruited a national economist consultant to support the development of the FEIU within the already well established Fisheries Economic and Information Division.

In November 2013, IOC-SmartFish contracted an international consultant to assist SFA with a proof of concept to identify areas needing attention to further develop and strengthen the FEIU in response to the pressing need for such unit.

Since July 2014, IOC- SmartFish supports the Implementation of a small institutional project under the provision of temporary international and national expertise targeting 3 primary initiatives:

- the development of a repository SFA-FEIU database through the statistic division to support economic analysis,
- the development of an economic model for the tuna industry drawing information from the SFA-FEIU database with the capability to report on major trends relevant to the tuna industry in Seychelles
- Drawing information from the SFA-FEIU database, carrying out a global valuation of the fisheries sector's contribution to the national economy.

Currently, FEIU is still considered an SFA initiative placed under the coordination/supervision of the Head of the Fisheries Economic and Information Division. However, the future of a fully operational FEIU within the existing SFA structure is still unclear. Unfortunately, there is a shortage of staff to support the FEIU initiative. In reality, only one person (either the senior economist or the Chief of the Fisheries economic

management Section of the Fisheries Economics and information Division) could be potentially involved in the day-to-day operation of the FEIU as long as this does not interfere with his/ hers existing duties.

The repository database is being finalised to support, among others, the economic analysis of the FEIU. The database, which is almost fully operational, has been designed to run under Microsoft Access. Note that the database is currently managed by the consultant who designed it and who is attached to the Statistical Management Section of the Fisheries Economics and Information Division.

Finally, a monitoring and economic analysis tool has been designed in Microsoft Excel, referred in this document as the "FEIU tool", which analyses data dynamically linked to the FEIU MS Access database. The FEIU tool is still under development but is already functional and able to conduct some of the economic analysis expected from the unit such as monitoring the trends in the tuna industry, and estimating the tuna industry contribution to the national economy.

3 THE MISSION

3.1 Objective

The objective of this mission was to update work done by the World Bank in 2011 on estimating value addition in the Seychelles tuna fisheries sector and its impact on the Seychelles Economy. This work was to be conducted alongside the establishment of a Fisheries Economic Intelligence Unit (FEIU) within the Seychelles Fishing Authority (SFA) specifically dedicated to the monitoring of the economic performance of the fisheries sector in general. The FEIU was to be set up to provide specific advice to support the management of the fishery sector and to improve governance in the context of the Blue Economy.

To do so, an economic tool, the "FEIU tool", was to be introduced to the FEIU exhibiting two main components:

- An economic simulation model used to identify the source, distribution and extent of the direct, indirect and primary value added in each segment of the tuna industry (both fishing and processing sectors) – *The "FEIU tool-dashboards"*
- A series of key indicators to monitor business intelligence in the tuna industry – *the dynamic "FEIU pivot tables and charts" linked to the FEIU repository database.*

3.2 Methodology used

The FEIU tool "FEIU.xlsm" was developed in Microsoft Excel 2013 and require VBA¹ Macros to be enabled. The VBA macros generate the custom menus and submenus, some features of the dashboards and ensure that the FEIU tool is correctly linked to the FEIU database.

3.2.1 Primary Added Values calculation

The FEIU tool's dashboards (see Table 26 to Table 30 in the Appendix under section 6.4.3) uses the same economic model that was developed by the World Bank (2011) which is based on the 'effects method'. This method allows for a valuation of the impact of the tuna industry on the entire economy in terms of the direct economic effects (Direct Value-Added – DVA) and indirect economic effects (Indirect Value-Added – IVA) of the tuna fisheries and related activities.

Value-added was mostly calculated by the difference between sales (turnover) and the intermediary consumption. The value-added generated by the tuna fleet licenced to fish in the Seychelles EEZ was also appraised in terms of the access rights that is, licence fees, plus fishing agreement revenues for the European Union (EU) fleet operating under the Fisheries Partnership Agreements (FPA).

DVA refers to value-added generated by all tuna fishing and processing activities taking place in Seychelles.

IVA refers to value-added generated by all the ancillary activities related to fishing and processing activities taking place in Seychelles. The IVA generated by the local suppliers and captured by the model is the IVA of first iteration.

¹ Visual Basic for Application (VBA)

By summing the DVA and the IVA of first iteration, the model can provide an estimate of the Primary Value-Added (PVA) generated by the tuna fisheries sector, and hence a contribution of the entire sector to the Seychelles economy.

The economic model also allows for an estimate of the sharing of PVA between Employees (workers), Companies and State.

The newly-developed FEIU tool used the same approach as the one used by the World Bank in 2011 to derived DVA, IVA and PVA (see section 6.4.3. in the Appendix for a full description of the FEIU tool's dashboards)

3.2.2 Key Indicators and trends relevant to the Tuna industry

Pivot tables and pivot charts were used to produce summaries of the various indicators and trends relevant to the Tuna fishing industry as suggested by the World Bank (2011) and Breuil (2014). The pivot tables and charts are dynamically link to the FEIU database reflecting the latest information available. For most pivot tables there is a corresponding pivot chart.

Following Breuil (2014), the following categories of indicators relevant to the tuna fishing activity were produced in the FEIU tool:

1. Technical and environmental indicators on tuna fishing activity,
 - a. Quantity/composition of tuna caught in the IO area (see Table 1 and Table 2)
 - b. Quantity/composition of tuna caught in the Seychelles EEZ (see Table 3 and Table 4)
 - c. Fishing effort of tuna fleet in Seychelles EEZ in number of fishing days and number of hooks (see Table 5)
 - d. Status of the tuna fish stocks for the tuna main species (yellowfin, skipjack, big-eye, albacore) (see Table 6)
 - e. Catch and catch's representativeness for each big pelagic species' group (Indian Ocean catches / global catches (FAO), Seychelles EEZ catches/ Indian Ocean catches) (see Table 2 and Table 4)
2. Technical and commercial indicators in Port Victoria,
 - a. Tuna port activity indicators
 - i. Quantity/composition of tuna landed and transhipped in Port Victoria (see Table 7)
 - ii. Number of port calls of tuna boats (see Table 8)
 - iii. Tuna flow by port call (see Table 8)
 - iv. Vessel expenses including consumption of gasoil and fuel oil and port fees (Table 9 to Table 13)
 - v. Quantity (corresponded volume) of containers imported and exported by IOT see Table 14)
 - b. Tuna processing activity indicators
 - i. Quantity/composition/value of raw material contracted with PS and imported (see Table 15)
 - ii. Quantity/value of canned tuna (see Table 16)
 - iii. Quantity/value of fishmeal (see Table 16)
 - iv. Quantity/value of fish oil (see Table 16)
 - v. Quantity/value of tuna loin (see Table 16)
 - vi. Export market (share of EU) (see Table 17)
 - c. Indicators to measure the local cannery competitiveness
 - i. Seychelles tuna cans exports volume (tons), value (000 €) and price (€/ kg) (see Table 18)
 - ii. EU tuna cans imports volume (tons), value (000 €) and price (€/ kg)²
 - iii. EU tuna cans imports from Seychelles, volume (tons), value (000 €) and price (€/ kg))³
 - iv. Seychelles volume representativeness⁴

- 2 There is no data available on EU Tuna cans global imports in the current version of the FEIU database (at the time of writing)
- 3 There is no data available on EU Tuna cans imports from Seychelles in the current version of the FEIU database (at the time of writing)
- 4 There is no data available on Seychelles volume representativeness (share of Tuna cans imported from Seychelles) in the current version of the FEIU database (at the time of writing)

3. Economic indicators,
 - a. Estimated PVA (see Table 23)
 - b. Budget revenue (see Table 19, Table 20, Table 21, Table 22)
 - c. Employment⁵
 - d. International fish trade⁶
 - e. Share of tuna fishing and related activities in port's activity (turnover, taxes) (see Table 24)

3.3 Mission Results

3.3.1 The 2011 World Bank Model update

The economic model ran in 2011 by the World Bank (using data from 2009) gave an estimate for the PVA of SCR 557.4 million (USD 40.8 million); our estimates for the same year shows a PVA of SCR 585.63 (USD 43.07) (see Table 23).

We note, however, that the WB model of 2011 did not first integrate the effects of what might be considered as a form of "transfer pricing" by IOT cannery. The 2011 WB report states that:

"Using the 2009 average exchange rate, the transfer pricing is estimated at approximately SCR 283.4 million (USD 20.9 million). Inclusion of this value in the contribution of the fisheries industry to the national economy would increase the contribution by 51% from SCR 557.4 million to SCR 840.8 million (USD 40.8 million to USD 61.7 million). The contribution of the tuna industry sector to the economy (primary value added) could consequently be estimated to a minimum of 8.2%."

We applied the same rule for the data generated by the FEIU tool and estimated the PVA (including transfer pricing) to be SCR 883.13 (USD 64.95) corresponding to a contribution to the Seychelles GDP of 7.7% in 2009, that contribution has since been decreasing to reach 6.7% in 2013 (see Table 23). During the same period, the FEIU tool's model estimates an increased contribution of IVA between 2009 and 2013 while correspondingly, the contribution of DVA decreased over the same period (Table 23).

We also note that the decrease in the DVA contribution to the GDP can be explained by the reduction in the number of European Union's purse seiners from 32 in 2009 to just 22 in 2013 reducing de-facto the direct revenue generated by the EU-Seychelles FPA for fisheries access by EU purse seiners fleet from SCR 104.76 million in 2009 to SCR 89.24 million, or a loss of revenue of about 15% (see Table 26 to Table 30 in the Appendix under section 6.4.3 for detailed DVA, IVA and PVA calculation).

Also between 2009 and 2013 the industrial longliners' fleet increased by 56% (from 86 to 134 vessels) while the purse seiners' fleet, all flags combined, decreased by 21% (from 48 to 38 vessels)

3.3.2 Technical and environmental indicators on tuna fishing activity

Table 1 Tuna caught (Mt) in the IOTC area by vessel type and country between 2009 and 2013

Catch (Mt)	Country																Grand Total		
	France	Spain	Seychelles	Taiwan	China	Australia	Korea, South	Japan	Thailand	Reunion	Portugal	Not Elsewhere included	South Africa	Oman	Maldives	Mauritius		India	
2009	139,020	115,252	76,574	58,512	4,506	7,600		5,562	11,084	2,170	1,131	6,068	843	1,874			108	8	430,313
Industrial Longliner		3,306	8,234	58,512	4,506	443												8	81,136
Purse Seiner	139,020	111,946	68,339	60,463	8,068	7,158		5,562	11,084	2,170	1,131	6,068	843	1,874			108	8	349,177
2010	130,910	133,631	82,155	60,463	8,068	5,088	1,331	2,055		2,253	2,098						336	9	428,397
Industrial Longliner		3,116	6,368	60,463	8,068	456	1,331				2,253	2,098					336	9	84,499
Purse Seiner	130,910	130,514	75,787			4,632		2,055										8	343,898
2011	139,008	133,538	70,974	60,545	2,207	4,569	1,512	3,157	372	2,515	1,989		1,501				89	8	421,985
Industrial Longliner		3,191	7,762	60,545	2,207	260	1,512		372	2,515	1,989		1,501				89	8	81,953
Purse Seiner	139,008	130,347	63,211			4,309		3,157										8	340,032
2012	132,313	113,001	63,317	72,428	5,321	4,907	2,710	2,205	468	1,892	1,531		1,246			33	36	8	401,416
Industrial Longliner		4,396	12,379	72,428	5,321	415			468	1,892	1,531		1,246			33	36	8	100,153
Purse Seiner	132,313	108,605	50,938			4,492	2,710	2,205										8	301,263
2013	131,479	146,982	68,097	59,737	7,538	4,562	12,246	1,153	342	1,822	2,349		1,081			1,199	68	85,260	438,654
Industrial Longliner			10,773	59,737	7,538	352			342	1,822	2,349		1,081			1,199	68	85,260	
Purse Seiner	131,479	146,982	57,324			4,211	12,246	1,153										8	353,394

Source: IOTC

- 5 There is no data available on employment in the Seychelles tuna fishing industry in the current version of the FEIU database (at the time of writing), although the table exists, it is empty.
- 6 There is no table referring to international trade in the current version of the FEIU database

Table 2 Tuna caught (Mt) in the IOTC area by species, vessel type and country between 2009 and 2013

Year	Fishery type	Country																	Grand Total	
		Algeria	China	France	India	Japan	Korea, South	Maldives	Mauritius	Mt. Cleopatra Island	Oman	Portugal	Saudi Arabia	Seychelles	South Africa	Spain	Taiwan	Thailand		USA Area of Compliance
2009	Industrial Longliner																			
	Purse Seiner																			
	Industrial Longliner																			
	Purse Seiner																			
	Industrial Longliner																			
	Purse Seiner																			
2010	Industrial Longliner																			
	Purse Seiner																			
	Industrial Longliner																			
	Purse Seiner																			
	Industrial Longliner																			
	Purse Seiner																			
2011	Industrial Longliner																			
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2012	Industrial Longliner																			
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	Purse Seiner																			
	Industrial Longliner																			
	Purse Seiner																			
2013	Industrial Longliner																			
	Purse Seiner																			
	Industrial Longliner																			
	Purse Seiner																			
	Industrial Longliner																			
	Purse Seiner																			

Source: IOTC

Table 3 Tuna caught (Mt) in the Seychelles EEZ by vessel type and country between 2009 and 2013

Year	Fishery type	Country														Grand Total
		Seychelles	Spain	France	Mayotte	Taiwan	Korea, South	Thailand	Italy	China	Japan	Philippines	Oman	Mauritius	Tanzania, United Republic of	
2009	Industrial Longliner	794	12,482	10,466	2,567	841	13	967	943	144	688	3	24			
	Purse Seiner	9,722	12,482	10,466	2,567				967	943						
	Semi Industrial Longliner	329,015														
2010	Industrial Longliner	629	28,227	13,442	5,205	1,642							66		29	
	Purse Seiner	10,592	28,227	13,442	5,205											
	Semi Industrial Longliner	294,850														
2011	Industrial Longliner	748	26,804	13,274	6,086	550						8	32			
	Purse Seiner	13,103	26,804	13,274	6,086											
	Semi Industrial Longliner	237,689														
2012	Industrial Longliner	1,821	22,635	12,621	11,578	6,542	396			180	134	479	80		52	
	Purse Seiner	10,301	22,635	12,621	11,578				396							
	Semi Industrial Longliner	270,814														
2013	Industrial Longliner	2,725	14,554	8,119	5,994	3,559	580			556	21	118	23	207	57	
	Purse Seiner	6,647	14,554	8,119	5,994				580							
	Semi Industrial Longliner	262,160														

Source: IOTC, SFA

Table 9 Vessel expenses including consumption of gasoil and fuel oil (bunkering) and port fees in 2009 (SCR)

Expenses type	EEC				National Seychelles	Others	Grand Total
	Spain	France	Netherlands	Italy			
2009	488,066,255	198,886,438	8,685,620	22,186,938	328,244,785	114,756,198	1,160,826,234
Industrial Longliner							
Agency Charges	11,952					9,223	21,175
Bunkering						2,096,327	2,096,327
Marine Brokerage						169	169
Medical Expenses	168					175	343
OffHour	7,365						7,365
Other Expenses	530					1,269	1,799
Port Charges	1,411					7,668	9,079
Shipchandling	57,305						57,305
Telephone						1,692	1,692
Purse Seiner							
Agency Charges	5,530,508	3,281,801		210,149	4,029,753	1,617,814	14,670,025
Bunkering	415,968,289	171,779,683		19,490,083	272,228,977	89,927,971	969,395,006
Custom Fees	262,365	1,001,230		104,700	195,784	310,948	1,875,027
Engineering Services	2,206,975	36,781		3,440	1,022,225	10,875	3,280,296
Fish Purchase		1,034,229		115,400		222,500	1,372,129
Fleet Personnel	599,824	659,975		135,957	126,479	169,464	1,691,700
Garbage	203,798	596,898		53,100	125,078	145,288	1,124,162
Marine Brokerage		32,871		1,686	200	7,576	42,333
Medical Expenses	243,174	65,984		12,056	135,638	78,588	535,440
Miscellaneous Fuel		1,050					1,050
OffHour	916,794	336,144		241,812	1,431,256	102,156	3,028,161
Other Expenses	2,186,210	2,605,994		141,280	1,868,440	662,101	7,464,025
Other Labour Cost		435,381		4,785		68,086	508,252
Port Charges	1,375,696	1,467,643		147,267	713,391	733,374	4,437,372
Shipchandling	4,577,286	4,510,759		449,271	1,800,560	1,243,449	12,581,325
Stevedoring Expenses	34,197,425	9,580,944		979,746	23,716,711	4,068,971	72,543,797
Telephone	57,997	48,588			55,903	23,234	185,722
Transport	1,191,225	1,116,900		89,738	1,161,187	443,195	4,002,245
Utilities	3,215	293,579		6,470		48,879	352,143
Reefer Vessel							
Agency Charges	284,263		2,718,227			1,014,336	4,016,826
Bunkering	4,186,917		2,908,861			7,020,155	14,115,933
Custom Fees	2,917		663,388			442,706	1,109,010
Engineering Services			103,291			119,397	222,688
Garbage	13,753		25,125			33,475	72,352
Marine Brokerage			1,642			199	1,841
Medical Expenses	2,975		7,044			17,137	27,157
OffHour	25,935		86,741			293,628	406,304
Other Expenses	5,710		267,936			633,216	906,863
Other Labour Cost			852				852
Port Charges	229,719		573,013			803,614	1,606,347
Shipchandling			109,235			109,235	218,470
Stevedoring Expenses	44,872		1,224,524			444,602	1,713,998
Telephone			1,221			8,045	9,266
Transport			77,145			68,034	145,179
Utilities			26,610			23,407	50,017
Supply Vessel							
Agency Charges	383,201				593,615	325,271	1,302,087
Bunkering	12,567,832				17,458,431	1,009,587	31,035,850
Custom Fees	12,013				16,296	6,995	35,304
Engineering Services	152,636				318,045	12,175	482,855
Fleet Personnel					6,947	6,947	13,894
Garbage	9,193				32,276	18,141	59,610
Marine Brokerage						436	436
Medical Expenses	5,059				12,099	7,433	24,592
Miscellaneous Fuel					383		383
OffHour	157,611				169,009	12,480	339,100
Other Expenses	33,484				247,516	1,542	282,542
Port Charges	29,925				82,594	76,953	189,472
Shipchandling	210,057				622,583	208,094	1,040,734
Stevedoring Expenses	71,908				7,482	13,817	93,206
Telephone					1,874	2,045	3,919
Transport	36,762				63,855	27,497	128,113
Utilities						1,554	1,554

Source: SFA and Seychelles Ports Authority (SPA)

Table 10 Vessel expenses including consumption of gasoil and fuel oil (bunkering) and port fees in 2010 (SCR)

Expenses type	EEC				National Seychelles	Others	Grand Total
	Spain	France	Netherlands	Italy			
2010	489,568,627	231,485,957	6,405,142		341,871,723	76,289,988	1,145,621,437
Purse Seiner							
Agency Charges	10,664,100	4,916,388			8,065,068	1,267,538	24,913,093
Bunkering	414,782,117	206,764,816			283,463,789	67,009,955	972,020,676
Custom Fees	192,972	577,471			100,665	219,095	1,090,203
Engineering Services	1,964,959	57,900			1,126,284	10,753	3,159,895
Fish Purchase		1,269,843				361,261	1,631,104
Fleet Personnel	239,102	618,706			71,162	263,953	1,192,923
Garbage	251,568	532,538			168,513	182,099	1,134,718
Marine Brokerage		19,441				4,244	23,686
Medical Expenses	167,508	65,643			69,393	12,826	315,370
OffHour	537,121	357,924			673,701	402,148	1,970,894
Other Expenses	1,826,686	2,868,151			1,464,934	1,222,127	7,381,897
Other Labour Cost		95,989				95,989	95,989
Port Charges	920,261	1,327,088			915,045	560,312	3,722,706
Shipchandling	3,780,299	4,398,686			1,395,877	1,265,974	10,840,836
Stevedoring Expenses	36,358,381	6,427,854			19,960,165	1,776,991	64,523,390
Telephone	38,374	35,604			53,841	8,759	136,578
Transport	1,200,790	776,369			1,407,203	341,638	3,726,000
Utilities		375,545			10,393	45,088	431,027
Reefer Vessel							
Agency Charges	203,513		1,921,372			497,083	2,621,968
Bunkering	2,328,192		2,333,453				4,661,646
Custom Fees	1,989		287,760			26,605	316,354
Engineering Services	16,492		63,528			26,921	106,941
Garbage	9,420		25,900			19,159	54,479
Marine Brokerage			993			283	1,277
Medical Expenses	6,710		4,854			16,387	27,951
OffHour			23,160			10,043	33,203
Other Expenses	33,759		277,507			93,806	405,071
Port Charges	165,391		594,942			539,408	1,299,741
Shipchandling	429		300			52,918	53,647
Stevedoring Expenses	189,884		680,333			8,008	878,226
Telephone			19				19
Transport	192,134		153,646			33,589	379,368
Utilities			37,377			8,621	45,997
Supply Vessel							
Agency Charges	830,965				701,040		1,532,005
Bunkering	12,305,770				20,368,241		32,674,011
Custom Fees	13,259				46,327		59,585
Engineering Services	158,023				119,547		277,570
Garbage	8,062				33,745		41,808
Medical Expenses	3,328				26,868		30,196
OffHour	31,345				281,902		313,247
Other Expenses	14,713				174,268		188,981
Port Charges	22,400				84,610		107,011
Shipchandling	59,683				553,823		613,506
Stevedoring Expenses	15,364				393,233		408,598
Telephone					6,043		6,043
Transport	33,566				136,045		169,611

Source: SFA and Seychelles Ports Authority (SPA)

Table 11 Vessel expenses including consumption of gasoil and fuel oil (bunkering) and port fees in 2011 (SCR)

Expenses type	EEC				National Seychelles	Others	Grand Total
	Spain	France	Netherlands	Italy			
2011	638,647,792	228,507,284	5,432,519		351,565,470	62,445,645	1,286,598,710
Purse Seiner							
Agency Charges	11,296,376	5,268,754			8,286,426	1,160,022	26,011,578
Bunkering	563,206,696	203,064,711			308,064,448	53,037,425	1,127,373,280
Custom Fees	163,924	840,531			49,029	187,045	1,240,529
Engineering Services	2,059,885	72,600			1,096,368	3,200	3,232,053
Fish Purchase	691	1,321,223				292,100	1,614,013
Fleet Personnel	12,408	561,398			10,808	162,444	747,057
Garbage	292,539	460,657			118,463	101,050	972,710
Marine Brokerage		12,633				2,774	15,407
Medical Expenses	150,656	48,798			85,641	7,420	292,514
Miscellaneous Fuel	8,561						8,561
OffHourent	793,924	596,676			713,715	55,541	2,159,856
Other Expenses	899,244	3,117,711			813,546	581,053	5,411,555
Other Labour Cost		32,574				2,191	34,765
Port Charges	791,127	1,369,699			678,013	285,937	3,124,776
Shipchandling	3,878,203	4,203,485			1,688,201	823,928	10,593,815
Stevedoring Expenses	35,989,701	6,479,473			16,082,259	1,223,895	59,775,329
Telephone	41,976	27,069			19,714	2,601	91,360
Transport	1,995,937	805,233			989,626	138,965	3,929,761
Utilities	1,488	224,061				26,815	252,364
Reefer Vessel							
Agency Charges	222,379		1,721,400			730,990	2,674,769
Bunkering	4,452,700		1,193,715			2,045,114	7,691,529
Custom Fees	11,311		233,366			4,334	249,011
Engineering Services	2,128		122,971			239,136	364,235
Garbage	12,719		19,955			6,101	38,776
Marine Brokerage			603				603
Medical Expenses	19,494		1,837			6,746	28,077
OffHourent			25,730			1,416	27,146
Other Expenses	24,427		192,852			7,437	224,716
Port Charges	652,881		1,227,349			1,149,238	3,029,468
Shipchandling						131,631	131,631
Stevedoring Expenses	14,425		558,062				572,487
Telephone			3,681				3,681
Transport	7,862		88,002			31,286	127,150
Utilities			42,999				42,999
Supply Vessel							
Agency Charges	970,813				354,957		1,325,771
Bunkering	9,831,051				11,543,042		21,374,094
Custom Fees	4,425				9,275		13,700
Engineering Services	29,823				274,957		304,780
Fleet Personnel	884				624		1,508
Garbage	11,575				10,131		21,706
Medical Expenses	11,067				7,860		18,927
OffHourent	8,441				97,293		105,734
Other Expenses	91,993				53,990		145,983
Port Charges	37,208				45,231		82,438
Shipchandling	139,510				422,904		562,414
Stevedoring Expenses	454,193				15,245		469,438
Telephone	2,661				6,502		9,164
Transport	50,486				25,010		75,496

Source: SFA and Seychelles Ports Authority (SPA)

Table 12 Vessel expenses including consumption of gasoil and fuel oil (bunkering) and port fees in 2012 (SCR)

Expenses type	EEC				National Seychelles	Others	Grand Total
	Spain	France	Netherlands	Italy			
2012	513,393,613	104,271,936	6,648,986		339,742,566	57,337,890	1,021,394,991
Industrial Longliner							
Agency Charges					230,046	546,061	776,107
Custom Fees					200	1,300	1,500
Medical Expenses					24,615	1,589	26,204
Other Expenses					454,330	908,173	1,362,503
Port Charges					251,641	987,917	1,239,558
Shipchandling					27,270	168,860	196,130
Stevedoring Expenses					13,756	182,012	195,767
Telephone					100	8,375	8,475
Transport					52,124		52,124
Purse Seiner							
Agency Charges	12,051,429	3,992,737			8,113,963	1,444,016	25,602,144
Bunkering	440,146,707	84,928,904			286,691,808	44,325,201	856,092,619
Custom Fees	81,680	432,900			81,822	223,618	820,020
Engineering Services	4,003,113	140,894			2,749,809	61,718	6,955,534
Fish Purchase		1,395,257				502,378	1,897,636
Fleet Personnel	19,518	458,321			907	176,363	655,109
Garbage	234,246	427,925			236,886	166,851	1,065,909
Hotel Accommodation		110,928			48,621		159,549
Marine Brokerage		29,796				3,571	33,367
Medical Expenses	132,778	26,805			136,642	99,146	395,370
OffHourent	983,778	278,519			1,064,812	161,462	2,488,571
Other Expenses	637,190	2,122,036			703,976	760,407	4,223,609
Other Labour Cost	18	26,167				3,521	29,706
Port Charges	745,847	1,151,459			874,290	354,982	3,126,577
Postage & Courier	30,867	162,809			25,091		218,767
Shipchandling	3,720,335	2,850,292			1,878,563	1,229,335	9,678,527
Stevedoring Expenses	29,392,708	5,097,276			17,968,478	2,019,149	54,477,611
Telephone	69,945	13,563			65,690	4,339	153,538
Transport	2,026,063	513,643			1,441,235	227,381	4,208,322
Utilities		111,704				10,666	122,370
Reefer Vessel							
Agency Charges	286,777		1,401,492			400,158	2,088,427
Bunkering	4,576,428		1,584,551				6,160,979
Custom Fees	1,761		396,889			199	398,848
Engineering Services	421		40,513			126,609	167,544
Garbage	25,050		13,861			13,478	52,389
Hotel Accommodation			32,080				32,080
Marine Brokerage			960				960
Medical Expenses	6,244		2,897			7,836	16,977
OffHourent	16,665					9,548	26,214
Other Expenses	683,518		463,687			15,642	1,162,847
Port Charges	282,778		1,371,870			2,125,530	3,780,178
Stevedoring Expenses	44,098		1,094,933			32,726	1,171,757
Telephone			8,461				8,461
Transport	13,743		196,590			27,776	238,109
Utilities			40,202				40,202
Supply Vessel							
Agency Charges	970,612				542,606		1,513,219
Bunkering	11,525,401				14,879,322		26,404,723
Custom Fees	7,284				10,355		17,640
Engineering Services	101,140				81,246		182,386
Garbage	10,742				31,871		42,613
Medical Expenses	3,698				4,221		7,919
OffHourent	52,642				146,642		199,284
Other Expenses	72,107				85,789		157,895
Port Charges	43,958				77,673		121,632
Shipchandling	242,657				611,623		854,280
Stevedoring Expenses	66,601				33,335		99,937
Telephone	17,786				8,056		25,842
Transport	65,277				93,154		158,431

Source: SFA and Seychelles Ports Authority (SPA)

Table 13 Vessel expenses including consumption of gasoil and fuel oil (bunkering) and port fees in 2013 (SCR)

Expenses type	EEC				National Seychelles	Others	Grand Total
	Spain	France	Netherlands	Italy			
2013	790,274,999	267,088,789	3,994,824		349,370,974	222,562,009	1,633,291,593
Industrial Longliner							
Agency Charges						37,085	37,085
Bunkering					3,735,897	3,451,828	7,187,725
Medical Expenses						2,163	2,163
Other Expenses						59,286	59,286
Port Charges						56,389	56,389
Shipchandling						3,209	3,209
Purse Seiner							
Agency Charges	14,377,732	5,255,727			7,282,363	7,168,550	34,084,372
Bunkering	675,820,196	238,594,275			289,487,759	180,811,736	1,384,713,966
Custom Fees	50,548	298,934			44,955	316,108	710,544
Engineering Services	6,206,495	39,623			3,302,917	64,989	9,614,023
Fish Purchase		1,812,770				663,120	2,475,890
Fleet Personnel	56,806	1,029,054				830,105	1,915,965
Garbage	771,578	769,426			243,991	489,806	2,274,801
Hotel Accomodation	1,167,041	356,563			727,704	268,328	2,519,637
Marine Brokerage		26,221				6,931	33,151
Medical Expenses	276,711	44,224			152,242	83,677	556,853
OffHourent	130,078	124,431			266,908	15,169	536,586
Other Expenses	4,290,842	3,298,265			2,173,550	5,519,275	15,281,932
Other Labour Cost		15,030				21,901	36,930
Port Charges	2,105,878	1,562,443			1,268,294	1,148,817	6,085,431
Postage & Courier	1,114,474	413,390			401,282	599,303	2,528,450
Shipchandling	5,684,823	3,807,969			2,019,592	2,412,052	13,924,436
Stevedoring Expenses	52,406,420	8,995,982			20,550,748	9,410,671	91,363,822
Telephone	172,961	27,614			178,529	20,984	400,088
Transport	946,807	589,333			326,298	340,334	2,202,771
Utilities		27,515			475,386	86,616	589,517
Reefer Vessel							
Agency Charges			530,792			1,044,218	1,575,010
Bunkering	3,485,377		971,674			5,087,007	9,544,057
Custom Fees			51,301			3,426	54,727
Engineering Services						38,659	38,659
Garbage			5,565			18,680	24,245
Hotel Accomodation			81,677				81,677
Marine Brokerage			707			148	855
Medical Expenses			1,640			6,884	8,524
Other Expenses			727,336			6,329	733,665
Port Charges			1,359,951			2,437,344	3,797,295
Postage & Courier						2,338	2,338
Stevedoring Expenses			176,198			757	176,956
Telephone			8,137			2,241	10,378
Transport			79,845			25,549	105,394
Supply Vessel							
Agency Charges	843,185				472,818		1,316,003
Bunkering	19,252,409				15,111,246		34,363,656
Custom Fees	2,137				6,324		8,461
Engineering Services	208,952				131,076		340,028
Garbage	23,714				40,357		64,071
Hotel Accomodation	98,292				127,270		225,562
Medical Expenses	13,060				3,987		17,047
OffHourent	5,851						5,851
Other Expenses	164,470				280,874		445,344
Port Charges	128,352				121,033		249,385
Postage & Courier	66,140				66,592		132,732
Shipchandling	308,443				355,487		663,929
Stevedoring Expenses	57,292						57,292
Telephone	10,234				1,848		12,082
Transport	27,700				13,327		41,027
Utilities					319		319

Source: SFA and Seychelles Ports Authority (SPA)

Table 14 Quantity (corresponded volume) of containers imported and exported by IOT (Numbers of 20ft equivalent containers)

Number of containers (20ft equiv.) movement by year	containers status			Grand Total
	Empty	full	Transhipment	
2009	12,224	19,853	3,781	35,858
in	1,396	14,845	1,880	18,121
out	10,828	5,008	1,901	17,737
2010	14,471	22,947	589	38,007
in	1,558	17,068	282	18,908
out	12,913	5,879	307	19,099
2011	15,679	23,452	794	39,925
in	1,918	17,575	414	19,907
out	13,761	5,877	380	20,018
2012	13,364	23,461	1,581	38,406
in	1,287	17,178	787	19,252
out	12,077	6,283	794	19,154
2013	15,056	25,982	365	41,403
in	2,280	18,230	177	20,687
out	12,776	7,752	188	20,716

Source: Seychelles Ports Authority (SPA)

Table 15 Quantity/ composition/ value of raw material contracted with PS and imported

product type	Volume (Mt)	Value (SCR)
2009	70,404	1,107,459,581
Fresh or Chilled	0	2,167
Tunas nei	0	2,167
Frozen	70,404	1,107,457,414
Albacore	7	2,407,369
Tunas nei	70,201	1,083,842,665
Yellowfin tuna	196	21,207,380
2010	69,652	1,137,567,537
Fresh or Chilled	382	10,809,684
Albacore	351	10,599,769
Tunas nei	1	5,485
Yellowfin tuna	30	204,430
Frozen	69,270	1,126,757,853
Albacore	15	506,041
Southern bluefin tuna	79	2,294,486
Tunas nei	69,176	1,123,784,078
Yellowfin tuna	0	173,249
2011	69,634	1,620,034,965
Fresh or Chilled	0	14,633
Tunas nei	0	14,633
Frozen	69,634	1,620,020,332
Albacore	227	9,583,408
Skipjack tuna	150	4,742,256
Tunas nei	68,756	1,586,987,095
Yellowfin tuna	501	18,707,573
2012	68,307	2,146,898,347
Fresh or Chilled	1	269,077
Tunas nei	1	269,077
Frozen	68,306	2,146,629,270
Tunas nei	68,306	2,146,629,270
2013	79,370	2,211,176,379
Fresh or Chilled	2	326,650
Southern bluefin tuna	0	22,134
Tunas nei	2	304,516
Frozen	79,368	2,210,849,729
Tunas nei	79,368	2,210,849,729

Source: SFA

Table 16 Quantity of canned tuna, fishmeal, fish oil, tuna loin (frozen) produced (Mt)

Volume (Mt)	Country
	Seychelles
Fishery	
2009	113,486
Industrial Longline Fishery	8,329
Frozen	8,329
Purse Seine Fishery	105,157
Canned	30,824
Fish Meal	5,168
Fish Oil & Fat	826
Frozen	68,339
2010	121,361
Industrial Longline Fishery	6,659
Frozen	6,659
Purse Seine Fishery	114,703
Canned	30,338
Fish Meal	7,663
Fish Oil & Fat	915
Frozen	75,787
2011	108,682
Industrial Longline Fishery	7,566
Frozen	7,566
Purse Seine Fishery	101,117
Canned	30,152
Fish Meal	6,986
Fish Oil & Fat	767
Frozen	63,212
2012	104,501
Industrial Longline Fishery	14,695
Frozen	14,695
Purse Seine Fishery	89,806
Canned	31,400
Fish Meal	6,597
Fish Oil & Fat	871
Frozen	50,938
2013	113,604
Industrial Longline Fishery	11,426
Frozen	11,426
Purse Seine Fishery	102,178
Canned	36,826
Fish Meal	7,337
Fish Oil & Fat	691
Frozen	57,324

Source: SFA

Table 17 Export market (share of EU) in SCR

Value (SCR)	Country		Grand Total	Share of EU
	EEC	Others		
product type	EEC	Others	Grand Total	Share of EU
2009	2,931,067,142	93,516,455	3,024,583,597	96.91%
IOT Canning Factory	2,927,106,308	93,046,812	3,020,153,120	96.92%
Canned	2,914,132,111	59,898,519	2,974,030,630	97.99%
Fish Oil & Fat	12,974,197	33,148,293	46,122,490	28.13%
Local Processing Plant	3,960,834	469,643	4,430,477	89.40%
Fresh on Ice	3,016,066	409,311	3,425,377	88.05%
Frozen	480	32,462	32,943	1.46%
Others	944,288	27,870	972,157	97.13%
2010	2,351,883,197	74,134,751	2,426,017,947	96.94%
IOT Canning Factory	2,349,886,206	73,532,156	2,423,418,362	96.97%
Canned	2,334,530,775	47,959,539	2,382,490,313	97.99%
Fish Oil & Fat	15,355,431	25,572,617	40,928,048	37.52%
Local Processing Plant	1,996,991	602,595	2,599,585	76.82%
Fresh on Ice	1,329,133	218,297	1,547,430	85.89%
Others	667,858	384,298	1,052,156	63.48%
2011	2,996,357,888	39,201,064	3,035,558,953	98.71%
IOT Canning Factory	2,995,395,119	38,256,245	3,033,651,363	98.74%
Canned	2,993,762,923	7,508,963	3,001,271,886	99.75%
Fish Oil & Fat	1,632,196	30,747,282	32,379,477	5.04%
Local Processing Plant	962,770	944,820	1,907,589	50.47%
Fresh on Ice	326,217	8,910	335,127	97.34%
Others	636,553	935,910	1,572,462	40.48%
2012	3,413,386,644	58,938,856	3,472,325,500	98.30%
IOT Canning Factory	3,410,356,071	57,724,556	3,468,080,627	98.34%
Canned	3,409,718,135	15,074,493	3,424,792,628	99.56%
Fish Oil & Fat	637,935	42,650,064	43,287,999	1.47%
Local Processing Plant	3,030,574	1,214,300	4,244,874	71.39%
Fresh on Ice	2,527,678	288,118	2,815,796	89.77%
Others	502,896	926,181	1,429,078	35.19%
2013	4,234,647,853	72,572,131	4,307,219,985	98.32%
IOT Canning Factory	4,233,634,695	70,947,830	4,304,582,525	98.35%
Canned	4,233,265,201	33,012,237	4,266,277,439	99.23%
Fish Oil & Fat	369,493	37,935,593	38,305,086	0.96%
Local Processing Plant	1,013,159	1,624,301	2,637,460	38.41%
Fresh on Ice	609,187	653,319	1,262,505	48.25%
Frozen	403,972	970,982	1,374,954	29.38%

Source: SFA

3.3.3.3 Indicators to measure the local cannery competitiveness

Table 18 Seychelles tuna cans exports volume (Mt), value (000 €) and price (€/kg) to the European Economic Community (EEC) and the Rest of the World (Others)

	EEC			Others			Value ('000 €)	Volume (Mt)	Average price (€/kg)
	Value ('000 €)	Volume (Mt)	Average price (€/kg)	Value ('000 €)	Volume (Mt)	Average price (€/kg)			
2009	155,774	28,181.87	5.53	3,202	541.01	5.92	158,976	28,722.88	5.53
2010	147,076	28,427.47	5.17	3,021	587.69	5.14	150,098	29,015.16	5.17
2011	175,827	31,211.09	5.63	441	72.24	6.10	176,268	31,283.34	5.63
2012	195,994	31,131.74	6.30	866	138.63	6.25	196,861	31,270.37	6.30
2013	265,618	36,455.69	7.29	2,071	307.58	6.73	267,689	36,763.27	7.28

Source: SFA, IOT

NB: No information was found in the FEIU database related to the following:

- EU tuna cans imports volume (tons) and value (000 €) and price €/kg
- EU tuna cans imports from Seychelles volume (tons) and value (000 €) and price €/kg
- Seychelles volume representativeness

3.3.4 Economic indicators

Table 19 Budget revenue and expenditures (SCR and Euros)

Cashflows	Value (SCR)	Value (Euros)
2011		
Balance brouht down 01 January	97,717,023	5,568,928
Capacity Building		
Direct Expenditures	33,157,116	1,889,636
Expenditures related to comittments (contracts)		
Fisheries Infrastructure Development		
Improve Management of Artisanal & Industrial Fisheries		
Other receipt and adjustments	3,544,916	202,026
Total Actual Budget		
Total Expenditures	33,157,116	1,889,636
Total Inflows	142,566,355	8,124,908
Total Provisional Budget		
Receipt	41,304,415	2,353,953
2012		
Balance brouht down 01 January	111,542,885	6,235,272
Capacity Building	22,093,225	1,235,016
Direct Expenditures	32,765,766	1,831,614
Expenditures related to comittments (contracts)	23,624,696	1,320,626
Fisheries Infrastructure Development	177,831,439	9,940,816
Improve Management of Artisanal & Industrial Fisheries	65,268,727	3,648,536
Other receipt and adjustments		
Total Actual Budget	113,932,859	6,368,872
Total Expenditures	56,390,462	3,152,239
Total Inflows	151,256,504	8,455,272
Total Provisional Budget	151,260,534	8,455,497
Receipt	39,713,619	2,220,000
2013		
Balance brouht down 01 January	86,241,010	5,303,033
Capacity Building	24,121,160	1,483,231
Direct Expenditures	82,657,680	5,082,691
Expenditures related to comittments (contracts)		
Fisheries Infrastructure Development	149,429,042	9,188,518
Improve Management of Artisanal & Industrial Fisheries	31,126,180	1,913,975
Other receipt and adjustments		
Total Actual Budget	82,657,680	5,082,691
Total Expenditures	82,657,680	5,082,691
Total Inflows	122,018,694	7,503,033
Total Provisional Budget	122,018,701	7,503,033
Receipt	35,777,684	2,200,000
2014		
Balance brouht down 01 January	41,272,813	2,420,342
Capacity Building	20,276,816	1,189,084
Direct Expenditures	41,439,859	2,430,138
Expenditures related to comittments (contracts)		
Fisheries Infrastructure Development	74,213,093	4,352,043
Improve Management of Artisanal & Industrial Fisheries	39,709,350	2,328,657
Other receipt and adjustments		
Total Actual Budget	48,590,036	2,849,442
Total Expenditures	41,439,859	2,430,138
Total Inflows	85,609,239	5,020,342
Total Provisional Budget	85,609,223	5,020,341
Receipt	44,336,426	2,600,000

Source: SFA, NBS

Table 20 Contribution to Gross Domestic Product (GDP) in SCR

Indicators by Contributor and year	Value
2009	
All Sector	11,533.40
GDP at 2006 Current Prices	11,533.40
Fisheries Sector	88.30
GDP at 2006 Current Prices	88.30
2010	
All Sector	11,705.40
GDP at 2006 Current Prices	11,705.40
Fisheries Sector	99.60
GDP at 2006 Current Prices	99.60
2011	
All Sector	13,304.50
GDP at 2006 Current Prices	13,304.50
Fisheries Sector	121.60
GDP at 2006 Current Prices	121.60
2012	
All Sector	15,468.50
GDP at 2006 Current Prices	15,468.50
Fisheries Sector	117.80
GDP at 2006 Current Prices	117.80
2013	
All Sector	17,387.24
GDP at 2006 Current Prices	17,387.24
Fisheries Sector	117.80
GDP at 2006 Current Prices	117.80

Source: SFA, NBS

Table 21 European Union Financial Contribution (million SCR).

Contributor	European Union
Cashflow description	Value
2009	
Million Rupees	0.5386
EU Compensation payment ITFA	no data
EU Excess Catch Payment ITFA	no data
EU Seaman Payment ITFA	0.5386
2010	
Million Rupees	0.5100
EU Compensation payment ITFA	no data
EU Excess Catch Payment ITFA	no data
EU Seaman Payment ITFA	0.5100
2011	
Million Rupees	0.5800
EU Compensation payment ITFA	no data
EU Excess Catch Payment ITFA	no data
EU Seaman Payment ITFA	0.5800
2012	
Million Rupees	0.8400
EU Compensation payment ITFA	no data
EU Excess Catch Payment ITFA	no data
EU Seaman Payment ITFA	0.8400
2013	
Million Rupees	0.6710
EU Compensation payment ITFA	no data
EU Excess Catch Payment ITFA	no data
EU Seaman Payment ITFA	0.6710

Source: SFA

Table 22 Licence fees receipts (SCR)

Country	Malta	Ghana	France	Iran	Italy	Japan	Korea, South	Mauritius	Myanmar	China	Philippines	Seychelles	Spain	Taiwan	Tanzania	United Kingdom	Thailand	Overall Total	
2009	231,141	5,409,981	392,074	1,152,532	4,480,440	237,339	74,781	5,332,084	6,508,232	5,615,360	6,594,300	15,996,012	6,332,049	6,332,049	6,332,049	6,332,049	6,332,049	6,332,049	6,332,049
Industrial Longline Fishery	231,141																		
Purse Seine Fishery		5,409,981	392,074	1,152,532	4,480,440	237,339	74,781	5,332,084	6,508,232	5,615,360	6,594,300	15,996,012	6,332,049	6,332,049	6,332,049	6,332,049	6,332,049	6,332,049	6,332,049
2010	200,000	7,744,000			7,200,000	210,000		8,490,000	11,410,000	8,100,000	8,340,000	18,640,000	8,340,000	8,340,000	8,340,000	8,340,000	8,340,000	8,340,000	8,340,000
Industrial Longline Fishery	200,000																		
Purse Seine Fishery		7,744,000			7,200,000	210,000		8,490,000	11,410,000	8,100,000	8,340,000	18,640,000	8,340,000	8,340,000	8,340,000	8,340,000	8,340,000	8,340,000	8,340,000
2011	2,745,500		1,407,781		7,200,000			294,340	12,272,000	1,200,000	8,091,338	11,724,000	11,724,000	11,724,000	11,724,000	11,724,000	11,724,000	11,724,000	11,724,000
Industrial Longline Fishery	2,745,500																		
Purse Seine Fishery			1,407,781		7,200,000			294,340	12,272,000	1,200,000	8,091,338	11,724,000	11,724,000	11,724,000	11,724,000	11,724,000	11,724,000	11,724,000	11,724,000
2012	1,900,240	8,404,754		650,125	1,625,112	8,120,561	237,025	2,587,390	12,611,157	15,105,426	11,002,576	12,502,000	12,502,000	12,502,000	12,502,000	12,502,000	12,502,000	12,502,000	12,502,000
Industrial Longline Fishery	1,900,240																		
Purse Seine Fishery		8,404,754		650,125	1,625,112	8,120,561	237,025	2,587,390	12,611,157	15,105,426	11,002,576	12,502,000	12,502,000	12,502,000	12,502,000	12,502,000	12,502,000	12,502,000	12,502,000
2013	2,432,099	7,777,403		578,250	1,181,872	912,400	1,052,422	499,846	11,378,071	11,971,000	14,180,078	14,180,078	14,180,078	14,180,078	14,180,078	14,180,078	14,180,078	14,180,078	14,180,078
Industrial Longline Fishery	2,432,099																		
Purse Seine Fishery		7,777,403		578,250	1,181,872	912,400	1,052,422	499,846	11,378,071	11,971,000	14,180,078	14,180,078	14,180,078	14,180,078	14,180,078	14,180,078	14,180,078	14,180,078	14,180,078

Source: SFA

Table 23 Summary tables showing trends in the Tuna fishing sector's direct (DVA), indirect (IVA) and primary (PVA) added value between 2009 and 2013 (SCR)

		2009	2010	2011	2012	2013	Trends	
Direct added values (DVA) ¹	million SCR	DVA Total	363.87	334.07	393.55	465.34	453.13	
		% chge		-8.2%	+17.8%	+18.2%	-2.6%	
	million US\$	DVA Total	26.76	27.83	32.09	34.36	37.61	
		% chge		+4.0%	+15.3%	+7.1%	+9.5%	
Indirect added values (IVA) ¹	as a % of annual PVA	% of PVA	62.1%	59.8%	61.6%	66.3%	58.8%	
		% chge		-3.7%	+3.0%	+7.7%	-11.4%	
	million SCR	IVA Total	221.77	224.53	245.60	236.36	317.78	
		% chge		+1.2%	+9.4%	-3.8%	+34.4%	
Primary added values (PVA) ¹	million US\$	IVA Total	16.31	18.71	20.03	17.45	26.38	
		% chge		+14.7%	+7.0%	-12.9%	+51.2%	
	as a % of annual PVA	% of PVA	37.9%	40.2%	38.4%	33.7%	41.2%	
		% chge		+6.1%	-4.4%	-12.3%	+22.4%	
Seychelles ² GDP at current prices	million SCR	PVA Total	585.63	558.60	639.15	701.70	770.90	
		% chge		-4.6%	+14.4%	+9.8%	+9.9%	
	million US\$	PVA Total	43.07	46.54	52.11	51.81	63.99	
	% chge		+8.1%	+12.0%	-0.6%	+23.5%		
PVA as a % of Seychelles GDP ¹	w/o transfer pricing	SCR per US\$	11,533.40	11,705.40	13,304.50	15,468.50	17,387.24	
		% chge		+1.5%	+13.7%	+16.3%	+12.4%	
	w/ transfer pricing	Index	5.1%	4.8%	4.8%	4.5%	4.4%	
	% chge		-6.0%	+0.7%	-5.6%	-2.3%		
Exchange rate ² SCR/ US\$	Index	13.60	12.00	12.26	13.54	12.05		
	% chge		-11.8%	+2.2%	+10.4%	-11.0%		
Consumer Price Index (CPI) ²	All items	Index	185.76	181.30	185.94	199.16	207.80	
		% chge		-2.4%	+2.6%	+7.1%	+4.3%	
	Fish	Index	135.66	172.42	195.90	213.27	257.81	
	% chge		+27.1%	+13.6%	+8.9%	+20.9%		

¹ calculation based on both the SFA-FEIU database and data extrapolated from the 2011 World Bank Model

² calculation solely based on the SFA-FEIU database

Source: SFA, World Bank (2011)

Table 24 Share of tuna fishing and related activities in port's activity (turnover, taxes) in SCR.

Expenses (SCR)	Country						Grand Total
	Spain	France	Netherlands	Italy	National Seychelles	Others	
2009	488,066,255	198,886,438	8,685,620	22,186,938	328,244,785	114,756,198	1,160,826,234
Industrial Longliner	78,731					2,116,522	2,195,253
Purse Seiner	469,520,780	198,886,438		22,186,938	308,611,582	99,884,471	1,099,090,209
Reefer Vessel	4,797,062		8,685,620			11,031,186	24,513,868
Supply Vessel	13,669,682				19,633,203	1,724,019	35,026,904
2010	489,568,627	231,485,957	6,405,142		341,871,723	76,289,988	1,145,621,437
Purse Seiner	472,924,236	231,485,957			318,946,031	74,957,156	1,098,313,380
Reefer Vessel	3,147,913		6,405,142			1,332,832	10,885,887
Supply Vessel	13,496,478				22,925,692		36,422,169
2011	638,647,792	228,507,284	5,432,519		351,565,470	62,445,645	1,286,598,710
Purse Seiner	621,583,335	228,507,284			338,698,448	58,092,215	1,246,881,283
Reefer Vessel	5,420,326		5,432,519			4,353,430	15,206,276
Supply Vessel	11,644,130				12,867,022		24,511,152
2012	513,393,613	104,271,936	6,648,986		339,742,566	57,337,890	1,021,394,991
Industrial Longliner					1,054,082	2,804,286	3,858,368
Purse Seiner	494,276,223	104,271,936			322,082,593	51,774,103	972,404,854
Reefer Vessel	5,937,483		6,648,986			2,759,501	15,345,971
Supply Vessel	13,179,907				16,605,891		29,785,798
2013	790,274,999	267,088,789	3,994,824		349,370,974	222,562,009	1,633,291,593
Industrial Longliner					3,735,897	3,609,960	7,345,857
Purse Seiner	765,579,390	267,088,789			328,902,519	210,278,469	1,571,849,166
Reefer Vessel	3,485,377		3,994,824			8,673,581	16,153,781
Supply Vessel	21,210,232				16,732,558		37,942,790

Source: SFA, SPA

NB: No information was found in the FEIU database related to the following:

- Employment
- International fish trade

4 CONCLUSION AND RECOMMENDATIONS

One of the key aspects of SmartFish's effort to develop a fisheries economics intelligence unit in Seychelles, is the expectation that such a unit will contribute not only to a better understanding and assessment of the contribution of the tuna fishery sector in the national economy as a whole, but will also report on the performance and contribution of the tuna fishery sector vis-à-vis the Blue Economy.

There is also an expectation that the FEIU will contribute to a better understanding and acceptance that the fishery sector is a driving force in the national economy, capable of attracting potential investors and skilled workers.

Although the mission in Seychelles was too short⁷ to fully develop *in situ* a tool capable of supporting any FEIU's endeavour to deliver sound economic intelligence immediately, it was an opportunity to make initial contacts with the key personnel potentially involved in the future operation of the yet-to-be formally established FEIU. The mission in Seychelles was also an opportunity to meet the contractor who developed the FEIU repository database.

Overall, the FEIU repository database is a good start, although a few adjustments are necessary to be fully functional; the majority of issues we found are minor and certainly not unsolvable. Moreover, I believe that the issues reported in this report (see section 6.5 in the Appendix) can easily be addressed by the consultant who developed the database. As is, the FEIU database can be used to provide useful insights about the economic benefits brought by the tuna industry to the Seychelles economy. Several tables have been presented although the FEIU tool can produce many more yet (including charts).

In order to improve the FEIU repository database, I would recommend the following:

1. Update the tables with incomplete information such as ex-vessel prices, GDP,...
2. Adding the following tables:
 - a. Additional economic indices such as PPI, unemployment rates
 - b. Data from IOT (production by product type, prices, operating expenses, investment,...)
 - c. Disaggregated Employment data from NBS (Tuna harvesting vs. processing if available).
 - d. Trade data to measure Seychelles' tuna export competitiveness.
3. Double check the data on
 - a. exchange rates
 - b. GDP (adding the ones for 2013 and later, if available)
4. Convert any data expressed in monetary terms into Seychelles rupees (SCR) applying the relevant exchange rate. The SCR value equivalent could be calculated in a new field labelled "equivalent value in SCR"
5. Use a consistent unit of measure within the same table (Mt or kg, Millions or thousands)
6. Correct inconsistent data (errors identified) such as the catch by Seychelles flag semi-industrial longliners within the Seychelles EEZ currently showing catch varying between 250,000 Metric tons and 340,000 Metric tons depending on the year, while the production for the entire Seychelles' EEZ should be around 70,000 Mt.
7. Show the FEIU tool to someone familiar with the Seychelles tuna industry to help identify other inconsistent data.

Once those issues have been addressed, the FEIU tool's dashboards should be better calibrated and therefore able to reflect any variations in activities, expenses and contributions of the tuna fishery sector between years, without having to rely on extrapolating estimates from the 2011 World Bank model. It will also be possible to generate more economic indicators currently unavailable due to the lack of data.

⁷ The visit to Seychelles lasted 11 days from which only 8 days were actually working days.

Finally, the success of establishing a fully-functional FEIU could be potentially threaten by the following:

- First, by the lack of collaboration between FEIU and other SFA units (e.g. MCS, research, statistics department) or between FEIU and other public (e.g. NBS) and private (e.g. IOT) institutions providing data and analysis,
- Secondly, by inadequate linkage between the FEIU and the SFA unit responsible for the management of the repository database (i.e. the Statistic and information division);
- Last but not least, inadequate FEIU staffing forcing most FEIU service delivery to excessively rely on consultancies via *ad hoc* projects and contracted research.

5 REFERENCES

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6 APPENDIX

6.1 Mission Terms of Reference

Under the supervision of IOC-SmartFish and in very close collaboration with the SFA Fisheries Economic Intelligence Unit (FEIU), and on the basis of information available in the specific repository data base (under development), existing literature and complementary investigations with public and private sectors directly or indirectly concerned with the tuna industry (including Port Authorities, Land marine and IOT cannery), the consultant will:

1. Assess the impact of the tuna industry on the national economy whilst making use of ratios that can be derived from the economic model developed in 2011 by the Ministry of Finance with the support of the World Bank
2. Fulfil a dashboard summarizing the principal indicators, including data that can be derived from the use of the economic model mentioned above.
3. Analyse major changes in the legal and economic environment that have occurred since 2009 or are likely to occur in the coming years in the tuna industry (e.g. market, EPA, by-catch, etc.)
4. List any type of indirect economic effects that are induced by the tuna industry in the Seychelles
5. Based on the above, produce a short note (max 5 pages) on major issues and challenges faced by Seychelles regarding the management of the tuna industry in line with the overall objectives of the Blue Seychelles Economy.

6.2 Schedule of the Mission and Persons Met

During his inbound/ outbound visit to Mauritius, the consultant met with IOC-SmartFish key personnel

for a project briefing/ debriefing respectively.

Meeting at IOC, Ebene, Mauritius:

1. Dominique Greboval, IOC-SmartFish Team Leader
6. Yann Yvergniaux, Fisheries Socio-Economist

During his stay in Seychelles the consultant was able to meet with the following key persons:

Meeting at SFA, Port Victoria, Mahe, Seychelles :

1. Philippe Michaud, SFA Chairman
7. Vincent Lucas, SFA CEO
8. Michel Marguerite, SFA chief economist
9. Karine Rassool, SFA Senior Economist
10. Juliette Lucas, consultant-statistician who developed the FEIU database for SFA
11. Jan Anderson, consultant-scientist at SFA

Meeting at the Seychelles Ministry of Finance, Port Victoria, Mahe, Seychelles

1. Philippe Michaud, technical Adviser at Seychelles Ministry of Foreign Affairs (Blue Ocean)
2. Rebecca Loustau Lalanne
3. Suzanne Charles

Meeting at IOT, Port Victoria, Mahe, Seychelles:

1. Mr Francois Rossi-Operations Manager,
12. Mr Gregoire Malot-Finance Manager and
13. Ms Helda PortLouis-Human Resources Manager

Meeting at Sea Harvest, Port Victoria, Mahe, Seychelles:

1. David Bentley, CEO

Meeting with fishing boat owner association (FBOA) , Port Victoria, Mahe, Seychelles

1. Virginie Lagarde, chairperson
14. Beatty, Treasurer and Tuna Longline fisher
15. Keith Andre (also on SFA board)

Meeting with Seychelles Sports Fishing Club (SSFC) at SFA, Port Victoria, Mahe, Seychelles

1. Grant Heyer
16. Keith Andre (also on SFA board and FBOA)
17. several other representatives came to SFA

Meeting with hospitality Industry at SFA, Port Victoria, Mahe, Seychelles

1. several representatives came to SFA

Meeting with UK consultants from VIVID economics doing a similar project on the Seychelles demersal fisheries.

1. Robin Smale, Director
18. Aditi Sahni, associate

Meetings with these key persons helped to better understand the context under which SFA operates and to better assess the FEIU potential. Also discussions with several key tuna fishing stakeholders helped to clearly identify what resources and data were made available to SFA. In the context of the FEIU tool (the economic dashboards and the various economic and activities indicators), one of the main results of the mission was to assess the quality, usefulness and comprehensiveness of the data collected by the consultant who designed and populated the FEIU database. Although the structure of the database is in place, there are a few issues to be addressed before the data can fully and flawlessly be integrated into the FEIU tool.

Table 25 Schedule of the mission

Tasks	Start	End date	Place
Travel to Mauritius (Ebene) from South Africa (Cape Town)	Sun 3/05/2015	Sun 3/05/2015	
Inbound Visit to IOC (Ebene, Mauritius) Dominique Greboval and Yann Yvergniaux	Mon 4/05/2015	Tue 5/05/2015	Mauritius (Ebene)
Travel to Seychelles (Mahe Island) from Mauritius	Tue 5/05/2015	Tue 5/05/2015	
AM: Meet SFA staff in Port Victoria Vincent Lucas (CEO), Michel Marguerite (chief economist), Karine Rassool (Senior Economist), Juliette Lucas (consultant-statistician), Jan Anderson (consultant-scientist) PM: Meeting at Ministry of Finance Philippe Michaud, technical Adviser at Seychelles Ministry of Foreign Affairs (Blue Ocean)	Wed 6/05/2015	Wed 6/05/2015	Seychelles (Port Victoria)
Meeting with local processor David Bentley, Sea Harvest (CEO)	Thu 7/05/2015	Thu 7/05/2015	Seychelles (Port Victoria)
AM: Meeting w/ Recreation industry and Fishermen & boat owner association (FBOA) Grant Heyer, Keith Andre (SFA & FBOA board) + 3 other representatives PM: Meeting with hospitality industry (3 representatives)	Fri 8/05/2015	Fri 8/05/2015	Seychelles (Port Victoria)
Review meeting notes	Sat 9/05/2015	Sun 10/05/2015	Seychelles (Port Victoria)
Meeting with fishermen & boat owner association (FBOA) Virginie Lagarde (chairperson), Beatty (Treasurer and Tuna semi-industrial Longliner fisher)	Mon 11/05/2015	Mon 11/05/2015	Seychelles (Port Victoria)
Project debriefing. Meeting with Christophe Breuil (IOC-SmartFish lead consultant)	Tue 12/05/2015	Tue 12/05/2015	Seychelles (Port Victoria)
Meeting at Seychelles Ministry of Finance Philippe Michaud (technical Adviser at Seychelles Ministry of Foreign Affairs & Blue Ocean), Rebecca Loustau Lalanne, Suzanne Charles and several SFA staff	Wed 13/05/2015	Wed 13/05/2015	Seychelles (Port Victoria)
Wrap up meeting at SFA. Presentation of Concept SFA-FEIU Tool + discussion All SFA interested parties + Philippe Michaud	Thu 14/05/2015	Thu 14/05/2015	Seychelles (Port Victoria)
Meeting at Indian Ocean Tuna (IOT) with Juliette Lucas (SFA) and head of SFA stats department Mr Francois Rossi (Operations Manager) , Mr Gregoire Malot (Finance Manager), and Ms Helda PortLouis (Human Resources Manager)	Fri 15/05/2015	Fri 15/05/2015	Seychelles (Port Victoria)

Tasks	Start	End date	Place
Travel back to Mauritius (Ebene) from Seychelles (Mahe Island)	Sat 16/05/2015	Sat 16/05/2015	
Debriefing meeting at IOC- SmartFish Dominique Greboval, Yann Yvergniaux	Mon 18/05/2015	Mon 18/05/2015	Mauritius (Ebene)
Travel back from Mauritius to South Africa (Cape Town)	Thu 21/05/2015	Thu 21/05/2015	
Development of a functional SFA -FEIU tool and final report writing	Mon 25/05/2015	Thu 25/06/2015	South Africa (Cape Town)

6.3 Tuna Industry's Primary Added Values Calculation (2009-2013)

The Summary tables below were generated by the SFA-FEIU tool developed by Philippe Lallemand and are based on the 2011 World Bank (WB) model. The 2011 WB economic model (using data from 2009) gave an estimate of the Primary Value Added (PVA) not including transfer pricing at SCR 557.4 million (US\$ 40.8 million). Our estimates for 2009 are SCR 585.63 million (US\$ 43 million at the exchange rate of SCR 13.6/ US\$ as reported in the SFA-FEIU database for 2009) (Table 26). The 2010 PVA was estimated at SCR 558.6 (US\$ 46.54 at the exchange rate of SCR 12/ US\$ as reported in the SFA-FEIU database for 2010) or a decrease of -4.6% when expressed in SCR (but a corresponding increase of 8.1% when expressed in US\$) (Table 27). The PVA for the following years were estimated at SCR 639.15 (US\$52.11 at SCR 12.26/ US\$) or an increase of +14.4% (w.r.t. SCR) & +12% (w.r.t. US\$) in 2011 (Table 28), SCR 701.7 (US\$ 51.81 at SCR 13.54/ US\$) or an increase of +9.8% (w.r.t. SCR) & decrease of -0.6% (w.r.t. US\$) in 2012 (Table 29) and SCR 770.90 (63.99 at SCR 12.05/ US\$) or an increase of +9.9% (w.r.t. SCR) & +23.5% (w.r.t. US\$) in 2013 (Table 30).

Note that with the SFA-FEIU tool, all added values can be expressed in 3 currencies, Seychelles Rupee (SCR), US Dollars (US\$) or Euro (€). The following tables showing the DVA, IVA and PVA estimates are expressed in the local currency (SCR)

Table 26 2009 Primary Added value calculation (SCR)

Dashboard-Historical for 2009 (Seychelles Rupee) In 2009, the Tuna industry sector represented 5.06% of GDP (w/o transfer pricing), and 7.59% of GDP (w/ transfer pricing by IOT estimated as 50.8% of PVA based on 2009 data)

Country/ Tuna based Activity	Sum of Annual Value Added										Primary Added Value	
	France	Spain	Italy	Seychelles	Mayotte	Other	Any	Supplier	Supplier	Supplier		
Added value description												
Direct Added Value	75,925,306	72,076,874	7,948,559	6,965,361	179,621,065	5,086,508	7,955,087	8,352,049	7,277,439	7,277,439	370,818,248	
Depreciation allowance for investment in Seychelles	-	-	-	-	71,168,803	-	-	-	-	-	71,168,803	
Dividends paid to Govt of Seychelles	-	-	-	-	13,095,139	-	-	-	-	-	13,095,139	
EU-Seychelles FFA for fisheries access by purse seiners fleet	32,633,334	30,595,022	3,351,342	-	-	-	-	-	-	-	67,181,018	
EU-Seychelles FFA support for the sustainable development of the fisheries sector	21,435,081	20,095,189	2,350,654	-	-	-	-	-	-	-	44,126,124	
Fishing license fees	18,258,441	17,117,288	1,141,133	4,180,928	-	-	-	-	-	-	60,523,872	
Gross wages of national crew (or tax for absence of national crew)	3,596,390	4,268,515	258,810	2,784,434	80,003,975	599,658	577,923	8,352,049	7,277,439	99,348,144		
Rebate paid by Govt of Seychelles to PUC (electricity, water...)	-	-	-	-	(33,416,510)	-	-	-	-	-	(33,416,510)	
Spending of foreign workers in Seychelles (*)	-	-	-	-	45,569,604	-	-	-	-	-	45,569,604	
Indirect Added Value	27,302,254	60,790,805	2,701,176	40,731,341	55,795,197	5,862,215	6,453,340	189,134	8,188,667	4,494,833	212,610,722	
Crew accommodation	23,530	64,176	16,927	100,188	-	5,833	1,318	516	28,441	21,737	264,665	
Fuel and port dues	1,481,324	982,837	151,180	545,505	-	290,625	335,969	5,447	1,629,214	134,085	5,556,966	
Food supplies	1,184,075	915,457	61,030	300,112	-	246,717	54,437	21,867	211,044	3,055,339	73,273,754	
Gas oil & fuel oil	12,034,651	25,117,780	1,364,306	19,056,028	-	3,076,071	3,218,887	546,743	988,115	2,172,538	9,581,196	
Lease rental	-	-	-	-	-	-	-	-	-	-	-	
Maritime agent fees	3,334,672	5,530,508	211,835	4,029,853	-	655,313	970,078	21,344	4,018,667	1,300,723	20,055,091	
Other expenses	1,035,197	607,346	68,380	561,020	-	154,555	149,694	859	236,034	77,761	9,207,692	
Raw materials for can processing	1,301,879	1,846,021	147,167	737,316	-	297,000	58,347	14,326	82,381	382,634	7,010,360	
Repairs & Maintenance	5,748,566	20,518,455	587,848	14,230,027	-	1,092,658	1,348,725	-	1,028,399	55,924	44,610,601	
Steering Expenses	1,116,900	1,191,225	89,738	1,163,187	-	133,974	309,221	-	145,179	128,113	7,083,091	
Transport	71,238	16,561	4,766	10,006	-	9,470	6,063	-	9,790	4,893	8,739,671	
Utilities	-	-	-	-	-	-	-	-	-	-	-	
Primary Added Value	103,227,560	132,867,239	10,651,715	47,696,703	235,416,262	11,048,722	14,038,427	9,541,183	8,188,667	13,772,272	583,428,970	

Table 27 2010 Primary Added value calculation (SCR)

Dashboard-Historical for 2010 (Seychelles Rupee) In 2010, the Tuna industry sector represented 4.75% of GDP (w/o transfer pricing), and 7.15% of GDP (w/ transfer pricing by IOT estimated as 50.8% of PVA based on 2009 data)

Country/ Tuna based Activity	Sum of Annual Value Added										Primary Added Value
	France	Spain	Italy	Seychelles	Mayotte	Other	Any	Supplier	Supplier	Supplier	
Added value description											
Direct Added Value	44,098,737	72,790,001	-	9,258,017	193,203,353	8,422,563	302,769	8,899,461	5,605,707	5,605,707	345,080,608
Depreciation allowance for investment in Seychelles	-	-	-	-	76,964,116	-	-	-	-	-	76,964,116
Dividends paid to Govt of Seychelles	-	-	-	-	14,121,856	-	-	-	-	-	14,121,856
EU-Seychelles FFA for fisheries access by purse seiners fleet	20,430,200	33,212,173	-	-	-	-	-	-	-	-	53,642,373
EU-Seychelles FFA support for the sustainable development of the fisheries sector	11,423,946	21,811,912	-	-	-	-	-	-	-	-	33,235,858
Fishing license fees	7,745,980	12,387,217	-	6,181,014	-	7,201,182	-	8,899,461	-	-	42,614,853
Gross wages of national crew (or tax for absence of national crew)	2,490,551	5,176,699	-	3,077,003	86,276,285	1,221,381	302,769	-	-	-	104,150,396
Rebate paid by Govt of Seychelles to PUC (electricity, water...)	-	-	-	-	(36,016,364)	-	-	-	-	-	(36,016,364)
Spending of foreign workers in Seychelles (*)	-	-	-	-	52,377,460	-	-	-	-	-	52,377,460
Indirect Added Value	28,379,092	66,443,156	-	43,651,338	60,814,953	8,331,686	754,321	5,012,057	4,907,252	4,907,252	218,094,055
Crew accommodation	25,055	37,598	-	47,159	-	20,340	7,810	-	2,124	21,927	162,214
Fuel and port dues	1,142,735	667,940	-	609,426	-	330,204	137,440	-	968,657	99,957	3,957,360
Food supplies	752,478	1,008,387	-	457,693	-	313,571	69,148	-	27,767	268,994	2,898,079
Gas oil & fuel oil	14,473,537	29,034,748	-	19,842,465	-	4,690,697	-	-	326,315	2,287,181	72,928,895
Lease rental	-	-	-	-	-	-	-	-	-	-	-
Maritime agent fees	4,935,829	10,664,100	-	8,065,068	-	1,175,290	96,492	-	2,623,245	1,532,005	29,092,029
Other expenses	1,074,907	496,548	-	381,582	-	346,228	87,548	-	108,240	56,305	9,431,864
Raw materials for can processing	-	-	-	-	-	26,110,538	-	-	-	-	26,110,538
Repairs & Maintenance	1,268,823	1,496,090	-	648,331	-	339,857	45,311	-	40,147	222,769	6,371,357
Steering Expenses	1,856,712	21,815,028	-	11,976,099	-	901,647	182,548	-	526,935	245,139	39,466,128
Transport	776,369	1,200,790	-	1,407,203	-	196,124	145,514	-	379,368	165,611	6,640,168
Utilities	72,447	20,125	-	14,313	-	15,728	2,447	-	8,018	3,345	10,704,629
Primary Added Value	72,477,829	139,231,157	-	52,709,355	254,518,306	16,784,249	1,097,099	8,899,461	5,012,057	10,512,959	563,174,664

Table 28 2011 Primary Added value calculation (SCR)

Dashboard-Historical for 2011 (Seychelles Rupee) In 2011, the Tuna industry sector represented 4.81% of GDP (w/o transfer pricing) and 7.22% of GDP (w/ transfer pricing by IOT estimated as 50.8% of PVA based on 2009 data).

Country/ Tuna based Activity	Sum of Annual Value Added						Primary Added Value
	France	Spain	Italy	Seychelles	Mayotte	Other	
Added value description							
Depreciation allowance for investment in Seychelles	47,499,415	78,471,590	-	216,071,972	9,151,488	1,471,743	4,099,139
Dividends paid to Govt of Seychelles	-	-	-	93,799,226	-	-	-
EU-Seychelles PFA for Fisheries Access by purse seiners fleet	21,923,936	33,626,396	-	17,210,667	-	-	91,799,226
EU-Seychelles PFA support for the sustainable development of the fisheries sector	14,399,745	23,399,586	-	-	-	-	17,210,667
Fishing license fees	8,309,042	13,302,193	-	7,634,666	-	-	57,590,332
Gross wages of national crew (or tax for absence of national crew)	2,866,712	5,945,414	-	3,200,609	7,338,714	1,471,743	37,799,311
Rebate paid by Govt of Seychelles to PUC (electricity, water...)	-	-	-	(43,918,949)	-	-	-
Spending of foreign workers in Seychelles (*)	-	-	-	63,834,491	-	-	-
Indirect Added Value	28,895,892	77,819,282	-	42,429,779	6,906,271	305,600	218,829,688
Crew accommodation	41,767	55,575	-	46,960	3,888	-	180,492
Fees and Port dues	1,326,138	373,030	-	498,225	271,497	12,292	37,683
Food supplies	854,928	1,143,681	-	520,009	356,264	78,608	3,292,658
Gas oil & fuel oil	14,214,550	39,425,068	-	21,564,511	8,712,620	-	1,498,167
Lease rental	-	-	-	-	-	-	-
Maritime agent fees	5,381,387	11,296,376	-	8,266,426	1,117,439	45,337	13,566,174
Other expenses	1,130,077	262,648	-	235,344	218,113	34,870	30,028,126
Raw materials for can processing	1,209,171	1,487,624	-	31,821,950	-	-	10,349,311
Repairs & Maintenance	3,887,684	21,993,821	-	698,844	2,815,323	800	31,821,950
Stevedoring Expenses	805,233	1,955,937	-	9,649,355	794,337	-	6,799,696
Transport	54,777	33,522	-	989,626	2,537,117	3,672	281,663
Utilities	-	-	-	9,477	13,178,489	10,228	73,496
Primary Added Value	76,395,328	156,332,871	-	53,265,054	15,997,761	1,617,341	640,158,331

Table 29 2012 Primary Added value calculation (SCR)

Dashboard-Historical for 2012 (Seychelles Rupee) In 2012, the Tuna industry sector represented 4.52% of GDP (w/o transfer pricing) and 6.78% of GDP (w/ transfer pricing by IOT estimated as 50.8% of PVA based on 2009 data).

Country/ Tuna based Activity	Sum of Annual Value Added						Primary Added Value
	France	Spain	Italy	Seychelles	Mayotte	Other	
Added value description							
Depreciation allowance for investment in Seychelles	54,534,507	77,851,024	-	262,992,923	10,219,395	1,831,113	470,834,424
Dividends paid to Govt of Seychelles	-	-	-	104,335,995	-	-	104,335,995
EU-Seychelles PFA for Fisheries Access by purse seiners fleet	24,500,826	34,301,156	-	23,144,219	-	-	10,144,219
EU-Seychelles PFA support for the sustainable development of the fisheries sector	16,093,258	22,529,162	-	-	-	-	58,801,952
Fishing license fees	10,612,192	14,857,069	-	9,040,799	8,126,561	1,625,312	18,621,420
Gross wages of national crew (or tax for absence of national crew)	3,329,231	6,266,637	-	3,123,771	2,092,834	305,801	91,240,226
Rebate paid by Govt of Seychelles to PUC (electricity, water...)	-	-	-	(48,852,506)	-	-	-
Spending of foreign workers in Seychelles (*)	-	-	-	71,005,226	-	-	-
Indirect Added Value	17,519,662	66,586,656	-	80,821,137	7,316,499	265,414	136,537,860
Crew accommodation	27,201	68,864	-	77,940	9,000	1,702	203,379
Fees and Port dues	950,615	496,516	-	976,667	320,627	26,532	81,563
Food supplies	1,163,405	1,943,195	-	566,111	387,849	85,577	9,703,571
Gas oil & fuel oil	5,945,023	30,810,270	-	20,668,427	3,102,764	-	3,913,196
Lease rental	-	-	-	-	-	-	-
Maritime agent fees	4,022,533	12,051,429	-	8,111,963	1,192,629	54,958	11,977,773
Other expenses	933,269	200,213	-	216,427	323,645	36,103	30,034,223
Raw materials for can processing	862,377	1,335,742	-	3,131,577	366,854	0	35,396,613
Repairs & Maintenance	3,054,365	17,635,625	-	10,761,087	1,206,655	4,834	7,803,354
Stevedoring Expenses	513,643	2,026,063	-	2,992,296	191,795	35,638	31,567,043
Transport	43,170	18,740	-	18,951	14,120	81	7,249,282
Utilities	-	-	-	13,318,163	14,120	81	15,431
Primary Added Value	72,054,169	144,540,680	-	55,179,608	17,515,883	2,096,527	699,122,254

Table 30 2013 Primary Added value calculation (SCR)

Dashboard-Historical for 2013 (Seychelles Rupee) In 2013, the Tuna industry sector represented 4.46% of GDP (w/o transfer pricing) and 6.69% of GDP (w/ transfer pricing) and 6.69% of GDP (w/ transfer pricing) by IOT estimated as 50.8% of PVA based on 2009 data).

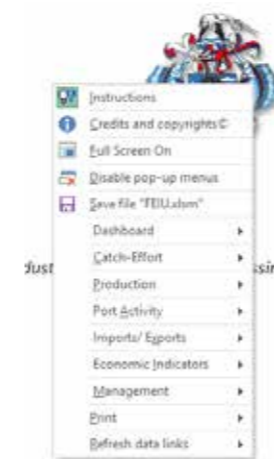
Country/ Tuna based Activity	France	Spain	Italy	Seychelles	Mayotte	Other	Any	IOT Camerary	Primary Added Value
Sum of Annual Value Added	83,642,011	78,737,167	6,114,010	5,763,827	24,153,866	6,732,645	290,805,382	115,545,646	666,314,686
Added value description									
Direct Added Value									
Depreciation allowance for investment in Seychelles									
Dividends paid to Govt of Seychelles									
EU-Seychelles FTA for fisheries access by purse seiner fleet	19,588,563	34,279,985							53,868,547
EU-Seychelles FTA support for the sustainable development of the Fisheries sector	12,865,861	22,515,256							35,381,117
Fishing license fees	7,777,471	13,610,374		6,836,596	3,902,522	4,969,332			61,250,461
Gross wages of national crew (or tax for absence of national crew)	3,410,117	8,331,352		3,529,087	2,211,488	794,489			154,535,114
Release paid by Govt of Seychelles to PUC (electricity, water...)							6,732,645	129,525,936	
Spending of foreign workers in Seychelles (*)								(54,101,122)	(54,101,122)
Indirect Added Value	32,924,917	101,553,468	21,291,112	6,693,774	590,223	5,014,296	4,777,913	78,633,885	308,734,201
Crew accommodation	33,670	90,798		69,623	12,114	7,731	16,199		235,852
Fees and Port dues	1,116,826	1,293,855		787,949	829,449	49,506	2,311,213	154,708	6,577,339
Food supplies	1,125,115	1,623,736		684,350	468,856	103,451	41,518	402,204	4,449,229
Gas oil & fuel oil	10,701,599	47,307,414		20,764,143	8,823,432	3,833,390	668,084	2,405,450	101,920,525
Lease rental									15,479,516
Maritime agent fees	5,261,448	14,377,712		7,262,363	5,996,548	1,178,912	37,085	1,316,003	37,046,476
Other expenses	1,395,920	1,420,307		681,789	1,599,054	222,786	188,726	151,801	10,323,586
Raw materials for can processing									39,199,554
Repairs & Maintenance	1,219,162	2,987,031		1,330,027	794,205	32,581	9,665	230,989	10,093,090
Restoring Expenses	5,397,389	31,443,852		12,330,445	4,430,081	1,216,321	106,173	34,375	54,968,842
Transport	589,333	946,807		326,298	292,002	48,331	105,384	41,027	4,723,997
Utilities	63,735	61,728		57,550	43,370	744	1,940	5,131	16,050,269
Primary Added Value	76,566,928	180,290,625	29,405,122	12,457,595	24,744,189	5,014,296	11,510,558	380,078,770	775,048,887

6.4 Technical Appendix regarding the "FEIU Tool"

6.4.1 Overview

The FEIU tool was developed by the consultant in MS Excel 2013⁸ consisting of a Workbook dynamically linked to the FEIU MS Access database developed by Juliette Lucas for SFA. The FEIU tool and the MS Access database are currently available for download from Dropbox (link available from IOC-SmartFish upon request)

The FEIU tool is composed of a brief instruction sheet, two dashboards (an historical and a simulation one) and several interactive pivot tables and pivot charts. The instruction sheet, the two dashboards as well as the pivot tables and charts can easily be accessed through a menu on the Excel Ribbon (on the Ribbon's right hand side), under the menu option labelled "SFA-FEIU" (as shown below):



Or by right-clicking on any portion of any of the sheet's working area which will trigger a popup menu (as shown herein on the right-hand side).

The pivot tables and charts are dynamically linked in "real-time" to the FEIU database and as such, can be refreshed at any time to reflect data newly entered in the FEIU database. The tool also comprises 2 economic dashboards, an historical-dashboard and a simulation dashboard. At the time of writing, the historical dashboard gathers data collected between 2009 and 2013⁹; this will evolve as more data are being added to the FEIU database. At the moment, the simulation dashboard is used to simulate scenarios under various economic conjectures (inflation, exchange rates) and fishing fleet composition (number of purse seiners by country). The tool can easily be expanded to include additional economic indicators and other performance indicators which could be provided through the FEIU database.

⁸ The FEIU tool was also tested successfully with MS Excel version 2007 and 2010.
⁹ Data for 2014 and 2015 are still incomplete and therefore were not included in the analysis

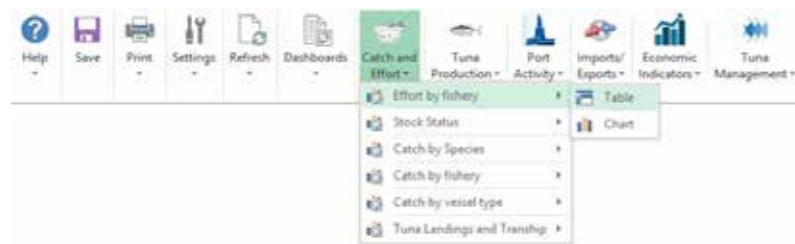
6.4.2 The FEIU tool's dynamic pivot tables and pivot charts

At the time of writing, the FEIU tool which is still under development, consists of 24 pivot tables with, for most of them, a corresponding pivot chart grouped into 7 main categories (showing below each category, how to access the tables and charts from the Ribbon):

1. Historical and Simulation Dashboards



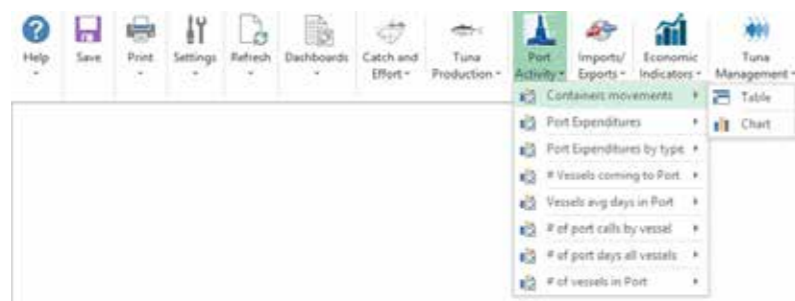
2. tuna catch-effort, landing, transshipment and ex-vessel prices information by species/ vessel/ fishery/ country



3. tuna vessel production (tuna production onboard of vessels)



4. port¹⁰ activities related to the tuna fishing industry (port expenditures, containers and vessel activity)



5. tuna imports/ exports to/ from Seychelles in local (i.e. Rupees) of foreign currency



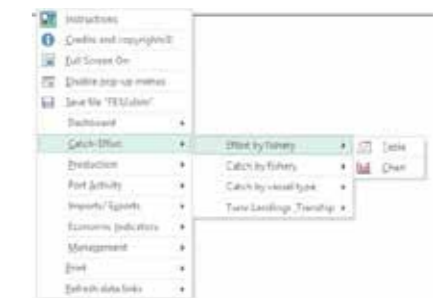
6. Main economic indicators (CPI, GDP, Exchange rates,...)



7. Management data (number of registered vessels by activity, licensing and financial contribution to the tuna fishery sector).



The individual pivot tables and charts can be accessed through the submenus either from the Excel Ribbon as shown above, or through the popup menu (see example herein on the right hand side for the Catch-Effort menu and submenus).



All the data generated through the FEIU's pivot table and charts come from the linked FEIU MS Access database covering years as early as 2000 and as recent as 2015, although the last 2 years are incomplete. The FEIU pivot tables and charts can be used to identify gaps in the data especially incomplete sets of data covering the more recent years.

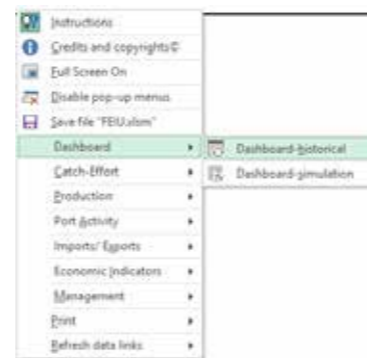
10 Port of Victoria, Mahe, Seychelles

6.4.3 The FEIU tool's Dashboards

The information generated by the dashboards is based on data coming from 2 main sources:

1. Estimates from the **original 2011 World Bank (WB) model** using 2009 data. The 2011 WB model was used essentially to fill up the data gaps identified in the FEIU database and pertaining to the following sectors:
 - a. The local processing sector (IOT): operating expenses, employment data, investment and other relevant financial information.
 - b. The harvesting sector fishing in the Seychelles EEZ: operating expenses, employment data, investment and other relevant financial contributions from the EU based on fisheries trade agreement (FTA) signed with the Seychelles to allow European flagged vessels to operate in their EEZ.
2. Data currently collected in the **FEIU database**:
 - a. Licenses paid by foreign vessels which allow them to fish in Seychelles water
 - b. Expenses related to port activities such as fees and port charges, stevedoring expenses, bunkering, etc.
 - c. Economic indicators such as annual CPIs and Exchange rates

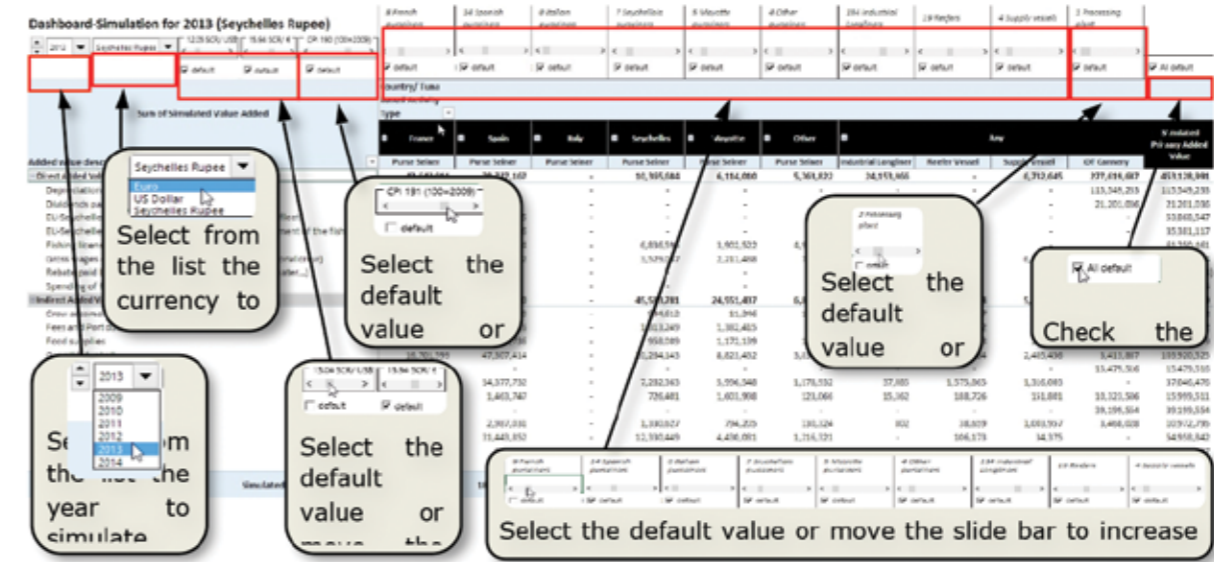
Both dashboards can be accessed through the Ribbon or popup menus as shown herein on the right hand side.



The FEIU dashboards were used not only to simulate recent contributions of the Tuna industry to the Seychelles economy but also to compare and contrast trends in the industry throughout the years (2009 to 2013). When specific data were unavailable in the FEIU database, the missing data were either extrapolated from the 2011 WB model or from ad hoc sources (internet search and personal communication).

Data taken from the 2011 WB model, when relevant, were adjusted to reflect annual variations in exchange rate and inflation. The data on annual exchange rates and inflation related to fishing activity in Seychelles (CPI¹¹ fish product) were taken directly from the FEIU database. Also some expenses from the 2011 WB model were calibrated to reflect the level of activity for the year being simulated based on the number of active fishing vessels and the corresponding estimated number of crew. However, some other activities not specifically identified in the scenarios such as container movements should also be integrated to improve the simulation capabilities of the tool. Based on a specific year, the FEIU tool can not only simulate a variety of exchange and inflation rates, it can also make assumptions on the fleets' sizes and their composition between vessel types (Industrial Longliners versus Purse Seiners).

11 A producer price index (PPI) would have been more appropriate to simulate/ extrapolate some of the data.



1. Data year of simulation

The data year of reference to calibrate the data in the simulation. By checking the "All Default" box, the data used in the simulation are reset to their observed value for that year (Exchange rates, CPI, fleet and number of plants).

2. Currency

The user can select a currency to be used to represent the data displayed in the simulation dashboard. Currently there are 3 possible currencies to be chosen from: Seychelles Rupee (SCR) US Dollar (US\$) and Euro (€). The data thus displayed will reflect the exchange rate as defined by the slider relevant to the selected currency, either using the default value if the "Default" box is checked or applying the value indicated by the slider if the "Default" box is unchecked.

3. Exchange rate

The user can define 2 exchange rates, SCR vs US Dollar and SCR vs Euro by using the slider to increase (moving the slider to the right) or decrease (moving the slider to the left) the exchange rate. By checking the "Default" box under the relevant slider, the data calculation for the simulation will be based on the observed exchange rate for the data year of simulation. The exchange rate for a given currency will not only affect the conversion factor for the data displayed in that currency, but some internal computation as well even if the corresponding currency is not selected. In other words, although the data might be expressed in SCR, some revenues and expenses might be paid in one of the 2 foreign currencies and thus would be affected by a change in exchange rates.

4. Inflation based on the Consumer Price Index (CPI)

The inflation factor is only relevant here because we based some of our estimates on the World Bank (2009) report which needed to be adjusted for the subsequent years to reflect the level of inflation in Seychelles. The default value (when the "default" box is checked) reflects the inflation level for the data year of simulation. The user may override the default value by increasing (moving the slider to the right) or decreasing (moving the slider to the left) the inflation index (the base year is 2009).

5. Fleet size by country and type

If the "default" box is checked under each category representing the fleet size by country/ vessel type, the dashboard will simulate the data based on the known fleet size for the data year of simulation. The user can override the default values in some or all the categories by increasing (moving the slider to the right) or decreasing (moving the slider to the left) the fleet size. In other words, the user may

change the purse seiners' fleet size for 5 different countries and one "other" purse seiners' category. The industrial long liners' fleet size (all countries combined) can also be changed.

6. Number of processing plants

If the "default" box is checked, only one (IOT) processing plant will be taken into account in the simulation. The user may override the default value by increasing (moving the slider to the right) or decreasing (moving the slider to the left) the number of tuna processing plants in Port Victoria.

7. All default value

If the "All default" value is checked, each value will be reset to its default value as observed in the data year used in the simulation.

6.4.4 Example of FEIU tool's Pivot Tables and Pivot Charts

Most categories of information presented in the FEIU tool can be presented either as a dynamic pivot table or as the corresponding pivot chart. The underlying data are linked to the FEIU MS Access database which can be refreshed on demand.

The information to display can be filtered by following the standard protocol for MS Excel pivot tables and pivot charts (See MS Excel Help for more information). The following table and figures show examples of a pivot table (Table 31) and several pivot charts (Figure 1 to Figure 4) that can be found in the FEIU tool.

It is important to note that a portion of the data generated in the dashboards are linked to several pivot tables and therefore filtering out some information in those tables will affect the data generated in the dashboards. An improvement of the FEIU tool would be to isolate a duplicate version of the Pivot tables used to generate the dashboard data to bypass such limitation.

Table 31 Interactive Pivot table generated by the FEIU tool showing the number of active vessels by year, fishery, gear type, and country of origin

Active Vessels Sum of Vessel Active	Country													Grand Total		
	Tahiti	Seychelles	Spain	France	Japan	China	Mayotte	Philippines	Thailand	Oman	Korea, South	Tanzania, United Republic of	Mauritius		Solite	Italy
2009	28	51	15	16	25	25	5	2	1	4	1	1	1	1	1	150
Industrial Longline Fishery	28	25	-	-	25	25	5	5	1	1	1	1	1	1	1	86
Industrial Longliner	28	25	-	-	25	25	5	5	1	1	1	1	1	1	1	86
Purse Seine Fishery	17	15	15	16	16	16	2	2	4	4	1	1	1	1	1	55
Purse Seiner	17	15	15	16	16	16	2	2	4	4	1	1	1	1	1	55
Supply Vessel	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	48
Semi-Industrial Fishery	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	7
Semi-Industrial Longliner	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9
2010	29	47	13	8	8	8	8	5	3	3	1	1	1	1	1	107
Industrial Longline Fishery	29	24	-	-	24	24	8	5	3	3	1	1	1	1	1	65
Industrial Longliner	29	24	-	-	24	24	8	5	3	3	1	1	1	1	1	65
Purse Seine Fishery	14	13	13	8	8	8	5	5	3	3	1	1	1	1	1	55
Purse Seiner	14	13	13	8	8	8	5	5	3	3	1	1	1	1	1	55
Supply Vessel	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	43
Semi-Industrial Fishery	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	38
Semi-Industrial Longliner	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	38
2011	29	38	13	8	8	8	8	5	1	1	1	1	1	1	1	95
Industrial Longline Fishery	29	23	-	-	23	23	8	5	1	1	1	1	1	1	1	54
Industrial Longliner	29	23	-	-	23	23	8	5	1	1	1	1	1	1	1	54
Purse Seine Fishery	11	11	11	8	8	8	5	5	1	1	1	1	1	1	1	54
Purse Seiner	11	11	11	8	8	8	5	5	1	1	1	1	1	1	1	54
Supply Vessel	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	37
Semi-Industrial Fishery	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	34
Semi-Industrial Longliner	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	34
2012	93	47	14	10	2	11	11	5	7	2	2	1	1	1	1	193
Industrial Longline Fishery	93	29	-	-	29	29	11	7	7	2	2	1	1	1	1	145
Industrial Longliner	93	29	-	-	29	29	11	7	7	2	2	1	1	1	1	145
Purse Seine Fishery	11	11	11	10	2	11	11	5	7	2	2	1	1	1	1	41
Purse Seiner	11	11	11	10	2	11	11	5	7	2	2	1	1	1	1	41
Supply Vessel	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	38
Semi-Industrial Fishery	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7
Semi-Industrial Longliner	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7
2013	81	48	14	8	3	13	13	5	4	1	1	1	1	1	1	162
Industrial Longline Fishery	81	31	-	-	31	31	13	4	4	1	1	1	1	1	1	134
Industrial Longliner	81	31	-	-	31	31	13	4	4	1	1	1	1	1	1	134
Purse Seine Fishery	11	11	11	8	8	8	5	5	1	1	1	1	1	1	1	42
Purse Seiner	11	11	11	8	8	8	5	5	1	1	1	1	1	1	1	42
Supply Vessel	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	38
Semi-Industrial Fishery	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	4
Semi-Industrial Longliner	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	4

Figure 1 Interactive Pivot chart generated by the FEIU tool showing Purse Seiners' annual expenditures by country and type while in the Port of Victoria, Seychelles between 2009 and 2013

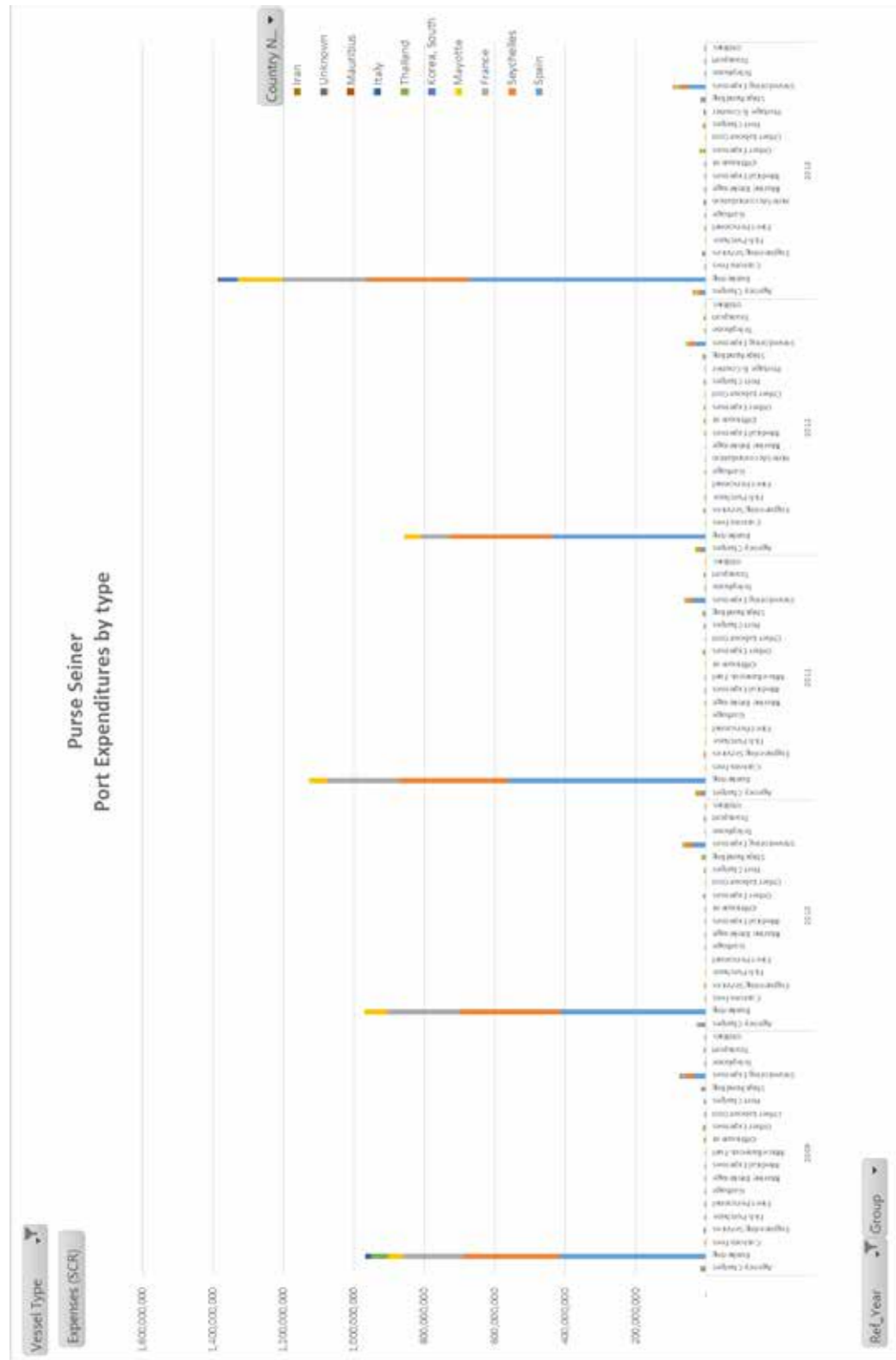


Figure 2 IOT Containers movement (in versus out) in Port Victoria between 2009 and 2013

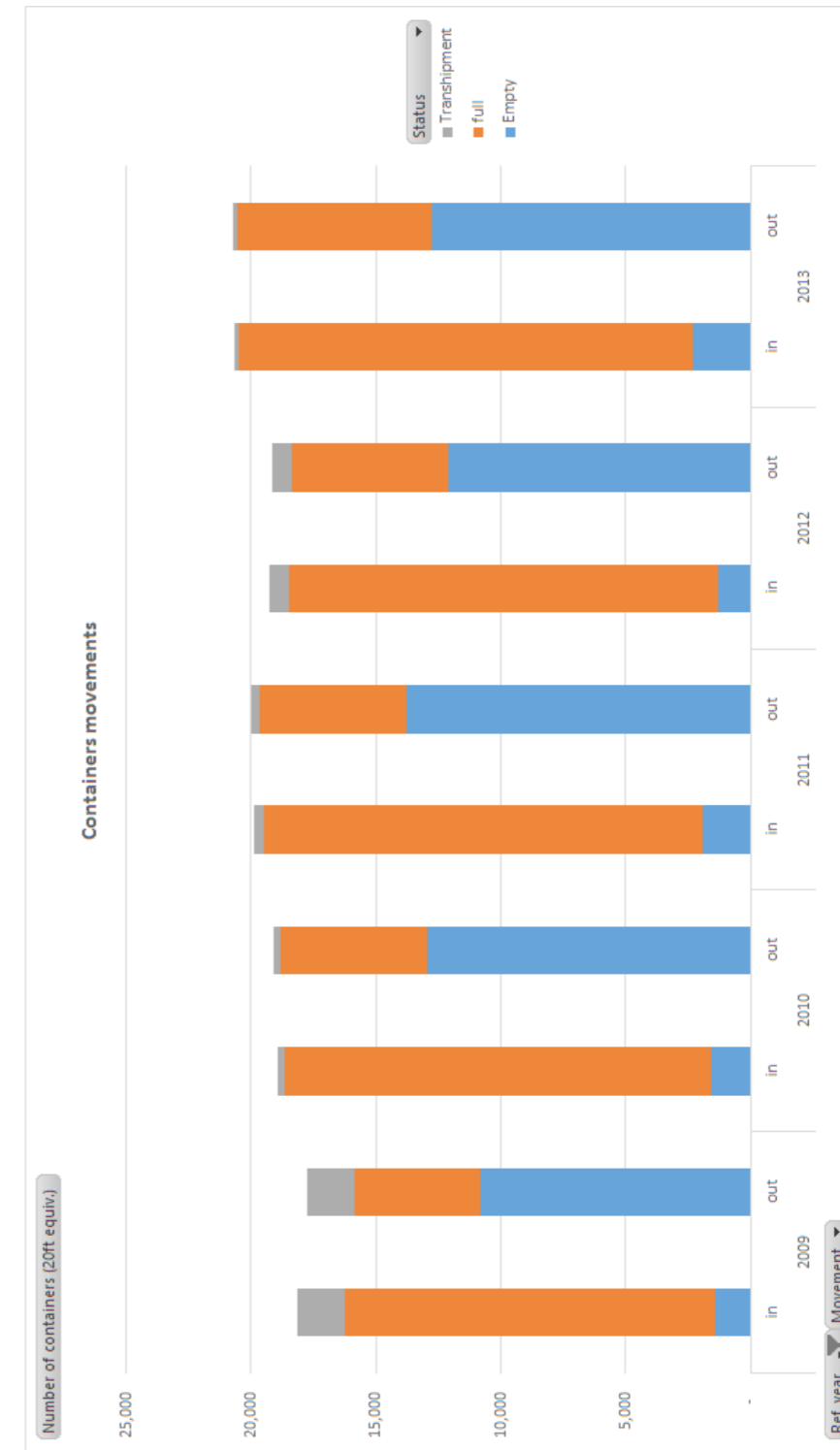


Figure 3 Licence fees comparison (Industrial Longliners versus Purse Seiners) by country between 2009 and 2013

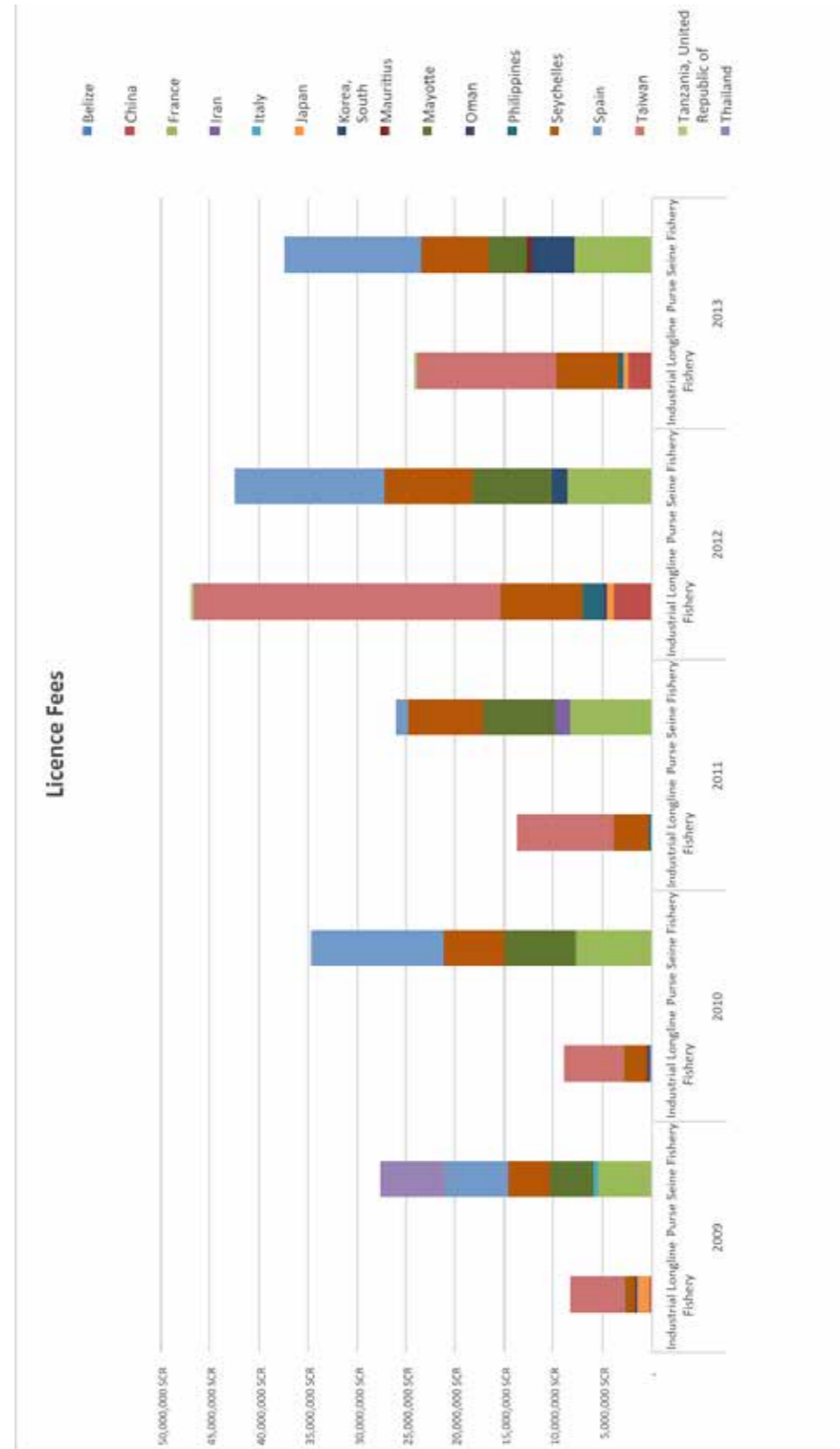
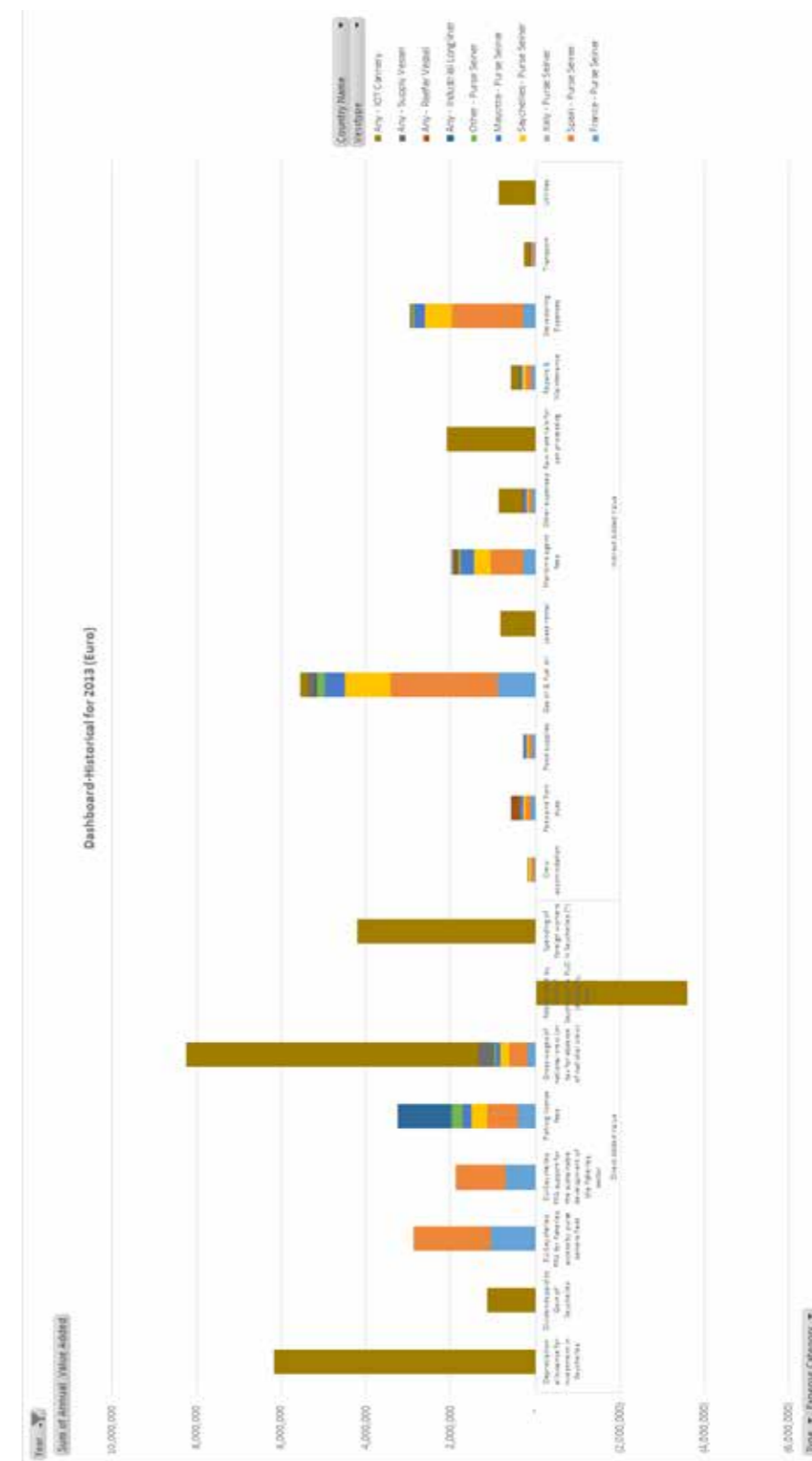


Figure 4 2013 estimates of the Tuna industry's Direct and Indirect Added value by category of contribution, activity type and country



6.5 Issues identified in the FEIU Repository Database

The following points describe problem areas found in the FEIU database and identified by the consultant.

The issues identified were:

- 1 **Inconsistency** in the data measurement within a same table: switching between different currencies, different scale (units, thousands, millions,...) or different types of measurement altogether (currency vs. percentage). This creates a problem especially when comparing or aggregating data with different measurement units. This problem can easily be addressed by standardising similar data using the same unit.
- 2 Data expressed in **foreign currencies**: similarly to point 1, to avoid inconsistency in data measured in monetary terms within a same table we suggest adding a field where data expressed in a foreign exchange currency would also be expressed in the local currency (SCR or Seychelles rupees) using the annual or monthly (when relevant) average exchange rate for the conversion.
- 3 **Data sourcing**: There are few conflicts in the data reported in the FEIU database compared with the same data reported by internationally recognized data repositories: for example the data on exchange rates do not match the values reported by the United Nations (see the UN Monthly Bulletin of Statistics Online). Moreover, I could not find the source used to collect the data on exchange rates. For example, the exchange rates used by the World Bank in their 2009 Model is different from the ones used in the FEIU tool leading to small discrepancies between the 2 results. Also the reported annual GDP for Seychelles at current prices is different from the GDP as reported by the World Bank (see World Development Indicators, Gross Domestic Product from Google). Although it is acknowledged that the discrepancy might be an artefact caused by the exchange rate used in the conversion since the GDP values reported by Google are in US dollars.
- 4 **Incomplete or missing** data within a table: for example ex-vessel prices data by tuna species are inadequate covering only few species for few months over a 2 year period (2013 and 2014). Another problem (see point 2) is that the available prices are expressed in either Euro or SCR. Furthermore, the overall GDP for 2013 is absent while the GDP for 2013 covering the fisheries sector is present in the database.
- 5 **Missing** tables:
 - a. Data regarding tuna processing activities: there are no data pertaining to tuna processing activity in Seychelles (IOT) although we engaged with IOT who indicated their willingness to provide SFA with the required data which they currently report to the Seychelles National Bureau of Statistics (NBS). However, the final approval must come from MW brand headquarters. We are still waiting to hear back from IOT.
 - b. Data regarding employment in the Tuna fishing sector: no data has been collected. The only data available through NBS has been aggregated by primary sectors.
 - c. Economic indices: such as unemployment rates (by sector if available), Producer price Index (all sectors, fishery sector if available, by primary sector such as harvesting, manufacturing, ...)
 - d. Trade data which could be useful to compare the competitiveness of the tuna products exported from Seychelles vis-à-vis the rest of the world (see UN Comtrade and ITC data).

- 6 **Erroneous or inconsistent** data: This is a problem area which is harder to address as errors are being identified mostly from calculation in the FEIU tool. However as soon as errors are being identified, the FEIU database can be corrected immediately. For example the total Tuna catch in the Seychelles EEZ was inconsistent with the reported FAO catch by several folds raising the suspicion that the data was incorrectly incorporating catch outside the EEZ.
- 7 **Labelling errors**: these labels are used to identify categories, groups, etc. I identified a few instances in which the label was incorrectly spelt leading to the data being left out of a category with the corresponding label using the right spelling. This can be a problem when the data is being accessed remotely through a Pivot table while querying specific labels. However this issue is easily fixed by correcting the spelling mistake. We note that although the database has a tracking error mechanism in place where labels can only be selected from a predefined list, this did not stop some of the label from being incorrectly entered.

IOC-SmartFish is a regional fisheries programme managed by the Indian Ocean Commission, funded by the European Union and co-implemented by the Food and Agriculture Organization of the United Nations. IOC-SmartFish, which operates in twenty countries throughout the Indian Ocean Region, Southern and Eastern Africa, focuses on fisheries governance, management, monitoring control and surveillance, trade, and food security.

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