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NFDS Africa

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FINAL REPORT

To prepare a technical rationale for supporting certain recommendations adopted at the regional meeting for developing Regional Minimum Terms and Conditions for fisheries access arrangements, 28th and 29th August in Maputo, Mozambique

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Acronym	Full name
ADNAP	National Fisheries Administration Mozambique
EC	European Commission
EEZ	Exclusive Economic Zone
ETP	Endangered, Threatened or Protected
EU	European Union
EUR	Euro
DSFA	Deep Sea Fishing Authority
DWFN	Distant Water Fishing Nation
FAD	Fish Aggregating Device
FPA	Fisheries Partnership Agreement
IOTC	Indian Ocean Tuna Commission
MTC	Minimum Terms and Conditions
MZN	New Metical
UNCLOS	United Nations Convention On the Law of the Sea
VRT	Vessel Reference Tonnage
USD	United States Dollar
WIO	Western Indian Ocean
WWF	World Wide Fund for Nature
PS	Purse Seiner
LL	Longliner

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1 INTRODUCTION

1.1 TUNA FISHING IN THE WESTERN INDIAN OCEAN

The Western Indian Ocean (WIO) is characterised by a seasonally reversing monsoon wind system that results in strong northwards and southward winds and currents at different times of the year. This brings increased nutrient supply to the surface, providing the base for a food chain that supports the world's second largest tuna fishery. These highly migratory tuna and tuna like species, move annually through the region from one exclusive economic zone (EEZ) to another and into the high seas. The fish are closely followed by large-scale industrial fishing vessels, originating from Asia and Europe, although some vessels are now registered or flagged to coastal states of the WIO.

1.1.1 HEALTH OF THE FISH STOCKS

The tuna stocks being fished in the WIO include: skipjack, yellowfin, bigeye and albacore tuna, which are all accessed to be in a healthy condition by the Indian Ocean Tuna Commission[1] (IOTC). Swordfish another highly migratory tuna like species is showing evidence of being overfished in the South West Indian Ocean. Ecosystem concerns associated with purse seine and longline fishing methods include: their possible impacts on non-target fish species; the bycatch of endangered, threatened or protected (ETP) species; and their potential to disrupt the functioning of marine ecosystems as a result of the removal of high trophic level species.

1.1.2 THE FISHING FLEETS

The purse seine fleet operating in the WIO numbers around 47 vessels, 27 are from the European Union (EU) with other major fleets from the Seychelles, Mauritius and Korea. Vessel numbers have declined in recent years from a high of 68 in 2005. Skipjack and yellowfin tuna are the two main species caught by purse seiners (around 90 % of total catch) with the remainder being bigeye and small amounts of albacore tuna. Purse seine vessels rely heavily on fish aggregating devices (FADs), with 65 % to 80 % of the catch being associated with FADs. The majority of the purse seine vessels operate out of, and unload their catch to, Port Victoria in the Seychelles.
The longline fleet operating in the Indian Ocean as a whole includes around 400 to 450 large-scale deep-freezing vessels, with Taiwan, Japan, Seychelles and China having the largest fleets, around 200 of these are thought to be operating in the WIO. There are also over 1 000 smaller-scale, fresh-tuna longline vessels in the Indian Ocean,

[1] The IOTC is an intergovernmental organisation responsible for the management of tuna and tuna-like species in the Indian Ocean. It works to achieve this by promoting cooperation among its Contracting Parties of which Kenya, Mozambique and Tanzania are all parties. The IOTC 2014 Science Committee report recorded that skipjack, yellowfin, bigeye and albacore are not subject to 'overfishing' defined as occurring when the fishing intensity is higher than the one that produces maximum sustainable yield (MSY), nor are the stocks defined as being 'overfished' when its total biomass is less that the biomass that produces MSY, www.iotc.org.

mostly from Indonesia, Taiwan and Sri Lanka, but the number of these vessels operating in the WIO could not be differentiated. Overall, there has been a decline in fishing effort in the WIO since the beginning of 2000 due to declines in catch rates and the piracy threat. The fleets display different catch compositions; for example, the Taiwanese, Chinese and Seychellois (beneficially owned by Taiwanese interests) fleets target bigeye tuna; the Japanese fleet targets yellowfin tuna; the French and Réunion fleets target swordfish and tuna; while the Spanish, UK and Portuguese fleets target swordfish and sharks. In the WIO the main operational port for the longline vessels is at Port Louis in Mauritius.
An important element of the purse seine fishery in the WIO is the dominance by the Spanish and French EU fleets that catch around 65 % of the total purse seine catches. This is a very different to that in the west central Pacific, where EU purse seiners represent 2 % of the purse seine fishery, and to the eastern Atlantic where they account for around 45 % of the purse seine catch. The longline fishery in the WIO is dominated by Asian vessels, with the EU fleet estimated to catch around 10 % of the longline catches.

1.1.3 ACCESS TO FISH

The foreign fleets targeting the tuna and tuna like stocks of the WIO require access to a number of EEZs in order to conduct their fishing. The United Nations Convention on the Law of the Sea (UNCLOS), is a broad international framework that guides governments in their actions with respect to the high sea and EEZs. In respect to providing access to foreign parties to fish in waters under national jurisdiction a principle known as the 'surplus principle' has guided international practice. This has widely been interpreted to suggest that if a coastal state has surplus fish resources that it is unable to harvest, it is obliged to grant access to other states to do so. This interpretation is increasingly being contested with the opinion that a state determines its total allowable catch or equivalent and their own harvesting capacity, and therefore has no obligation to prove that there is or is not a surplus[2].

Whether or not there is a legal requirement to permit foreigners to catch 'surplus' fish in an EEZ, this is none-the-less a very common practice with approximately half of the world's EEZs subject to foreign fishing arrangement. Kenya, Mozambique and the United Republic of Tanzania[3] all offer foreigners access to fish the highly migratory tuna stocks that pass through their EEZs at certain times of the year. This access has, over the years been a significant part of the national strategies to maximize the economic benefits from these fish stocks, mainly due to the three coastal states' limited skills at this type of fishing and processing, lack of access to adequate capital, and limited access and knowledge about global markets.

[2] See e.g.: The World Bank, 2014. Trade in Fishing Services, Emerging Perspectives on Foreign Fishing Arrangements; or Report of the Expert Consultation on the Conditions of Access to the Fish Resources of the Exclusive Economic Zones. April 11–15, 1983, Rome. FAO Fisheries Report 293; 1994.

[3] From this point forward the United Republic of Tanzania will be referred to as Tanzania, the Union is composed of mainland Tanzania (former Tanganyika) and Tanzania Island (Zanzibar).

1.1.4 THE COASTAL STATES STRATEGIES

Following years of selling licences for access to foreign vessels owners to catch the tuna resources in their EEZs, Kenya, Mozambique and Tanzania have recently all developed strategies and plans to increase their involvement in the tuna fishery and to increase the benefits they gain from the fishery.

Kenya, in August 2013, launched its first Tuna Fisheries Development and Management Strategy 2013 to 2018 to improve the social, economic and environmental benefits derived from the tuna fishery. This strategy aims to grow Kenya's largely underdeveloped tuna supply chain including upgrading its fishing vessels to become a modern and commercially oriented fleet able to catch tuna both within and outside the Kenyan EEZ and to increase its processing capacity from the one factory that currently exists.

Mozambique, in 2013 finalised a Tuna Fleet Development Plan as part of their vision for gaining fuller benefits from the fishery and is actively planning for a major shift in the tuna fishery sector, their aim is that within 15 years the majority of fish caught in their EEZ will be caught by Mozambican vessels.

Tanzania, in September 2014, launched their Tuna Fishery Management Strategy with the vision to ensure that Tanzania enjoys the highest levels of social, economic and ecological benefits through sustainable utilisation of the tuna fisheries. The rationale is to open new avenues and to address the challenges that hinder development of the tuna fisheries.

All three countries have identified that the main potential for economic optimisation from the tuna fishery is for countries to develop domestic capacity to: catch tuna, process tuna and market tuna. If this pathway is followed, the potential benefits that can be gained from the tuna resource are significantly greater than what is possible by selling access to foreign operators to catch tuna.

1.1.5 REGIONAL COOPERATION

As part of an incremental process towards the realisation of the various national tuna strategies, Kenya, Mozambique and Tanzania, represented by their Directors of Fisheries met in August 2014 in Maputo, Mozambique to develop a set of minimum terms and conditions (MTC) to provide a collective and common approach to granting fishing access for highly migratory and shared fish stocks in the coastal region of eastern Africa. The resultant Maputo Declaration, while recognising the shared interest in the long-term rational exploitation of these fish stocks also registers concern that the benefits being derived from these resources are not equitable and thus do not lead to adequate socio-economic development. The Declaration incorporates 13 agreements between the countries that represent interim steps towards the national strategies, four of which, provide the context for this report:

I. The reference tonnage shall be calculated to mutual benefit to the coastal states and distant water fishing nations (DWFN) as well as for sustainability of resources. We further commit ourselves to develop a protocol to calculate reference tonnage that will be applied by each partner state when granting fishing access to foreign fishing fleets.

II. The compensation from the access agreements shall be based on the price of the fish in the market and cost of management.

III. That the formula to calculate the private licence fee shall be developed based on the market price. The minimum shall be 10 % of the value of catch. On the interim, this shall be USD 50 000 for the purse seiners and USD 35 000 for the longliners annually.

IV. Support vessels shall be charged, and on the interim a minimum of USD 5 000 per support vessel per year shall be charged.

1.2 THE STUDY AND REPORT

1.2.1 METHODOLOGY

In early 2015, NFDS Africa was contracted by the World Wide Fund for Nature (WWF) Tanzania Country Office to undertake research to support some of the agreements made through the Maputo Declaration. The key tasks were 1) to provide a situation analysis of historical access and associated tuna catches that Kenya, Mozambique and Tanzania had granted to DWFN and the likely sustainability impacts of these and 2) to provide an overview of the concept of reference tonnage and to develop options to calculate reference tonnage. The focus of the study was on the EU fleets and in particular purse seine vessels, but where possible generally applicable guidance has been provided.

The NFDS team undertook the research during May and June 2015. The team consisted of Sandy Davies and Peter Manning with support from Per Erik Bergh, Kosakosa Mukosa and Mark Ssemakula. Dr Manning undertook field-work to Kenya, Mozambique and Tanzania to collect information, while the remainder of the study was completed as desk-top work.

The authors note that although every effort has been made to present accurate information and interpretation, in many cases information sourced and provided was not coherent and discrepancies may occur.

1.2.2 REPORT STRUCTURE

This report provides the research findings and analysis in three Chapters: the first provides the introductory information and context; the second provides the situation analysis of historical tuna access, costs, catches, support vessels and FADs; the third provides an overview of current access agreements with the European Commission (EC), analysis of options for future access arrangements; and recommendations for negotiating access for the EU fleet.

2 HISTORICAL FISHING ACCESS AND CATCHES

This Chapter provides the compiled information from the research and sets the scene for the analysis in Chapter 3.

2.1 ACCESS BY FOREIGN VESSELS

None of the relevant national fisheries legislation in the three countries specify a limit on the number of vessels allowed to be authorised to fish in their respective EEZs or any catch limit. However, all three countries abide by the IOTC resolutions including Resolution 12/11 that creates a limitation on fishing capacity in the fishery, and all three countries only authorise vessels that are included in the IOTC's vessel list. All countries have sold licences for the exploitation of tuna and tuna like species within their EEZs to foreign vessels including those of the EU, although only Mozambique has done this through a Fisheries Partnership Agreement (FPA) with the EC (see Section 3.1.2). The following Sections (2.1.1 to 2.1.4) present the available information on access for each country followed by a summary of access by EU vessels.

2.1.1 ACCESS BY FOREIGN VESSELS TO FISH IN THE KENYAN EEZ

Kenya has licenced between 34 and 40 purse seiners to fish annually in their EEZ in the last four years. Of these around 14 are Spanish and up to 13 would now classify as French, although five of these until 2013 were previously registered to Mayotte. In 2014, the last year where a full year of data is available, 35 foreign purse seiners took annual licences, 25 of these from the EU (see Table 1). The main tuna fishing season in Kenya is from May to July and most licences are issued annually from early in the year.

From 2007 to 2013 no foreign longline vessels were licenced to fish in Kenya's EEZ, this was attributed to the threat of piracy. Prior to 2007, foreign longline vessels flagged to Japan, Chinese Taipei and Republic of Korea fished in Kenya's EEZ. In 2013, 11 longline vessels were licenced to fish, and in 2014 five longline vessels were licenced.

Fishing season	2011 season		2012 season		2013 season		2014 season	
Country	**PS**	**LL**	**PS**	**LL**	**PS**	**LL**	**PS**	**LL**
Spain	13		14		14		14	
France	8		8		8		11	
Mayotte	5		5		5			
Rep. Korea					3		1	
Mauritius					2		2	
Seychelles	8		8		8	5	7	3
China						3		
Taiwan						2		1
Oman						1		1
TOTAL	**34**	**0**	**35**	**0**	**40**	**11**	**35**	**5**

Note: compiled from national information and relevant reports

Note: after 2013 Mayotte purse seiners became French

Table 1: *summary of foreign purse seine (PS) and longline (LL) vessels licenced to fish in Kenya's EEZ (2011-2014)*

Information for vessel days actually spent in the EEZ were available for 2014. It is expected that these are not complete as reporting does not occur through a centralised system (see Table 2).

Registration for purse seiners	Number of reported and recorded days fishing in EEZ
EU	60
Seychelles	13
Mauritius	9
Rep. Korea	5
Total	**87**
Registration for longliners	**Number of reported and recorded days fishing in EEZ**
Oman	102
Taiwan	79
Seychelles	112
Total	**293**

Table 2: *reported and recorded foreign purse seine (PS) and longline (LL) vessel days spent in Kenyan EEZ in 2014*

2.1.2 ACCESS BY FOREIGN VESSELS TO THE MOZAMBIQUE EEZ

Records indicate that between 1997 and 2003, prior to any EU fisheries agreements, between 26 to 55 purse seiners and between 37 to 60 longliners took up annual licences. The highest recorded number of foreign vessels taking up licences followed the first FPA, was 44 purse seiners and 85 longliners in 2004.

More recent information indicates that between 19 and 26 purse seiners were licenced to fish in the last three years annually. In 2014, 14, in 2013, 11 and in 2012, 14 were Spanish and in 2012, 6 were French. The number of longliners licenced to fish has varied from 27 to 35 in the past three years with 11 Spanish in 2012, 7 in 2013 and 7 in 2014 (Table 3). The main tuna fishing season in Mozambique is from March to April for purse seiners and more scattered and prolonged for longliners.

Fishing season	2012 season		2013 season		2014 season	
Country	**PS**	**LL**	**PS**	**LL**	**PS**	**LL**
Spain	14	11	11	7	14	7
France	6					
Portugal		1		2		
Rep. Korea		2	2	1		9
Seychelles	6		6		8	
Japan		21		17		17
TOTAL	**26**	**35**	**19**	**27**	**22**	**33**

Note: compiled from national information and relevant reports

Note: information provided does not differentiate Mayotte PS vessels from French prior to 2013

Table 3: *summary of foreign purse seine (PS) and longline (LL) vessels licenced to fish in Mozambique's EEZ (2012-2014)*

2.1.3 ACCESS BY FOREIGN VESSELS TO THE TANZANIAN EEZ

Tanzania has licenced between 18 and 38 purse seiners to fish annually in their EEZ in the last six years. Of these around 14 are Spanish and 13 French. In 2014, the last year where a full year of data is available, 33 foreign purse seiners took annual licences, 20 of these from the EU (see Table 4). The main tuna fishing season in Tanzania is from May to July and most licences are issued annually.

From 2011 to 2012 no foreign longline vessels were licenced to fish in Tanzania's EEZ, this was initially attributed to the threat of piracy but later it emerged that there was a fraudulent network selling false licences to vessels in the fleet linked to Taiwanese ownership. In 2013, after this network was exposed, 36 longline vessels were licenced to fish, mainly from Taiwan and in 2014, 43 longline vessels were licenced, mainly from Taiwan and China.

Fishing season	2009 season		2010 season		2011 season		2012 season		2013 season		2014 season	
Country	**PS**	**LL**	**PS**	**LL**	**PS**	**LL**	**PS**	**LL**	**PS**	**LL**	**PS**	**LL**
Spain	11		14		14		13		14		**11**	
France	1		12		13		13		13		9	
Mayotte											1	
Rep. Korea							2		1		3	
Mauritius									2		2	
Seychelles	6	2	12	5	8		7		8	5	7	4
China										4		16
Taiwan		1		6						24		21
Oman										1		1
Thailand												1
Japan										1		
Indonesia										1		
TOTAL	**18**	**3**	**38**	**11**	**35**	**0**	**35**	**0**	**38**	**36**	**33**	**43**

Note: compiled from national information and relevant reports

Note: information provided does not differentiate Mayotte PS vessels from French prior to 2013

Table 4: *summary of foreign purse seine (PS) and longline (LL) vessels licenced to fish in Tanzania's EEZ (2009-2014)*

2.1.4 SUMMARY OF ACCESS FOR EU VESSELS

The number of EU vessels that took up fishing licences in each of the three countries in 2012 to 2014 is summarised in Table 5 and Figure 1. The EU fleet fishing that has fished in the three EEZs is somewhat consistent with a maximum of 27 purse seiners and 12 longliners taking up opportunities to fish.

Fishing season	2012 season		2013 season		2014 season	
Country and vessel registration	**PS**	**LL**	**PS**	**LL**	**PS**	**LL**
Kenya EEZ - Spanish vessels	14		14		14	
Kenya EEZ - French vessels	13		13		11	
Mozambique EEZ - Spanish vessels	14	11	11	7	14	7
Mozambique EEZ - French vessels	6					
Mozambique EEZ - Portuguese vessels		1		2		
Tanzania EEZ - Spanish vessels	13		14		11	
Tanzania EEZ - French vessels	13		13		9	

Table 5: summary of EU purse seine (PS) and longline (LL) vessels licenced to fish in the three EEZs (2012-2014)

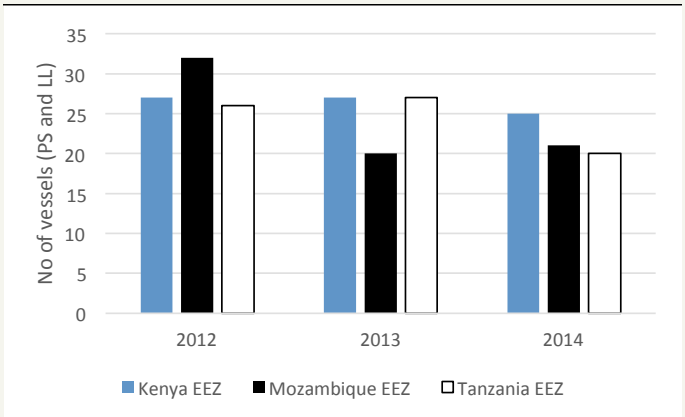

Figure 1: comparative summary of EU vessels licenced to fish in the three EEZs per annum (2012-2014)

The EU purse seine fleet forms the majority of the purse seine fleet in all three countries, an average over three years is 72 % for Kenya, 67 % for Mozambique and 67 % for Tanzania (Figure 2). The EU longline fleet has not fished in Kenya or Tanzania in the last three years while in Mozambique it has on average represented 29 % of the longline fleet in the last three years (Figure 2).

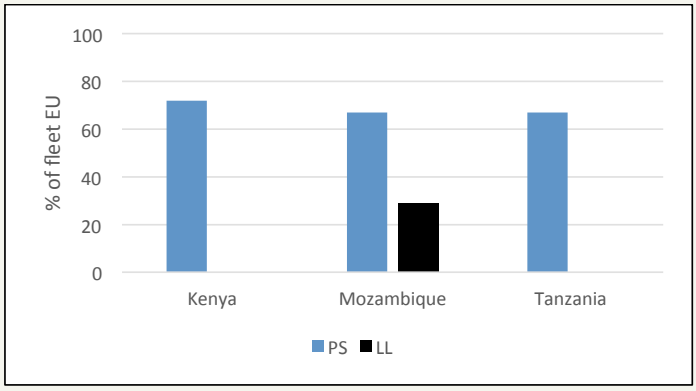

Figure 2: percentage of vessels fishing in each EEZ that are EU registered over 3 years (2012-2014)

2.2 THE COST OF FOREIGN ACCESS

All three countries have licence fee rates for foreign access outside of FPA arrangements.

Kenya has a two tier payment licences system; licence fees and payment per tonne of catch. Although the requirement for royalty payments per tonne are made in the Fisheries Act, the method of calculation is not specified, nor does it appear that any examples of past royalty payments exist to provide a guideline. Although the specified fee for purse seiners is USD 50 000 during the period 2012 to 2014, license fees were reduced to USD 30 000 in order to remain competitive in light of the piracy threat.

Mozambique has set its fees in New Metical (MZN) with a varying scale depending if a Mozambican port is the operational port for offloading, in Table 6 the highest rate applied to foreign vessels is provided.

Tanzania sets its fees in United States Dollar (USD) and has been applying these as provided in Table 6.

In the Maputo Declaration agreement was made for minimum fees to apply to foreign vessels these are USD 50 000 per annum for purse seiners and USD 35 000 per annum for longliners. No country has yet applied these although all expressed their intention to do so. Figure 3 shows a comparison of nationally applied fees and the Maputo Declaration.

Country	Kenya	Mozambique	Tanzania	Agree Maputo Declaration
Currency	**USD**	**MZN**	**USD**	**USD**
Cost of PS licence - 1 month			5 000	
Cost of PS licence - 3 months			12 000	
Cost of PS licence - annual	30 000	960 000	35 000	50 000
Cost of LL licence - 1 month	10 000		3 500	
Cost of LL licence - 3 months	20 000		9 000	
Cost of LL licence - annual	30 000	877 760	32 000	35 000
Currency	**EUR**	**EUR**	**EUR**	**EUR**
Cost of PS licence - 1 month			4 479	
Cost of PS licence - 3 months			10 750	
Cost of PS licence - annual	26 876	22 944	31 355	44 794
Cost of LL licence - 1 month	8 959		3 136	
Cost of LL licence - 3 months	17 917		8 063	
Cost of LL licence - annual	26 876	20 978	28 668	31 355

Table 6: summary of cost of licence as charged in 2014 season for purse seine (PS) and longline (LL) vessels licenced to fish in the three EEZs (currency of licence and EUR equivalent)

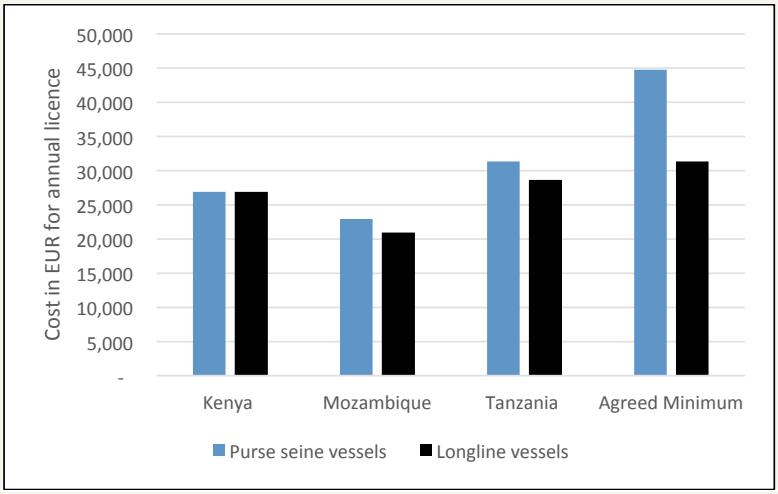

Figure 3: comparison of price charged in EUR in 2014 for vessel licences and the minimum agreed in the Maputo Declaration

2.2.1 INCOME AND POTENTIAL INCOME FROM LICENCE FEES

Based on information provided on a number of EU vessels taking up licences a comparison of the actual income to the potential income if the Maputo Declaration agreed fee rates is provided for all countries (see Tables 7, 8 and 9), all figures are in Euro (EUR).

For Mozambique the income from the FPA is provided as the vessel owner contribution (advance fee for authorisation to fish), the EC contribution for access as an advance and finally the sector support contribution, although this is not considered as payment for access it has been included for comparative reasons. It is not ascertainable to know if all the vessels that took up authorisations through the FPA would have also paid for licences at either the charged rate or the newly agreed rate, however, it provides an interesting comparison (see Table 9 and Figure 4).

Income or potential income for EU vessels EUR	2011	2012	2013	2014
Income received	698 779	725 655	725 655	671 903
Income that would have been received on Maputo Declaration fees	1 164 631	1 209 425	1 209 425	1 119 838

Table 7: income and potential income for Kenya (2011 to 2014) for access by EU vessels at current fee rate and at Maputo Declaration fee rate (EUR)

Income or potential income for EU vessels EUR	2009	2010	2011	2012	2013	2014
Income received	355 660	815 242	810 762	815 242	846 597	627 109
Income that would have been received on Maputo Declaration fees	508 084	1 164 631	1 158 217	1 164 631	1 209 425	895 870

Table 8: income and potential income for Tanzania (2009 to 2014) for access by EU vessels at current fee rate and at Maputo Declaration fee rate (EUR)

Contribution in EUR	2012	2013	2014
Received for EU access vessel owners contribution	142 100	86 135	94 815
Received from EC for EU access	520 000	520 000	520 000
Total from vessel owners and EC for EU access	**662,100**	**606,135**	**614,815**
If fees had been charged to EU vessels based on current licence price	710 622	441 190	481 824
If fees had based on Maputo Declaration agreed price	**1 272 135**	**774 928**	**846 597**

Table 9: income received for EU access for Mozambique (2012 to 2014) and an estimate of potential income if current and Maputo Declaration fees had been charged (EUR)

Note: the EU vessels owners pay additional amounts for observers and not embarking seamen this is estimated to be no more than EUR 20 000 per annum.

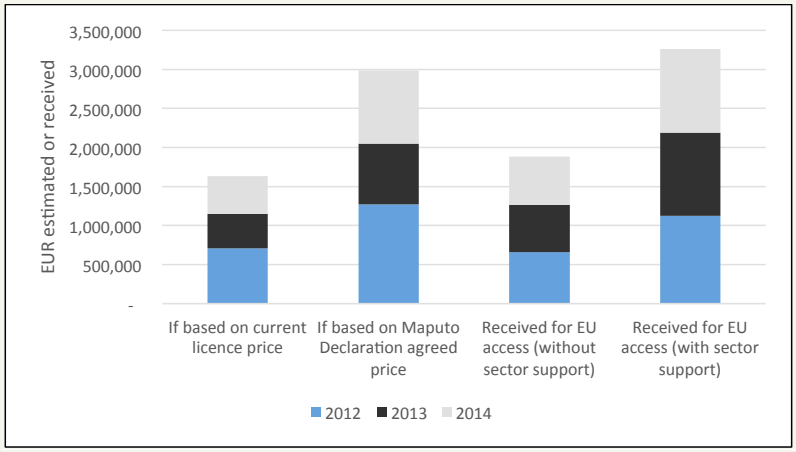

Figure 4: comparison of income received for access by the EU fleet to potential income if current and agreed licence rates would have been applied (EUR) for Mozambique

2.2.2 COMPARISON TO OTHER COUNTRIES

Table 10 provides a summary of the access costs being charged for foreign vessels to fish in certain countries EEZs per year for which data have been obtained, they do not include FPA arrangements.

WIO country	Costs of access (purse seine)	Costs of access (longline)
Comoros	9 700 - 13 000	6 300
Madagascar	2 243 - 14 400	1 496 - 10 500
Mauritius	15 032 - 24 856	18 036
Mayotte	10 000	Not available
Seychelles	95 238	19 048

2.3 TUNA CATCHES AND VALUE

Fisheries managers in East Africa regularly express doubts about the catch data they hold for the industrial tuna fisheries. They do so because of the inconsistencies that are regularly evident when scrutinising the available data. The collection of catch data is recognised as a key activity of the fisheries administrations of Kenya, Mozambique and Tanzania. The IOTC Secretariat also compiles catch information reported by the flag states however, this is compiled by one degree boxes which means that a reported catch could have been taken up to 60 nm (111 km) within an EEZ and would be regarded as on the EEZ-high seas boundary and therefore not attributable to the EEZ. This type of information while useful for stock assessment purposes, is not useful to determine catches within the EEZ and was thus not included.

2.3.1 THE REQUIREMENT OF VESSELS TO REPORT CATCH

Kenya requires reporting as a condition of a licence for foreign vessels operating in its EEZ. All foreign fishing vessels are required to report to the State Department of Fisheries of Kenya via the Director of Fisheries whenever entering and leaving the Kenyan EEZ specifying the cargo on board, time and entry or exit position. In addition, Kenya requires weekly catch data reports to be submitted[4].

Mozambique requires all foreign tuna vessels to provide entry and exit reports 24 hours prior to entering and leaving the EEZ of Mozambique. The reports must provide the name and flag state of the vessel, its international radio call sign, the time and the point of entry/exit, and the catch on board by species and by weight. In addition, foreign fishing vessels are required to provide a catch report every three days, giving the location of the vessel, radio call sign, the time and date, and the catch on board by species and weight. The Protocol to the FPA between Mozambique and the EU reflects these provisions, including that failure to comply with the reporting requirements is an offence punishable according to Mozambican law.

[4] Kenya Fisheries (Foreign Fishing Craft) Regulations, 1991 Rev. 2012

Tanzania requires reporting of information as part of the licence conditions for foreign tuna fleets the Deep Sea Fishing Authority (DSFA) collects and compiles this information. The captain of a fishing vessel must provide entry and exit reports when entering or leaving the EEZ, providing the location of the vessel, the date and time of entry and exit, and the weight by species of the fish on board. The vessel is also required to report on a daily basis the weight and species of fish caught[5].

2.3.2 PRICE DATA

Price data was extracted from Globefish[6] for species other than albacore and shark. The average prices over the three years 2012 to 2014 inclusive of skipjack and yellowfin (Seychelles FOB[7]) were calculated from monthly price data. The average price for bigeye originating from the Indian Ocean was calculated for 2014, as was the average price for swordfish. For albacore the average 'market price' for 2010 to 2012 was extracted from information in the Pacific from the Forum Fisheries Agency as no information for the WIO was available.

The price of whole shark is more difficult to come by, and is based on a single price from Kesennuma, Japan, which specialises in the shark trade. Catch categorised as 'other' was conservatively estimated to have a value of EUR 1 000 per tonne. These figures are used in further price and value calculations in this report (see Table 11), it should be noted that the accuracy of the estimate of value depends on the reliability of the catch data.

Average prices of main spices EUR	EUR/kg	EUR/t
Skipjack Seychelles FOB average 2012-2014	1.37	1 370
Yellowfin Seychelles FOB average 2012-2014	2.16	2 160
Bigeye Indian Ocean average price 2014	1.94	1 940
Swordfish average price 2014	5.21	5 210
Albacore average market price 2010-2012	2.31	2 314
Blue shark 2009 price		1 200

Table 11: summary table of prices used to calculate the value of catch (EUR per tonne)

[5] Regulation 10 of the Deep Sea Fishing Authority Regulations, 2009

[6] GLOBEFISH is the unit in the FAO Fisheries and Aquaculture Department responsible for information on international fish trade, including fish commodity prices.

[7] Free on board (FOB) indicates that that the seller pays for transportation of the goods to the port of shipment, plus loading costs. The buyer pays cost of marine freight transport, insurance, unloading, and transportation from the arrival port to the final destination.

2.3.3 DECLARED CATCHES AND VALUE FOR KENYA

The total EU purse seine catch for 2014 is drawn from information provided by the State Department of Fisheries as was reported to them by the vessels' agent/owner/captain and for 2013 from POSEIDON 2014[8] which was originally drawn from data provided by the EU. The distribution of species was provided in the 2013 data and this distribution is applied to the total catch for 2014. Value of catch each year is determined based on price figures (Table 11) and additionally an average over the two years (see Table 12 and Figure 5). The dataset is inadequate for purposes of arriving at an average catch in the long-term. The difference between the figures reported to the EU (2013) and the Kenyan authorities (2014) is significant and draws attention to the reliability of the dataset, and care should be used in interpretation.

	Price (EUR / t)	2013 catch (t)	Value of 2013 catch (EUR)	2014 catch (t)	Value of 2014 catch (EUR)	Average catch (2013 to 2014)	Value of average catch (EUR)
Yellowfin	2 160	36	77 760	648	1 399 680	342	738 720
Bigeye	1 940	25	48 500	450	873 000	238	460 750
Skipjack	1 370	58	79 460	1044	1 430 280	551	754 870
Total		**119**	**205 720**	**2 142**	**3 702 960**	**1 131**	**1 954 340**

Table 12: estimated value of EU purse seine catch by species from reported catches in Kenyan EEZ (EUR)

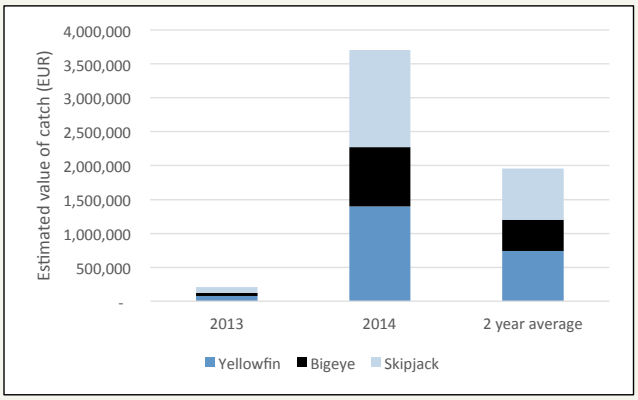

Figure 5: estimated value of EU purse seine catch in Kenyan EEZ by species (EUR)

There is no domestic commercial tuna fleet in Kenya. The only currently existing domestic tuna catching sector is an artisanal fleet supplying fish to restaurants and hotels and recreational vessels. It is difficult to quantify actual vessel numbers catching tuna, but the main gear types targeting tuna are handlines, longlines, trolling lines, monofilament nets and gillnets all of which are typically confined to within three to five nautical miles of the coast. Catches are recorded by beach management unit officers and catches have remained relatively stable in recent years with the latest figures showing an annual catch of around 900 tonnes.

[8] POSEIDON, MRAG, COFREPECHE and NFDS, 2014. Ex ante evaluation of a possible future fisheries partnership agreement and protocol between the European Union and Kenya (Framework contract MARE/2011/01 – Lot 3, specific contract 7). Brussels, 91 p.

Based on the reported vessel days (see Table 2) and catches (Table 12) catch rates were determined for 2014 based on different fleet nationalities (Table 13). Catch rates were quite steady for the longliners at averaging around 1.26 tonnes per day, while the purse seine catch rates varied considerably, especially the large difference between the Seychelles and EU fleets were noticeable and surprising as both fleets are operated by Spanish vessel owners. The reported rate for EU vessels at 35.70 tonnes per day is significantly higher than the average for purse seiners in the WIO which is 24.7 tonnes per day.

Registration	Total catch (t)	No of days	Catch rates (t/day)
Purse seiners			
EU	2 142	60	35.70
Seychelles	90	13	6.90
Mauritius	263	9	29.20
Rep. Korea	80	5	16.00
Total /average	**2 575**	**87**	**29.60**
Longliners			
Oman	136	102	1.34
Taiwan	92	79	1.17
Seychelles	138	112	1.24
Total /average	**368**	**293**	**1.26**

Table 13: catch rates determined for different fleets fishing in the Kenyan EEZ in 2014

2.3.4 DECLARED CATCHES AND VALUE FOR MOZAMBIQUE

Table 14 provides figures based on data provided by the national fisheries administration (ADNAP) and reflects the aggregation of catch reports which EU vessels provided every three days while in the fishing zone of Mozambique. The species distribution for purse seiners was provided in the dataset. However, for the longliner fleet, the catch by species was given annually for shark and swordfish and only in 2013 for tuna species. Therefore other years are estimated based on the species distribution for the 2013 longliner catch data. For 2012, only total information was available.

It should also be noted that this data does not include catches taken in two boxes that are part of the EEZ of Mozambique but that did not fall within the fishing zone in the FPA (see Section 3.1).

Fleet type	Spices	2008	2009	2010	2011	2012	2013	2014
Purse seiners	Yellowfin	325	286	0	92		436	0
	Bigeye	205	96	93	115		90	0
	Albacore	532	1 487	108	219		0	0
	Skipjack	3 260	424	1 773	1 367		757	0
	PS sub-total	**4 322**	**4 302**	**1 974**	**1 793**	**103**	**1 284**	**0**
Longliners	Shark	164	261	284	306		107	180
	Swordfish	373	659	613	300		245	113
	Yellowfin	16	20	25	6		4	7
	Bigeye	215	246	304	76		53	89
	Albacore	4	1	1	0		0	0
	Skipjack	0	0	1	0		0	0
	Other	4	8	17	17		40	55
	LL sub-total	**776**	**1 196**	**1 245**	**705**	**129**	**449**	**445**
	TOTAL EU catch	**5 098**	**5 498**	**3 219**	**2 498**	**232**	**1 733**	**445**

In addition to the data provided to ADNAP by vessels' owners/agents/captains, verified data[9] was obtained from a report to the EU that provided the data that vessels' owners/agents/captains had reported to the EU. There were significant differences in the annual reports particularly for purse seiners in 2008 and 2009 (see Figure 6). In 2011, the last year comparative data was available the figures were more similar. While it is normal to find discrepancies between such datasets, this does not explain how certain vessels reported a catch to the Mozambique authorities, while the verified data reflects that there was no catch by the vessel. Conversely, there are instances where the vessel has not declared its catch, yet the verified data claims that the vessel caught fish in the Mozambican fishing zone.

[9] Oceanic Dévelopment, MegaPesca Lda (2014) Ex□post and ex□ante evaluations of the Protocol to the Fisheries Partnership Agreement between the EU and the Republic of Mozambique.

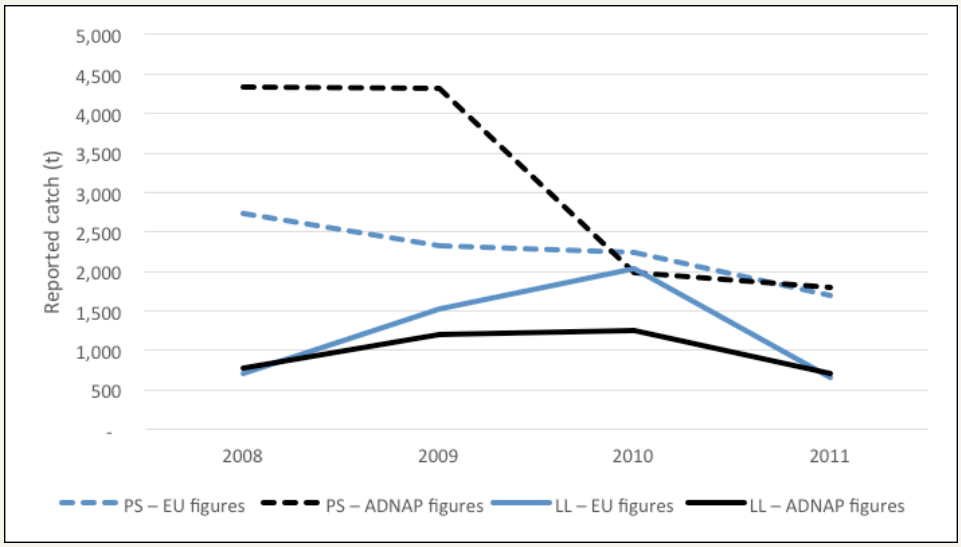

Figure 6: EU catch extracted from an EU commissioned report that used EU provided data for vessels fishing in the Mozambique fishing zone in tonnes (2008 to 2011) compared to catches reported to ADNAP

An estimate of the value of the catch was determined between the years 2008-2011 and 2013 and an average of these was calculated. The years 2012 and 2014 were not included because they were considered atypical in that it is understood that a substantial part of the EU fleet did not fish in the Mozambique fishing zone for reasons other than the availability of fish. Using the price data in Table 11, the value of the catches were calculated (see Figure 7 and Table 15).

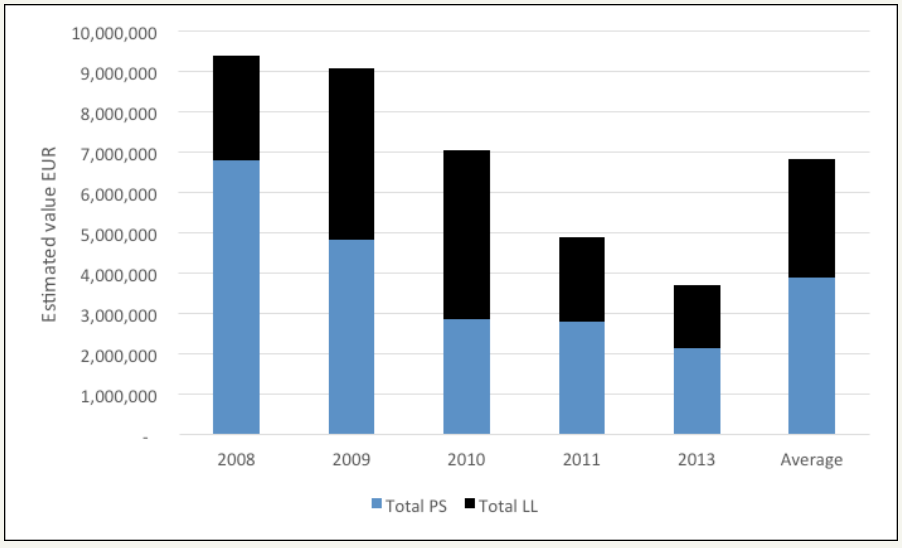

Figure 7: estimated value of EU catch from catch reported to ADNAP in the Mozambique fishing zone in EUR

	Price (EUR / t)	2008 catch (t)	Value of 2008 catch (EUR)	2009 catch (t)	Value of 2009 catch (EUR)	2010 catch (t)	Value of 2010 catch (EUR)	2011 catch (t)	Value of 2011 catch (EUR)	2013 catch (t)	Value of 2013 catch (EUR)	Average catch (2013 to 2014)	Value of average catch (EUR)
Purse seine													
Yellowfin	2,160	325	702,000	286	617,760	-	-	92	198,720	436	942,797	228	492,255.40
Bigeye	1,940	205	397,700	96	186,240	93	180,420	115	223,100	90	174,335	120	232,359.06
Albacore	2,314	532	1,231,048	1,487	3,440,918	108	249,912	219	506,766	-	-	469	1,085,728.80
Skipjack	1,370	3,260	4,466,200	424	580,880	1,773	2,429,010	1,367	1,872,790	757	1,037,667	1516	2,077,309.45
Total PS		4,322	6,796,948	2,293	4,825,798	1,974	2,859,342	1,793	2,801,376	1,284	2,154,800	2,333	3,887,653
Longline													
Shark	1,200	164	196,800	261	313,200	284	340,800	306	367,200	107	128,400	224	269,280.00
Swordfish	5,210	373	1,943,330	659	3,433,390	613	3,193,730	300	1,563,000	245	1,276,450	438	2,281,980.00
Yellowfin	2,160	16	35,230	20	44,209	25	54,640	6	13,577	4	8,640	14	31,259.02
Bigeye	1,940	215	416,672	246	477,460	304	590,120	76	146,636	53	102,820	179	346,741.59
Albacore	2,314	4	9,256	1	2,314	1	2,314	-	-	-	-	1	2,776.80
Skipjack	1,370	0	511	0	575	1	710	0	176	-	-	0	394.41
other	1,000	4	4,000	8	8,000	17	17,000	17	17,000	40	40,000	17	17,200.00
Total LL		**776**	**2,605,798**	**1,196**	**4,279,148**	**1,245**	**4,199,314**	**705**	**2,107,589**	**449**	**1,556,310**	**874**	**2,949,632**
Total PS and LL		**5,098**	**9,402,746**	**3,489**	**9,104,946**	**3,219**	**7,058,656**	**2,498**	**4,908,965**	**1,733**	**3,711,110**	**3,207**	**6,837,285**

2.3.5 DECLARED CATCHES AND VALUE FOR TANZANIA

The data was compiled from the daily catch reports which vessels report including catch by species. A longer time series would produce a more accurate picture of average catches. The Globefish price data is applied to determine an estimate of the value of catch from EU vessels in the Tanzanian EEZ (Table 16 and Figure 8). There is considerable variability across the years and care should be taken in interpreting these estimates, it is likely that the reported catches are under-estimates in all years, due to lack f a reliable system to record information.

	Price (EUR / t)	2010 catch (t)	Value of 2010 catch (EUR)	2011 catch (t)	Value of 2011 catch (EUR)	2012 catch (t)	Value of 2012 catch (EUR)	Average catch (2010 to 2012)	Value of average catch (EUR)
Yellowfin	2,160	788	1,702,080	70	151,200	1,355	2,926,800	738	1,593,360
Bigeye	1,940	131	254,140	7	13,580	538	1,043,720	225	437,147
Skipjack	1,370	1,341	1,837,170	232	317,840	2,086	2,857,820	1,220	1,670,943
Total		**2,260**	**3,793,390**	**309**	**482,620**	**3,979**	**6,828,340**	**2,183**	**3,701,450**

Table 16: estimated value of EU purse seine catch by species from reported catches in Tanzanian EEZ (EUR)

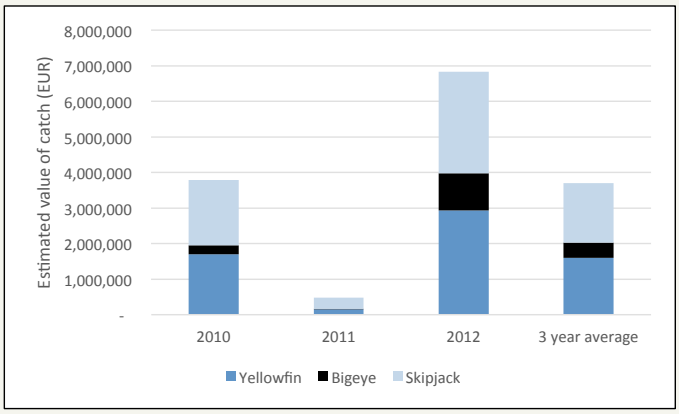

Figure 8: estimated value of EU purse seine reported catch in Tanzanian EEZ by species (EUR)

Tanzania has a few domestic commercial tuna vessels fleet registered within their fleet but of foreign beneficial ownership. The artisanal marine sector has approximately 14 000 boats and some of the larger powered ones are involved in the tuna fishery as part of their multi-species fisheries strategy. These vessels operate within six nautical miles of the coast and they caught around 2 500 t of tuna in 2012.

2.4 SUPPORT VESSELS AND FISH AGGREGATING DEVICES

2.4.1 SUPPORT VESSELS

There are a range of different vessel types known somewhat interchangeably as supply/support/service vessels that are providing services to the fishing fleet at sea, they provide services including assistance with FADs, re-fuelling, transhipment, the provision of supplies such as food, bait, etc., the changing of crew and maintenance. Support vessels generally range from 250 and 500 GRT and they support the purse seine vessels.

Between November 1998 and January 1999, all of the IOTC registered support vessels assisting the purse seiners had an observer on-board[10] , the analysis of the observer's data showed that supply vessels can be anchored, serving as FADs themselves, or navigating, assisting with the building/repairing, deployment, monitoring etc. of fish aggregating objects (both natural and artificial) and provision of other support services. The skippers of the support and purse seine vessels that are working together communicate frequently as they exchange information and discuss the actions to be taken.

Based on an IOTC report[11] , analysis demonstrated that the support fleet moved in various areas including port visits. The seeding, visiting, and fishing largely depended on the seasonal currents, activity in the Kenyan and Tanzanian EEZs were observed in 2006 to 2008 in April to June but not in 2009. While visits to the Mozambique EEZ were seen to be mainly in 2008 and 2009 (see Figures 9 and 10). Support vessels operating in the Indian Ocean are required to be authorised and recorded with the IOTC, currently 20 such vessels are recorded but this does not imply that they are all active in the Indian Ocean.

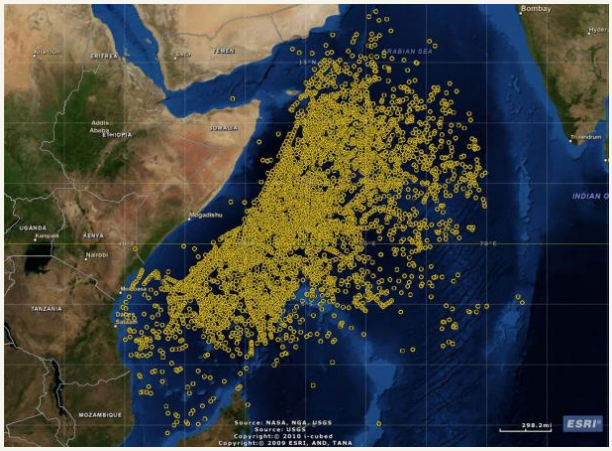

Figure 9: geographical distribution of support vessel activity in 2006 in the Indian Ocean extracted from IOTC report

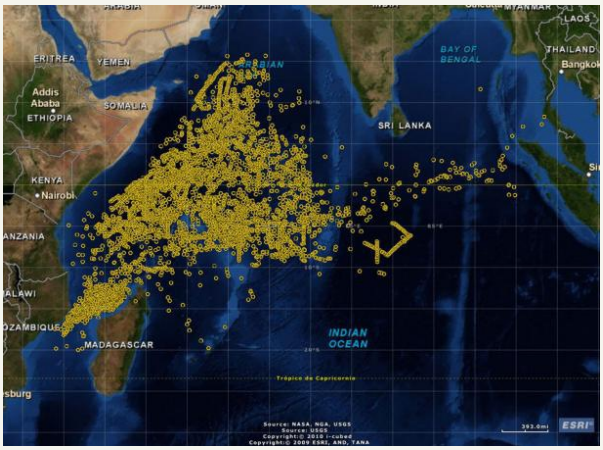

Figure 10: geographical distribution of support vessel activity in 2009 in the Indian Ocean extracted from IOTC report

[10] IOTC Proceedings no. 4 (2001) pg. 390-401. http://www.iotc.org/documents/analysis-activities-supply-vessels-indian-ocean-observers-data

[11] IOTC-2010-WPTT-22 (2010), http://www.iotc.org/documents/analysis-activity-data-obtained-supply-vessels-logbooks-implemented-spanish-fleet-and

2.4.2 FISH AGGREGATING DEVISES

Support vessels deploy drifting FADs in a line, the first object generally has a buoy with tracking capabilities and the rest are varied, with some having conventional and others tracking buoys. The support vessels notify purse seiners of schools of fish associated with these FADs. The support vessels also look for and evaluate other vessels' FADs and safeguard aggregations of tuna on their own from 'theft' by other vessels. FADs are now being equipped with echo sounders 'transmitting daily or hourly estimates of biomass beneath the buoy, allowing skippers to confirm the presence of a school beneath the FAD before visiting it'[12] .

A 2012[13] report, used 2009 data from purse seine support vessels operating in the Indian Ocean that served approximately one-third of the IOTC purse seine fleet, to demonstrate that the support vessels serving 14 purse seine vessels registered approximately 3 800 FAD tracking buoys. It was also estimated that IOTC support vessels can deploy up to 15 FADs per day. It then was estimated that the number of drifting FADs deployed in the Indian Ocean per year is 7 600. However, at the 19th IOTC Commission Meeting in Busan, South Korea, a resolution was adopted dealing with FADs that specified the maximum number of instrumented buoys active and followed by any purse seine vessels at 550 at any one time. The number of instrumented buoys that shall be acquired annually for each purse seine vessel was set at no more than 1 100. Considering the size of purse seine fleet in the WIO, at around 47 vessels, this would suggest possibly much higher numbers of FADs.

There is a reported increase in the use of FADs over time in the WIO and this has an impact on fishing effort and how this is calculated. The traditional measure of effort is days at sea, days fishing or time searching, and that it is an adequate measure when most of the time fishing is spent searching for schools. As FADs act as a bait for the fish, the efficiency of the vessels in catching fish relates more to the number of FADs deployed, cooperation with support vessels and the accuracy in estimating the quantity of fish under a particular FAD, than the searching time for schools. The support vessels enhances this method by locating FADs with the highest expected catch. Fonteneau et al have observed that 'the rate of successful sets under FADs is always very high in all the oceans, above 90 %, whereas about 50 % of the sets clone on free swimming schools are unsuccessful'[14].

Based on an analysis[15] of data from the IOTC database, the average catches for the period 2007 to 2011 of the three main species caught in the purse seine fishery by the main three fleets were calculated and are shown in Table 21[16], classified according to the set type. Overall, there is a large dependency on the schools associated with floating objects, especially by fleets from Spain and Seychelles (for these vessels around 80 % of the catch comes from sets associated with floating objects). The French fleet has a lower, but significant, dependency on floating objects (65 % of the catch).

Around 90 % of the catch of skipjack comes from FAD fishing, significant catches of yellowfin tuna and bigeye tuna

[12] Davies Tim K., , Chris C. Mees, , E.J. Milner-Gulland, Marine Policy, Volume 45, March 2014, The past, present and future use of drifting fish aggregating devices (FADs) in the Indian Ocean. Found at: http://www.sciencedirect.com/science/article/pii/S0308597X13002972

[13] The Pew Environment Group, 2012, 'Estimating the use of drifting Fish Aggregation Devices (FADs) around the globe'

[14] Fonteneau, Alain, Pilar Pallarés , Renaud Pianet, A worldwide review of purse seine fisheries on FADs, 2000. Found at: http://archimer.ifremer.fr/doc/00042/15278/12664.pdf

[15] POSEIDON, MRAG, NFDS and COFREPECHE, 2014. Review of tuna fisheries in the western Indian Ocean (Framework contract MARE/2011/01 – Lot 3, specific contract 7). Brussels, 165 p.

[16] IOTC, Catch-and-Effort Database, from POSEIDON, MRAG, NFDS and COFREPECHE, 2014.

are also made from FADs and these are primarily made up of juveniles. Since 2010, a one-month time-area closure has been applied to the purse-seine fleet in an area between 60° east and the coast of Somalia, to reduce fishing pressure in general, but in particular on juvenile yellowfin and bigeye tuna. In terms of spatial distribution, most of the catches on FADs come from the Somali basin region, defined as the high seas waters off the Somali coast, peaking in July-November.

Species/Set type	Spain	France	Seychelles
Yellowfin tuna			
Free-swimming	17 071	19 433	8 324
FADs	25 887	14 876	13 393
Percent from FADs	**60 %**	**43 %**	**62 %**
Skipjack tuna			
Free-swimming	6 105	4 056	2 706
FADs	61 706	28 558	32 641
Percent from FADs	**91 %**	**88 %**	**92 %**
Bigeye tuna			
Free-swimming	2 574	2 161	1 209
FADs	8 377	4 314	4 325
Percent from FADs	**76 %**	**67 %**	**78 %**
Total catch	121 720	73 399	62 600
Percent from FADs	**79 %**	**65 %**	**80 %**

Table 17: catch in tonnes by species and set type (average 2007-2011) for the three main WIO purse seine fleets

2.4.3 LEGISLATION FOR SUPPORT VESSELS AND FADS

Of the five FPAs active in the WIO and the current or past (in the case of Mozambique) Protocols, support vessels are treated in different ways, Table 18, provides a summary of these ways. Five support vessels took up licences in Mozambique in 2012 and 2013 providing additional revenue of EUR 17 900. Tanzania has recently stated that they will charge USD 10 000 per support vessel from 2015 onwards.

Country	Comoros	Madagascar	Mauritius	Mozambique	Seychelles
Support vessel defined	No	Yes	No	No	No
Authorization required for support vessels from the national authorities	Yes	Yes	No	Yes	Subject to the same provisions applicable to such vessels under national law
Fee required for support vessels	No (there must be no fee)	Yes (EUR 2 500 per year)	No	Yes (EUR 3 580 per year)	Subject to the same fees as applicable to such vessels under national law

Table 18: provisions for support vessels in EU Fisheries Partnership Agreements (FPAs) and Protocols

Table 19 provides a summary of whether FADs are regulated and whether support vessels require a licence in each of seven WIO countries, within national legislation.

Country	Comoros	Madagascar	Mauritius	Kenya	Tanzania	Mozambique	Seychelles
FADs regulated	No	No	Yes	No	No	No	Yes
Support vessel require license	Yes	Unclear	Yes	Yes	Unclear	Yes	Yes

Table 19: comparison of provisions for support vessels in national fisheries legislation in the WIO

3 ACCESS BY THE EU FLEETS

3.1 CURRENT FPAS AND PROTOCOLS IN THE WIO

3.1.1 AN OVERVIEW

An agreement with the EU, exists practically in two parts: the FPA, which sets out the principles, rules and procedures; and the Protocol which provides the detail, such as tonnages involved, compensation to be paid and the number of vessels permitted to fish. There are currently five FPAs active in the WIO although the associated Protocol for Mozambique has expired. A comparison of these FPAs and Protocols is useful in understanding the strategy of the EC. Table 20 provides an overview of vessel opportunities available for fishing in each Protocol, the most significant observation is that in all the Protocols opportunities for between 40 and 43 purse seiners are included, although only 27 (14 Spanish and 13 French) have been active in recent years. Equally, with the longliners, apart from in the Seychelles the figures appear to be far above the number of EU longline vessels that normally seek fishing licences in these EEZs.

Country	Comoros		Madagascar		Mauritius		Mozambique		Seychelles	
	PS	LL	PS	LL	PS	LL	PS	LL	PS	LL
Spain	21	8	23	25	22	12	22		22	2
France	21	9	19	39	16	29	20		16	2
Italy			1		2		1		2	
Portugal		3		7		4				2
UK				5	1					
TOTAL	**42**	**20**	**43**	**76**	**41**	**45**	**43**	**32**	**40**	**6**

Table 20: the number of fishing opportunities available to EU vessels in FPAs/Protocols in the WIO

Table 21 provides a breakdown of the estimated percentage of catch caught by the French and Spanish vessels in each of the EEZs of the WIO and the high seas. This is compiled based on reported catches to IOTC and from information collected from associations for the industry[17].

Country	Contribution of zone to total catch		Months of year in zone	
	French vessels	Spanish vessels	French vessels	Spanish vessels
Seychelles	35 %	30 %	Nov-Feb	Dec-Feb
Mauritius	4 %	1 %	Feb-March	Feb-March
Comoros	1 %	1 %	March/April	March/April
Mozambique	2 %	2 %	March/April	March/April
Mayotte	5 %	1-2 %	April	April
Madagascar	1 %	3-5 %	May-July	May-July
Kenya	1 %	1-2 %	May-July	May-July
Tanzania	1 %	1-2 %	May-July	May-July
High seas	51 %	50-55 %	Aug-Oct	Aug-Nov

Table 21: estimated typical EU purse seine dependency on different fishing zones in the WIO

[17] POSEIDON, MRAG, NFDS and COFREPECHE, 2014. Review of tuna fisheries in the western Indian Ocean (Framework contract MARE/2011/01 – Lot 3, specific contract 7). Brussels, 165 p.

Table 22 provides compiled details from the FPAs and Protocols for the five countries in the WIO.

Table 22: key information extracted from FPAs/Protocols that are active in the WIO and Mozambique's recently expired Protocol

Country	Comoros	Madagascar	Mauritius	Mozambique	Seychelles
FPA duration (years)	7	6	6	5	6
Protocol duration (years)	3	4	3	3	6
Start date Protocol	Jan-14	Jan-15	Jan-14	Jan-12	Jan-14
End date Protocol	Dec-16	Dec-18	Jan-17	Jan-15	Jan-20
Total annual contribution EC (EUR)	**600,000**	**1,566,250**	**660,000**	**980,000**	**5,530,000**
Annual access EC (EUR)	300,000	866,250	357,500	520,000	2,930,000
Annual sector support (EUR)	300,000	700,000	302,500	460,000	2,600,000
Annual Reference tonnage (tonnes)	6,000	15,750	5,500	8,000	50,000
Annual Advance PS (EUR)	4,235	11,400	3,710	5,110	38,500
Based on a reference tonnage per PS of (tonnes)	77	190	106	146	700
Annual advance LL (EUR)	2,475				
Based on a reference tonnage per LL (tonnes)	45				
Annual advance LL > 100 GRT (EUR)		3,600	3,150		
Based on a reference tonnage per LL > 100 GRT of (tonnes)		60	90		
Annual advance LL < 100 GRT (EUR)		2,400	1,750		
Based on a reference tonnage per LL < 100 GRT of (tonnes)		40	50		
Annual advance LL > 250 GRT (EUR)				4,130	6,600
Based on a reference tonnage per LL > 250 GRT of (tonnes)				118	120
Annual advance LL < 250 GRT (EUR)				2,520	4,950
Based on a reference tonnage per LL < 250 GRT of (tonnes)				72	90
Price per tonne for vessel owners (EUR)*	55	60	35	35	55
Price per tonne for EC (EUR)*	50	55	65	65	75
Total price per tonne in Protocol (EUR)	105	115	100	100	130

3.1.2 MOZAMBIQUE'S FPA WITH THE EU

Fisheries agreements between the EU and Mozambique have existed since 1987, with a break between 1993 and 2002 (see Table 23). The current FPA with Mozambique applied for a period of five years from 1st January 2007. In the absence of six months' notice of termination by either party, the FPA was automatically renewed for a further period of five years on 1st January 2012 (FPA Articles 11 and 12). The Protocol, its Annex and Appendices form integral parts of the Agreement (Article 14). The latest Protocol was for a period of three years from 1st February 2012 to 31st January 2015. Negotiations for a further Protocol were started but have been suspended pending consideration of options that might better benefit Mozambique.

There have been three fisheries agreements with Mozambique to date and, associated with these, there have been six Protocols. The first, second and fourth Protocols were for mixed species, while the third, fifth and sixth were for tuna species only. Apart from tuna, the 1987, 1990 and 1994 mixed Protocols provided for fishing opportunities for shrimp and, in addition, deep-water crabs (1990 Protocol). The 1992 Protocol which covered a period of 21 months, provided only for tuna. Due to consideration for the development of domestic fishing industry, Mozambique decided not to conclude a further Protocol until 2002.

Year signed	Duration of Protocol months	Tonnage/year -species	Number of vessels	Compensation per year
1987	36	1 000 t deep-water shrimp 1 500 t shallow water shrimp 18 000 t tuna	not specified not specified 40 tuna boats	ECU* 6.9 m
1990	24	1 200 t deep-water shrimp 1 000 t shallow water shrimp 200 t deep-water crab 6 000 t tuna	not specified not specified not specified 44 tuna boats	ECU 4.3 m
1992	21	6 000 t tuna	42 tuna boats	ECU 0.3 m
2004	36	1 000 t deep-water shrimp and 535 t bycatch 8 000 t tuna (reference tonnage)	10 vessels 35 purse seiners 14 long liners	EUR 3.49 m and EUR 0.6 m up to 8 000 t, plus EUR 75/t above that. All of the EUR 4.09 million was allocated to predetermined sectorial expenditure
2007	60	10 000 t (reference tonnage)	44 purse seiners 45 long liners	EUR 0.65m up to 10 000 t, plus EUR 65/t above that, plus EUR 0.25m sectorial support
2012	36	8 000 t (reference tonnage)	43 purse seiners 32 long liners	EUR 0.52 m up to 8 000 t, plus EUR 65/t above that. EUR 0.46 m sectorial support. In addition, for vessels authorised to fish, vessel owners pay: EUR 5 100 per PS EUR 4 100 per LL>250 GT EUR 2 500 per LL<250 GT

Table 23: summary of key points of the six Protocols between Mozambique and the EU

*ECU, the European Currency Unit, was the old EU currency that was the precursor to the Euro.

The most recent Mozambique-EU FPA, which provisionally took effect on 1st January 2007, was renewed on 1st January 2012 and now will remain in force until 31st December 2016. The most recent Protocol to the Mozambique-EU FPA, signed in 2007, expired on 31st January 2015. It provided for payments by the Commission of EUR 520 000 per year for access to the fishery and a further EUR 460 000 per year dedicated to the support of the fisheries policy of Mozambique known as Sector Support. In addition, every vessel that applied for an authorisation to fish in the fishing zone of Mozambique was required to pay an 'advanced payment fee' of:

- EUR 5 100 per tuna purse seiner for the right to fish up to 146 tonnes of catch;
- EUR 4 100 per longliner > 250 GT, for the right to fish up to 118 tonnes of catch;
- EUR 2 500 per longliner vessel < 250 GT, for the right to fish up to 72 tonnes of catch.

If the vessel catches more than these tonnages, the fee of EUR 35 per tonne must be paid.

The Annex to the Protocol provides for entry and exit reports, giving details of location, date and time of entry, the quantity of each species held on board and quantities of each species that have been discarded. Similarly, the Protocol requires catch reports every three[18] days requiring the same detail as for the entry and exit reports. It also requires that tuna purse seiners report: the number of successful sets on FADs since last report; the number of successful sets on free schools since last report; and the number of unsuccessful sets.

Tuna longline fishing vessels are required to report: the number of sets and the number of hooks deployed since the last report.

Significantly the Protocol provides that 'any vessel found to be fishing in the Mozambican fishing zone without having provided its five days periodic catch report shall be considered to be an unauthorised fishing vessel' and may be prosecuted under Mozambican law (Chapter VI, 2).

There is an issue in respect to the Protocol that expired in January 2015 and the definition of the fishing zone which had been defined as indicated by the red line in Figure 11, this definition left a significant area of Mozambique's EEZ out of the 'fishing zone', noted as Boxes 1 and 2 in Figure 11. At the Joint Committee meeting on the 15th June 2012, agreement was reached that the fishing zone should be redefined to include these areas of EEZ. Some 240 sets of coordinates were defined to demarcate the new outward limit of the fishing zone. This important modification increases the area of the fishing zone by around 11 %. The EC were requested to provide revised historic entry, exit and catch data that took account of the updated definition of the fishing zone adopted in 2012, so far it was reported that this data has not been provided.

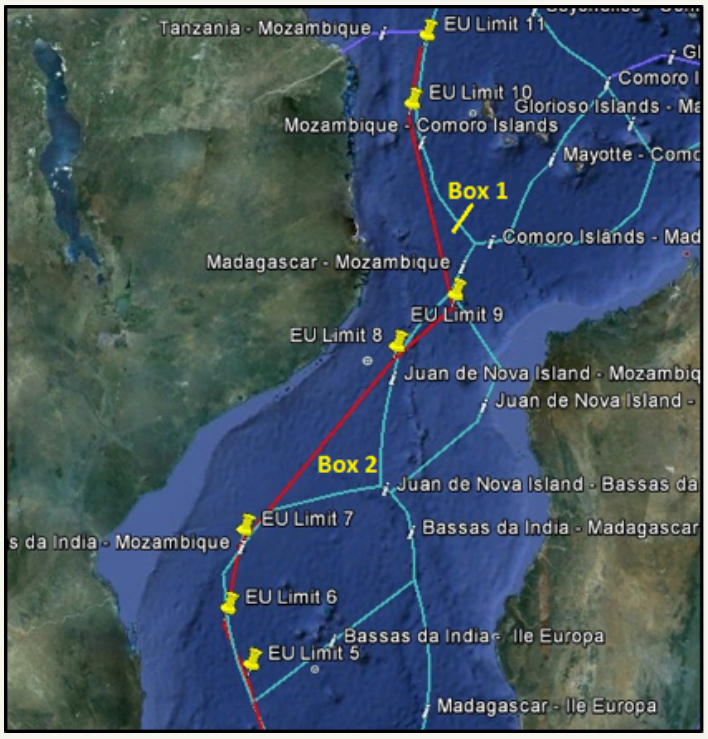

Figure 11: map indicating two areas (Box 1 and 2) of the EEZ previously excluded from the fishing zone in the Mozambique EU Protocol

[18] The opening paragraph of Annex VI 2, requires reporting every three days, but the rest of the section refers to reports every five days.

3.2 NEGOTIATING FPAS AND PROTOCOLS

In the longer-term the three coastal states of the WIO considered in this study, have strategies to develop domestic tuna sectors that include developing their own fishing capacity (see Section 1.1.4). These strategies will take some time to implement, so in the meantime states are interested to continue benefiting from selling access to their EEZ for foreign tuna fishing vessels. Of concern to the countries is how to maximise the compensation or fees obtained from selling access while not undermining any future sustainability of the resource, and in particular how to untangle the complexity of FPAs and Protocols with the EC to evaluate their worth to the countries.

The cost of buying access to fish is usually determined by either a calculation of expected or actual effort (such as vessel days, no of sets, capacity of vessel, or any combination of these) or expected or actual catch (by weight and species) or a combination of these. In addition other levies or taxes may be added or subsidies offered.

When a system of only selling licences is used, fees are based on an expected effort that permits a vessel access to fish for a defined period of time, irrelevant of the actual catch. This system is common when limited monitoring, control and surveillance (MCS) is in place to accurately monitor effort, such as days spent fishing or the catch. It is also common for highly migratory species that migrate in and out of the countries fishing zone as these fisheries provide particular challenges. The price charged for the licence may be set based on a range of rationales, including historical catch, a calculation based on a percentage of the anticipated catch value, or a negotiated figure.

The EC is currently negotiating a new Protocol with Mozambique and has shown interest to negotiate FPAs and Protocols with Kenya and Tanzania. It is widely accepted that the EC generally starts negotiations in a stronger position than the coastal state partner: they have a large data set of information (catch and effort) from their fleet for the whole WIO and the capacity to analyse it; they provide the template for the structure of the FPA or Protocol, resulting in any deviation from this requiring strong arguments by the coastal state; the template includes various aspects of reference tonnage, vessel reference tonnage, price per tonne, crew opportunities etc., that often distract coastal state negotiators from the core of negotiation especially if they are inexperienced; and finally the EC offers sector support that although not officially linked to the fee paid for access, is negotiated at the same table.

The following sections explore some of the concepts used in the FPAs and Protocols and some guidelines for coastal states to prepare for the negotiation process with the EC.

3.2.1 REFERENCE TONNAGE

The reference tonnage is the main medium that is used in FPA Protocols to calculate the payment made by the EC to the coastal state. The reference tonnage is seen as the anticipated annual catch that the EC considers likely that the EU fleet may possibly catch annually for the period of the Protocol. It does not represent a quota or a limit on catch and is not linked to sustainability. The historic catch is said to influence the decision on reference tonnages in a future Protocol, although from analysis, there is little correlation between the reference tonnage set and the historic declared catches by the EU tuna fleet to support this argument.

Therefore the sole purpose of the reference tonnage is to determine along with the price per tonne and the percentage of that to be paid by the EC (i.e. the price per tonne for the EC) the annual advance payment for access paid by the EC to the coastal state. This lump-sum payment is guaranteed by the EC.

Payments above the reference tonnage are paid pro-rata at the agreed rate per tonne, up to twice the reference

tonnage in any one year. Above that, payments would be deferred to the following year. As far as could be determined, payments for more than the reference tonnage have not been paid in relation to FPA Protocols in the WIO.

Due to the language used – reference tonnage – the size of the catch has taken on an importance that is not warranted when compared to other factors that also need to be considered in determining this figure. When the vessel owners seek authorisation to fish in the fishing zone of the coastal state, it seems evident that they are not expecting to be able to catch a certain quantity of fish in that particular zone that year. Rather, their strategy is to secure rights to fish over the whole of the range of the tuna stocks. It is the right to fish rather than a right to a particular size of catch that they seek.

This is borne out by the practice of seeking authorisation to fish, regardless of whether they use that right in any particular year. For example, in the case of Mozambique in 2013, 11 EU purse seiners and nine longliners sought licenses to fish. In practice, only six of the 11 purse seiners and four of the nine longliners took up the opportunity in 2013. Similarly, 25 of the EU's purse seiners bought licences in 2014 to fish in Kenyan waters, but only 14 actually entered the fishing zone during that period. This practice by the EU fleet is common in the WIO region. Thus payments are made to the coastal state for access to the fishery. They offer the opportunity to fish, and are not tied to a particular expectation of catch. Vessel owners are fully aware that a characteristic of the fisheries is that the presence of the stocks in any particular fishing zone is quite variable, and sizeable variations in the size of the catch can be expected over time.

Reference tonnage is an important element of the Protocol negotiations as it is a key element determining the fee payable by the EC to the coastal state. Although it is given as a figure in tonnes, in practice it is not an expected catch or a limit to catch, in practice it simply equates to a figure that influences the fees to be paid when combined with price per tonne and percentage to be paid by the EC.

3.2.2 VESSEL REFERENCE TONNAGE

The term reference tonnage is also used at the vessel level and is referred to in this report as the vessel reference tonnage (VRT). This VRT is used to calculate the advance payment made by the vessel owner covering catches up to the level of the VRT by multiplying the per-tonne rate for the vessel owner (different to the EC price) with the VRT.

As with reference tonnage, if an individual vessel fishes the total VRT this would be topped up with further payments at the vessel owners' per tonne rate for the extra tonnes caught.

In assessing how the VRT is arrived at, the VRT of the five active or recently completed Protocols in the WIO was multiplied by the number of vessels provided with opportunities to fish in each Protocol to ascertain the relationship to the reference tonnage (Table 24). The aggregate of the VRTs of vessels in the EU fleet does not equal the overall reference tonnage and no relationship between the reference tonnage and the VRT was evident: the percentages of the VRT to the overall reference tonnage varied from 57 % to 137 % (Table 24).

VRT is an important element in Protocol negotiations as it is used to calculate the advance payment made by vessel owners to the coastal state in combination with the price per tonne and the percentage paid by vessel owners. Historically, the VRT has not been linked to the reference tonnage or the number of vessels offered opportunities to fish in Protocols in the WIO.

Comoros	no. of vessels in each segment	vessel reference tonnage	total vessel reference tonnage for each segment
PS	42	77	3,234
LL	20	45	900
Total reference tonnage of fleet			**4,134**
Reference tonnage is given as			**5,500**
Aggregate of VRT as a % of the reference tonnage			**75%**
Madagascar	**no. of vessels in each segment**	**vessel reference tonnage**	**total vessel reference tonnage for each segment**
PS	43	190	8,170
LL>100	50	60	3,000
LL<100	26	40	1,040
Total reference tonnage of fleet			**12,210**
Reference tonnage is given as			**15,750**
Aggregate of VRT as a % of the reference tonnage			**76%**
Mauritius	**no. of vessels in each segment**	**vessel reference tonnage**	**total vessel reference tonnage for each segment**
PS	41	106	4,346
LL>100	23	90	2,070
LL<100	22	50	1,100
Total reference tonnage of fleet			**7,516**
Reference tonnage is given as			**5,500**
Aggregate of VRT as a % of the reference tonnage			**137%**
Mozambique	**no. of vessels in each segment**	**vessel reference tonnage**	**total vessel reference tonnage for each segment**
PS	43	146	6,278
LL>250	16	118	1,888
LL<250	16	72	1,152
Total reference tonnage of fleet			**9,318**
Reference tonnage is given as			**8,000**
Aggregate of VRT as a % of the reference tonnage			**116%**
Seychelles	**no. of vessels in each segment**	**vessel reference tonnage**	**total vessel reference tonnage for each segment**
PS	40	700	28,000
LL>250	3	120	360
LL<250	3	90	270
Total reference tonnage of fleet			**28,630**
Reference tonnage is given as			**50,000**
Aggregate of VRT as a % of the reference tonnage			**57%**

Table 24: detail on vessel reference tonnage compared to vessel reference tonnage in WIO FPAs/Protocols

3.2.3 PRICE PER TONNE

In FPA Protocols a price per tonne is agreed. Table 25 provides the total price per tonne (EUR) in the latest Protocols in the WIO ordered according to start year and the percentage of the total price per tonne paid by vessel owners and the EC. While Figure 12 shows the same information as the contribution in EUR rather than percentage. It can be seen that the Seychelles negotiated the highest price per tonne at EUR 130 compared to other Protocols including the Madagascar Protocol negotiated more recently.

Coastal state of Protocol and start date of Protocol	Mozambique 2012	Comoros 2014	Mauritius 2014	Seychelles 2014	Madagascar 2015
% paid vessel owners	35	52	35	42	52
% paid EC	65	48	65	58	48
Total price per tonne (EUR) in Protocol	**100**	**105**	**100**	**130**	**115**

Table 25: price per tonne provided in Protocols in WIO (EUR) and the percentage split between EC and vessel owners

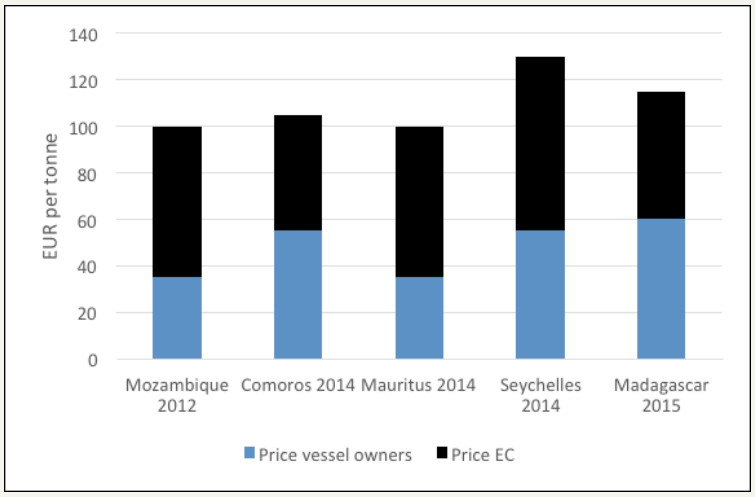

Figure 12: price per tonne (EUR) paid by the EC and vessel owners in WIO Protocols

The price per tonne is an important element in Protocol negotiations as it is used to calculate the advance payment made by the EC and the vessel owners to the coastal state in combination with the reference tonnage and the VRT. In current WIO Protocols it appears to be a somewhat arbitrary figure.

3.2.4 NUMBER OF EU VESSELS IN THE PROTOCOL

A maximum number of EU vessels, usually a combination of purse seiners and longliners, are agreed in the Protocol (see Table 20 for examples in the WIO). In reality the agreed maximum is always far higher (often around 50 %) than the actual number of EU vessels that take up licenses. Table 24 demonstrated that the number of vessel opportunities in the Protocols has historically had no relevance to the VRT, and therefore its importance as a maximum figure is unclear. Even if the maximum number of vessels in the Protocol was more in line with the number of EU vessels fishing in the WIO, this would still often imply a higher number of vessels than would actually take up licences and thus bring income to the countries.

The maximum number of vessels guaranteed access in the Protocol currently has no relevance to the actual number of vessels taking up a licence and therefore it has no relationship to the potential income that the coastal state can anticipate.

3.2.5 THE DIVISION OF THE PRICE PER TONNE BETWEEN THE EC AND THE VESSEL OWNERS

The relationship between the actual number of vessels taking up fishing opportunities and the income to the coastal states is important and will become more so in time. This is due to the split in the price per tonne between the EC and the vessel owners. Originally the EC made the entire contribution for access for EU vessels to the fishing zones of developing coastal states. Vessel owners as a result, had access to the fisheries free of any charge to themselves. This was correctly seen as a subsidy to the European fleet. As a result of this criticism, the EC began the process of shifting responsibility for payment from themselves to the vessel owners.

For example, the Mozambique Protocol, covering the period 1st February 2012 to 31st January 2015 provided for 35 % of the per tonne rate being paid by the vessel owners and 65 % by the EC. The proposal for a future Protocol by the EC is that it should rise to 50 % with the implementation of the new Protocol and move, over the period of five years, to 75 % of the per tonne price. The longer term intention of the EC is to eliminate the subsidy element in fisheries agreements which means that, in time, vessel owners will be responsible for 100 % of the per tonne price with no advance payment by the EC. This would then be more equivalent to the vessel owners paying for a licence and it would be expected that this payment be equivalent to the price of a licence for the coastal state.

The way in which advance payments are defined in terms of percentages of the price per tonne to be paid by the EC and vessel owners tends to suggest that for every EUR 65 will be paid by the EC, EUR 35 paid by the vessel owner, , using the recently expired protocol with Mozambique as an example. This is not the case as the EC pays EUR 65 multiplied by the reference tonnage, while vessel owners only pay the EUR 35 up to the vessel reference tonnage if they seek from Mozambique authorisation to fish.

The division of the price per tonne between the EC and the vessel owner is an important element in the Protocol negotiation as it is a factor that contributes to whether the advance payments are guaranteed or not. The EC percentage of the split is guaranteed, while the vessel owner percentage will depend on the number of vessels taking up licences and is therefore not guaranteed. The trend is that this split is increasing towards the vessel owner, in this case the assured income to the coastal state will be reduced as vessel owners only pay if they take up opportunities to fish.

3.2.6 SUPPORT VESSELS AND FADS

There are 20 IOTC authorised support vessels active in the WIO, and these vessels have been active in Mozambique, Kenya and Tanzania. Support vessels' activities influence the efficiency and yield from the purse seine fleet and thus fishing effort must be interpreted with care, especially if effort (e.g. days fishing) is involved in the fee calculation or as a justification of the fee. Provisions to define, authorise or charge for support vessels under the FPAs/Protocols in the WIO are not harmonised, fees are charged by some states and not others. They also tend not to be coherent with national legislation. In the Maputo Declaration a minimum licence fee of USD 5 000 was agreed for all three countries.

In the WIO the use of FADs to improve fishing efficiency of the purse seine fleet is increasing with between 65 % and 85 % of sets being made on FADs (see Table 17). This results in vessels catching more fish than previously, suggesting that any use of historical catch data as a basis for calculating expected catch will produce underestimates of potential catch. FADs are not uniformly regulated in national legal frameworks with only Mauritius and the Seychelles including them in their national framework and then are not included in FPAs or Protocols.

Support vessels and FADs should be considered in Protocols. They increase the efficiency of purse seine vessels and thus increase their potential catch. If effort (e.g. vessels days) are considered in calculating access fees, the use of support vessels and FADs should be taken into account. The use of historic catch data in calculating predicted catch should take into account an expected increase in catch due to greater dependency on support vessels and FADs. The Maputo declaration minimum licence fee should be applied as a minimum in all three countries.

3.2.7 MARITIME BOARDERS

Disputed maritime boundaries in the WIO may pose problems when negotiating access for foreign vessels. The presence of any 'grey areas', would suggest that vessels should either: avoid such zones altogether, declare catches to the administrations of both countries, or run the risk if they do not declare catches and entry/exit to both administrations of being accused of fishing illegally in one country or the other.

There have been cases when boarders agreed in FPAs / Protocols are not the same as the internationally agreed maritime boarders, an example is that of Mozambique, when the exclusion of two boxes has potentially reduced the declared catch to Mozambique significantly and this would influence any calculations of access fees based on past catch rates (see Section 2.4.1).

Maritime boarders are important elements of the FPA or Protocol and care should be taken in defining them as in any other access agreement. They should aim to be in line with the internationally accepted boarders. Any disputed boarders should be stated and a system to deal with these defined. Historic catches/catch rates should be reconciled with any changes in maritime boarders.

3.2.8 SECTOR SUPPORT

Within the FPA/Protocol arrangement with the EC, there is an aspect of financial contribution that is called 'sector support'. This is earmarked for specific support to the fisheries sector and the development there of, the activities should be in line with the national development strategy but also be agreed with the EC. This contribution is separate from the main payment made annually in advance that is intended to compensate for the access and should not be considered as part of the access payment. However, this contribution, if used well, can be a useful support for countries to implement their national development strategies or plans in the fisheries sector.

Traditionally sector support is set at a similar level to the access contribution (see Figure 13, based on figures from Table 20). It is becoming the norm for the advance contribution by the EC for access to decline each year for on-going Protocols (e.g. Madagascar and Seychelles) as the vessel owners will carry a higher burden of payment. It is important to negotiate for sector support annual payments that do not decrease over time, and to consider, an increase over time to support the countries development needs.

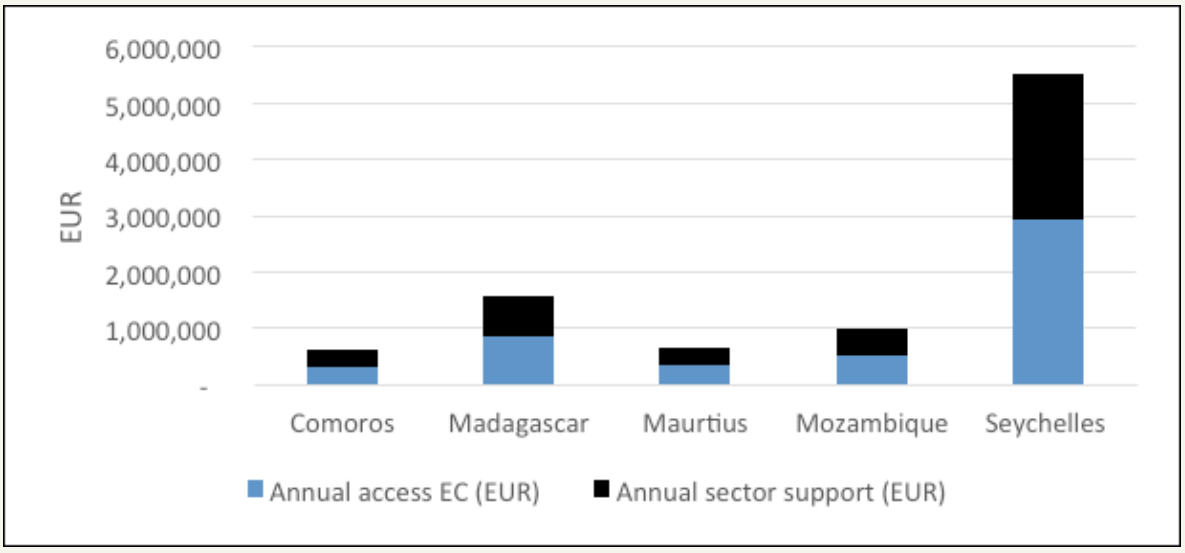

Figure 13: comparison between WIO FPAs/Protocols for EC contributions for access and sector support

Sector support in FPA Protocols, although not considered payment for access, are important and often seen as the element making entering into an FPA/Protocol worthwhile for the coastal state. Sector support is usually set as either an amount equal to the EC's advance payment, or a percentage of that. The advanced payment by the EC is to diminish and, if the sector support is pegged to the advance payment, it too will diminish. It should be argued during the negotiation that the basis of setting the amount for sector support should be the need demonstrated for that support rather than as an arbitrary level based on the advance payment.

3.3 TOWARDS A PROTOCOL FOR CALCULATING COMPENSATION FOR ACCESS

3.3.1 CALCULATING REFERENCE TONNAGE BASED ON OFFERED OPPORTUNITIES AND EXPECTED UPTAKE

In Section 3.2 the arbitrary nature of the reference tonnage as used in EC Protocols has been discussed. However, if an FPA Protocol is to be negotiated it is unlikely that the EC will move away from using the reference tonnage as one of the main variables in their negotiation strategy, until possibly a region or group of countries insists on a reconsideration of the template for the FPAs and Protocols.

A proposed formula for calculating reference tonnage is (a*b*c) + (d*e*f)) = annual reference tonnage, the variables are given in Table 26. Table 26 also provides information on two models for Mozambique: option one is based on the opportunities that were available in the last Protocol and using average figures for effort, while option two is based on a more realistic estimate of what may be expected in a future Protocol. Attempts were made to calculate the formula based on historic information, but as discussed earlier, due to limitations in the consistency of this information, especially days spent fishing (effort) and catch this was not possible.

Variable	Variable generic meaning Annually	Source of variable and value for each option			
		Option 1 – realistic maximum opportunities	Option 1	Option 2 – realistic prediction	Option 2
a	Number of EU PS vessels	Number of EU PS vessels that are included with opportunities to fish in the last Protocol	43	An assessment of the active number of EU PS in the WIO and the expected number that may take up a licence to fish in a future Protocol	27
b	Effort in days for EU PS	Possible number of days that an EU PS may fish in the EEZ based on expected season	30	An assessment of the likely effort in days for an EU PS to fish in the EEZ	15
c	CPUE of EU PS in tonnes per day	CPUE for PS based on the IOTC average for the WIO	24	CPUE based on an adjustment of the average for PS to take into account factors such as: Underreporting or lack of reporting Loss of information due to weak collection and compilation systems Increase in effort due to use of FADs and support vessels	20
d	Number of EU LL vessels	Number of EU LL vessels that are included with opportunities to fish in the last Protocol	32	An assessment of the active number of EU LL in the WIO and the expected number that may take up a licence to fish	15
e	Effort in days for EU LL	Possible number of days that an EU LL may fish in the EEZ based on expected season	100	An assessment of the likely effort in days for an EU LL to fish in the EEZ	60
f	CPUE of EU LL in tonnes per day	CPUE for LL based on the IOTC average for the WIO	1.5	CPUE based on an adjustment of the average for LL to take into account factors such as: Underreporting or lack of reporting Loss of information due to weak collection and compilation systems in coastal states	1.5
Formula for reference tonnage in tonnes		**((a*b*c) + (d*e*f))**	**35,760**	**((a*b*c) + (d*e*f))**	**9,450**

Table 26: explanation of the variables used and the figures used to calculating reference tonnage for Mozambique

Reference tonnages calculated for Mozambique based on a formula are 35 000 tonnes per year if realistic offered opportunity is considered based on the last Protocol and almost 10 000 tonnes per year if expected uptake is used to estimate variables for a future Protocol for the EU fleet. A compromise between offered opportunities and expected uptake may be an appropriate choice.

3.3.2 CALCULATING PRICE PER TONNE BASED ON ESTIMATED VALUE FROM REPORTED CATCH

The price per tonne can be linked to various rationale. It can be linked to calculations based on average reported catches and average prices. The resultant price per tonne will depend on the estimate of the species composition as well as the accuracy of the catch reported. Table 27 provides an estimate of 10 % of the value of the reported and recorded catch calculated by year (when data was available) for the EU fleet by year and with an average in the three EEZs. Figure 14 shows the average per country in EUR and this is based on the catch composition and catch figures presented in Chapter 2.3, these averages, based on very limited reported catches, are significantly higher than the prices per tonne in the Protocols of the WIO (see Table 25).

	2008	2009	2010	2011	2012	2013	2014	Average
Kenya						173	173	**173**
Mozambique	184	261	219	197	214			**213**
Tanzania			168	156	172			**170**

Table 27: an estimate of 10 % of the value of the catch from the EU fleet, per tonne, by year with an average for the three EEZs (EUR)

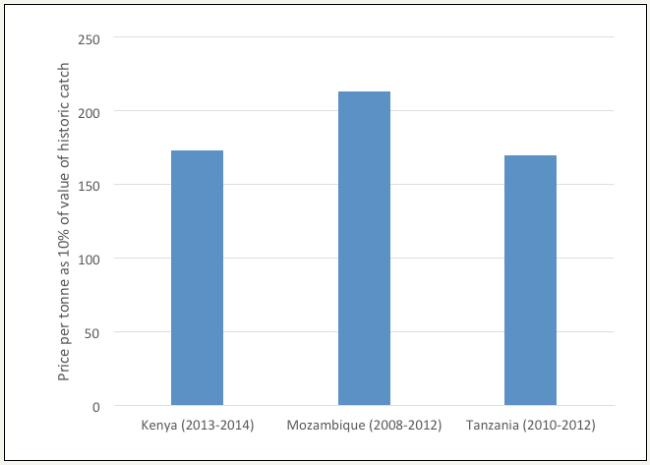

Figure 14: an estimate of 10 % of the value of the catch from the EU fleet, per tonne, as an average for the three EEZs in EUR (average of years provided)

Price per tonne calculated based on analysis of historic reported and recorded catches and average values per species in the three EEZs of this study and based on 10 % of the estimated value of the catch yielded higher prices than in current Protocols in the WIO. This figures were EUR 173 in Kenya, EUR 213 in Mozambique and EUR 170 in Tanzania per tonne.

3.3.3 CALCULATING COMPENSATION BASED ON ESTIMATED VALUE FROM REPORTED CATCH

The value of the catch as estimated from the available catches and prices by species were given in Chapter 2 and the averages and maximums are provided in Table 28 for the three countries based on available reported and recorded data. 10 % of the total value of catch is used to estimate the compensation to countries as used in the Maputo Declaration and these estimates would yield expected revenue as provided in Table 29. As these figures are considered to be underestimates the resultant value should be interpreted with care.

	Maximum value of catch (EUR)	Estimate of 10 % of the value of the maximum catch value (EUR)	Value of average catch (EUR)	Estimate of 10 % of the value of the average catch value (EUR)
Kenya	**3 702 960** (2014)	**370 296**	**1 954 340** (2013 and 2014)	**195 434**
Mozambique	**9 104 946** (2009)	**910 495**	**6 837 285** (2008, 2009, 2010, 2011, 2013)	**683 728**
Tanzania	**6 828 340** (2012)	**682 834**	**3 701 450** (2010 to 2012)	**370 145**

Table 28: estimated average value of catch and maximum value of catch (EUR) from reported and recorded catches for EU vessels

Note: see tables in Section 2.3 for baseline information

Compensation calculated based on 10 % of the estimated value from reported catches was calculated as a maximum and an average over years with available data. The results for Kenya were for a maximum of EUR 370 000 and an average of EUR 195 000, for Mozambique a maximum of EUR 910 000 and an average of EUR 685 000 and for Tanzania for a Maximum of EUR 683 000 and an average of EUR 370 000. These figures should be interpreted with care due to underreporting it is also noted that accuracy in reporting of species composition has a significant impact on the value of catch.

3.3.4 CALCULATING VRT

As discussed in 3.2 the calculation for compensation for fishing access paid by the EC depends on the reference tonnage and the price per tonne to be paid by the EC as guaranteed income per year, while the price paid by the vessel owners depends on the VRT and the price per tonne to be paid by the vessel owner only to be paid if they take up the opportunity to fish. As demonstrated in Table 24 there is no logical explanation for the different VRT in the various FPAs. However, in future negotiations coastal states should be aware that consideration is required to ensure that, with the rising burden of payment on the vessel owners within Protocols, that when 100 % payment is made by vessel owners this relates to the current rates charged for licences for foreign vessels. If this does not happen, then it will mean that EU vessels receive authorisation to fish at a lower rate than those of other fleets. In effect, the developing coastal states would find itself assuming responsibility for the subsidy element for the EU fleet's access fees for operating in their waters.

To avoid this happening attention needs to be given to the VRT which needs to be recalculated so that it reflects the equivalent percentage of the license fee. The advanced payment by vessel owners is the VRT times the per tonne price multiplied by the proportion for which the vessel owners will take responsibility.

Taking the proposed Mozambique Protocol, as an example. The EC proposal envisages a per tonne price of EUR 125 in the fifth year, with the vessel owners paying 75 % of that rate. What the vessel owners pay ought to be the equivalent of 75 % of the anticipated licence fee rate, assumed to be USD 50 000 (rounded to EUR 44 000 equivalent). Thus the calculation:

a = VRT

b = rate per tonne

c = share (percentage) to be paid by the vessel owners

d = the licence fee envisaged

e = the share of the licence fee to be reached (=c)

The advance payment by vessel owners is a*b*c for the VRT to deliver an advance payment which is equivalent of the licence fee in the 5th year, the calculation should be:

VRT = (d*e) / (b*c)

= (44 000 * 0.75) / (125* 0.75)

= 352 tonnes

The vessel owners advance payment at the end of year five would be 352*125*0.75 = EUR 33 000.

VRT is becoming increasingly important as the percentage split between the EC and the vessel owners for advance payment is shifting towards the vessel owner. As the number of vessels taking up fishing licences is always uncertain, the coastal states need to ensure that the VRT is appropriate when considered with the price per tonne to, at a minimum, balance the cost of a foreign fishing licence. To assist in this a formula is provided that can be applied to test the different scenarios.

3.4 COMPARISON OF OPTIONS FOR GRANTING THE EU FLEET ACCESS TO FISH AS NOTED ABOVE, THE RECENTLY ENDED PROTOCOL IN

Mozambique guaranteed payment for access at the rate of EUR 520 000 per year plus EUR 460 000 in sectoral support per year. The guaranteed prepayment by the Commission contained in the EU proposal for a new Protocol implies that the guaranteed payment in the first year would be EUR 330 000 and this figure would reduce to EUR 187 500 by the fifth year. In addition advanced payments have been made by the EC and by vessel owners (that take up authorisations to fish) in accordance with the most recent Protocol (2012 to 2015) agreed under the Mozambique FPA.

Figure 14 shows various scenarios have been calculated based on 14 purse seiners and 7 longliners taking up

opportunities to fish (as was the case in 2014) and with reference tonnage of 6 000 and 8 000 t, as the contribution by vessel owners will increase over the five years and the EC contribution decrease this is shown in the first and fifth year of the Protocol. For comparative reasons the calculation for the income based on current licences and also licences at the Maputo Declaration rate are included. Note that the additional, approximately EUR 20 000 per year for the observer programme and compensation for not embarking crew is not included.

The EC has proposed to Mozambique that the reference tonnage comes down from 8000 t to 6000 t, but that the rate per tonne rises from EUR 110 per tonne at the beginning of the five-year period of the Protocol to EUR 125 per tonne in the fifth year of the Protocol, this change is included in the calculations in Figure 14.

The annual advance payment by the EC is a fixed, guaranteed amount. Over the modelled five-year period of the Protocol, the EC intends to shift the cost of access increasingly from the EC to the vessel owners. The advanced payment by vessel owners is dependent on whether they choose to seek authorisation to fish in Mozambique's fishing zone. Thus, as more of the burden of payment for access is given to the vessel owners, so also is the guaranteed advance payment by the EC reduced and aggregated value of advanced payments by vessel owners become more uncertain.

In addition (in red and orange) the actual licence revenue for Kenya and Tanzania and the revenue that would have been achieved if Maputo Declaration prices were applied have been included for comparative reasons. It is important to note that the income from private licences is in no way guaranteed. Another important financial element of the FPA is the sector support which, in the recent Mozambique Protocol, amounted to EUR 460,000 per year. The EC has proposed that this be an amount equal to the access fee, or a percentage of the access fee. Thus either way, it would be an amount equal to or less than EUR 330,000.

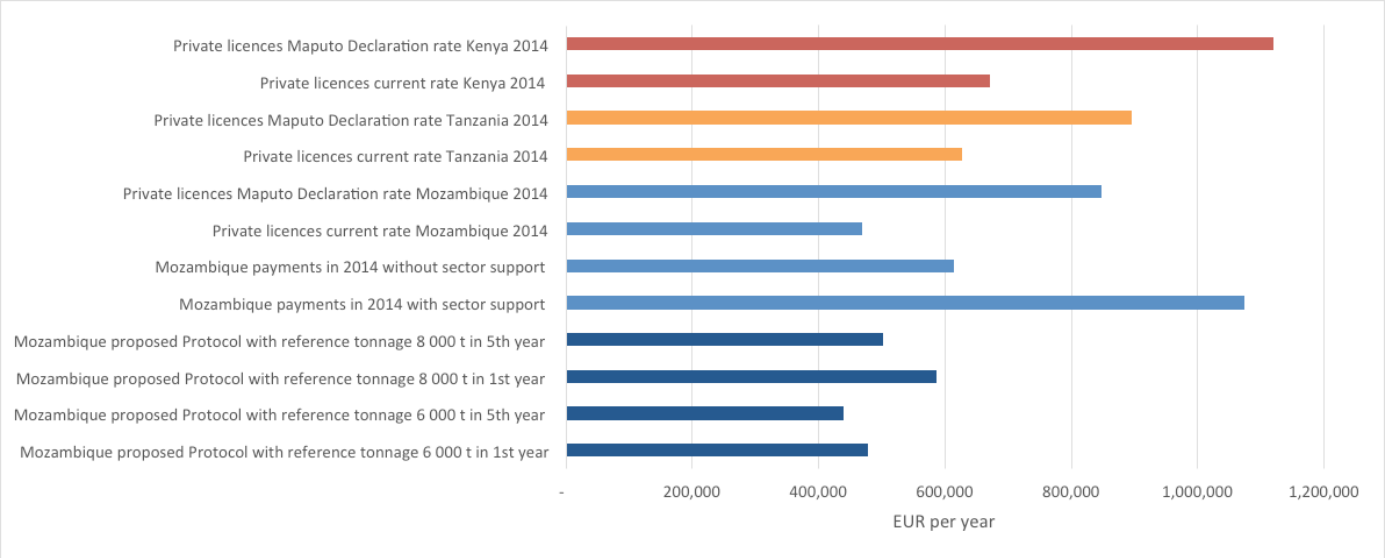

Figure 15: comparison between income from the EU fleet in 2014 and potential income from Maputo Declaration prices for three countries, and projection of income for reference tonnage of 6 000 and 8 000 t based on same number of vessels taking up fishing opportunities as in 2014 for Mozambique

A comparison of options to grant access to the EU fleet to fish in the EEZs of Kenya, Mozambique and Tanzania, based on reported and recorded catches and information on uptake of licences was summarised. For Mozambique, considering 2014 they received a higher income through the FPA when sector support was included to other options, however if sector support was not included and the Maputo Declaration prices were applied this would have resulted in higher income. Neither Kenya nor Tanzania had FPAs but their respective incomes can be viewed in comparison to Mozambique to provide an indication of the variables they would need to consider if opting for an FPA in the future.

3.5 RECOMMENDATIONS IN RESPECT TO EU ACCESS

Analysing the potential benefits to be gained by a coastal state from either entering into an FPA and Protocol with the EC or selling licences to the same EU fleet is far from straight forward. The variables used in the FPA Protocol template are many, including the use of reference tonnage, vessel reference tonnage (VRT), price per tonne and a split in advance payments between the EC and the vessel owner on a sliding scale. There are uncertainties about how many vessels will take up opportunities to fish or buy licences that need to be evaluated and balanced against the security of the EC guaranteed contribution and the 'bonus' of sector support.

The analysis of the three coastal states of Kenya, Mozambique and Tanzania demonstrated that information on vessel effort and catches by the EU fleet in the respective EEZs is not always reported or compiled in a systematic way and when verification was possible with EU reported information discrepancies were found. This implies that calculations of future effort or catch based on historical information should be interpreted with care and used only as a guide. In general calculated figures from reported catch and effort should be considered an underestimate.

The analysis provided in this study sheds light on aspects and concepts used in the EC FPAs and Protocols and provides guidelines for coastal states to prepare for the negotiation process with the EC. The following aspect of the FPA/Protocol negotiations are deemed important for coastal states:

- **Reference tonnage** is a key element determining the fee payable by the EC to the coastal state. Although it is given as a figure in tonnes, in practice it is not an expected catch or a limit to catch, in practice it simply equates to a figure that influences the fees to be paid when combined with price per tonne and percentage to be paid by the EC. Historically, it appears to be a somewhat arbitrary figure.
- **Vessel reference tonnage (VRT)** is used to calculate the advance payment made by vessel owners to the coastal state in combination with the price per tonne and the percentage paid by vessel owners. Historically, the VRT has not been linked to the reference tonnage or the number of vessels offered opportunities to fish in Protocols in the WIO. Historically, it appears to be a somewhat arbitrary figure.
- **Price per tonne** is used to calculate the advance payment made by the EC and the vessel owners to the coastal state in combination with the reference tonnage and the VRT. Historically, it appears to be a somewhat arbitrary figure.
- **The division of the price per tonne between the EC and the vessel** determines if the advance payments are guaranteed or not. The EC percentage of the split is guaranteed, while the vessel owner percentage will depend on the number of vessels taking up licences and is therefore not guaranteed. The

trend is that this split is increasing towards the vessel owner on a sliding scale, thus the assured income to the coastal state will be reduced as vessel owners only pay if they take up opportunities to fish.

- **Maritime boarders** should be defined in the FPA/Protocol and should be in line with the internationally accepted boarders. Any disputed boarders should be stated and a system to deal with these defined. Historic catches/catch rates should be reconciled with changes in maritime boarders.
- **Sector support** is often seen as the element making an FPA/Protocol worthwhile, it is usually set as either an amount equal to the EC's advance payment, or a percentage of that. The advanced payment by the EC is to diminish so, if the sector support is pegged to this, it too will diminish. It should be argued that the basis of setting the amount for sector support should be the need demonstrated for that support rather than as an arbitrary level based on the advance payment.

The following aspects of the FPA/Protocol negotiations are **less important**, but should be considered:

- **Number of EU vessels** in the Protocol guaranteed access has no relevance to the income anticipated by the coastal state. Historically, this figure has been a maximum for the EU fleet, but for the coastal state it has not indicated expected uptake or expected income from advance payments by the EU fleet.
- **Support vessels and FADs** should be **considered in all future Protocols.** They increase the efficiency of purse seine vessels and thus increase their potential catch. If effort (e.g. vessels days) are considered in calculating access fees, the use of support vessels and FADs should be taken into account. The use of historic catch data in calculating predicted catch should take into account an expected increase in catch due to greater dependency on support vessels and FADs.
- **Observer programme payments, compensation for not embarking seamen and landing by-catch**, although all of importance, are of **limited financial value** and can distract from the core considerations that impact on a coastal states income, many of these aspects can also be considered under sector support if important for the coastal state.

Specific findings, based on analysis in this study, should be taken as a guide with trends and magnitudes used rather than exact information or figures. With that in mind, the following **recommendations** are provided:

- A range of **reference tonnages calculated for Mozambique** showed that maximum opportunity offered within the past FPA could be interpreted to suggest that up to 35 000 tonnes per year of tuna and tuna like species could have been caught in the Mozambique fishing zone by EU fishing vessels. Comparatively, based on historical estimates a realistic likelihood of around 10 000 tonnes per year would more likely be expected from the same fleet. The last reference tonnage used in an FPA was 8 000 tonnes per year. This suggests that taking into account the increased areas in the Mozambique EEZ due to the previously excluded areas, the increased use of support vessels and FADs and likely under reporting by vessels and lack of compilation at coastal state level, an increase in reference tonnage would be appropriate.
- **Price per tonne** calculated based on analysis of historic reported and recorded catches and average values per species in the three EEZs of this study and based on 10 % of the estimated value of the catch yielded higher prices than in current Protocols in the WIO. This figures were EUR 173 in Kenya, EUR 213 in Mozambique and EUR 170 in Tanzania per tonne. This suggests that the price per tonne should be increased and at a minimum not be lower than the Seychelles rate of EUR 130 per tonne, a sliding scale over the years could be considered.

- **Value of catch as a guide to compensation for access** was calculated based on 10 % of the estimated value from reported catches, as a maximum and an average over years with available data. The results for Kenya were for a maximum of EUR 370 000 and an average of EUR 195 000, for Mozambique a maximum of EUR 910 000 and an average of EUR 685 000 and for Tanzania for a Maximum of EUR 683 000 and an average of EUR 370 000. It is noted that species composition has a significant impact on the value of catch and due to underreporting these figures are anticipated to be an underestimate, however they provide a guide to countries of the reported value of catch taken within their EEZ and the estimated income they could anticipate.
- **VRT is increasingly important** as the percentage split between the advance paid by the EC and the vessel owners is shifting towards the vessel owner. As the number of vessels taking up fishing licences is always uncertain, the coastal states should ensure that the VRT when considered with the price per tonne is similar to the cost of a foreign fishing licence.
- **Regional cooperation and minimum terms and conditions (MTCs) are increasingly important** to ensure that the national strategies are implemented and that foreign access is beneficial to the coastal states. The European Parliament, in 2012 expressed support for a regional approach to the EU's bilateral agreements. Although a regional WIO FPA/Protocol may be some time away there are many benefits to be gained by the coastal states cooperating in the area of access to fishery resources. The political commitment has been expressed in various African and regional protocols and strategies, most recently in the Maputo Declaration agreed between Kenya, Mozambique and Tanzania. Cooperation would give cooperating countries a stronger challenge to the EC and their ridged FPA, Protocol and Annex templates. Regional cooperation could also further support efforts designed to ensure sustainable exploitation through ensuring that EU fleet catches in the region are assessed in their totality and in light of regional stock status.
- **National information and statistics** on foreign fleet effort, catch and income would benefit from being strengthened in all three coastal states.

Finally, a comparison of options to grant access to the EU fleet to fish in the EEZs of Kenya, Mozambique and Tanzania, based on reported and recorded catches and information on uptake of licences was made. It suggested that overall, for Mozambique they benefited from the overall package that the EC offers in monetary terms compared to simply selling licences to the EU fleet. As can be seen form Figure 15, this difference is not great, in 2014, they received a higher income through the FPA when sector support was included, however if sector support was not included and if the Maputo Declaration prices had been applied this would have resulted in higher income. For Kenya and Tanzania this cannot be estimated as no baseline FPA/Protocol is available for comparisons.

With the EC, intending to reduce their guaranteed contribution to the advance payment, coastal states should consider carefully the balance between secured benefits, including sector support and aim to set their negotiating stakes at an appropriate level to ensure a fair income. Ultimately, the decision to enter into an FPA and Protocol or not is a balance of possible opportunities against secure revenue and the interpretation of this will vary from coastal state to coastal state.

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