EVALUATION OF THE SUSTAINABLE FISHERIES PARTNERSHIP AGREEMENT BETWEEN EUROPEAN UNION AND LIBERIA

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ABSTRACT

The Sustainable Fisheries Partnership Agreement (SFPA), a bilateral arrangement between the European Union and Liberia, is a clear and purely commercial deal that is designed to maximise access to the fishery resources of the coastal state. This study aims to provide a theoretical review of the SFPA between EU and Liberia, reviewing some of the related fisheries challenges, the management of stocks in Liberia, limitations in the agreement, and analysing the results from reported tuna catch as reported by EU fleet against the vessel monitoring system data from the control centre of Liberia. Financial compensation paid by selected European Union countries as subsidy for fishing rights covers a period of five years for resources harvested from the country's waters for license fees and is equivalent to a reference tonnage of 6,500 per year. This subsidy places the EU in the position of preferred user of the coastal resources due to lack of processing facilities to add value to fishery products in Liberia. This report also considers Liberia's capacity to monitor the long-distance fleet in its Exclusive Economic Zone (EEZ). This type of agreement should focus on the long-term sustainability of the marine resources. Long-term, coastal countries like Liberia should undertake a more coordinated approach in dealing with foreign pressures on their resources and try to be pragmatic in their approach to negotiating a fisheries agreement with the EU in the next sitting.

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TABLE OF CONTENTS

TABLE OF FIGURES

LIST OF TABLES

LIST OF ABBREVIATIONS

BNF	Bureau of National Fisheries
CBA	Cost Benefit Analysis
CECAF	Committee for Eastern Central Atlantic Fishery
EEZ	Economic Exclusive Zone
EJF	Environmental Justice Foundation
EU	European Union
EPA	Environmental Protection Agency
FAO	Food Agriculture Organisation
FOB	Forward Operating Base
FDA	Forestry Development Agency
GOL	Government of Liberia
GDP	Gross Domestic Product
HDI	Human Development Index
ICCAT	International Commission for the Conservation of Atlantic Tuna
IQ	Individual Quota
ITQ	Individual Transferable Quotas
IEZ	Inshore Exclusive Zone
IUU	Illegal Unregulated Unreported
LISGIS	Liberia Institute of Statistics and Geo – Information Services
LMA	Liberia Maritime Authority
LCG	Liberia Coast Guard
MEY	Maximum Sustainable Yield
MSY	Maximum Economic Yield
MCS	Monitoring, Control and Surveillance
MOF	Ministry of Finance
MJ	Ministry of Justice
MOA	Ministry of Agriculture
MCSCC	Monitoring, Control and Surveillance Coordinating Committee
MOCI	Ministry of Commerce and Industry
MLME	Ministry of Lands, Mines and Energy
MYS	Ministry of Youth and Sports
MGD	Ministry of Gender and Development
MOE	Ministry of Education
MOICT	Ministry of Information, Culture and Tourism
NAFAA	National Fisheries and Aquaculture Authority
NPA	National Port Authority
NGO	Non- Governmental Organisation
NIV	National Investment Commission
RRMO	Regional Fisheries Management Organisation
SCRS	Standing Committee on Research and Statistics
SFPA	Sustainable Fisheries Partnership Agreement
SB	Standards Board
TAC	Total Allowable Catch
TURF	Territorial User Rights in Fisheries
USA	United States of America
UNUFTP	United Nations University Fisheries Training Programme
UNCLOS	United Nations Convention on Law of the Sea
UK	United Kingdom
VMS	Vessel Monitoring System
WARFP	West Africa Regional Fisheries Project

1 INTRODUCTION

Fisheries has always played a big part in people's livelihood in Liberia but very little is known about the fisheries of Liberia including the status of the stocks or ecosystem supporting the sector.

Historically, fisheries data over a long period in Liberia are not readily available, monitoring and research capacities came into focus in 2009 with aid from the Regional Fisheries body supported by the World Bank Group on fisheries and fisheries related issues. After a period of civil upheaval, acquiring information on the fisheries and related activities worsened. The period, therefore, provided an opportunity for illegal fishing activities, with foreign vessels targeting fish in the waters of the Liberian Exclusive Economic Zone (EEZ). This situation led to a negative impact on fish stock and ecosystem in the sector (WARFP-Liberia, 2010).

With speedy improvement in the sector, the European Commission through its Common Fisheries Policy (CFP) initiated a bilateral fisheries partnership agreement known as the Sustainable Fisheries Partnership Agreement (SFPA) between the Union and Liberia on June 5, 2015 by paying financial compensations as subsidy for fishing rights for a period of five years in the EEZ of Liberia targeting Tuna and tuna like species.

This study aims at examining the EU and Liberian bilateral fisheries agreement in relation to the harvesting of tuna species as reported by EU tuna vessels, the monitoring capacity of Liberia Fisheries Control Centre, deployment of Liberia Scientific Observers on board the Union vessels and comparison of catch data from the Vessel Monitoring System (VMS) reported from the Fisheries Monitoring Centre of Liberia.

The overall focus of the study is to assess the catch, as reported by EU fleet, Liberia monitoring capacity to monitor, control and keep watch on all EU vessels fishing in the Exclusive Economic Zone (EEZ) of Liberia.

The outcome from this study may potentially inform the parties of possible findings to be considered during future negotiations through the Joint Committee as detailed in the protocol of the SFPA between the two parties.

1.1 Objective

The objective is to evaluate the Sustainable Fisheries Partnership Agreement (SFPA) between the European Union and Liberia on the industrial (tuna) fishery; who benefits?

This will involve examining the following sub – objectives:

1. Availability of catch data from the EU vessels
2. Liberia's monitoring capacity
3. Assessment of the coverage of the Liberian Scientific Observer on board tuna vessels as slated in the agreement
4. Assessment of the prospects and challenges of the agreement (SFPA) between EU and Liberia.

2 FISHERIES MANAGEMENT IN LIBERIA

2.1 Overview of Liberia Fisheries Sector

Liberia is situated on the coast of West Africa (Figure 1). The surface area is approximately 111,369 km2, with water covering 14% of the total area. Liberia borders with Sierra Leone to the west, Ivory Coast to the east, Guinea to the north and the Atlantic Ocean to the south (CIA, 2018).

The climate is tropical with relatively small temperature differences between day and night. There are two seasons, the rainy season from April to October and the dry season from November to April.

Figure 1: Map of Liberia showing Atlantic coastline, inland water and neighbouring countries (https://www.google.co.uk/search)

The Liberian coastline is 570 km and the country has an Exclusive Economic Zone (EEZ) that extends 200 nautical miles off-shore, consisting of relatively warm waters with low nutrient content. The continental shelf extends from Ivory Coast to Robertsport in Liberia, with an average width of 34 km with the widest part in the central region of Liberia. An inshore exclusive zone (IEZ) reserves the six nautical miles closest to shore for the sole use of subsistence, artisanal and semi- industrial fishing activities – trawling is not allowed inside the IEZ.

The establishment of the 6-mile Inshore Exclusion Zone (IEZ), protected for artisanal fisheries, and the restriction on industrial demersal trawling has resulted in at least a doubling of the landings from artisanal fishery (NaFAA, National Fisheries and Aquaculture Authority (NaFAA), Fisheries And Aquaculture Policy & Strategy, Republic of Liberia, 2014). The Liberian EEZ is part of FAO Catch Area 34, the Eastern Central Atlantic (Figure 2).

Figure 2: Map of Liberia showing the IEZ (Green 0-6 Nm, EEZ Blue 200NM) of the Maritime Domain.

There are 15,050 km2 of freshwater bodies constituting 14 percent of the total land area of the country. These perennial water bodies (lakes, rivers, estuaries and creeks) coupled with the fact that Liberia receives the third highest rainfall in the world, result in substantial discharge into the inshore areas of the sea presenting a huge asset to the country for Mari culture development.

The fisheries resources of Liberia are exploited by different combinations of fishing gear and craft and these are generally divided into the following four groups:

Marine small-scale fisheries

These fisheries are comprised of the semi-industrial, artisanal fisheries and subsistence sub-sectors. This fishery provides livelihoods for approximately 33,000 full-time fishers and processors located in the nine coastal counties (i.e., Grand Cape Mount, Montserrado, Grand Bassa, Sinoe, Grand Kru, Rivercess, Margibi, Bomi and Maryland). Around 80% of those working in the sector are Liberian and 60% are female. They operate from some 114 fish landing sites along the coastlines (NaFAA, 2014).

The artisanal fishers operate the Kru-style wooden dug-out, non- motorised canoes, generally targeting demersal species using a variety of fishing gears, including cast-nets, beach-seines, set-nets, traps and hook and line. The canoes are mostly made from tree trunks sourced from nearby forests and propelled by sail and /or paddles. The canoes are in two sizes.

The first, is the smaller version less than six meters in length, with a depth of approximately 60 centimetres and mostly operated by one to three men. The second, is a medium-sized canoe, greater than six meters in length, with crews ranging from three to five men.

Most of the catch in this sub-sector, estimated to be around 3,000 tonnes per year, is processed locally, mainly by drying and smoking.

Marine industrial fisheries

The marine industrial fishery is divided into trawl fishery for shrimp and demersal finfish that provide frozen whole fish and shrimp for the local market and an offshore large pelagic fishery. The mixed demersal fishery is not operating in an optimal manner. It utilises out-dated and at times damaged vessels, equipment, port and processing facilities, within an environment that is often not safe for workers and polluting for the environment. The sector lacks the infrastructure, equipment and expertise to process export- quality fish products. It has traditionally been dominated by foreign companies, with only a few Liberians flagged vessels operating. With the introduction of the six-mile inshore exclusive zone in the 2010 fishery

regulations, banning industrial vessels from fishing in this zone, many of the vessels turned to illegal fishing within the zone. Since 2012, this situation has changed and those now licensed to fish are aware that NaFAA, with the support of the Liberian Coast Guard (LCG), will not tolerate any infringement of this regulation and will prosecute those caught fishing illegally in this zone. As a result of the improved governance of this sector the number of vessels fishing has decreased, resulting in reportedly improved catches by the small-scale fishers and a reduction in conflict situations and thus has improved safety for small- scale fishers.

Liberia falls within the migratory path of the offshore large pelagic tropical tuna species, including the yellowfin, skipjack, and bigeye species that migrate within the Atlantic Ocean. In 2012 following the punishment by fine of 40 foreign vessels for illegally fishing in Liberian waters, discussion was initiated with foreign vessels regarding illegal and legal fishing in Liberian waters (NaFAA, 2014).

Inland fisheries

The inland fisheries are based on rivers, lakes and wetlands such as swamps and coastal lagoons. The two major lakes are Lake Shepherd and Lake Piso and there is an extensive river network, the largest and longest of which are the Cavalla and the St. John Rivers. There are six major rivers and 71% of the land of Liberia falls within one of the international river basins. These rivers are not navigable as they are shallow and rocky and therefore do not support water transport or fishing on a large scale. Monrovia is surrounded by the Mesurado river wetland, which despite high pollution provides a harvest of tilapia. Although neither the number of people engaged in land capture fisheries, nor the volume and value of catch is known, it is considered an important seasonal subsistence activity for riverside communities, using mainly traditional fishing gear and traps. Decisions that impact inland fisheries have historically been driven by interests other than fisheries (NaFAA, 2014).

Recreational fisheries

In Liberia, recreational fisheries are not of any great significance, but it is a likely area where growth and new opportunities may arise in the future both in marine and inland locations.

2.2 Challenges to Fisheries in Liberia

Between 1956 and 2010 the fisheries sector was faced with numerous key specific issues (WAFRP-Liberia, 2013). During these years, industrial vessels, including trawlers, were fishing closer to the shore causing a risk of undermining the country's food security by allowing industrial vessels greater access to fish in its coastal waters. Moreover, most foreign catch was exported overseas, and the expected reduction in levels of fish being supplied to the local market threatened the food security of hundreds of thousands of citizens. In 2010 the World Bank started providing support to the Liberian fisheries authorities to strengthen governance and management of priority fisheries and supporting marine and coastal ecosystems. The world bank intervention helped strengthen very limited institutional capacity in the sector which currently has no fisheries research capacity, leading to weak governance and management systems in the past.

Prior to the coming of the world Bank Group on Fisheries in 2010, artisanal canoe fishermen interacted with trawlers and shrimpers in Liberian waters. It has been reported (Fisheries-Policy, Ministry of Agriculture, Bureau of National Fisheries And Aquaculture Policy &

Strategy, Republic of Liberia. Quality Fishing Better Livelihood., 2014) that sometimes the shrimpers, finfish trawlers and canoes operate on the same species and on the same fishing grounds. In these circumstances, an expanding fleet of industrial vessels will reduce the catches of canoe fishermen. The fisheries management in Liberia has a difficult balance to establish between the opposing goals of increasing the total catch of industrial vessels and upgrading the well-being of small-scale fishermen.

Liberian multi-species fisheries are still poorly developed and fully exploited (Fisheries-Policy, 2014). The industrial fisheries have expanded more than artisanal fisheries. Increased fishing intensity will result in an increase in catch of those dominant species presently being exploited by artisanal and industrial fleets. But attention must be focused on control and adjustment of fishing effort (i.e., control the number, type and size of gears used as well as the number and type of fishing vessels). The pelagic species offer the larger potential for expansion and are particularly suited for the local markets.

It is recognised that some progress has been made in the collection of fishery statistics, but there are still many information gaps on landings by artisanal and industrial fishing boats. It has recently been reported by the Division of Research and Statistics that EU tuna fleet catch could not be tabulated due to the unavailable catch report from some EU fleets currently fishing in Liberia EEZ. There is a need to upgrade the collection of data from the vessels on sizes, weight, discard and bycatch through emails since there are no Liberian observers on the majority of the EU tuna vessels.

A series of catch and effort statistics - if continued over a period of years - provides the best measure of changes in a stock of fish and the impact of fishing on it. Overall, one of the major problems is the poor knowledge available of Liberian maritime resources, which is essentially based on quick surveys by research vessels. Estimates of potential yields vary greatly but normally fall within the range of 9,000 – 15,000 tons for demersal species, 19,400 – 14,000 tons for coastal pelagic species and 1,200 -1,600 tons for shrimps (Bank-Liberia, 2013). Recent statistics show that efforts still need to be applied and management strategies reformed and emphasised for the sustainability of the sector and the benefits of its people.

Liberia has taken significant steps to address IUU fishing, particularly through enhanced transparency of governance in the fisheries sector. The National Fisheries and Aquaculture Authority (NaFAA) is responsible for regulating fishing activities in Liberian waters. The first of its kind in the history of the sector, NaFAA launched a website in April 2012 which was financed by WARFP. It is designed to publish information on the country's fisheries sector including a list of licensed vessels.

Fishing with dynamite and poison is a prevalent problem in Liberian estuaries and rivers. Dynamite is widely used in mining operations, but its unregulated use in fisheries breaches both fisheries regulations and penal codes designed to protect life and property. This is a powerful example of how fisheries crime is related to other types of crime and evidence of a constructive approach by the National Fisheries and Aquaculture Authority (NaFAA) to using non-fisheries regulations to tackle associated criminality.

The National Fisheries and Aquaculture Authority, through the WARFP-Liberia, has undertaken various activities to improve the management and regulation of fisheries in Liberia. NaFAA has also collaborated with other international organisations to achieve these aims.

2.3 Industrial Fisheries Management regime in Liberia

Even though the industrial fisheries sector of Liberia has been in existence for decades, an effort towards fisheries management started in 2009. Since the coming of the West Africa Regional Fisheries Project (WARFP), the industrial sector has made rapid improvements compared to the past. The establishment of a legal framework for the sector; publication of the first fisheries regulations in Liberia now serves as a guide for proper fisheries management. In addition, the establishment of the fisheries monitoring center to monitor all licensed vessels registered to fish in Liberia, and the Liberian observer programme which carries out fisheries monitoring, control and surveillance operations contribute towards the improvement. Finally, a Fisheries Dashboard office to keep accurate records on all fishing vessels, canoes, and those involved in fishing related activities started during this period. This project was initiated and funded by the World Bank Group on fisheries to correct decades of bad fisheries practices in Liberia.

Due to the lack of a modern fishing port, the fish processing industries are underdeveloped and underutilised. Fishing activity is based at the fish market, in a landing area. A high percentage of fresh fish are imported from Sierra Leone, Guinea, and other West African coastal states. Nearly all catches of the inshore and small-scale fleets are sold at local landing sites.

The lack of port infrastructure limits landing opportunities and the irregularity and inadequacy of air transport hinders exports, although fresh products are exported to EU through the Fisheries Partnership Agreement between EU and Liberia (special arrangement until port facilities are constructed).

Records of industrial vessels licensed to fish in Liberian waters over the years are limited. Prior to 2010 most vessels were Chinese (table 1) but since full operations of the SFPA between the EU and Liberia the number of European vessels has grown forming the largest group of vessels today fishing in the EEZ of Liberia. In previous years (prior to 2010) this information was barely available as can be seen from the FOA annual report with repetition on statistics representing the Liberian catch report on the FAO countries annual report (FMC-Liberia, 2018).

Table 1: Number of licensed industrial and tuna vessels in Liberia since 2009. (Source: Fisheries Monitoring Centre, FMC-Liberia)

Year	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Chinse Trawlers	35+	50+	7	4	4	3	10	5	3	10	N/A
EU Tuna Fleet	N/A	N/A	N/A	N/A	N/A	N/A	N/A	32	32	32	39
ANABAC Private Tuna fleet	N/A	N/A	N/A	N/A	N/A	N/A	N/A	13	13	13	13
AGAC Private Tuna Fleet	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3	3	3	3

Licensing process

With regards to vessel licensing applications in Liberia, owners are required to follow the (Figure 3) procedures stated below:

All licensed vessels are required to carry on board NaFAA observer in accordance with the Liberian 2010 Fisheries Regulation/Act.

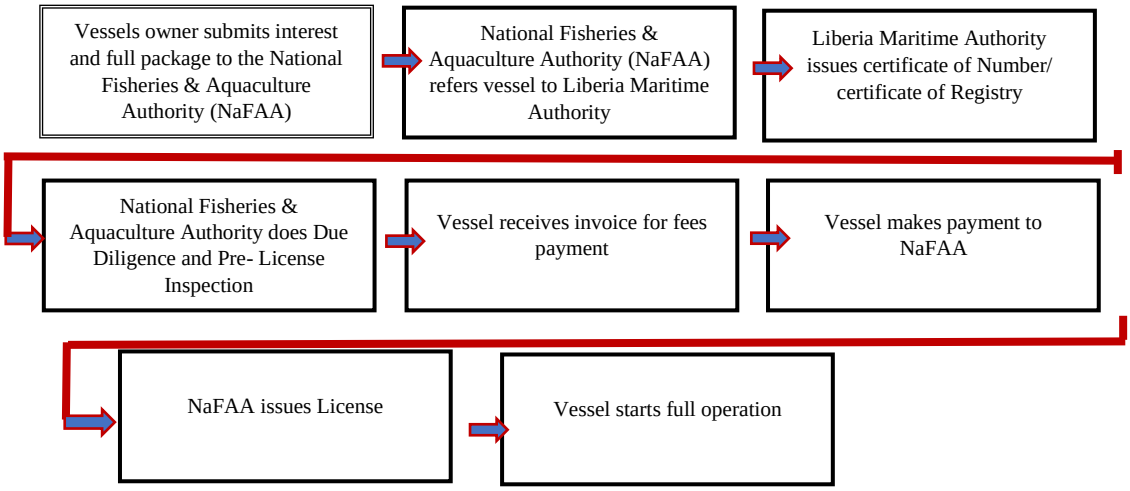

Figure 3:Showing licensing full circle and average process time per new vessel in Liberia.

2.4 Functions and duties of observers according to Liberia Fisheries Act 2018

As stated in the 2018 Fisheries Act, observers may be deployed as directed by the Director General in accordance with the Act, as applicable in international agreements or arrangements, including an agreement with the objective of carrying out fisheries monitoring, control and surveillance operations jointly or cooperatively with another state, or any international conservation and management measures on any vessel used for fishing, transshipment, transportation and or landing of fish within and beyond the fisheries waters and such others as may fall within the scope of the Fisheries Act of Liberia. Also, the fisheries partnership agreement (SFPA) between EU and Liberia (Section 5), vessels holding a fishing authorisation shall be subject to a scheme for observing their fishing activities carried out within the framework of the agreement. But on the contrary, the coverage of Liberian observers on board EU tuna vessels remain a serious challenge. Liberia is only allowed 15% observer coverage on 39 tuna vessels currently fishing in the coastal waters of Liberia. Even though the agreement called for Liberian observers on board, this is yet to become a reality. Some EU tuna vessels do not carry Liberian observers, but report catch by emails to the FMC and the research and statistics division of the sector.

The SFPA agreement has a clear objective to promote sustainable fishing in contracting countries and it should be implemented on a long-term and exclusive basis. Negotiations are linked to coastal states' fisheries resource management, and to monitoring and control of all ship activity in national EEZs.

2.5 Intervention of Local, Regional, and International fisheries partners in Liberia

Since the inception of the West Africa Regional Fisheries Project (WARFP) in Liberia 2009, several milestones have been achieved so far to ensure protection, preservation and sustainable management of the fisheries constraints, which have hampered its development for many decades. This regional body came with a focus to:

- Review the Legal framework in order to ensure compliance with the international and regional rules applying to the conservation and management of fishing resources, (Karmenum, 2017) UNCLOS Articles 61. 62. 91. 94. And 177, and with Article 21 of UNFSA, as regards its obligations as a coastal and flag state.
- Adopt a National Plan of Action on IUU to prevent deter and eliminate IUU fishing in Liberia.
- Strengthening the effective implementation of international rules and management measures through an adequate regime of sanctions.
- Strengthening and improving registration and licensing regimes setting out all eligibility rules for all types of vessels under all types of license agreements.
- Rectification of identified shortcomings in Monitoring, Control and Surveillance (MCS) System with regard to requirements laid down in international and regional regulations as well as in the framework of the catch certification scheme to name a few. To accomplish these factors, several governmental agencies needed to form a part of the strategy of WARFP dream, to include:

National Investment Commission (NIC) is responsible for the handling of the investment promotion drive for the fisheries sector. The Commission already co-operated with NaFAA for the extension of the Mesurado fishing pier in Liberia for lease from 10 to 25 years and has indicated its willingness to take up the new challenge in fisheries investment promotion.

Ministry of Commerce and Industry (MCI) lead the sensitisation drive to promote Liberian participation in the establishment of value addition facilities on designated land located at Mesurado. This could be helpful in facilitating credit for the realisation of the facilities.

Forestry Development Agency (FDA) is responsible for forestry and forest related conservation including mangroves which are used for fish preservation. It will play an essential role in sensitisation on minimisation of use and introduction of fuel efficient and energy saving systems in the fisheries.

Environmental Protection Agency (EPA) is responsible for environmental monitoring and management including limiting of excessive exploitation and pollution of the fisheries waters. Its supervision of the preparation of ESIAs and ESMPs is even more relevant in the establishment of fisheries infrastructure.

Ministry of Lands, Mines and Energy (MLME), Lands Commission and Ministry of Internal Affairs are concerned with land issues for fisheries development, acquisition, surveys, and facilitation of land titles.

Ministry of Finance will work to provide the mechanisms for revenue management and projections.

The Ministry of Health (MOH) and the Standards Board (SB) will be responsible for fish sanitary certification through the competent laboratory to be established for fish imports and exports.

The Ministry of Youth and Sports (MYS) and the Ministry of Gender and Development (MGD) will mobilise the disadvantaged groups, including youths, women and other vulnerable groups for engagement in aquaculture and post-harvest activities.

The Ministry of Education (MOE) and Ministry of Information, Culture and Tourism (MICAT) will be involved in curriculum development and sensitisation for capacity building for fisheries education programs.

Liberia Institute Statistics and Geo Information Systems (LISGIS) is responsible for data management including fisheries data and already works closely with the Statistics Division for estimation of contribution of fisheries to GDP.

Universities are involved in fisheries work. A fisheries curriculum is being developed at the University of Liberia and that will provide the workforce for fisheries extension and research. There is ongoing collaboration with the University of Iceland, as well as other partners and stakeholders.

3 SUSTAINABLE FISHERIES PARTNERSHIP AGREEMENT (SFPA)

The sustainable fisheries partnership agreement (SFPA) between the European Union and Liberia was negotiated and concluded on the 5 of June 2015. The aim of the agreement is to allow EU vessels to fish for surplus stocks in the Exclusive Economic Zone (EEZ) of Liberia a legally regulated environment. The agreement also focuses on resources conservation and environmental sustainability, ensuring that all EU vessels are subject to the rules of control and transparency. The agreement at the same time, addresses respect for human rights and includes the following:

1. To promote sustainable fishing in the contracting country which will be implemented over a long-term period of five years
2. The parties underline the importance of the fight against illegal, unreported and unregulated (IUU) fishing.
3. Liberia welcomes the availability of sectoral support under the Partnership Agreement which will allow Liberia to enhance its monitoring, control and surveillance capacities, as regards the vessel monitoring system (VMS).
4. Under the principles (Article 3), the parties shall consult one another prior to adopting any decision that may affect the activities of EU vessels under the Agreement.
5. The Liberian authorities shall not deliver authorisation to fish to EU vessels other than under the Agreement
6. A Joint Committee shall be established, composed of representatives of the EU and Liberian authorities, responsible for the monitoring of the application of the Agreement. (It may adopt modifications to the protocol, annex and appendices).

In exchange, the EU pays (table 3) the partner countries a financial contribution composed of 2 distinct parts:

- access rights to the EEZ
- sectorial support which aims to promote sustainable fisheries development in the partner country, by strengthening their administrative and scientific capacity through a focus on sustainable fisheries management, monitoring, control and surveillance.

Table 2: Annual amount for access to fisheries resources in Liberia fishing zone/SFPA EU and Liberia 2015.

An annual amount for access to the fisheries resources in Liberian fishing zone for 6,500 reference tonnage of Tuna and tuna like species	
EUR 55	Per tonne for the first year of application
EUR 60	Per tonne for the second and third years of application
EUR 65	Per tonne for the fourth year of application
EUR 70	Per tonne for the fifth year of application
Specific annual amount for the support of the implementation of Liberia's sectoral fisheries policy	
EUR 357,000	for the first year of application
EUR 325,000	for the second, third and fourth years of application
EUR 292,500	for the fifth year of application

According to Article 3 of the protocol in the SFPA between the EU and Liberia on financial contribution, it states that if the annual catches from EU vessels fishing in the EEZ of Liberia exceed the annual reference tonnage, the total amount of financial contribution will be increased. However, the total annual amount to be paid by the EU will not be more than twice the indicated amount in paragraph 2 (a) of the agreement (SFPA-Liberia, 2015).

4 MONITORING, CONTROL AND SURVEILLANCE (MCS) IN LIBERIA

4.1 Liberia MCS Functions

The purpose of a monitoring, control and surveillance (MCS) system in any given fishery is to ensure that the fishery policy in general, and the conservation and management arrangements for a specific fishery are implemented fully and expeditiously. As with other functions of the MCS arm of the sector, the specific task of the MCS arm is related to the nature of the management measures used to achieve the objectives of MCS.

For MCS in Liberia, all activities falling within the scope of the 2018 Fisheries Act and international agreement, and its function in relation to monitoring, control and surveillance include:

a. Monitoring activities that fall within the scope of the Fisheries Act, including the provision of information and data collection.
b. Carrying out surveillance over activities falling within the scope of the Fisheries Act.
c. Ensuring compliance with the Fisheries Act of Liberia through effective enforcement.
d. Daily recording of VMS data, speed, latitude, longitude of fishing related activities.

In discharging these functions and responsibilities on behalf of the sector, the Director General coordinates and collaborates with the relevant Government Ministries, Authorities and agencies, including: the Liberian Coast Guard, Liberia Maritime Authority, Ministry of Justice including the Liberia National Police; and the Bureau of Immigration and Naturalisation. Each ministry, authority or agency and all its official staff or employees are to provide full and effective coordination, collaboration and cooperation with the sector carrying out

responsibilities and functions to perform monitoring, control and surveillance activities as provided by in the Act.

The division is comprised of three sub- divisions, namely:

1 Fisheries Monitoring Centre (FMC), responsible for monitoring all licensed and authorised vessels fishing in Liberia's water through the sea-software for 24 hours and 7 days a week and recording the position of all vessels entering or exiting the fisheries waters of Liberia.
2 Liberia Scientific Observers programme serves the purpose of collecting, recording and reporting reliable and accurate information for scientific, monitoring, management and compliance purposes including (a) the species, quality, size, age and condition of fish taken, (b) the method by which the areas in which, and depths at which fish are taken (c) the effort of fishing method on fish, and the environment, (d) all aspects of the operation of any vessel, processing, transportation, transhipment, storage or disposal of any fish, etc.
3 Inspectorate Unit is a sub-division which consists of fisheries inspectors who exercise monitoring, control and surveillance and compliance functions pursuant to the Fisheries Act within areas under national jurisdiction; and in relation to such other laws and international conservation and management measures beyond areas of national jurisdiction in accordance with any international agreement.

4.2 Analysis of Liberia European Union SFPA with respect to MCS

In relation to the Sustainable Fisheries Partnership Agreement (SFPA) between European Union and Liberia, as stated in chapter 4 of the bilateral fisheries agreement on monitoring of EU fleet, calls for the flag state to ensure that for compliance purposes, all EU vessels should have installed satellite-based vessel monitoring system (VMS) for monitoring the daily activities of the vessels while fishing in Liberian zone to enable automatic and continuous communication of their position, every two hours, to the fishing control centre. The protocol also calls for the masters of EU vessels under the agreement to keep a logbook. The logbook should be completed by the master for each day the vessel is present in the Liberian fishing zone (SFPA-Liberia, Negotiations for the Conclusion of a Sustainable Fisheries Partnership Agreement and Protocol between the European Union and the Republic of Liberia, 2015).

Each day the master shall record in the fishing logbook the quantity of each species, identified by its FAO alpha 3 code, species discarded, expressed in kilograms of live weight, gear type used, total number of hauls per day. This catch report should be submitted to the National Fisheries and Aquaculture Authority (NaFAA) preferably by e-mail in the form of a scanned copy, or by fax, or the original by letter.

In addition, vessels holding a fishing authorisation in accordance with the agreement are subject to a scheme for observing their fishing activities carried out within the framework of the Agreement. The observation scheme shall conform to the recommendations adopted by ICCAT (International Commission for the Conservation of Atlantic Tunas).

4.3 The reported catch by EU fleet in relation to the SFPA in Liberia 2016 – 2017

Table 3 outlines EU tuna fleet catch for two years on categories of tuna species harvested in the EEZ of Liberia. This information presented is compiled from the research and statistics division of the National Fisheries and Aquaculture Authority (NaFAA) provided through e-mails to the department by EU captains during fishing trips in the coastal waters of Liberia. Below, (Table 3) shows reported tuna species caught between 2016 to 2017 by EU tuna fleets in the EEZ of Liberia.

Table 3: The reported catch by EU fleet in relation to the SFPA in Liberia

Species	Reference Tonnage/Year	2016 Tuna Production (tons)	2017 Tuna Production (tons)
Yellow fin Tuna	6,500	789	4,366
Big Eye Tuna		388	353
Skip Jack Tuna		1,557	5,237
Frigate Tuna		4	18
Marlin		7	8
Other Species		132	657
Total		**2,877**	**10,639**

In the interest of mutual transparency, to ensure that the agreement is implemented in accordance with the principle of good fisheries practices where the quantities catch by the EU vessel exceed reference tonnage, the excess is to be paid by the Union in the following year. Table 3 above shows the reported catch by EU fleet in 2017 exceeded the reference tonnage of (6,500) as agreed by both parties. Therefore, EU is to pay Liberia for excess catch of (4,139) tons. This catch report includes the total catch by all EU fleet fishing in the EEZ of Liberia. This report was provided by the Statistic and Research division of the National Fisheries and Aquaculture Authority (NaFAA) in Liberia.

The distribution of fish within West Africa coastal waters is uneven. It is important to the coastal states to know the migration of tuna species in the zones. The two distinct zones are apparent: A Northern Zone extending from Morocco through Liberia, (Liberia labelled red – Figure 6) and a Southern Zone, extending from the Ivory Coast through Zaire. The richest concentrations of fish occur off the northern coast; waters to the south are less productive. The proximity of West Africa's productive waters to Europe draws many fishermen into the region.

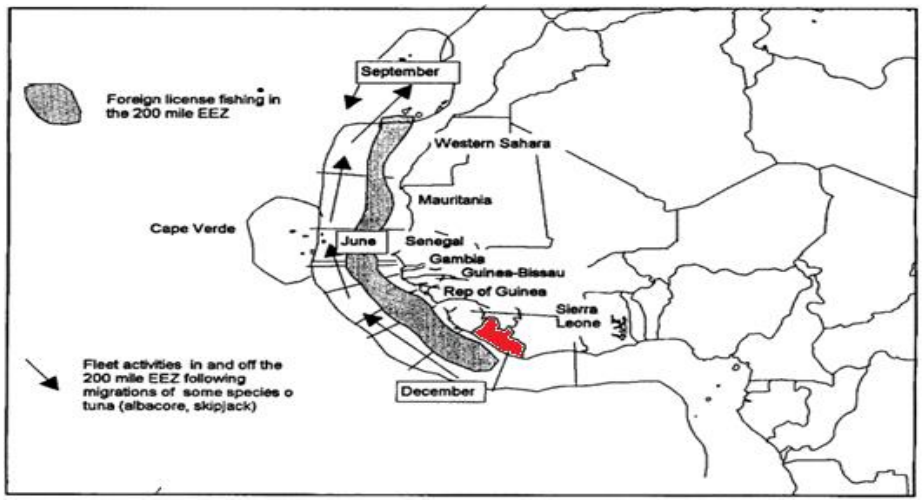

Figure 4: West Africa tuna catch distribution. The red coloured in the west represent the boundary of Liberia. (www.searounds.org/doc./Research)

4.4 VMS generated catch data approximations from the control centre of Liberia

This analysis points out the fishing effort from the Liberia Fisheries Monitoring Centre (FMC) on EU tuna vessels fishing in the EEZ of Liberia and the reported catch by EU fleet in relation to the SFPA in Liberia. It has proven that a lot of fishing effort occurred in 2017 as evidenced in Table 3. Also, the availability of catch data from the research division of NaFAA on the separate catch by vessel limited this analysis. The analysis is based on the sum of reported catch by EU tuna vessels and VMS data for two years of fishing in Liberia (2016-2017) from the fisheries monitoring center (FMC).

VMS Results:

1. The license list from the Fisheries Research and Statistics Division had 42 vessels, five of these vessels were not on the list (Arenas, Irene, Montealba, Monteclaron and Uno).
2. All vessels for which there is VMS data are purse seiners. There are no VMS data for any longliner.
3. The time span at sea between VMS records (pings) is variable. The median interval between records is 0.58 hours. Points were removed where the interval was higher than 3 hours.
4. The fishing speed are between 0 and 3 knots and tabulated the total number of fishing within the Liberian EEZ by boat per year.

As a primary responsibility of MCS is to monitor all activities that fall within the scope of fishing in Liberia, including the provision of information and data to ensure compliance. Analysis was done on the fishing effort of the EU tuna fleet and the results presented below in (Figure 5 and 6) for the period of two years (2016- 2017) fishing within Liberia EEZ.

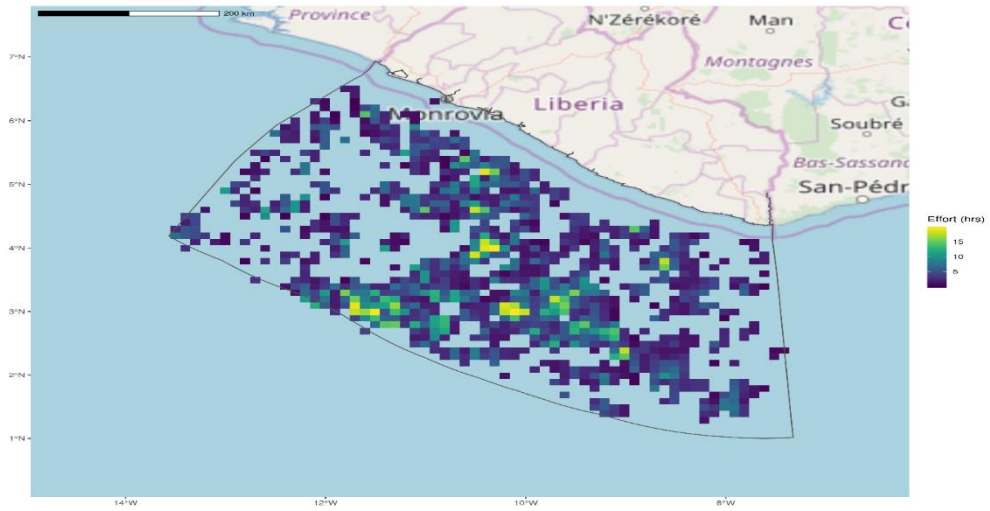

Figure 5: Fishing effort by EU vessels in Liberia's EEZ. The time span between VMS records is variable. The median interval between records is 0.58 hours

Fishing effort in Figure 5 shows the most concentrated or highly fished areas by EU tuna fleet within the EEZ of Liberia. The Yellow spotted areas are the maximum fished areas with around 20 hours, Green areas 15 hours, Sky-blue 10 hours, and the Navy-blue areas 5 hours for the period of two years from the VMS report. Only 28 vessels out of the 42 tuna vessels on the National Fisheries and Aquaculture Authority (NaFAA) vessel list were reflected on the VMS during the analysis. Figure 5 shows the fishing effort/speed for the 28 vessels.

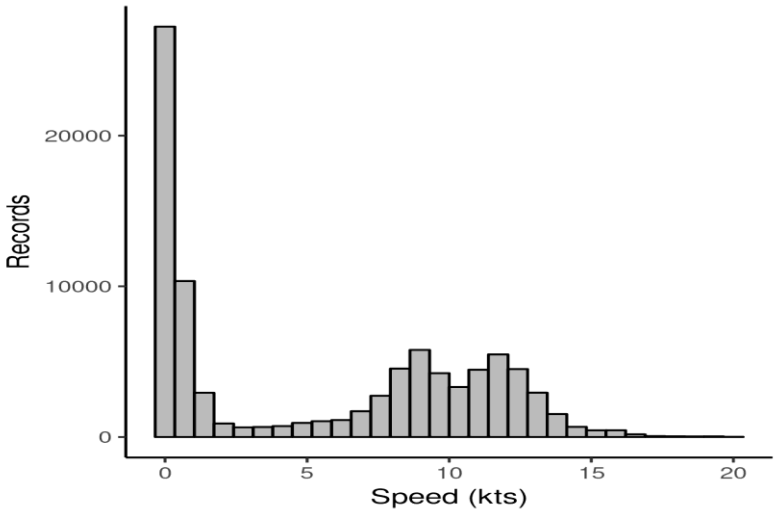

Figure 6: EU Tuna vessels speed histogram while fishing in the Liberia' water 2016-2017. Fishing speed are between 0 and 3 knots and tabulated the total number of hours fishing within the Liberian EEZ by boat and year.

4.5 The SWOT Analysis on issues affecting Liberia MCS

Table 3: SWOT analysis is based upon the strategic areas of the Liberian MCS

Strategic areas	Strengths	Weakness	Opportunities	Threat
MCS activities	Has a well – designed organisation structure	Internet & electrical connection at the FMC not always enough	The university of Liberia through the Iceland government is now concluding curriculum to start fisheries courses in Liberia	No fisheries lawyer for the adjudication of fisheries cases
	Unlicensed fishing in the EEZ of Liberia is practically under control	Majority of the observers and inspectors are not sufficiently experienced/ trained to operate on a pelagic tuna vessel.	Strengthen skills and capacity of VMS applications and operations.	Liberia has a long coastline with extensive fishing grounds with limited capacity to monitored
	Mobile Transceiver Units for VMS monitoring are installed on all registered vessels.	Standard Operating Procedures (SOP) in place, but do not cover all aspect of MCS activities.	Construction of the Fisheries Headquarters	
	Strong International Partnership	Limited capacity to interpret VMS and AIS data.		

Table 4 above presents a SWOT analysis of Strength, Weakness, Opportunities and Threats of Liberia MCS, especially in the FMC, landing and catch controls, strength and opportunities which identified potential for the development of the sector. The weakness and threats identified prompt solutions that would resolve some of these challenges faced by the sector. These issues would augment proper implementation of fisheries MCS in Liberia, improving enforcement mechanism, preventing, deterring, and eliminating IUU fishing in Liberia.

4.6 Discussion

The analysis provided in this study is based on desktop research, comparing catch data as reported by EU tuna vessels in Liberia for the period of two years (2016-2017) tabulated by the Division of Research and Statistic of NaFAA, and VMS data from the monitoring control centre.

To map the distribution of fishing effort by tuna vessels in the Liberia EEZ, data were utilised from a Vessel Monitoring System (VMS). A VMS is a monitoring system in which vessels are equipped with a transmitter that emits at regular intervals information on the location, speed and heading of the vessel. The information is relayed by satellite and received by a station on land. VMS systems are used for safety and law enforcement purposes, but in addition the data

obtained by these systems can be used to map fishing effort and catch and be used for other fishery management purposes (Gerritsen, 2011).

For this work VMS data were obtained from 29 vessels from the period 2016 - 2017. The data were pre - processed by removing duplicated records and records with unreal positions (i.e. on land). Next, records were removed in which the vessel speed was above 3 knots. This was done because a VMS transmits data at regular interval regardless of whether the vessel is fishing or not. A speed criterion of 3 knots was deemed adequate to identify records corresponding to fishing activities. Records where the vessel was static were also removed, as well as records that were not within the Liberian EEZ. The remaining records from the vessels were joined into a single dataset.

Fishing effort was defined as the number of hours fishing and was computed using the time interval between VMS records. For example, if the interval between records was one hour, a single VMS record classified as fishing corresponded to one hour of fishing. The total fishing effort was computed by vessel and by year. Fishing effort was mapped by creating a regular grid with 6 arc - minutes of resolution and associating each VMS record to a cell. The total hours of fishing were computed for each cell. All analysis was carried out using the R statistical language (R Core Team, 2018).

As pointed out in Table 4 of the SWOT analysis strength, weakness, opportunities and threats of the monitoring, control and surveillance division of NaFAA, the division has on paper a well-designed organisation structure but there are some limitations on achieving the overall goal of the sector. The three sub-divisions of MCS have the weakness of insufficiently experienced/ trained people to operate on pelagic tuna vessels within the observer program and the inspectorate unit. The fisheries monitoring centre staff are somewhat limited in interpreting VMS and AIS data. The focus of staff at the centre has been to record the position, fishing speed, and entry/ exit of vessels conducting fishing or fishing related activities in the waters for the past years. It could be recommended that more detail is placed on training and focusing on preparing the VMS data for better analysis as is done in other world class fishing countries like Iceland. With a better data collection system, it will allow them to prepare a more accurate representation of the stock and make better management decisions.

An effective MCS is considered the best hope of preventing, deterring, and eliminating IUU fishing and is recognised as one of the key principles of fisheries management both in areas under national jurisdiction and the high seas. There are well written Standard Operating Procedures (SOP) in place for implementation but not much funding available to cover all aspect of MCS activities in the sector.

In order to ensure that fishing operations are documented and that fishing vessels comply with conservation and management measures, NaFAA needs to ensure that Liberian observers are deployed on all fishing and fishing related vessels exercising their sovereign rights over marine resources as clearly written in the Fisheries Regulations of 2010. The 15% observer coverage on EU tuna vessels needs to be revisited to allow a full coverage of Liberian observers for a more and comparable analysis of data generated by the three sub-divisions for more accurate information.

5 MOVING TOWARD SOUND FISHERY RELATIONS OF EUROPEAN UNION WITHIN LIBERIA/ WEST AFRICA

5.1 Changes to be considered

There is a need for joint commitment of EU and West African coastal states to transform fishery cooperation into more effective instrument of growth and reduction of poverty in the region. However, coastal states must lead the way because domestic policy issues are at the heart of inefficiencies generated by the fishery agreements with Liberia just as in other West African coastal states. No real improvement is conceivable unless these policy matters are dealt with.

Several important factors might affect the course of actions that could be undertaken by Liberia or the West African coastal nations in order to improve fishery relations with the EU regarding harvesting the most valuable marine species from the region.

For a coastal country like Liberia in the West African region, EU financial compensation represents a very important source of hard currency earnings and accounts for a significant share of their income. However, the activities of subsidised EU fleets has an impact on fish stocks and contributes to deterioration of the coastal resources. In order to secure the sustainability of these resources and their beneficial effect on the economies, coastal states need to develop effective controls over the foreign fleet activity by improving the MCS division and staff. These states are gradually improving resource management measures including harvest quotas, limitation of and accounting for bycatch, restrictions on use of destructive fishing practices. Some countries are applying seasonal and general fishing limitations, so resources can recover from overexploitation where it exists. Fishery agreements should better reflect these conservation measures

The effectiveness and support by the EU of such financial compensation should be subject to review by coastal states because of its negative impact on the development of national fishing and processing capabilities (unfair competitive edge secured by subsidies to the European fleets vis-à-vis local operators). Compensation introduces distortions in valuation of resources harvested by the EU ships (it is more economic for EU vessel owners to buy licenses for shrimp and harvest demersal fishes as license fees are heavily subsidised). Compensation, access rights and fees as well as resource allocations should be used as incentives to integrate foreign operators with the coastal state economies. Priority in access to the resources should be given to foreign operators that unload harvested fish in local ports for processing.

More recent changes in EU policies have been brought to the Fisheries Partnership Agreements (FPA) and to The Sustainable Fisheries Partnership Agreement (SFPA). These changes put more emphasis on the cooperation, participation and interaction between the EU and developing countries with the focus on accountability and sustainability. In fact, these changes were triggered by the need for policy coherence and transparency concerning EU external fleet activities in developing countries, but is it working and monitored by both the EU and coastal African nations.

Surprisingly, it was 2012 that marked the breakthrough for the EU- SFPA improvement in the catch reporting requirement of the EU fleet. It was then that the EU committee agreed on the introduction of an electronic Logbook as in the 2011 – 2014 protocol. However, not all licensed EU vessels submit complete logbook and catch reports even though some vessels complied to the SFPA, it is unlikely to be entirely reliable.

5.2 The need for shift in the European Union fisheries policy in West Africa

One of the most fundamental needs for a shift in the EU fisheries cooperation policy with Liberia is to view their coastal fishery resources and local fisheries sectors as engines of growth for the local economies. These resources in some cases are among the most valuable assets the coastal countries have and could become an important source of employment and export revenue, as well as the primary means to reduce poverty in Liberia. Instead, EU could use its support to promote investment in land infrastructure and sector reform programs. Marine policy changes in West African states supported by active involvement of the EU promise substantially improved growth prospects for West Africa in the next century.

When dependence of the coastal state on compensation is high it has a powerful effect on a country's economic life. Using this situation, the EU could rewrite its fishery cooperation policy and undertake joint effort with West African coastal states to address current problems these countries face in fisheries development.

The international fishery cooperation policy of the EU for the West African region needs to be based on detailed macro-economic, sector and environmental analysis of the coastal states. Such studies should be performed jointly between EU and the coastal state entities and should precede negotiation of any cooperation agreement. Policy directions should reflect specifics of individual countries. In addition, attention needs to be given to the formulation of realistic assessments and investment programs.

Increased EU responsiveness to the specific situation of each West African coastal state requires more in-depth analysis of conditions on environmental, economic, legal, and administrative levels.

EU assistance can take many forms, such as project support, sector lending, support of local agencies in structural adjustment, support in marine sectors including local artisanal fisheries and promotion of exports to the EU markets. There is a great need for helping local companies in meeting product quality and sanitary requirements, training and technical assistance, support of scientific research and resource monitoring/surveillance programs. Most of these needs were not previously addressed by the Fishery Cooperation agreements with West African coastal states.

5.3 Legal framework of the National Fisheries and Aquaculture Authority (NaFAA)

The fisheries legal framework of Liberia consists of the Natural Fisheries Resources Act, 2010 and the Liberia Fisheries Regulations, 2010. There is in addition the Co-Management Charter developed by the Community Management Association CMA and NaFAA for the Robertsport area, and an MCS Coordination Committee (MCSCC) following a Memorandum of Understanding between the Ministry of Agriculture / NaFAA, Ministry of Defense, Ministry of Justice, Ministry of Finance, National Port Authority, and Liberia Maritime Authority defining inter-agency MCS cooperation. The EEZ has been declared through the Maritime Zones of the Republic of Liberia.

The current legal framework has been established, but there is still room for improvement. The finalisation and adoption of the new Fisheries Act that is currently under development, followed by a review and updating of the Fisheries Regulations, is crucial for effective fisheries

management to be achieved. It is also vital that the Liberian Government lodge the EEZ baselines under the United Nations Convention on the Law of the Sea (UNCLOS) to internationally describe the EEZ as soon as possible. Liberia has yet to produce one fisheries lawyer.

5.4 Benefits from the European Union and Liberia tuna agreement

In most West African countries, marine living resources are considered as a key economic asset, with significant potential for future development. However, they do not have enough capabilities to benefit from them in the short-term perspective. They need to establish fishing capabilities and create coastal facilities to harvest and add value to their own coastal resources.

The European Union have 15 active Fisheries Agreements currently running. Half of the agreements are largely centered around coastal countries in Africa but have yet to see a fully developed fisheries and value addition and fish processing in these countries. With value addition, especially in processing, most coastal African countries will be lifted from the huge poverty that faces them despite the potential of large marine resources found on the continent.

Comparing cost and benefits generated by these agreements under the umbrella of the International Fishery Cooperation Agreement, the EU fleets could exploit the coastal resources of Liberia if proper monitoring and management measures are not in place to control the coastal waters of Liberia. This is because EU operators take their catches directly to European markets without any integration of their fleet activity with the economy of the coastal states. The coverage of the Liberian operators on EU tuna vessels is very little and there is a need for management to address negotiating the next deal with the EU.

Reports from the latest evaluation of the EU-Mauritania SFPA (2015) show that EU-flagged ships fishing outside of EU waters catch around 1 million tons of fish per year – mostly under SFPAs. That is about one-fifth of the total fish caught globally by EU ships. Around 240,000 tons (or 33%) of the small pelagic fish caught under SFPAs is sold into African markets every year, with most of the remaining 67% being shipped back to the EU under the 2015 agreement signed between the EU and the developing countries. This loss could be considered as the price these countries pay by not having their own harvesting and land processing capabilities. In today's free market environment, very few countries around the world allow their natural resources to be exported unprocessed, especially by foreign-owned operations.

5.5 Strengths and Weaknesses of the SFPA between EU and Liberia

This session of the evaluation is focused on research conducted and is based on other previous evaluations of Fisheries Partnership Agreements of EU and developing countries. The first agreement known as Fisheries Partnership Agreement (FPA) created in the 1970s had several limitations, for example, progress on catch reports through the monitoring control and surveillance system was underdeveloped as compared to the more improved ones known as the Sustainable Fisheries Partnership Agreement (SFPA). However, the improved ones, from this analysis, still have several challenges and a need for a more sustainable approach.

Strengths

In terms of Fishing Agreements and moving from FPAs to SFPAs, the European Union has long been criticised for the fishing agreements they negotiated on behalf of the member states as they are not based on effective stock assessments and lack of coherence with development and environmental policies (Tindall 2010). As such, responsive actions to settle down criticism were a priority of the commission, and that was to produce a communication outlining a framework moving from FPAs to SFPAs in 2015.

In this context, the FPAs were expected to address issues that were highlighted in the 2004 Council Conclusions 16 on the communication on fisheries agreements with developing countries. Such issues include but are not limited to (i) the contribution towards rational and sustainable exploitation of the surplus of coastal states' marine resources; (ii) the improvement of scientific and technical knowledge; (iii) the assistance and contribution towards combating Illegal, Unregulated and Unreported (IUU) fishing; (iv) and the contribution towards strategies for the sustainable management of fisheries as defined by the coastal state.

Therefore, the Commission considered that the FPAs should be transformed into SFPAs, where it will establish a legal, environmental, economic, and social governance framework for EU fishing activities in partners' waters.

Weaknesses

The analysis showed that fisheries legislation is well defined under influence from the EU however, EU reserves the right to increase the negotiated fleet size if it decides that resource abundance justifies its decision.

(i) the scientific knowledge of certain stocks in the coastal waters is insufficient to establish the overall size of the surplus; (ii) the terms and conditions of fishing agreements concluded by partner countries with other (non-EU) countries are usually not known to the EU. Consequently, it is often impossible to assess the overall fishing effort targeted at the stocks, and to determine the share of the surplus to be sustainably fished by the EU fleet; (iii) the capacity of many partner countries to use funds allocated to the support of the sector is limited.

Although the SFPAs were considerably improved from the commercial agreements, there are still problems with the approach. SFPAs are seen to be administratively heavy for the EU to negotiate and have less significant impact on poverty, value addition or development in the developing countries (Tindall 2010). Liberia MCS division lack the capacity to fully monitor the totality of its territorial waters due to the experience, and the ability for observers and inspectors to collect the needed information and interpret data remain a challenge faced by the division.

6 CONCLUSION AND RECOMMENDATIONS

Well trained and experienced MCS personnel assigned to collect and interpret fishing data for long-term management and sustainability is needed. Reliable data from the division to evaluate the effect between the EU and Liberia is important. Data collected is to be used to assess the status of the stocks harvested by the EU fleet. Institutional capacity is of vital importance for reliable analysis on the reported catch by EU tuna fleet and to connect such data to the VMS

data generated from the fisheries monitoring centre (FMC) of Liberia on all activities of fishing in its EEZ.

Overall, the MCS division of the National Fisheries and Aquaculture Authority is fundamentally important if proper and accurate data is collected. A full deployment of Liberia Scientific Observers on all EU tuna vessels is needed to make sure catch is recorded correctly and reported to NaFAA as stated in the Fisheries Regulations of 2010.

This will surely lead to stock recovery, sustainable use of fisheries resources and improved social- economic benefits of the sector and for both parties.

Firstly, and most importantly, EU should encourage its partner in the development of a long-term strategies for fisheries management. This will clearly identify where support is needed especially in the monitoring, control and surveillance division to improve the collection of fishing data and turning those data into an accurate reliable result for the sustainability and contribution of fisheries to food security and poverty reduction in Liberia.

It is recommended that:

1. both parties agree on identifying the priorities of the coastal state so that sectorial funds can be used to support such priorities. This should happen through a more consultative process, including the small-scale fisheries.
2. staff from the MCS and Research and Statistic divisions are supported with master's level training on how to analyse and interpret catch and VMS data.
3. observers and inspectors are trained sufficiently to operate on pelagic tuna vessels.
4. the skills and capacity of VMS application and operations are strengthened at the control centre in Liberia.
5. full installation of HF/VHF radios to communicate with observers concerning sea safety in times of distress at sea.

6.1 Limitation of the research study

The completion of this research was limited by a certain number of factors, and as such it is acknowledged that the present research could have provided much better facts if the following limitations were overcome. The limitations include:

(i) Although several researchers provided information on the topic, it was found to be challenging to get in touch with most personnel in Liberia on the availability of EU fleet catch data. In addition, those who could be contacted were cautious due to the fact that the EU fisheries partnership agreement is highly political in Africa.

(ii) Access to the relevant and technical documents from the Research Division were restricted, and therefore, the analysis fell short for the EU/Liberia SFPA evaluation. For example, access was nor granted to the 2018 Eu Tuna Catch Data on grounds the data had some problems and the data needed to be finalised with the EU partners and the interpretation of VMS data by MCS staff.

(iii) Also, for the EU Documents, it takes a significantly long time to get feedback when requesting documents from the EU Mare fisheries information.

7. ACKNOWLEDGEMENTS

After an intensive period of studies in Fisheries Management and Policy, today is completion day: Writing this note of thanks is the finishing touch on my research project. It has been a period of intense learning for me, not only in the arena of Fisheries Management, but also on a personal and professional level.

I am especially indebted to the management of NaFAA and the UNU-FTP Administrators. I would also like to thank Dr Daði Már Kristofersson, Head of the Fisheries Policy and Management Line and Dean of the school of Social Sciences/Professor of Economics, University of Iceland. Gratitude to my supervisor Mr. Arnor Snaebjornsson from the Department of Fisheries and Aquaculture, Ministry of Industries and Innovation. Thanks to all my colleagues UNU-FTP Fellows 2018, and for wonderful guidance from the UNU-FTP staff team who were supportive of my goals and worked actively to provide me with the support and academic time to pursue those goals.

I am grateful to all of those with who I have had the pleasure to work during this and other related research. Each of the UNUFTP staff has provided me with extensive personal and professional guidance and taught me more than I could ever give them credit for.

Nobody has been more important to me in the pursuit of this project than the members of my family. I would like to thank my parents; whose love and guidance are with me in whatever I pursue.

8. REFERENCES

Bank-Liberia, W. (2013). *The World Bank Project Appraisal Document- West Africa Regional Fisheries Project Report* .

CIA. (2018). *World Factbook and other sources: https://theodora.com/wfbcurrent/liberia_economy.html.*

Fisheries-Policy. (2014). Ministry of Agriculture, Bureau of National Fisheries. Fisheries And Aquaculture Policy & Strategy. Republic of Liberia.

Fisheries-Policy. (2014). *Ministry of Agriculture, Bureau of National Fisheries And Aquaculture Policy & Strategy, Republic of Liberia. Quality Fishing Better Livelihood.*

FMC-Liberia. (2018). *Liberia Fisheries Monitoring, Control and Surviellence (FMC) Annual Report, National Fisheries and Aquaculture Authority (NaFAA), Republic of Liberia.*

Gerritsen, H. L. (2011). *Integrating vessel monitoring system (VMS) data daily catch data from logbook to explore the spatial distribution of catch and effort at high resolution.*

Karmenum, V. (2017). *Copy of the relevent official journal of the European Union.*

(2014). *NaFAA.* National Fisheries and Aquaculture Authority, Fisheries and Aquaculture Policy & Strategy. Republic of Liberia.

NaFAA. (2014). National Fisheries and Aquaculture Authority (NaFAA), Fisheries And Aquaculture Policy & Strategy Document, Republiv of Liberia.

NaFAA. (2014). National Fisheries and Aquaculture Authority (NaFAA), Fisheries And Aquaculture Policy & Sterategy, Republic of Liberia.

NaFAA. (2014). *National Fisheries and Aquaculture Authority (NaFAA), Fisheries And Aquaculture Policy & Strategy, Republic of Liberia.*

(2018). *R Core Team.* R: Language and environment for statistical Computing. R Foundation for statistical computing, Vienna, Austria. URLhttps:R- Project.org/.

SFPA-Liberia. (2015). Negotiations for the conclusion of a Sustainable Fisheries Partnership Agreement (SFPA) and protocol between the European Union and the Republic of Liberia.

SFPA-Liberia. (2015). *Negotiations for the Conclusion of a Sustainable Fisheries Partnership Agreement and Protocol between the European Union and the Republic of Liberia.*

WAFRP-Liberia. (2013). *West Africa Regional Fisheries Project (WARFP)/Bureau of National Fisheries (BNF) Report. Monrovia, Liberia.*

WARFP-LIberia. (2010). *West Africa Regional Fisheries Project Annual Project Report, Monrovia , Liberia* .

9 APPENDICES

Appendix A: The Grant chart shows task name, duration and month of completion

ANALYSIS OF THE SUSTAINABLE FISHERIES PARTNER AGREEMENT (SFPA) WORK PLAN																		
DURATION	**November 2018**				**December 2018**				**January 2019**				**February 2019**				**March 2019**	
TASK SFPA ANALYSIS	**1st Week**	**2nd Week**	**3rd Week**	**4th Week**	**1st Week**	**2nd Week**	**3rd Week**	**4th Week**	**1st Week**	**2nd Week**	**3rd Week**	**4th Week**	**1st Week**	**2nd Week**	**3rd Week**	**4th Week**	**1st Week**	**2nd Week**
Proposal writing																		
1st meeting With supervisor																		
1st proposal draft submission																		
Proposal Presentation																		
DATA COLLECTION																		
Data from Literature review																		
Meeting with supervisor																		
REPORT WRITING																		
Report writing Begin																		
Meeting with supervisor																		
Final Project submission																		
Final Project presentation																		

APPENDIX B

VESSEL MONITORING SYSTEM (VMS) DAILY REPORTING FORM
FISHERIES MONITORING CENTER (FMC)

Reporting Staff: _____ Name of Vessel: _____ Date: _____

TIME	FISHING ZONE (IEZ, TW, CZ, EEZ)	MTU OPERATIONAL YES / NO	OBSERVATIONS/ REMARKS

Source: MCS Division, National Fisheries & Aquaculture Authority (NaFAA) Standard Reporting Form.

APPENDIX C

AUTOMATED IDENTIFICATION SYSTEM (AIS)
DAILY REPORTING FORM
FISHERIES MONITORING CENTER (FMC)

Time	Vessel Name/Callsign/ IMO#	Vessel Type	Position in Liberia water	Observation/ Remarks

Reporting Staff: _____ Date: _____

Source: MCS Division, National Fisheries & Aquaculture Authority (NaFAA) Standard Reporting Form.