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**WORLD MARITIME UNIVERSITY**

Malmö, Sweden

**NEGATIVE IMPACTS OF ILLEGAL,  
UNREPORTED AND UNREGULATED FISHING  
PERPETRATED BY MOZAMBICAN FISHERS**

By

**CATARINA MARIA ARMINDA ELIAS VASCO**

**Mozambique**

A dissertation proposal submitted to the World Maritime University in partial  
Fulfilment of the requirements for the award of the degree of

**MASTER OF SCIENCE**

In

**MARITIME AFFAIRS**

(MARITIME SAFETY AND ENVIRONMENTAL ADMINISTRATION)

2017

## DECLARATION

I certify that all the material in this dissertation that is not my own work has been identified, and that no material is included for which a degree has previously been conferred on me.

The contents of this dissertation reflect my own personal views, and are not necessarily endorsed by the University.

(Signature): Carolina J.P.A.P. Vaz

(Date): 20/09/2013

**Supervised by: Prof. Neil Bellefontaine**  
**Academic Vice- President**  
**World Maritime University**

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I would like to express my thanks first of all to God, by the grace of his love and his mercy, by the blessing of my life, the life of my gracious family, for the life of my friends.

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## ABSTRACT

**Title of Dissertation:** Negative Impacts of Illegal Unreported Unregulated Fishing Perpetrated by Mozambican Fishers

**Degree:** MSc

Illegal, Unreported and Unregulated Fishing (IUU) contributes to the over-exploitation of fisheries resources and constitutes an impediment to the recovery of fish stocks and ecosystems. It is universally recognized that there is a serious problem with the future of global food security.

This study had as its objective to identify the best methods to assist in the formulation of strategies and/or policies aimed at combating illegal, unreported and unregulated fishing in Mozambique and the adverse impacts resulting therefrom.

Through research, it was possible to identify the main practices of IUU fishing in Mozambique in general, and particularly in Nampula province, including its economic, social and environmental impacts.

The study also noted that, although, Mozambique has several tools in terms of plans, regulations, laws and adherence to international organizations that regulate the activities of the sea and fishing, it is noticed on a large scale the practice of IUU fishing, with trends of declining fish catches.

The study concludes with a discussion of the results achieved and raises some challenges for institutions such as DPMAIP, ADNAP and ADMAR, the community and society in general, with a view to finding better ways and solutions to prevent and combat IUU fishing.

**KEY WORDS:** Illegal, Unreported, Unregulated Fishing, Mozambique fishers, Negative Impacts.

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## LIST OF ABBREVIATIONS

%	Percentage
'	Minute
ADMAR	Maritime Administration
ADNAP	Provincial Delegation of Fisheries Administration
CCAMLR	Commission for the Conservation of Antarctic Marine Living Resources
COFI	Committee on Fisheries
DPMAIP	Provincial Direction of the Sea, Inland Waters and Fisheries
EEZ	Exclusive Economic Zone
FAO	Food and Agriculture Organization of United Nations
HP	Horse Power
ICCAT	International Convention for the Conservation of Atlantic Tunas
ILO	International Labour Convention
IMO	International Maritime Organization
INAMAR	National Maritime Authority
IOTC	Indian Ocean Tuna Commission
IPOA-IUU	International Plan of Action to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated Fishing
IUU	Illegal Unreported and Unregulated Fishing
KW	Kilowatts
LTD	Limited
Mts	Metric Tonnes
NAFO	Organisation of Fisheries in the North Atlantic
NEAF	Organisation of the North-East Atlantic Fisheries
NEPAD	New Partnership for Africa's Development
NGO	Non-Governmental Organization
PGC/BS	Management Plan for Fisheries of Shrimp in Banco de Sofala
PNA-IUU	National Plan of Action to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated Fishing
REPMAR	General Regulation of Marine Fisheries
RFMOS	Regional Fisheries Management Organizations
S	South
TC	Growth Rate
TR	Rate of Achievement
UNCLOS	United Nations Convention on the Law of the Sea
USD	United States Dollars
VMS	Vessel Monitoring Systems
WMU	World Maritime University

## 1 GENERAL INFORMATION

### 1.1 Introduction

“Fishing has been an important source of food for humanity and a provider of employment and economic benefits for those involved in this activity” (FAO, 1995). According to Agnew et al. (2008), FAO (2008), quoted by Metuzals et al. (2009), currently one of the most serious problems affecting world fisheries is illegal fishing. Illegal or pirated fishing occurs in almost all fisheries and can absorb significant amounts of overall catches.

Illegal fishing is a form of fishing, and in today's world of globalisation, the pirate' itinerants are exploring not only the high seas (Berkes et al., 2006, quoted by Metuzals et al., 2009) but also the coastal waters. In addition, large catches of fisheries on artisanal and small-scale not regulated, are generally not reported in developing countries (Pitcher et al., 2002, quoted by Metuzals et al., 2009).

During the last century, the activity of Illegal, Unreported and Unregulated (IUU) fishing was largely neglected by those responsible for setting quotas and by management, although since the 1980s some scientists used information from IUU fishing for evaluation of stocks, usually gathered confidentially (Kaija Metuzals, 2009). Kaija Metuzals states that, in the last ten years, concerns about over-exploitation and the increasing profile of non-governmental organisations (NGOS) have focused attention on IUU fishing and there has been a movement toward information gathering and transparency in IUU fishing.

Historically, the term “IUU fishing” was coined for the first time by the Commission for the Conservation of Antarctic Marine Living Resources (CCAMLR), a regional fisheries management organisation responsible for the marine resources in the Antarctic Ocean, at its annual meeting in 1997 (Metuzals et al, 2009). The Commission addressed the many-sided problems represented by Illegal, Unreported (or often not well-informed) and Unregulated fishing.

Since 1997, the term “IUU fishing” has regularly been discussed in meetings of the CCAMLR (has been a constant theme of agenda) and was later adopted by other international bodies concerned with fisheries, such as the FAO, the International Maritime Organization (IMO) and International Labour Organization. In addition, the International Convention for the Conservation of Atlantic Tunas (ICCAT), the organisation of fisheries in the North Atlantic (NAFO) and the organisation of the North-East Atlantic Fisheries (NEAF), among others have adopted this terminology (Metuzals et al, 2009).

## 1.2 Definition of IUU Fishing

FAO gives the international “definition of IUU fishing through the International Plan of Action to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated Fishing (IPOA-IUU fishing)” (FAO, 2001) in three categories, as follows:

**(i) “Illegal fishing refers to the activities:**

- Performed by national or foreign vessels in waters under the jurisdiction of a state, without the permission of that state or in violation of its laws and regulations;
- By vessels flying the flag of States which are parties to a relevant regional fisheries management organisation, but that operate in violation of conservation and management measures adopted by that organisation and by which the states are bound, or relevant provisions of applicable international law; or
- In violation of national laws or international obligations, including those undertaken by cooperating States to a relevant regional fisheries management organisation” (FAO,2001).

Therefore, the use of any device, material, artifact or fishing gear for the purpose of capturing fish, which is not regulated and properly licensed or authorised for the purpose, is an infringement of fisheries, i.e., illegal fishing.

**(ii) “Unreported Fishing refers to fishing activities:**

- Which have not been reported or have been the subject of incorrect declarations to the competent national authority, in contravention of national legislation; or
- Made in the area of competence of a regional fisheries management organisation which has not been reported or has been incorrectly declared, in violation of the notification procedures of that organisation;
- A fishing activity that has not been reported or poorly reported to the competent national authority or the regional fisheries management organisations (RFMOS), in violation of applicable laws and regulations” (FAO, 2001).

**(iii) “Unregulated Fishing refers to fishing activities:**

- In the field of application of a relevant regional fisheries management organization that are carried out by vessels without nationality; or by those vessels with flags of a State which is not party to that organization or by a fishing entity, in a manner that is not consistent with or contravenes measures for the conservation and management of the organization; or
- In areas or on fish stocks for which there are no conservation or management measures and where such fishing activities are conducted in a manner incompatible with the responsibilities of the State about the conservation of living marine resources under international law;
- By vessels without nationality, vessels flying the flag of a country which is not part of Regional Fisheries Management Organizations (RFMOS) governing this fishing area or vessels catching species in the high seas or in areas not regulated” (FAO, 2001).

### **1.3 Consequences of IUU Fishing**

According to the FAO (2006), (cited by Metuzal et. al 2009) demand for seafood products continues to increase and the world consumption of fish per capita has increased over the past four decades. Therefore, in terms of worldwide production, the total capture in 2014 was 93.4 million tonnes, 81.5 million tonnes of which was captured in marine waters (FAO, 2016).

IUU fishing not only threatens the commercial viability of the target species of fishing, as well as the marine ecosystems, but also undermines the legitimate fisheries and the conservation measures, nationally and regionally, and challenges the sovereignty of coastal States (Metuzals et al., 2009).

Agnew et al. (2009) state that Illegal Unreported and Unregulated fishing contributes to the overexploitation of fisheries resources and constitutes an obstacle to the recovery of fish stocks and ecosystems. It is widely accepted that there is a serious problem with the future of global food security, boosted by substantial growth in world population and increasing demand for fish proteins, but a large number of stocks are currently depleted and, therefore, not capable of producing their maximum sustainable yield.

According to Liddck (2014), the reduction of stocks of fish in local waters also reduces employment opportunities, resulting in a decrease in income of households and exacerbating impoverishment.

Agnew, et al. (2009) found that in analyzing the situation in 54 countries over the last 20 years, and without the loss of illegal fishing on the high seas, it is estimated that the lower estimates and higher total value of current losses of IUU throughout the world are between \$10 billion and \$23.5 billion annually, representing between 11 and 26 million tonnes. And the overall estimates of FAO (2016) indicate that IUU fishing is responsible for annual catches of up to 26 million tonnes, with a value of up to \$23 billion.

Agnew et al. (2009), state that the developing countries are most at risk of occurrence of illegal fishing, with the estimated total catch in West Africa accounting for 40% of the reported catches. The same author says that a significant relationship has been demonstrated on a global scale between the level of illegal and undeclared fishing and World Bank indices of governance, and points to the benefits of improving governance. Agnew et al. (2009) make the point that in the case of developing countries, with poor indices of governance, society will not blame them for IUU fishing, but they are more vulnerable to illegal activities conducted by their fishers and vessels from fishing nations of distant waters.

In Africa, for example, many coastal States are licensing vessels of countries from distant waters such as China, Taiwan, Korea, EU and Russia to fish in their waters. A significant problem of illegal fishing arises from many of these vessels (Agnew et al., 2009).

#### **1.4 Practices to Combat IUU Fishing**

Several efforts have been undertaken to combat Illegal, Unreported and Unregulated fishing. In recent years, the world fisheries have become a dynamic sector of the food industry, driven by the market. Coastal States have endeavoured to take advantage of their new opportunities by investing in modern fishing fleets and processing factories, in response to the growing international demand for fish and fishery products (FAO, 2009). FAO further notes that, at the end of the 1980s, it became clear that fisheries resources could no longer sustain fast paced exploration and development, which is often perceived to be out of control, and which urgently required new approaches to fisheries management, including considerations of environmental conservation.

The situation was aggravated by the fact that unregulated fishing on the high seas, in some cases, involves species of straddling fish stocks and highly migratory species that occur within and outside exclusive economic zones, which was becoming a matter of increasing international concern (FAO, 2009).

The FAO Committee on Fisheries (COFI), in its nineteenth session, in March 1991, asked for the development of new concepts that lead to responsible fishing in a sustainable manner. Subsequently, the International Conference on Responsible Fishing, held in 1992 in Cancun (Mexico), also asked the FAO to prepare an international code of conduct to address these concerns (FAO, 2009).

In November 1993, in the 27th session of the FAO Conference, the Agreement to Promote Compliance with International Conservation and Management Measures by Fishing Vessels on the High Seas was adopted (FAO, 2009).

On 31 October 1995, the Global Code of Conduct for Responsible Fisheries was adopted unanimously by the FAO Conference, which provides a framework for



national and international efforts to ensure the sustainable exploitation of living resources in harmony with the environment (FAO, 2009).

The International Plan of Action to Prevent, Deter and Eliminate illegal, Unreported and Unregulated Fishing (IPOA-IUU) was adopted by consensus at the 24th session of the COFI on March 2, 2001. Moreover, on 23 June 2001, an important voluntary instrument relating to the Code of Conduct for Responsible Fisheries was approved by the 120<sup>th</sup> Session of the FAO Council, which promotes improved fisheries management measures by fishing fleet organizations on a global scale (FAO, 2001).

### **1.5 Problem Statement**

The large expanse of coastline (2.780 km), maritime areas, the limited human resources, the poor training of inspectors, the weak coordination and collaboration between the institutions involved in surveillance and the lack of a strategy for monitoring have been pointed out as the main causes of weak capacity of the State to control the exploitation and use of fisheries resources in Mozambique. (Chimarizene, 2016).

With the practice of illegal fishing, the population of the country, estimated at over 24 million inhabitants (National Institute of Statistics, 2007) may face great difficulty with its fishery resource. Fisheries are a major source of economic growth and animal protein for human consumption. Overexploitation of the fisheries resource can also lead to the destruction of the marine ecosystem. This project will try to determine the resulting impacts in order to analyze and assist in the formulation of policies and/or strategies to mitigate the problem.

### **1.6 Significance of Project / Motivation**

The motivations that led to the choice of this theme, “The negative impacts of Illegal, Unreported and Unregulated fishing perpetrated by Mozambican fishers”, are:

First of all, due to the fact that, at this time, the attention of the Mozambique government is focused on the fight against absolute poverty, one of the strategies for the sector of the Sea, Inland Waters and Fisheries is the promotion of sustainable fishing. Hence, the formulation of policies and strategies, both general

and specific, for the development of actions with a view to minimizing or eliminating this poverty highlight for the sector of the Sea, Inland Waters and Fisheries. Such policies aim to combating illegal fishing, for which the fisheries resources are used, to take into account the future generations. The practice of fishing in Mozambique is regulated, including subscription to international standards such as agreements and conventions.

Second, despite existing policies, the practice of IUU fishing in the territorial waters of Mozambique continues to be a significant problem. According to Chimarizene (2016), fishing without a license is most common practice of IUU fishing, in addition to violating bans, capturing of prohibited and protected species and using unauthorized fishing gear.

## 1.7 General Objective

The general objective of this study is to identify the best methods that can be analysed to assist in the formulation of strategies and policies aimed at combating illegal, unreported and unregulated fishing activities perpetrated by Mozambican fisherman and the adverse impacts resulting from them.

### 1.7.1 Specific Objectives

**The specific objectives of this study are to:**

- Identify the best methods that can be analysed to deal with the different practices of illegal, unreported and unregulated fishing, perpetrated by fishers in Mozambique;
- Evaluate effects resulting from Illegal, Unreported and Unregulated fishing to find the best way to raise awareness of the community for the abandonment of this practice;
- Understand the strategies of the government of Mozambique in combating Illegal, Unreported and Unregulated fishing, so that the study can help improve the formulation of best policies and strategies.

## 1.8 Research Questions

- What are the types of illegal, unreported and unregulated fishing practices in Mozambique? What are the best methods to combat each type and how can they be analysed, so as to influence the combating of illegal, unreported and unregulated fishing?
- What are the negative effects of Illegal, Unreported and Unregulated fishing and what is the best way to raise awareness among the population of Mozambique to abandon the use of this practice?
- What are the strategies adopted by the Mozambican Government to combat illegal, unreported and unregulated fishing and how can this study help improve the formulation of policies and strategies to combat the harmful acts?

## 1.9 Hypotheses

The hypotheses of this study will be examining the following three areas with respecting in IUU fishing:

- Damage to fragile marine ecosystems and vulnerability of species caught;
- Non-sustainable fishing;
- Direct losses of economic value of fish catches.

## 1.10 Methodology

The methodological approaches will be both quantitative and qualitative. The research will be conducted through interviews, questionnaires and observations to the target group. To achieve the objectives mentioned in the previous section, this research will be divided into two parts:

- **Data Collection:** The collection of data began with a review of the literature of some national and international resources on IUU fishing that are available online and in libraries, through a questionnaire, and through interviews with organisations linked to the activity of fishing and fishers. The interviews were conducted on the ground, by phone and by email. The questionnaire will define according to the entities involved. In the place of

observation, the author and Mr. Intave (that will help to translate Portuguese to local language because most fishers do not speak the official language) will collect in the form of images and notes of different actions and behaviours of local fishers on the beaches, fishing centres and areas of loading and unloading of fish;

- **Analysis and interpretation of project:** The results of the research will be the subject to analysis. Then a summary of conclusions will be developed from the information gathered. The analysis of the questionnaires, interviews and observations of the research will be carried out manually; the treatment of quantitative data will be in the form of software.

### 1.11 The Area of Study

This project will focus on illegal, unreported and unregulated fishing perpetrated by local fishers in northern Mozambique, particularly in Nampula Province. Northern Mozambique is composed of three (3) Provinces (Cabo Delgado, Nampula and Niassa), two of which are located in the coastal zone (Nampula and Cabo Delgado Provinces) and one in the pool (Niassa). Nampula has the highest population density of Mozambique, with 3,988,613 inhabitants (census, 2007), and fishing is one of the main activities of livelihood of the population in the province.

Similarly, Nampula province has a total 80,295 artisanal fishers, representing approximately 28.1% of the artisanal fishers of Mozambique (285,549) and about 61.7% of the northern zone, against 40,794 artisanal fishers in Cabo Delgado province and 9,020 artisanal fishers in the province of Niassa (National Institute for Development of small-scale fisheries, 2013).

### 1.12 Organization of the Dissertation

The dissertation is organised in the following way:

1-General Information, definitions of IUU fishing, consequences of IUU fishing, practices to combat IUU fishing, problem statement, meaning of the project, general and specific objectives, research questions, hypotheses, methodology, area of study, potential limitations and expected results;

2-Literature Review of Mozambique, geographical Location of Mozambique, situation of fishing in Mozambique (National Report), IUU fishing in Mozambique, consequences of IUU fishing in Mozambique;

3-Description of the practice of IUU fishing by the Mozambican communities focused in the Northern region

4-Research Methodology

5-Government action on IUU fishing

6-Conclusions and Recommendations

### **1.13 Potential Limitations of the Project**

The large size of the territory of Mozambique, both in the area of maritime waters, as well as the area of inland waters, the limited financial resources and the armed conflict that has occurred in recent times in Mozambique, may be a limiting factor for the collection of representative data for this study. The conception of methods used in this project will be directed to the accessible information, without high costs and the relevant entities of the public sector and private sector involved in fishing activities and the activities their respective activities.

### **1.14 Expected Results**

This research project is expected to achieve the following results:

- Identify the types of illegal, unreported and unregulated fishing perpetrated by Mozambican fishers in Mozambique and find the best methods that can be analysed and influenced to combat these practices;
- Identify the negative effects of Illegal, Unreported and Unregulated fishing and strategies for the abandonment of these practices;
- Understand the strategies that the government is taking to prevent the illegal, unreported and unregulated fishing, for which the study may assist in the formulation of best policies and strategies to combat it.

## 2 LITERATURE REVIEW OF MOZAMBIQUE

### 2.1 Geographical Location of Mozambique

Mozambique is located between the latitudes 10° 20' S and 26° 50' South, with an area of approximately 783 000 Km<sup>2</sup> and has one of the largest sea coasts of Africa, about 1,430 nautical miles in length, all of it bathed by the Indian Ocean. The main ports along the coast are the Maputo, Inhambane, Beira, Quelimane, Angoche, Nacala and Pemba. The main rivers are the Rovuma and Lúrio in the northern zone, Zambezi, Pungue, Buzi and Save in the centre, Limpopo, Incomáti and Maputo in the south. All the rivers carry large volumes of sediment, a factor of great importance for living organisms of the continental shelf (FAO, 1990).

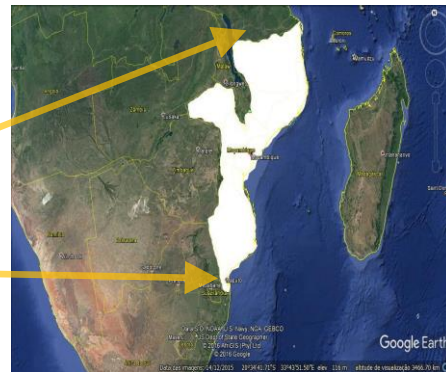
Mozambique is a country on the southeast coast of Africa that has its borders with: to the north, Tanzania; to the northwest, Malawi and Zambia; to the west, Zimbabwe, South Africa and Swaziland; to the south, South Africa; to the east, the section of the Indian Ocean known as the Mozambique Channel. In the Mozambique Channel, the neighbours are Madagascar and the Comoros (including the French possession of Mayotte). In the Indian Ocean, in the east of the Madagascar Island, are located the dependencies of the Reunion, Juan de Nova and Europe Island.

The Mozambique Channel has a substantial half distance between the continent and Madagascar, and the atoll of Bassas de India, also a French possession. The capital of Mozambique is Maputo (named Lourenço Marques during the Portuguese domination). The northern half (north of the Zambezi River) is a great plateau, with a small coastal plain bordered by coral reefs, limiting the pool with mountain ranges belonging to the system of the Great Rift Valley. The southern half is characterised by a wide coastal plain of alluvium, covered by savannahs and cut by valleys of several rivers, the most important of which is the Limpopo River (Governo de Moçambique, 2005).

**Figure 1: Map of Mozambique (world map)**



**Figure 2: Map of Mozambique (Africa)**



Source: Image from Google Earth

According to the Master Plan for Fisheries, 2010-2019, the coastline of Mozambique, can be identified by three distinct sections in which the fishing activities also have differences among them, which are highlighted as follows:

1. The north coast, with approximately 770 km, has a coastline characterized by reefs and rocks and a close continental shelf, with some sheltered bays and local inland waters to the coastal islands;
2. The central coast, with approximately 980 km, designated region by Banco de Sofala, is crossed by numerous rivers and streams, and bordered by mangrove forests that provide estuarine areas and extensive coastal communities, sometimes protected by some coastal islands; and
3. The south coast, with approximately 950 km, is widespread in some areas, with littoral seabed bottoms from banks of coral and rock. It has some sheltered bays, and it is exposed to high winds from the south quadrant, in particular from Inhambane to the extreme south of the territory (Ministério das Pescas, 2010).

## **2.2 Situation of Fishing in Mozambique**

The fisheries sector plays an important role in the Mozambican economy, both for subsistence and for income and food security of fishing communities. Fishing is also a driving force, articulated in the sectors of semi-industrial and industrial that focus primarily on the shrimp for export (Ministério das Pescas, 2009).

The different physical conditions and environments of the three coasts affect the fauna, and the flora present and the fishing operations conducted. Some sites, by their geographical conditions, provide a concentration of certain marine species. It is estimated that the potential of fishery products from Mozambique is about 332 thousand tonnes, the main features being the shrimp of shallow waters (in the Banco de Sofala and in the Baia de Maputo), the crustaceans of depth (in the continental slope of the Central and South), the horse mackerel and mackerel (in the Banco de Sofala) and demersal fish (in the north and south) (Ministério das Pescas, 2010).

In 2015, the total catch was recorded at 286 thousand tonnes of fish with a revenue of 147 million meticaís (approximately 9.8 million USD), of which 27 thousand tons was derived from commercial fishing (industrial and semi-industrial) and 259 thousand tons from artisanal fishing (Ministério do Mar, Águas Interiores e Pescas, 2016).

**Table 1-Global Fishing Production of 2014 - 2015**

Description	Fish production (Tonnes)				
	2014	Plan 2015	2015	TR (%)	TC (%)
Industrial and semi-industrial Fishing	24 331	33 320	27 214	82	12
Artisanal Fishing	228 834	207 800	259 372	125	13
<b>Total</b>	<b>253 165</b>	<b>241 120</b>	<b>286 588</b>	<b>119</b>	<b>13</b>

Source: Ministério do Mar, Águas Interiores e Pescas, 2016

The trends of catches and fishing effort in Mozambique are detailed as follows:

- The shrimp of the Baia de Maputo, with an estimated potential of approximately 425 tonnes in 2014, had an actual recorded catch of 464 tonnes, and are considered to have been exploited;
- The shrimp from the surface of the Banco de Sofala, with an estimate of around 6,125 tonnes in 2014, recorded 5,983 tonnes, also the fishery was considered overexploited; and

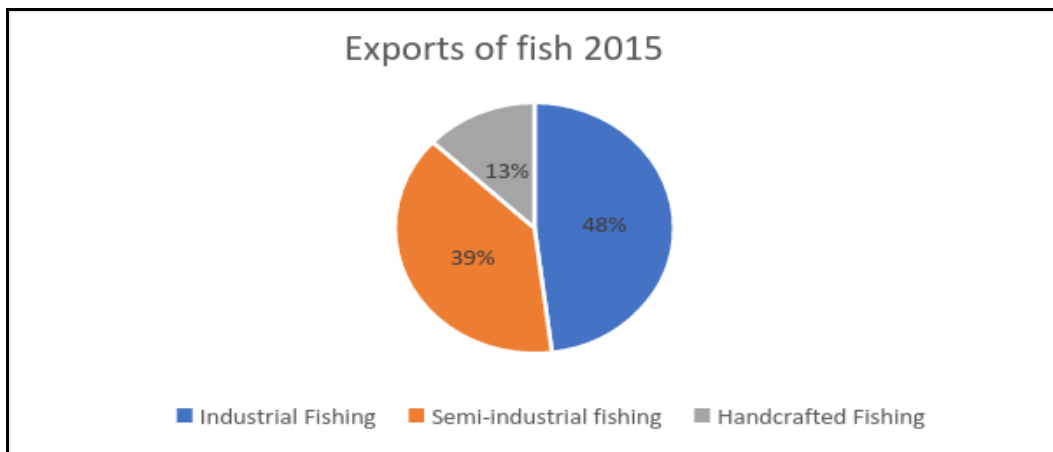


- The demersal fish, with an estimated 815 tonnes, recorded 1524 tonnes, it was also considered overexploited in the southern zone and optimally exploited in the centre, Banco de Sofala (Instituto de Investigação Pesqueira, 2015).

In 2015 the fleet of industrial fisheries was compromised of 124 licensed fishing vessels, against 138 licensed in 2014; 345 semi-industrial vessels were licensed compared to 336 the previous year (2014); regarding artisanal fisheries, 20,368 were licensed against 15,116 the previous year (2014). A total of 52,777 fishing gears were recorded by the census of fishing for 2012 (Ministério do Mar, Aguas Interiores e Pescas, 2016).

In the same year, the exports of fish reached approximately 13 000 tons, equivalent to 82 million USD, representing a growth of around 9% compared to the previous year. The main products were lobster, crab, shrimp, prawn, crayfish, tuna, kapenta and cephalopods (Ministério do Mar, Águas Interiores e Pescas, 2016). The sub-sectors of industrial fishing, semi-industrial and artisanal contributed about 48%, 39% and 13%, respectively, as depicted in Figure 3.

**Figure 3: Exports of Fishery Products**



Source: Ministério do Mar, Águas Interiores e Pescas

The exercise of fishing activity in Mozambique is regulated by the Law of Fisheries, Law no. 22/2013, of 1 November, whose Regulation of Fishing Gear for strategy activity is based on the terms of the General Regulation of Marine Fisheries,

approved by Decree No. 43/2013, of December 10, regulation of fisheries in inland waters, which was approved by Decree No. 57/2008, of December 30.

According to the Law of Fisheries, fishing resources existing in the jurisdictional waters of Mozambique are owned by the State, which determines the conditions of its use and exploitation. The law also states that fishery products obtained from harvesting or capture of fish in Mozambican waters or animals, born or reared in the territory of the Republic of Mozambique are considered to be of national origin (Assembleia da República, 2013).

### **2.3 Fishing in Mozambique**

According to the Ministério das Pescas (2009), in Mozambique there are various types of Illegal, Unreported and Unregulated fishing:

1. Fishing without a license is the most common practice in IUU fishing. There are regular incursions of fishing boats with purse and longliners that are not licensed in Mozambique's EEZ, and whose targets are the resources of tuna, swordfish and shark;
2. Another problem of IUU fishing, of medium severity, is the incursion of fishing boats of deep sea shrimp and surface shrimp in prohibited areas. For shrimp trawlers, this refers to the foray into the area of 3 nautical miles reserved for artisanal fishing. In the case of deep sea fishing vessels, this refers to the violation of the zones of depth required to be observed, where there are deep shrimp fishing operations in water shallower than those to which such vessels are confined by the provisions contained in the license;
3. Other causes for concern are reports of catches and landings, in particular as regards the catches of tuna where there is inadequate control of data. The data collected and compiled by the administrations of fishing, port authorities and customs do not always conform, and often show different values for the same statistics on reports from different sources.

## 2.4 Consequences of IUU fishing in Mozambique

Illegal unreported and unregulated fishing affects the Mozambican economy and presents a series of economic, environmental and social challenges that are explored below.

### 2.4.1 Economic Consequences

It is estimated that the national economy loses approximately US\$27 million due to the non-declaration in the shrimp sector, and \$7.6 million due to non-declaration of incidental catches (Ministério das Pescas, 2009).

According to the Ministério das pescas, 2009, based on the assumption that fish can be captured without being reported, approximately 20,000 mts (metric tonnes) of tuna are caught each year in the EEZs of Mozambique, and, establishing the value of the tuna at US\$1,500 per tonne, the loss to the economy would be US\$30 million, increasing the economic loss total due to IUU fishing to more than US\$64 million per year. Assuming that a tonne of tuna is valued at US\$26.5, the lost revenue with licenses for the Mozambican government due to lack of data presentation in tuna fishing would be about US\$530.000 (Ministério das Pescas, 2009).

Finally, Mozambique has been used as a transit country for the products of illegal fishing of foreign origin, mainly shark' fins (part of which are probably originating from illegal catches of their own EEZs), toothfish (*Dissostichus* spp) captured in the CCAMLR area and free abalone from South Africa. There have been very few seizures of poorly labelled products to leave the country, and the points of entry of illegal products to the country remain unknown (Ministério das Pescas, 2009).

In small-scale fisheries, the illegal activities are confined to violations, especially in the areas of use of illegal fishing gear, fishing without a license (fishing), capture and landing of prohibited or protected species, violations and zonal transshipments at sea, in particular of the artisanal and semi-industrial fishers, before the vessels enter in ports (Ministério das Pescas, 2009).

Mualeque et al. (2011), mention that in the beach trawl net fishery, in the districts of Angoche Larde and Moma there are negative correlations and substantial catches, of fishing effort and the incomes. However, fishing effort in the districts of Larde and Moma, although it has a downward trend, is not significant for the period under study.

In addition, with regards to fishing with drift nets in the district of Moma, the results of the analysis show that catches were constant over the whole series in review. However, due to the substantial increase in fishing effort, there is a reduction of income.

Therefore, this trend of reduction in catches of fish can be influenced, in part, by illegal fishing.

#### 2.4.2 Environmental Consequences

Currently, there is a major global concern about environmental problems that manifest in the degradation of ecosystems, climate change, deforestation, pollution and extinction of certain species (flora and fauna) with negative consequences for human well-being.

Anthropogenic action is considered one of the main causes of environmental problems that occur as a result of the growing pressure on natural resources dictated by the needs of modern societies (consumption) and by the growth of world population (Da Silva et al., 2014).

Therefore, the use of harmful fishing gear and other instruments or artifacts unregulated has resulted in the deterioration of the marine environment and its ecosystems such as the case of capture of larvae and juvenile fish, in addition to habitat destruction and the destruction of mangroves, which are used for building houses, and wood and coral destruction with the use of tow gears and manufacture of lime.

According to Da Silva et al. (2014), Mozambique currently has significant coastal populations. This population increase was associated with the migration of the population from the interior to the coastal zone and, especially, to urban areas. The population growth and convergence of multiple interests in the coastal zone are distinguished among the factors of degradation of coastal and marine ecosystems.

#### 2.4.3 Social Consequences

At present, there is a migrational flow of artisanal fishers along the coastal area in the provinces of Nampula, Zambezia and Sofala. The fishers from the Province of Nampula move periodically to Sofala seeking other fishing areas. With this displacement, the fishers bring with them all the means of work (fishing gears, and sometimes the vessels and their crew) that they need to develop their activities.

Da Silva et al. (2014), mention that the character of the seasonality of this mobility determines the ways of fixing of immigrants in fishing areas. Da Silva highlights the seasonal nature of this mobility, conditioning the way immigrants settled in the target fishing zones. This permanence of fishers in other areas causes some conflicts among fishers residing in fishing areas, in addition to the emigrant fishers leaving their families for a long time without proper support.

Therefore, it is assumed that this dynamic of migration of fishers from one province to another is due to a lack of fish which derived from the use of gears in Illegal, Unreported or Unregulated Fishing.

### **3 PRACTICES OF IUU FISHING BY THE MOZAMBICAN COMMUNITIES FOCUSED IN THE NORTHERN REGION**

As was mentioned in Chapter 1 of this dissertation, the study is focused on the northern region of Mozambique, particularly in Nampula Province, where the author lives and works.

#### **3.1 Characteristics of Nampula Province**

Nampula is the second of two Mozambican provinces of the north bathed by the Indian Ocean (another is Cabo Delgado). It has a coastline with an extension of 580 kilometres, divided among ten coastal districts: Memba, Nacala-a-Velha, Nacala-Porto, Mossuril, Ilha, Mongincual, Liúpo, Angoche, Larde e Moma.

The Districts of Angoche (from the vicinity of the city of the same name) and Moma are found in the coastal area with characteristics of the Center (Banco de Sofala), while the remaining six districts have their characteristics on the north coast, with the coast profusely populated by reefs and rocky bottom and a narrow continental shelf (Ministério das Pescas, 2006).

The Ministério das Pescas (2006), also states that from Angoche, barrier coral moves away from the coast. It is the source of a ring of Islands and shallows that extend through the province of Zambezia through the Archipelago das Primeiras. On the coast, this circumference is constituted by the Archipelago das Segundas, the Mafamede Island, Puga-Puga, Njovo, Caldeira e Moma, located within 10-15 km from the coast, not far from the depth 20m, and also by the shallow of Sangage, Sto. António and Miguel.

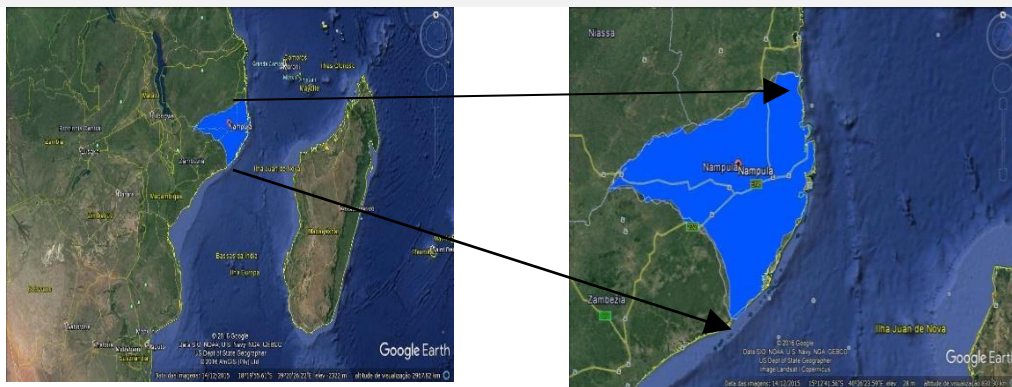
The transition area between the two coasts allows for the proximity between coral areas, off the coast, and mangroves, the latter situated nearby estuaries and mouths of tidal channels (Ministério das Pescas, 2006). Furthermore, this coastline of mangroves consists of a vast coastal plain, only 3 to 4 meters above sea level, crossed by some tide channels, with or without links, which converge in the rivers or directly into the sea and, at certain points along the coast, there are dunes parallel

to the coastline, separated from each other by fresh waterlogged depressions, sometimes under the influence of the tides, and spreading across the coastal flood plains from the network of rivers and channels.

The existence of important rivers, which flow along the whole coast of the province, gives the occurrence of estuarine areas, where fisheries resources are important to the livelihoods of local communities (Ministério das Pescas, 2006).

**Figure 4: Map of Nampula (Africa Map)**

**Figure 5: Map of Nampula (Mozambique Map)**



Source: Image from Google Earth

### 3.2 Characterization of Fishing in Nampula Province

Fishing in Nampula is practically dominated by vessels of small-scale fisheries, in particular: Ships of the fishing fleet of semi-industrial and artisanal fisheries, where fishing is conducted primarily in marine waters.

According to Regulamento Geral da Pesca Marítima (2003), without prejudice to other more restrictive rules which may be established by the Maritime Administration in the context of maritime safety, the inland artisanal fisheries can operate in the maritime waters up to a distance of:

- a) Three nautical miles from the coast or the anchorage of base having an open deck and devoid of mechanical means of propulsion;

- b) Six nautical miles from the coast or the anchorage of base, having an open deck and fitted with mechanical means of propulsion or closed deck and devoid of mechanical means of propulsion;
- c) Twelve nautical miles from the coast or the anchorage of base, having a closed deck and fitted with mechanical means of propulsion.

Therefore, according to the same document, these vessels must follow the requirements of construction:

- a) Have maximum length, measured from outside to outside, up to 10m;
- b) Possess conditions of autonomy of not less than 24 hours, with the engine.

Under the law, artisanal fishing vessels propelled by engines cannot have an installed propulsion power greater than 100 hp or 74 Kw.

Therefore, the Regulamento Geral da Pesca Maritima, (2003), deems without prejudice to other more restrictive rules which may be established by the Maritime Administration in the context of maritime safety, that semi-industrial fishing vessels can operate along the coast in the maritime waters of the Republic of Mozambique, up to a distance of 30 nautical miles from the coast, with the following construction requirements:

- a) Have length, measured from outside to outside, exceeding 10 m and less than 20 m;
- b) Possess mechanical means of propulsion;
- c) Possess mechanical means of fishing when you apply;
- d) Have autonomy of not less than 48 hours;
- e) Have bathroom or any other equivalent to ensure personal hygiene without risk of contamination of fish;
- f) Have holds of fish thermally insulated to ensure the preservation of ice;
- g) Possess the means for complete depletion of fish holds;
- h) to have facilities for the maintenance of food independent of fish holds;
- i) Have compartments which ensure a perfect separation between the housing of the crew, sanitary facilities, the housing of appliances of propulsion and fish holds;
- j) Are equipped with radar, sonar, and radio media and other aids to navigation required by law of the sea;



- k) Have deck seat;
- l) Are provided with means of rescue and emergency care established by appropriate legislation;
- m) Have conditions of production or storage of drinking water.

Futhermore, Regulamento Geral da Pesca Maritima (2003), states that fishing semi-industrial vessels should have propulsive power to ensure that the towage of the fishing gear even when loaded cannot exceed 350 hp or 259 Kw of installed propulsion power when it comes to fishing vessel for fishing trawling.

### 3.2.1 Artisanal Fishing in Nampula Province

According to data collected by Instituto Nacional de Desenvolvimento da Pesca de Pequena Escala (2013), Nampula Province has a total of 195 fishing centres, of which 188 are located in maritime waters and 7 in inland waters, representing 12.3% of the fishing centres of the country. It should note that the fishing centres located in maritime waters represent 23.7% of the entire country fishing centres.

Instituto Nacional de Desenvolvimento da Pesca de Pequena Escala states that 80,295 people practice fishing, and 31,580 people use non-conventional gear and fish without using a vessel, and 48,715 crews using fishing vessels representing approximately 40% of the country, use conventional gears.

The province has a total of 10,966 fishing gears of artisanal fishing out of a total of 52,778 throughout the country, representing approximately 21%, the main ones being the drift, trawl, longline, purse seine, Chilimila, traps, handlines, cast nets and harpoons. 9,003 boats are used, representing about 23% of the country (Instituto Nacional de Desenvolvimento da Pesca de Pequena Escala, 2013).

### 3.2.2 Semi-industrial Fishing in Nampula Province

In 2015, Nampula Province recorded, in the fleet of semi-industrial fishing, a total of 14 semi-industrial boats, including 8 for fishing of shrimp and 6 for the capture of small pelagics (Direcção Provincial do Mar, Águas Interiores e Pescas, 2016).

In addition to the semi-industrial boats whose ports are based in Nampula province, other industrial and semi-industrial vessels have been noted, mainly in the districts of Moma and Angoche that are based in other ports of the country, especially those from Beira and Zambézia, in the central of Mozambique.

### 3.3 Practices of IUU Fishing in Nampula Province

In 2012, the Census of artisanal fishing, found, in Nampula province a total of 4,513 instances of fishing with non-conventional gear namely Quinia and Chicocota (local names), i.e., illegal fishing gears, equipped with mosquito nets, representing about 19% throughout the country (Instituto Nacional de Desenvolvimento da Pesca de Pequena Escala, 2013).

In artisanal fisheries, in northern Mozambique, particularly in the districts of Moma, Angoche and Larde, Nampula province, beach seine, has been verified, wherein fishers use mosquito nets, which are provided by the Ministry of Health to prevent malaria, as bags, instead of using nets with appropriate mesh size, capturing larvae and very young fish.

According to Regulamento Geral da Pesca Maritima (2003), the minimum mesh size allowed for the drag the earth is 38 mm. In the same area, non-observance of the closed fishing period by artisanal fishers has been verified. These fishers fish using beach seine, even if they have received orders to the contrary from the competent authorities.

These practices are carried out by fishers, in the light of day, including on beaches along the towns and cities, where the state institutions responsible for supervision and administrative measures can be found, but this issue tends to generalise itself more and more.

In 2015, in Nampula Province, 73 fishing gears were seized that are harmful to the fishery, as a result of 25 patrols in land and at sea (Direcção Provincial do Mar, Águas Interiores e Pescas, 2016).

Also, in the artisanal fishery in Nampula province, fishing without a license is one of the most common practices. According to the Ministerio do Mar, Aguas Interiores e Pescas (2016), in 2015 only 2,818 fishing gears were licensed, against 2,226 in 2014, a total of 10,966 fishing gears were recorded by the census of the artisanal fishery in 2012 in Nampula province. As a result of the supervision of competent authorities, eight (8) fishing gears without a permit were seized in full decommissioning of fishing (Direcção Provincial do Mar, Águas Interiores e Pescas, 2016).

Another concern of IUU fishing in Nampula is the capture of species protected by law.

For example, in accordance with the Direcção Provincial do Mar, Águas Interiores e Pesca (2016), in 2015, a stealth fisherman in Ilha de Fogo in possession of a sea turtle was questioned during the surveillance, and received a fine in the amount of 72,496 Meticaís, around 1,150 USD. Subsequently, the process was channelled the process to judicial bodies in the district of Moma District.

In the semi-industrial fishing in Nampula Province, the most notable form of IUU fishing has been fishing in areas not authorised, mainly in areas reserved for artisanal fishing, originated in certain conflicts. The Assembleia da República, (2013) mentions that, without prejudice to what is laid down in the regulations on the extent of fishing areas, the entire length of the territorial sea up to 3 nautical miles, measured from the baselines is reserved exclusively for small-scale fisheries, subsistence, scientific research, recreation and sport.

In 2015, two proceedings for infringement of fishing, which involved two fishing vessels of the semi-industrial Yinuo, LDA Company, were initiated by the system of control and monitoring of fishing (VMS). For having exercised the activity of fishing outside the area established in the license to operate, the government, fined this company, based in Angoche, the amount of 876,256 meticaís, approximately 13,500 USD (Direcção Provincial do Mar, Águas Interiores e Pescas, 2016).

## **4 RESEARCH METHODOLOGY**

Research methodology is a path to be traced by the researcher in the process of producing knowledge about the reality that you seek to know (Reis, 2009). The same author also points out that it can also be seen as a set of procedures that are not limited to the use of research techniques and instruments, but which include them.

### **4.1 Research Method**

The method according to Garcia (1998), represents a rational procedure and ordered (way of thinking), consisting of basic instruments, which involves using reflection and experimentation, to proceed along the path (etymological meaning of method) and achieve the goals pre-established in the planning of research (project).

This research aims to understand the types of Illegal, Unreported and Unregulated fishing and its negative effects to find better ways to help formulate strategies to combat it. Therefore, the research questions were:

- What are the types of fishing practices of illegal, unreported and unregulated fishing in Mozambique?
- What are the negative effects of illegal, unreported and unregulated fishing?
- What are the strategies adopted by the Mozambican Government to combat illegal, unreported and unregulated fishing?

### **4.2 The Research Participants**

The research participants are persons or group of persons who participated in the survey and for this study were selected based on their knowledge and experience in the area of fishing.

For the purpose of the research, questionnaires containing open and closed questions were formulated using qualitative and quantitative methods. The questionnaires were addressed to the following entities, divided into four:

- Fishers;
- Provincial Direction of the Sea, Inland Waters and Fisheries (DPMAIP);
- Maritime Administration (ADMAR); and
- Provincial Delegation of Administration of Fisheries (ADNAP).

#### 4.2.1 The Fishers Questionnaire

A total of twenty-two (22) questionnaire were distributed randomly by the author, randomly to the same number of artisanal fishers who operate with different fishing gears, including beach seine and gill nets, sailors and owners of fishing gear were interviewed in three (3) fishing centers in Nampula province, namely: Inguri, Sangage and Kuiricuidje.

#### 4.2.2 Provincial Direction of the Sea, Inland Waters and Fisheries (DPMAIP)

The Provincial Direction of the Sea, Inland Waters and Fisheries is the provincial body of the state apparatus which, in accordance with the principles, objectives and tasks set by the government, directs and ensures the implementation of activities under the sea, inland waters and fisheries at the provincial level (Ministério do Mar, Águas Interiores e Pescas, 2016). A total of 6 employees were interviewed in the absence of the provincial director, who was involved in other government missions.

#### 4.2.3 Maritime Administration (ADMAR)

The Maritime Administration is the executive organ of the National Maritime Authority (INAMAR) within its areas of jurisdiction at the territorial level. It has the skills to pursue the maritime authority into the public domain by sea, monitor the activities in waters and waterways, license the activities of the seas, ensure the implementation and enforcement of legislation, proceed with registration of seafarers, proceed with the customs clearance of ships in ports and investigate maritime accidents (Conselho de Ministros, 2004).

In three (3) maritime administrations in Nampula Province (Angoche, Ilha de Moçambique and Nacala), where the present study was performed, a total of twelve

(12) employees were interviewed, four (4) from each maritime administration, in addition to the maritime administrators and some experienced staff.

#### 4.2.4 Provincial Delegation of Administration of Fisheries (ADNAP)

The ADNAP is a public service led by the Minister that oversees the fisheries sector which has competence to:

- Ensure the implementation of policies, strategies and plans for the management of fisheries;
- Perform all administrative procedures leading to access to fisheries resources under the conditions laid down in the laws of fishing;
- Ensure that fishing activities and related matters of fishing are carried out in a manner consistent with the management measures in place;
- Analyze and propose the management measures that are deemed necessary to achieve the objectives of the development of fisheries;
- ensure the collection of statistical information and the availability of treatment systems;
- Monitor and control the activities of the fishing fleet both domestic and foreign which operate in national ports;
- Ensure the actions of co-management of fisheries at different levels including the actions of community organizations;
- Participate in the definition of fishing policy and ensure its implementation (Assembleia da República, 2011).

For this study, due to the number of employees of that institution, only two technicians were interviewed that deal with fisheries monitoring.

### 4.3 Ethical Issues

In accordance with Resnik (2015), (quoted by Katrina Recorder, 2016), it is very essential for a researcher to learn to make decisions and act in an ethical manner in various situations through the careful interpretation, evaluation and application of various rules for research. In addition to what was mentioned by Prodanov, C.C. & de Freitas, E.C. (2013), ethics is the science of human behaviour; it is the principle

of systematic conduct that is morally correct, i.e., it conforms with the "PREVALENT" ideas of human behaviour.

The research tools were approved by the research ethics committee of the World Maritime University (WMU). The survey participants agreed on a voluntary basis to respond to research questionnaires, understanding that data from the responses was solely for the purpose of this dissertation and that the names of the respondents would be anonymized in the final report.

#### **4.4 Limitations of the Research**

The sampling technique used in research was a limitation of the study since it is intended for a given sample and not the entire population. As such, the results cannot be generalised.

Furthermore, the size of the sample by being small was to some degree a limiting factor to the research, since a larger sample could be drawn, but the nature of the study required participants who dominate the subject of the research.

The accessibility of participants by the researcher was very difficult since the research was being performed in Malmo and participants were in Mozambique (Nampula Province). Mainly due to their daily schedules, the interview survey forms completed by the representatives of the maritime administrations in the province and other colleagues in DPMAIP and ADNAP were sent via e-mail to the researcher.

#### **4.5 Instrument of Data Collection (Questionnaire)**

According to Amaro et al. (2004 - 2005), a questionnaire is an instrument of research that aims to collect information based, usually, in inquisition of a representative group of the population under study. To this end, a number of issues are raised that cover a topic of interest to researchers, and there is no direct interaction between researchers and respondents.

For this study, four different types of questionnaires were prepared for an equal number of groups surveyed. Available in Word format, all questionnaires required qualitative and quantitative questions and open-closed questions (yes or no). "Part A" of the questionnaires demanded answers related to the profiles of the

interviewees and "Part B" demanded answers related to the knowledge of the interviewees about Illegal, Unreported and Unregulated fishing.

Twelve (12) questions were developed for the fishers, eleven (11) for the Provincial Direction of Sea, Inland Waters and Fisheries (DPMAIP), eleven (11) for the Provincial Delegation of Fisheries Administration (ADNAP) and nine (9) for the Maritime Administration, not including the name and the comments that were optional.

#### 4.6 Data Collection

According to Prodanov, C.C. & de Freitas, E.C. (2013), the goal of the "data collection" phase of the research is to obtain information from reality. In this step, we define where and how the research collected and in what manner.

For the purpose of this study, the researcher sought answers from 4 different entities, considered keys to the theme, as was mentioned earlier, with a total of 42 respondents from a total of 50 questionnaires sent, and distributed as follows:

- Fishers – twenty two (22) participants
- The Provincial Direction of the Sea, Inland and Fisheries – Six (6)
- Maritime Administration – twelve (12) and;
- The Provincial Delegation of Fisheries Administration– two (2) participants.

Table 2 below summarizes the interview profiles:

**Table 2- Participants of the Research**

<b>Interview</b>	<b>Men</b>	<b>Women</b>	<b>Total</b>
Fishers	21	1	22
DPMAIP	6	0	6
ADMAR	11	1	12
ADNAP	2	0	2
<b>Total</b>	<b>40</b>	<b>2</b>	<b>42</b>

Source: Author



## 4.7 Review of data

### 4.7.1 Quantitative Analysis

Despite the limited number of respondents, the questions raised were answered through open-closed questions, by which to analysis was limited to quantitative statistics, represented by figures, tables and graphs. Other statistics are generated automatically through the forms of Google.

### 4.7.2 Qualitative Analysis

The researcher used the leaves of the Excel to tabulate the responses, having grouped the responses into themes. The number of occurrences of each theme in their responses was counted. The responses were evaluated by means of questions asked to a group of interviewees and the results of the groups with the same question forms, analyzed collectively.

## 4.8 Presentation and Analysis of Data

Prodanov, C.C. & de Freitas, E.C. (2013), mentioned that this phase of the research, analytical and descriptive, provides for the interpretation and analysis of the data.

In this research, this point presents the statistical data based on analysis of the responses gathered in the collection of data. The research had as its main objective to identify the types of Illegal, Unreported and Unregulated fishing perpetrated by artisanal fishers in Mozambique, particularly in Nampula province, where this study was carried out, as they are perceived by the entities listed in the previous chapters, which form an integral part of the study.

### 4.8.1 Statistical Presentation of the Results

For the analysis and interpretation of data from the respondents, the questions were grouped into two (2) groups:

- Fishers; and
- Institutions that deal daily with IUU.

The results are based on surveys of fishers' and the institutions, composed of three (3) State institutions and government, that work in favor of the administration,

management, monitoring and control of fisheries resources, including: the Provincial Direction of Sea, Inland Waters and Fisheries (DPMAIP), Maritime Administration (ADMAR) and the Provincial Delegation of Fisheries Administration (ADNAP).

#### 4.8.2 Data Results from Interviews with Fishers

##### 4.8.2.1 Demographic Analysis of Respondents

The analysis was made between the 22 interviewees, 4.5% were between 20 and 30 years of age, 18.2% between 31 and 41, 45.5% between 41 and 50, 13.5% between 51 and 60 years and 18.2% were over 60 years of age, as is shown in Table 3.

**Table 3- Age of Respondents – Fishers**

Age	Number	Percentage (%) Share
20-30 years	1	4.5
31-40 years	4	18.2
41-50 years	10	45.5
51-60 years	3	13.6
60+ years	4	18.2
<b>Nº of Respondents</b>	<b>22</b>	<b>100</b>

Source: The author

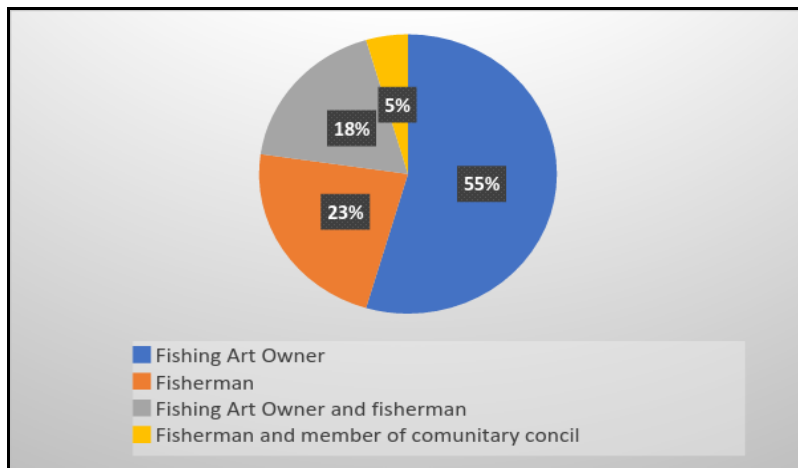
##### 4.8.2.2 Gender of the Participants

In terms of gender, by the nature of the activity, fishing in Mozambique, is mostly developed by men, particularly in Nampula province, where 95.5% of those interviewed were men and the remaining 4.5 % women. Thus, it is evident that fishing activity is dominated by men.

##### 4.8.2.3 Function in Fishing

In terms of function in fishing, from twenty-two (22) respondents, 56 % were owners of the fishing gear, 23% were fishers, 18% both owners of fishing gear and at the fishers and 5% fishers and members of the Community Council of Fisheries, as represented in Figure 6 below:

**Figure 6: Percentage Representation of Functions in the Fishery of the Interviewees – Fishers**



Source: The author

In view of this figure, the author has the following conclusion: from the 22 respondents, the majority are the owners of fishing gear (73%), of which 18% practice fishing activities and 28% are fishers.

#### 4.8.2.4 Experience in Fishing

With respect to their experience in fishing activities, of the 22 respondents questioned, 13.6% said that they had between 0 and 5 years of work experience in fishing; 5.5% had 6 and 10 years, 4.5% had 11 and 15 years; 9.1% had 16 and 20 years and 68.2 % had more than 21 years, as can be seen in Table 4 and in Figure 8 below.

**Table 4: Experience in Fishing of Respondents**

Years of experience	Nº respondentes	Percentage (%) share
0 -5 years	3	13.6
6 -10 years	1	4.5
11 - 15 years	1	4.5
16 - 20 years	2	9.1
21 + years	15	68.2

Source: The author

From Table 4, the author can concluded that the majority of respondents have a wide experience in fishing activity, which demonstrate that they have been the best people to answer the questions. For example, 68.2% of the respondents had more than 21 years of work experience.

#### *4.8.2.5 Knowledge about Illegal, Unreported and Unregulated Fishing*

Questioned if they knew what IUU Fishing is, all (100%) of the 22 respondents stated yes, demonstrating that they were well aware of this detrimental activity.

#### *4.8.2.6 Types of IUU Fishing are known by the Interviewees*

When the 22 interviewees were asked about the types of IUU fishing that they know about , 81.8% said that they aware of the use of mosquito nets in fishing; 27.3% mentioned use of small mesh size, less than that recommended by law; 77.3% identified fishing protected species such as: turtles, gulls and dolphins; 45.5% knew of fishing without a license and that captures species in the reproduction cycle; 54.5% referred to fishing in the closed seasons, 9.1% said they knew of frequent use of long cables in beach seine, which is fished species that have not yet reached the ripening stage, such as larvae and juveniles and the involvement of children in fishing; 13.6% reported night fishing, and also fishing in prohibited places such as sanctuaries, reserves and estuaries and 4.5% stated that they fished species in breeding. These responses are depicted in Table 5 below:

**Table 5 - Types of IUU fishing are known by the interviewees – Fishers**

<b>Types of known IUU</b>	<b>Frequency</b>	<b>% of Respondents</b>
Use of mosquito net in fisheries	18	81,8
Fishing with nets below those recommended by law	6	27,3
Fishing of protected species (turtles, sea gulls, dolphins)	17	77,3
Fishing without a license	10	45,5
Fishing in Closed Season	12	54,5
Use of very long cable in the beach seine	2	9,1
Fishing at night	3	13,6
Fishing prohibited places (sanctuaries, reserves and estuaries)	3	13,6
Capture of species during reproduction	1	4,5
Participation of children in fishing	2	9,1
Fishing of larvae and juveniles	2	9,1

Source: The author

From Table 5, it is obvious that the respondents (fishers) have a profound knowledge about most types of IUU fishing, by which, if practiced, they do so in full awareness.

#### *4.8.2.7 Awareness of the Existence of a Regulation on Fishing*

Asked whether they knew of a regulation on fishing, of the 22-people interviewed, 95.5% stated yes and the remaining 4.5% said they did not know.

#### *4.8.2.8 Knowledge about Fishing with a License*

Of the 22 respondents, asked if they knew that a license had to be purchased, all stated categorically yes, representing 100 % of respondents.

#### *4.8.2.9 Level of Knowledge in the Fishers Community about Illegal Unreported and Unregulated Fishing Practices*

Of the 22 respondents, asked if they knew whether Illegal, Unreported and Unregulated fishing (IUU) was practiced in their community, all (100%) responded affirmatively.

#### *4.8.2.10 Types of IUU Fishing Practiced in the Communities of Fishers*

Asked to enumerate the types of Illegal, Unreported and Unregulated Fishing (IUU) which were practiced in their communities, 90.9 % of 22 respondents stated the use of mosquito nets in fishing; 22.7% said that they fished with smaller mesh size not authorized by the law; 54.5% referred to fishing of protected species such as marine turtles and sea gulls and mentioned that there was a breach of the Veda; 59.1% responded with fishers fishing without a fishing license; 4.5% mentioned fishing with long cables, with no limit on the beach seine and also fishing in the night time. More details of types of IUU Fishing can be seen in Table 6 below:

**Table 6 -Types of Practices of IUU Fishing have been Reported in the Communities**

<b>Types of IUU Practiced</b>	<b>Frequency</b>	<b>Percentage (%)</b>
Use of mosquito net in fisheries	20	90,9
Fishing with nets below those recommended by law	5	22,7
Fishing of protected species (turtles, sea gulls)	12	54,5
Fishing without a license	13	59,1
Fishing in Closed Season	12	54,5
Use of too long in trawls for earth	1	4,5
Fishing at night	1	4,5
Fishing in prohibited places (sanctuaries, reserves and estuaries)	2	9,1
Capture of species during Reproduction (spawning)	1	4,5
Participation of children in fishing	2	9,1
Fishing of larvae and juveniles	2	9,1

Source: The author

From the table above, the author observed that the types of IUU Fishing that are the most common are the use of mosquito nets (90,9%), followed by fishing without a license (59,1%) and fishing in protected areas (54,5%) and/or in closed season (54,5%), along with the use of mesh fishing nets of a size below that recommended by law (22,7%).

#### *4.8.2.11 Why does the Practice of IUU Fishing Occur in Fishing Communities?*

From the twenty-two (22) people questioned as to why the practice of IUU Fishing exists, in their communities, 73.3% of respondents (17 fishers) answered the question and 22.7% (5 fishers) did not answer, allegedly they did not know.

Of the seventeen (17) respondents to the question, 52.5% said that the practiced of Illegal, Unreported and Unregulated fishing was linked to behavioural issues and attitude on the part of fishers; 29.4% said that it was due to a lack of supervision by the authorities of law; 5.9% said it was because of a lack of appropriate means of

fishing and high cost of inputs; 29.4% said it was because of financial reasons combined with lack of employment on the part of the offenders. See more details in Table 12 below:

**Table 7-Why the Practice of IUU Fishing by Fishing Community**

Why the Practice of IUU	Frequency	Percentage (%)
Behavioral Problems and attitude	9	52,9
Lack of supervision	5	29,4
Lack of appropriate means for fishing	1	5,9
Lack of employment and financial conditions	5	29,4
High cost of fishing equipment	1	5,9

Source: The author

In terms of the conclusions in Table 7 above, the author observed that the main issues have to do with the question of behavior and attitude (52,9%), and the lack of supervision (29,4%), along with the issues of lack of employment and financial conditions of the communities, using a certain way fishing activity for their survival.

#### *4.8.2.12 Main Problems that Fishers have faced in Applying the Rules Governing Fishing*

Of the 22 people who participated in this study, questioned as to the problems fishers have faced in applying the rules governing fisheries, 68.2% of respondents (15 fishers) answered the question and the remaining 31.8% (7 fishers) did not respond, allegedly they did not know.

Of the 15 respondents to the question, 40% said that there is a lack of monitoring of fishing activity on the part of the governmental structures; 6.7% stated that there is resistance on the part of fishers to the implementation of standards, and, as a result, there is a lack of fish in the province. The artisanal fishers have no maritime registration in fishery centers and much less are carriers of seamen books and/or other document which identifies. There is frequent use of fishing gear not regulated by law, school-age children are involved in the practice of fishing activity and there is resistance to the abandonment of mosquito nets in fishing by fishers; 26.7% said that



there is non-payment of fishing licenses by the fishers; 20% said there is a violation of rules and regulations on the part of the fishers for behavioural issues. See for more details on the problems faced in Table 8 below.

**Table 8 - Problems faced by fishers in the Implementation of the rules and Regulations**

Problems Faced	Frequency	Percentage (%)
Lack of supervision on the part of the government	6	40,0
Resistance of fishers in the implementation of the Standards	1	6,7
Lack of fish in the province	1	6,7
There is no payment of fishing licenses	4	26,7
Violation of rules and regulations by behavioural issues	3	20,0
Lack of documentation of fishers (registration and Seamen Book)	1	6,7
The use of nets not recommended by law	1	6,7
Children with school-age children to practice fishing	1	6,7
Resistance to abandonment of mosquito nets	1	6,7

Source: The author

In terms of problems faced by fishers in the implementation of rules and regulations, the author concluded that the main problem is the issue of lack of supervision on the part of government structures (40%), and the non-payment of fishing licenses and violation of rules and regulations as a result of behavioral issues on the part of fishers (20%).

#### 4.8.2.13 Comments of Respondents

Of the 22 fishers interviewed and invited to comment in relation to illegal, unreported and unregulated fishing, only 31.8% commented. The comments received highlight the following views:

- There are differences in rates of survey of ships between the provinces of Nampula and Zambézia provinces;
- The closed season of shrimp fishing, which is about 3 months, is too long;

- Manufacturers should be asked to avoid bringing fishing nets with a mesh size not recommended by law and authorities should not allow marketers of fishing gear to sell nets with meshes smaller than recommended;
- The fishers need credit to purchase inputs;
- Lately there is a shortage of fish in the province, forcing fishers to migrate to other provinces in search of better catches of fish, due to the use of unregulated gears.

#### 4.8.3 Results of Data from Questionnaires in Institutions

Data obtained as a result of the surveys of 20 employees from the institutions of the sea and fisheries sector that work in favor of the issues of prevention and combating of illegal, unreported and unregulated fishing has provided the following:

##### 4.8.3.1 Demographics of Respondents

Of the 20 employees interviewed, 20% were aged between 20 and 30 years, 20% between 31 and 40, 40% between 41 and 50, 15% between 51 and 60% and 5% were over 60 years of age, as can be seen in more detail in Table 9 below:

**Table 9 - The Age of Respondents – Institutions**

Age	Number	Percentage (%) Share
20-30 years	4	20
31-40 years	4	20
41-50 years	8	40
51-60 years	3	15
60+ years	1	5
<b>Nº of respondents</b>	<b>20</b>	<b>100</b>

Source: The author

##### 4.8.3.2 Gender of the Participants

In terms of gender, as was observed in the fishers' questionnaire, the scenario repeated itself in the institutions. In technical areas relating to the issue under study, we were unable to find a large number of women, since in Mozambique and, particularly in Nampula Province, the fishing activity and matters related to the sea

have been developed mainly by men, with 95% of the respondents being male and the remaining 5 % female.

#### 4.8.3.3 *Function of the Interviewees*

Of the 20 respondents, 3 were Maritime Administrators, 1 was a senior registrar 1 was the Head of the Department of Maritime Affairs and inland waters, 2 were department heads of supervision of fishing and the sea, 1 was a Maritime Delegate, 1 was an Extensionist, 3 were fisheries and maritime Inspectors, 2 were sailors, 1 was a Maneuver Officer and 5 were Fisheries, Aquaculture and Marine Affairs Department Technicians, as shown in Table 10 below:

**Table 10 - Functions of the Interviewees – Employees**

<b>Function</b>	<b>Nº of Respondents</b>	<b>% Share</b>
Maritime Administrator	3	15
Head of Secretary	1	5
Head of the Department of Marine and Inland Water Affairs	1	5
Head of Department of Fisheries and Maritime Inspection	2	10
Maritime Delegate	1	5
Fishing Extensionist	1	5
Fisheries and Maritime Inspector	3	15
Sailors	2	10
Maneuver Officer	1	5
Fisheries, Aquaculture and Marine Affairs Department Technicians	5	25

Source: The author

#### 4.8.3.4 *Professional Experience of respondents – Institutions*

In terms of the professional experience of the 20 employees surveyed, 35% had between 0 and 5 years of work experience, 20% had 6 and 10 years, 10% had 11 and 15 years, 5% had 16 and 20 years and 30% had 21 or more years of experience in institutions of fisheries and marine, as can be seen in Table 11 below:

**Table 11 - Professional Experience of the Interviewees – Employees**

Years of experience	Number	% share
0 - 5 years	7	35
6 - 10 years	4	20
11 - 15 years	2	10
16 - 20 years	1	5
21 + years	6	30

Source: The Author

In general terms, noting the Table 11, it can be concluded that the respondents had sufficient capacity to respond to the objectives previously drawn for the present study, so 65% of the respondents had a job experience between 6 and 21 years of job experience.

#### *4.8.3.5 Knowledge of IUU Fishing*

The 20 employees' respondents were asked, in their daily functions, if they have encountered illegal, unreported and unregulated fishing (IUU); 95% of them answered the question by stating yes and 5% did not respond.

#### *4.8.3.6 Forms of IUU fishing*

Of the 19 respondents who responded "yes", to the previous question when asked if they have encountered IUU fishing during their daily functions, all (100%) answered yes, when they make visits to the centers of fishing, as follows: 26.3% said that they had observed fishing with harmful gear, 31% had observed fishing by unlicensed vessels and fishing gear, 5.3% responded vessels with no registration and fishing in the closed season, 42% had seen use of mosquito nets in fishing, 10.5% had noted the use of bottles of oxygen in fishing, 21.1% said they had witnessed violation of closed season and 15.8% mentioned fishing in protected places such as sanctuaries and estuaries. Further details are provided in Table 12 below:

**Table 12 - Forms of IUU fishing - Interview with employees**

<b>Forms de IUU Found</b>	<b>Frequency</b>	<b>Percentage (%)</b>
Fishing with harmful gear	5	26,3
Use of unlicensed vessels and fishing gear	6	31,6
Use of unregistered vessels	1	5,3
Use of mosquito nets in fishing	8	42,1
Use of scuba in fishing	2	10,5
Violation of the closed period	4	21,1
Fishing in the closed period	1	5,3
Fishing in protected places (sanctuaries, estuaries)	3	15,8

Source: The author.

From the table above, the researcher has the following conclusions: the most usual practices of IUU fishing activities in the communities, referred by the interviewees, are the use of mosquito nets (42,1%), use of unlicensed vessels and fishing gear (31,6%), the use of harmful fishing gear (26,3%), and the violation of closed season (21,1%) and protected areas (15,8%).

#### *4.8.3.7 Types of IUU Fishing in Nampula Province*

Of the 20 respondents, questioned as to the types of IUU which have been registered in the province and/or in their area of jurisdiction, all (100%) answered the question having identified the following:

- Harmful fishing gear;
- Use of unlicensed vessels;
- Use of mosquito nets in fishing;
- Use of bottles of oxygen in fishing;
- Use of toxic plants to catch fish;
- Violation of Closed Season;
- Fish using nets with mesh sizes smaller than those recommended by law;
- Violation of fishing areas, mainly by fishing fleet and industrial;
- Fishing without a license;
- Fish catches not declared;

- Fishing without compliance with the measures for the conservation of fisheries resources in force;
- Fishing protected species;
- Fishing in protected areas (reserves, sanctuaries).

#### *4.8.3.8 Institutions that Collaborate on the Issue of Combating IUU*

The 6 people of the Provincial Direction of Sea, Inland Waters and Fisheries (DPMAIP) were questioned as to whether there were other institutions that collaborated on the issue of combating IUU fishing; all (100%) respond “yes”, having identified the following:

1. WWF;
2. Marine, fluvial and Lacustrine Police;
3. Maritime Administration;
4. The District Services of Economic Activities;
5. Navy; and
6. The Community Council on Fisheries.

#### *4.8.3.9 Tools Used in Combating IUU and how they have been used?*

The 8 employees from the DPMAIP and ADNAP were asked about the tools used in combating IUU fishing and how they were used; all answered the question (100%), referring to the following:

##### **a) Types of Tools Used:**

- General Regulation of Fishing;
- Law of Fisheries;
- Regulation of Inspection;
- Law of protection of natural resources;
- VMS;
- Laws, Conventions and national regulations.

##### **b) Forms of Using the Tools:**

- Lectures of mobilisation and awareness of fishers for the abandonment of bad fishing practices;

- Patrol and surveillance of fishing activities;
- Punishment of offenders;
- Promotion of good practices of fishing in the fishing communities;
- Distribution of brochures, use of radio and newspapers in disseminating messages about good practices of fishing;
- Licensing of fishing gear and vessels;
- Automatic location of vessels through the Vessel Monitoring Systems (VMS);
- Destruction of harmful gear.

#### *4.8.3.10 Strategies Used by the Administration of fishing in Relation to Preventing and Combating IUU Fishing*

The two (2) employees of the Provincial Delegation of Administration of Fisheries (ADNAP), were questioned about the strategies used to prevent and combat of IUU fishing; all (100%) answered the question by saying the following:

- Encourage communities to abandon the use of harmful fishing gear, setting an example in the promotion of the use of selective gear (extension and promotion of fisheries);
- Lectures to raise awareness for fishers to abandon harmful fishing gear, through brochures, dissemination of information on community radios locations;
- Prohibition of use of mosquito nets in fisheries.

#### *4.8.3.11 Employees Involved in the Surveillance of Fishing*

In relation to the number of employees of the sector involved in the surveillance of fishing activity, from 6 respondents from DPMAIP, all (100%) answered the question the lack of inspectors; however, the answers differing in terms of the number among the respondents: 17% of respondents said that there was only one official supervisor, 50% said they had 5 employees and 33% said they had 3 employees.

#### *4.8.3.12 Main Challenges in the Application of Rules and Regulations*

The 6 employees of DPMAIP were questioned about the main challenges in applying the rules and regulations of the fisheries to the fishers, 83% answered the

question and the remaining 17% did not respond. The Respondents stated that the main challenges are:

- The implementation and enforcement of rules, laws and regulations;
- Effective monitoring of fishing activity;
- Effective enforcement of the closed season (not to fish during the closed season);
- Abandonment of harmful fishing gears by the fishers;
- Introduction of VMS in the provinces;
- The use of mosquito nets in fisheries and other unauthorized mesh.

#### *4.8.3.13 Problems Faced in the Implementation of Rules and Regulations*

Of the 14 employees from the Maritime Administration (ADMAR) and Provincial Delegation of Fisheries Administration (ADNAP) that were questioned on problems faced in the implementation of rules and regulations within the fishers, all (100%) answered the question as follows: 29% of respondents answered that low level of education of fishers causes the practice of IUU fishing and lack of resources to monitoring and supervision by the competent authorities (human, material and financial resources); 64% said that the most significant problem has been the reluctance of fishers to comply with the standards due to the behaviour of the same and 7% said that there is a lack of dissemination of standards and regulations among the fishers. See more details in Table 13 below.



**Table 13 - Problems Faced in the Implementation of Rules and Regulations**

<b>Problems Faced in the Implementation of Rules and Regulations</b>	<b>Frequency</b>	<b>Percentage %</b>
Low level of education of fishers	4	29
Reluctance in meeting rules (behaviour)	9	64
Lack of resources (human, material and financial) for monitoring	4	29
Disclosure of rules and regulations within the fishers	1	7

Source: The author

In general terms, noting Table 13, the respondents reported reluctance to follow rules (behavior) as the main problem (64%), followed by low level of educational of fishers (29%) and the lack of human resources (29%), as well as materials and equipment to cope with the issue of combating IUU fishing.

#### *4.8.3.14 Level of Resources and Available Capacity to Combat IUU Fishing*

The 14 employees of the ADNAP and ADMAR were asked about what level of resources the institutions had to cope with the challenges of preventing and combating IUU fishing; 86% answered the question and the remaining 14% did not respond. Of the respondents, 67% said that there is a lack of means of monitoring (human, material and financial resources) and 33% said that they had, in the entire province, only 2 cars, 2 small craft and 2 motorbikes with 4 wheels.

The 20 staff respondents were invited to provide comments, if they so wished; 70% answered the question and the remaining 30% did not answered as shown in Table 20 below. The comments of the respondents are highlighted as follows:

- In spite of several resistance to the payment of licenses, after the supervisory actions as concern the vessel or documents, the fishers have begun to pay for their licenses;
- The lack of payment of the licenses for fishing gear is because the fishery sector does not take this problem seriously;
- There is a lack of means for monitoring (human and material);

- There is a problem of follow-up of the cited violations at the national level which discourages the inspectors involved in the cases;
- The need of revitalizing of supervision.
- The need for increased number of lectures/briefings to raise awareness of the fishers;
- Despite the various penalties applied, the fishers are continuing to violate regulations, allied to a lack of food products that are scarce;
- The need to invest in monitoring, control and surveillance;
- For the African populations that live in coastal communities fishing is a means of subsistence, and most of these are needy populations, who have a strong temptation to resort to illicit practices. The only way to fight this fraud is by constant education.
- There are challenges to create synergies with institutions that work in the context of ensuring the legality and safety at sea to ensure the control of illegal fishing in the EEZ.
- Supervision of fishers should be permanent;
- The involvement of community leaders in the surveillance and health personnel in raising awareness about the use of mosquito nets.

## **5 GOVERNMENT ACTION ON ILLEGAL UNREPORTED AND UNREGULATED FISHING (IUU)**

This chapter discusses the action of the Mozambican government on Illegal, Unreported and Unregulated Fishing in respect to the development, regulation and approval of policies and adherence to international organizations that fight this illicit activity.

According to FAO (2001), in the exercise of the sovereign rights of coastal States for exploring and exploiting, conserving and managing the living marine resources under its jurisdiction, in addition to those mentioned in the United Nations Convention on the Law of the Sea (UNCLOS, 1982), each coastal State shall implement measures to prevent and eliminate IUU fishing in the exclusive economic zone.

To this purpose, the Government of Mozambique has been conducting various actions with a view to preventing and combating Illegal, Unreported and Unregulated fishing:

- a) The accession of the Republic of Mozambique to the International Agreement on compliance measures for the conservation and management of resources on the high seas, on 24 November 1993, through Resolution No. 20/2008 of 16 December (Conselho de Ministros, 2008);
- b) The adoption of the law of fisheries, as a subject to establish the legal regime of fisheries activities and complementary activities of fishing, having in view the protection, conservation and sustainable use of biological National Aquatic resources (Assembleia da República, 2013);
- c) The approval of the General Regulation of Marine Fisheries (REPMAR), currently under review, with the aim of regulating the provisions of the Law on

Fisheries, relating to the activity of sea fishing (Regulamento Geral da Pesca Marítima, 2003);

- d) The preparation of the National Plan of Action to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated Fishing (PNA-IUU) that clearly establishes a systematic approach and integrated coordination and cooperation at national, regional and international levels as a key element in the efforts to combat illegal fishing, with a view to implementing the policy and strategy of the activities of monitoring, control and surveillance of fishing (Ministério das Pescas, 2009);
- e) Mozambique has been one of the 31 Member States party to the Indian Ocean Tuna Commission (IOTC) since 2012, by which it actively participates and contributes to the implementation of all the resolutions of the IOTC to prevent, destroy and eliminate IUU fishing activities in the region, such as the Resolution 05/03 - on the establishment of an IOTC program of inspections in ports; Resolution 06/03 - on the establishment of the system of monitoring of vessels and Resolution 10/11 - on port State measures. For more details on IOTC members states see Table 14 annex I;
- f) Mozambique signed, on 4 November 2010, and ratified, on 19 August 2014, the Agreement on Port State Measures to Prevent, Detect and Eliminate Illegal, Unreported and Unregulated Fishing (FAO, 2017). More information about the signature and deposit of the instruments can be seen in Table 15 annex II.
- g) Mozambique approved the Master Plan for Fisheries 2010 - 2019, which at the level of the administration of the fisheries provides for strengthening the capacity for instruction ensuring compliance with legislation and management measures and to define the conditions of access to resources; allow the elaboration and implementation of a development plan for management and supervision, also called MCS; characterizing the fishing gears, limiting the number per district or fishing center, ensuring the principle of selectivity of gears in conservation areas and proceeding to its disclosure and strengthening the linkage with the different entities at the level of the development and management of aquatic resources (Ministério da Pescas, 2010). The same

document states that the level of supervision should strengthened the capacity of supervision and operationalization of the VMS;

- h) Mozambique has also established a management plan for fisheries of shrimp of Banco de Sofala (PGC/BS) which aims to solve some of the problems that hinder fishing to ensure benefits to its maximum levels. It was in this context that Mozambique has paid greater attention to the excessive effort in fisheries applied to resources, the unsatisfactory performance of MCS system and the need to improve the knowledge about the key biological and socio-economic factors for the strengthening of the guiding principles of management with a view to improving the state of the stock (Administração Nacional das Pescas, 2014);
- i) Mozambique approved the management plan for the fishery in line with the maritime waters of Mozambique with the central purpose of integrating the wide diversity of elements of line fishing at sea, to provide a matrix for a management system appropriate to the fishery, including the proposed regulations and the critical need for additional research that will contribute to the sustainability and social and ecological integrity, including creating a framework for action with goals that can be monitored and validated (Administração Nacional das Pescas , 2014);
- j) The establishment of a fishery closed season for shrimp by Mozambique for fishing vessels with industrial and semi-industrial trawl nets and inland fishing nets and trawl nets on board, including the establishment of fishery products processes that handle and process shrimp, except cases of shrimp from aquaculture.

## 6 FINAL CONCLUSIONS AND RECOMMENDATIONS

### 6.1 Conclusions

In terms of the conclusions, the author believes that, while the topic is negative impacts of Illegal, Unreported and Unregulated Fishing perpetrated by artisanal fishers in Mozambique, this study has managed to identify and examine, in part, the main types of IUU fishing practiced in Mozambique and in particular by the artisanal fishery, and their negative effects. The study also assessed the methods and strategies that have been used by the government to prevent and combat IUU.

Therefore, it was concluded that the main types and forms of practice of IUU fishing in Mozambique, in particular, in the northern area encompass: the use of mosquito nets in fishing; fishing without a license, fishing in closed seasons or protected areas; fishing with nets not recommended by law; the capture of protected species and capture of species in breeding, larvae and juveniles.

It was also clear that the study provides information on the negative effects of the practice of IUU fishing, particularly the economic, social, environmental and/or ecological consequences of such activities.

It was concluded that despite having several tools in terms of plans, regulations, laws and adherence to international bodies that are aimed at preventing and combating IUU fishing, Mozambique does not have adequate supervision and monitoring of fishing, in addition to not possessing sufficient resources (materials, equipment and human) to undertake MCS in its EEZ.

The author concluded that the issues of behaviour and attitude, allied with the problems of low level of education of communities, have contributed to a great degree to the issue of IUU Fishing.

The survey also concluded that in Nampula province there are several organizations that collaborate on the issue of preventing and combating IUU fishing. Despite the several institutions such as DPMAIP, ADNAP and ADMAR that participated in this survey, there is no distribution of human resources or materials for the areas of supervision and monitoring of fishing in the fishing centers, with the study having found only five (5) employees who conduct this activity for ten (10) coastal districts across the province where the research was developed.

Another factor that the study concluded is that the total catch of fish has been declining in recent times. Therefore, this factor can be influenced by lack of proper reporting by the fishing industry. According to the studies carried out by *The Sea Around Us*, (2016), thirty per cent (30%) of global catches of fish may not be reported. It is estimated that the overall capture amounts to 109 million metric tons per year. *The Sea Around Us* (2016), also mentions that activities such as artisanal fishing, subsistence fishing and IUU fishing are not included in the statistics.

According to Professor Daniel Pauley, of the University of British Columbia, co-author of *The Sea Around Us*, (2016), “The world is taking a joint bank account of fish without knowing what has been removed or the remaining balance”. Dr. Pauley also mentions that “estimating the amount that we are catching can help to ensure that there is enough fish to sustain us in the future”.

Furthermore, *The Sea Around Us*, (2016), states that the accurate capture is fundamental to help employees and managers of fisheries to understand the health of fish populations and to inform the fisheries policies, such as the catch quotas and seasonal restrictions or area.

## **6.2 Recommendations**

From the results obtained, the author believes that this study can help to some degree in the formulation of policies and/or strategies with a view to preventing and combating IUU fishing in Mozambique. However, for this to be achieved there are challenges for the institutions of the state such as DPMAIP, ADNAP and ADMAR, the government and fishing communities, for which this research recommends

actions in the following three subsections: The Institutions of State and Government, the Fishing Community and the General Level.

### 6.2.1 The Institutions of State and Government

The economic policy of the State is dedicated to the construction of the fundamental bases of development, the improvement of the living conditions of the people, the strengthening of the sovereignty of the State and the consolidation of national unity, through the participation of citizens, as well as the efficient utilization of human and material resources (Assembleia da República, 2004).

State institutions such as DPMAIP, ADMAR and ADNAP (from which many employees have contributed to this study) and other activities designed for the prevention and combating of IUU fishing must apply the human resources and materials available, in addition to the creation of synergies in the fight and prevention of IUU fishing, including the greater participation of communities and NGOs on the issue of management of fisheries resources.

The institutions of state and government should, likewise, prioritize training packages for fishing communities in order to improve their levels of behaviour and attitudes in relation to rational use of resources.

The theory of change and social marketing, which emerged through Paul Butler's study in 1977 during his first campaign for the conservation of parrots in St. Lucia (Rare, 2017), can be a solution for education and awareness of communities.

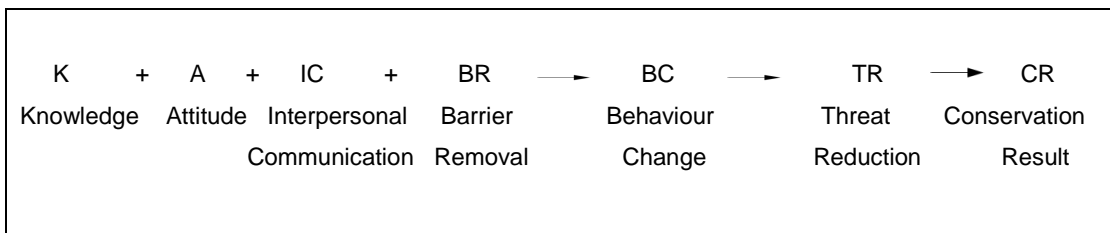
In accordance with Rare (2017), an NGO that is focussed on environmental sustainability, the theory of change is a testable hypothesis that defines social and biological changes necessary for results of sustainable conservation and social marketing is the promotion of behaviours that benefit individuals and society, in addition to educating people about a particular topic, which can actually change individual and societal behaviour.

Furthermore, Rare (2017), states that The Theory of Change and the principles of social marketing teach that, to change behaviour, we must first identify and understand the motivations of the current behaviour of the target group. These principles also highlight the barriers that may prevent the adoption of the new



behaviour. The theory of change is useful to identify the results of the intervention and measure progress.

The Theory of Change of Rare helps in understanding how to change the knowledge, attitudes and behaviours of people to reduce threats and achieve a result of conservation that benefits people and nature (Rare, 2017). It is represented by the following formula:



Source: Rare

The adoption of policies aimed at the involvement of communities in the management of fisheries resources, by assigning them a certain level of rights of use of fishing, can promote behavioural change and, at some level, minimize the issue of IUU fishing because in Mozambique the fishing is open access.

The introduction of some management measures respecting fishing efforts in the Mozambican legislation of fisheries, such as the case of limitation of the number of units of fishing by zones or fishing centers, limitation of the number of pitches of fishing by art in each campaign or period of fishing and limiting the size of fishing gear.

The strengthening of human resources available in the sector of the Sea, Inland Waters and Fishery in several topics relating to prevention and combat of IUU fishing and others should be planned and budgeted, including the fitting out of means of transport and equipment for monitoring and surveillance of fishing activities. The World Maritime University (WMU) can play a role in the education and training of personnel to implement such human developments.

Governmental institutions should promote education on the legislation relating to IUU Fishing and promote awareness in fishing communities, using learning tools including audio and visual support on a regular basis.

The adequacy of legal instruments in Mozambique needs to be evaluated, in order to harden the administrative measures to discourage IUU fishing, which can help combat it. Baird (2000), recognizing that there is not one single solution to the problem of IUU fishing, stated that the factors that facilitate the persistence of IUU fishing tend to be primarily of a legal nature because the Law of the Sea in itself is a product of political, economic and sometimes legal interests. Therefore, Baird (2000), states that it is possible to address these issues with the aim of creating a legal environment in which IUU fishing becomes less attractive, eliminating the gaps in the legal instruments.

Similarly, another factor no less important, to meet the problems of shortage of fish, which to some degree is a result of IUU fishing, is the practice of aquaculture. According to The World Bank (2013), fish products can play an important role in the satisfaction of the palate of the growing group of middle income earners throughout the world, while at the same time aquaculture would help meet the needs of food security for the poorest of the people. The World Bank (2013), cites that fish products represent 16 per cent of all animal protein consumed globally. In addition, the same report states that aquaculture has grown at a staggering rate over the past decades. This has helped to produce more food, kept the total price of the fish lower and made fish more accessible to consumers around the world (The World Bank, 2013). Therefore, there needs to be a greater investment in sustainable aquaculture, and particularly in Mozambique, to meet growing fish protein demand.

### 6.2.2 The Fishing Community

According to the Assembleia da República (2004), in addition to other duties, every citizen must pay their contributions and taxes, to defend and preserve the environment and protect and preserve the good public and community. It is thus recommended that the fishing communities of Mozambique in general, and in particular, pursue the rational and sustainable use of fisheries resources available, using the fishing gear, and rules and regulations provided for in the established legislation.

To the same degree, the fishing communities must support and adhere to government programs relating to education, such as the case of adult education and co-management of fisheries, in order to obtain knowledge that can serve not only to

conserve and manage fishery resources, but also to promote development of the communities.

### 6.2.3 To the General Level

All of the authorities and civil society, in general, need to become more involved in preventing and combating IUU fishing in order to avoid overfishing and potentially even the commercial extinction of available fish stocks.

In general terms, the number of interviewees for this study was limited, and this survey result may not be considered conclusive for the entire country, and therefore, further more detailed studies should be undertaken on this topic with a view to finding more constructive advice for combating and preventing IUU fishing.

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## ANNEXS

### Annex I

**Table 14 - United States of the Indian Ocean (IOTC)**

Country	Acceptance	Country	Acceptance
Australia	13 November 1996	Maldives	13 July 2011
China	14 October 1998	Mauritius	27 December 1994
Comoros	14 August 2001	Mozambique	13 February 2012
Eritrea	9 August 1994	Oman, Sultanate of	5 April 2000
European Union	27 October 1995	Pakistan	27 April 1995
France	3 December 1996	Philippines	9 January 2004
Guinea	31 January 2005	Seychelles	26 July 1995
India	13 March 1995	Sierra Leone	1 July 2008
Indonesia	20 June 2007	Somalia	22 May 2014
Iran, Islamic Republic of	28 January 2002	Sri Lanka	13 June 1994
Japan	26 June 1996	South Africa	16 February 2016
Kenya	29 September 2004	Sudan	3 December 1996
Korea, Republic of	27 March 1996	Tanzania	18 April 2007
Madagascar	10 January 1996	Thailand	17 March 1997
Malaysia	22 May 1998	United Kingdom	31 March 1995
		Yemen	20 July 2012

Source: FAO,2017

## Annex II

**Table 15 - Agreement on port state measures to prevent, deter and eliminate Illegal, Unreported and Unregulated Fishing - Last update: 19 May 2017**

Participant	Signature	Ratification	Acceptance	Approval	Accession
Albânia					7 Apr 2017
Angola	22 Nov 2009				
Austrália	27 Apr 2010	20 Jul 2015			
Bahamas					7 Oct 2016
Barbados					2 Feb 2016
Benim	28 Sep 2010				
Brazil	22 Nov 2009				
Cabo Verde					23 Jun 2016
Canada	19 Nov 2010				
Chile	22 Nov 2009	28 Aug 2012			
Costa Rica					4 Dec 2015
Cuba					25 Mar 2016
Dominicana					6 May 2016
European Union – Member Organization	22 Nov 2009			7 Jul 2011	
France	19 Nov 2010			11 Jul 2016	
Gabon	26 Apr 2010		15 Nov 2013		
Gambia					29 Jul 2016
Ghana	28 Oct 2010	29 Nov 2016			
Grenada					17 Jun 2016
Guinea					3 Jun 2016
Guyana					7 Mar 2016
Iceland	22 Nov 2009	16 Jun 2015			
Indonesia	22 Nov 2009	23 Jun 2016			
Japan					19 May 2017
Kenya	19 Nov 2010				
Madagascar					27 Mar 2017
Maldives					16 Mar 2017
Mauritania					23 Jan 2017
Mauritius					31 Aug 2015



Montenegro					17 May 2017
Mozambique	4 Nov 2010	19 Aug 2014			
Myanmar					22 Nov 2010
New Zealand	15 Dec 2009	21 Feb			
Norway	22 Nov 2009	20 Jul 2011			
Oman					1 Aug 2013
Palau					30 Nov 2015
Panama					21 Nov 2016
Peru	3 Mar 2010				
Republic of Korea					14 Jan 2016
Russian Federation	29 Apr 2010				
Samoa	22 Nov 2009				
Saint Kitts and Nevis					9 Dec 2015
Saint Vincent and the Grenadines					23 Jun 2016
Sao Tome and Principe					22 Nov 2016
Senegal					23 Mar 2017
Seychelles					19 Jun 2013
Sierra Leone	23 Nov 2009				
Somalia					9 Nov 2015
South Africa					16 Feb 2016
Sri Lanka					20 Jan 2011
Sudan					12 May 2016
Thailand					6 May 2016
Togo					2 Dec 2016
Tonga					6 May 2016
Turkey	9 Nov 2010				
United States of America	22 Nov 2009	26 Feb 2016			
Uruguay	22 Nov 2009	28 Feb 2013			
Vanuatu					6 May 2016

Source: FAO, 2017

### Annex III – Photography Report

**Figure 7- Fisherman Interview in Ingure-Nampula**



**Figure 8- Fishers Interview in Angoche-Nampula**



Source: Isidro Intave (Inguri - Angoche)

**Figure 9 - Use of Mosquito Net in Mucoroge Beach-Angoche-Nampula**



**Figure 10 - Use of Mosquito Net in Kuiricuije Beach – Angoche- Nampula**



Source: Isidro Intave (fishing centers of Mucoroge and Kuiricuidje)

**Figure 11 - Larvae of Fish Caught with Mosquito Net in Kuiricuidje Beach –Angoche - Nampula**



**Figure 12 - Larvae of Fish Caught with Mosquito Net in Mukoroje Beach - Angoche-Nampula**



Source: Isidro Intave (fishing center of Kuiricuidje)

## APPENDICES

### Appendix I - Letter to the respondents

Dear Respondent,

Thank you for taking the time to consider the attached questionnaire. Kindly take approximately 30 minutes of your time to answer the questions below and provide your contact information for any additional clarification and explanation of your response.

The purpose of the questionnaire is to collect data for a Master of Science Dissertation at the World Maritime University (WMU) about Negative Impacts of Illegal, Unreported and Unregulated Fishing perpetrated by fishermen in Mozambique, in particular in Nampula province. The World Maritime University (WMU) is the apex educational institution of the International Maritime Organization (IMO).

Data derived from this questionnaire is solely for the purpose of the dissertation and we hereby assure complete confidentiality. Your name (if given) will be anonymised in the final report. Further, the anonymised data will be stored until --- October 2017 after which the electronic files will be deleted and hard paper copies shredded.

We consider you an important part of this survey. Your participation—though purely voluntary—is critical to the success of the survey and is very much appreciated. If you have any questions, you are welcome to send them to Catarina Maria Arminda Elias Vasco using the following address for a prompt reply:

**Email: [s17023@wmu.se](mailto:s17023@wmu.se)**

Thank You

## Apêndice I - Carta aos Respondentes

Caro Respondente,

Obrigado por ter disponibilizado o seu tempo e em aceitar responder as questões que se seguem em anexo, num período de aproximadamente 30 minutos.

O propósito deste questionário é colectar dados para uma Dissertação de Mestrado na Universidade Marítima Mundial (WMU) sobre os Impactos negativos da Pesca Ilegal, Não reportada e Não Declarada (IUU) perpetrada pelos pescadores moçambicanos, no geral, em particular para a província de Nampula. A Universidade Marítima Mundial (MWU) é uma instituição educacional sob tutela da Organização Marítima Internacional (OMI), localizada na cidade de Malmo, Suécia.

Os dados provenientes deste questionário destinam-se exclusivamente à dissertação e assegura-se a sua total confidencialidade. Seu nome (se fornecido) será mantido em anonimato no relatório final.

A sua participação nesta pesquisa, embora puramente voluntaria, é considerada bastante importante, pelo que, antecipadamente são lhe endereçado sinceros agradecimentos. Se tiver alguma duvida deverá contactar a Catarina Maria Arminda Elias Vasco através do seguinte endereço:

**Email: [s17023@wmu.se](mailto:s17023@wmu.se)**

Obrigado pela atenção

## Appendix II - Instructions for completing the questionnaire

Please answer by checking the tick boxes or writing in the spaces provided for text. For the electronic version, text (words) can be filled in directly in the shaded blanks - \_\_\_\_\_ - which expand to fill in the amount of text you want to input. The check boxes are marked by clicking on them. To deselect a particular option, click on the box again.

In the spaces between parentheses square brackets [ ], you should mark with the letter X, clicking and typing in the middle of them or filling out using the pen as received the questionnaire in electronic version or printed, respectively.

The comments that you should write the last rectangle of the questionnaire.

Follow the specific instructions for each section and question. There is no right or wrong answers, by which we are interested in your opinion.

The time and effort in answering the questions are very much appreciated and we would like to thank you very much for your input and cooperation;

### **Return of the questionnaires:**

- If you received the electronic version of this questionnaire, kindly save your completed questionnaire under a suitable name of your choosing and then send it to the email address indicated below:

s17023@wmu.se

- If you were handed the questionnaire by a facilitator, kindly return it to the facilitator.

**Thank You**

## Apêndice II – Instruções de preenchimento do questionário

Por favor, responda marcando as casas ou escrevendo nos espaços previstos para o texto.

Para quem receber o questionário em versão eletrônica, o texto (resposta) pode ser digitado diretamente nos espaços em branco sombreados \_\_\_\_\_ devendo preencher a quantidade de texto que você desejar inserir.

Nos espaços entre parenteses rectos [ ], deverá assinala com a letra X, Clicando e escrevendo no meio deles ele ou preenchendo a caneta, conforme tenha recebido o questionário em versão eletrônica ou impressa, respectivamente.

Os cometários que tiver deverá escrever no ultimo retângulo do questionário.

Siga as instruções específicas para cada secção e pergunta. Não há respostas certas ou erradas, pelo que estamos interessados com a sua opinião.

Retorno dos questionários:

Se você recebeu a versão eletrônica deste questionário, preencha o questionário como foi instruído e envie para o endereço de e-mail indicado abaixo:

s17023@wmu.se

Muito Obrigado

**Apêndice III – Questionário para pescadores**  
**(Appendix III - Questionnaire for fishers)**

Data(e) \_\_\_\_/\_\_\_\_/ 2017

Lugar(Place)

**PARTE A**

**PART A**

Perfil do entrevistado (Respondent's Profile):

1.Nome (Opcional) \_\_\_\_\_

Name (Optional)

2.Favor indique o seu género                      Masculino [ ] Feminino [ ]

Please, indicate your gender                      Male                      Female

3.Favor preencha a sua idade (Please fill in your age):

a.     20 - 30    [ ]

b.     31 – 40    [ ]

c.     41 - 50    [ ]

d.     51 – 60    [ ]

e.     61+        [ ]

4.Favor indique a sua função na pesca (Please indicate your category in fisheries)

Pescador Fisherman                      [ ]

Marinheiro (Sailor) [ ]

Outra (Other)    [                      ]                      - Especificar (Specify)

5.A quanto tempo é que realiza a pesca? (How long to do practice the fishing)?



## PARTE B

### PART B

Esta secção pretende trazer o nível de conhecimento do entrevistado sobre a prática da pesca ilegal, não reportada e não regulamentada e das normas que regulam a pesca (This section aims to bring the level of knowledge of the interviewed about the practice of illegal fishing, unreported and unregulated and the rules that governing fishing):

1.Sabem o que é pesca ilegal, não reportada e não regulamentada (IUU)?  
(Do you know what is illegal, Unreported and Unregulated Fishing?)

a. Sim [ ]  
yes

b. Não [ ]  
No

Se sim, favor indique os tipos de IUU que conhece:  
(If yes, please indicate the types of IUU fishing)

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2.Sabem se existe um regulamento para Pesca?  
(Do you know if there is a regulation for fishing?)

a. Sim [ ]  
yes

b. Não [ ]  
No

3.Sabem que para pescar tem de estar licenciado?  
(Do you know that to fish must be licensed?)

a. Sim [ ]

Yes

b. Não [ ]

No

4. Sabem se praticam a pesca ilegal na sua comunidade?

(Do you know if your community practice in illegal fishing?)

a. Sim [ ]

Yes

b. Não [ ]

No

Se sim, quais os tipos de pesca ilegal? E porque praticam?

(If yes, what are the types of illegal fishing that practice? And because they practice?)

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5. Quais os principais problemas que os pescadores da sua comunidade têm enfrentado na aplicação as normas que regulam a pesca?

(What are the main problems that fishers of their community have faced in applying the rules governing fishing?)

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## 6.Comentários (Reviews)

Agradecemos pelo preenchimento e conclusão deste questionário  
(Thank you for filling out and completing this questionnaire)

**Apêndice IV – Questionário para Instituições**  
**(Appendix IV - Questionnaire for Institutions)**

**Administração Marítima (ADMAR)**  
**(Maritime Administration)**

Data(e) \_\_\_\_/\_\_\_\_/ 2017

Lugar(Place)

\_\_\_\_\_

**PARTE A**

Part A

Perfil do entrevistado (Respondent's Profile):

1.Nome (Opcional) \_\_\_\_\_

Name (Optional)

2.Favor indique o seu género                      Masculino [  ] Feminino [  ]

Please, indicate your gender                      Male                      Female

3.Favor preencha a sua idade (Please fill in your age):

a.     20 - 30    [  ]

b.     31 – 40    [  ]

c.     41 - 50    [  ]

d.     51 – 60    [  ]

e.     61+        [  ]

4.Qual é a sua função na Administração Marítima (Se não é o Administrador, favor de especificar o departamento ou repartição)

What is your position in the Maritime Administration? (please specify the department or division)

\_\_\_\_\_

5. Há quanto tempo você trabalha em sua instituição?

(How long have you been working in ADMAR?)

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6. Nas suas funções diárias tem se deparado com a pesca ilegal, não reportada e não regulamentada? Se sim, de que maneira?

In your daily functions have you been impeded by illegal, unreported and unregulated fishing? If yes, in what way?

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## **SECÇÃO B**

### **SECTION B**

Esta secção pretende compreender sobre o nível de conhecimento e envolvimento da Administração Marítima nas acções de prevenção e combate da pesca ilegal, não reportada e não regulamentada:

This section seeks to understand about the level of knowledge and involvement of the Maritime Administration in actions to prevent and combat illegal, unreported and unregulated fishing

1. Quais os tipos de pesca ilegal não reportada e não regulamentada que têm sido registados na sua área de jurisdição?

What are the types of IUU that are practise in your jurisdiction?

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2. Qual o nível de envolvimento da sua instituição na questão de prevenção e combate da pesca ilegal não reportada e não regulamentada?

What are level of involvement of Maritime Administration on the issue of preventing and combating illegal unreported and unregulated fishing?

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3.Qual é o nível de recursos e capacidade disponível para aplicação das normas no combate a pesca ilegal, não reportada e não regulamentada?

What is the level of resources and available capacity for implementation of standards in combating illegal unreported and unregulated fishing?

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4.Quais têm sido os problemas enfrentados pela sua instituição na aplicação das normas e regulamentos aos pescadores?

What are the problems that ADMAR has faced in application of the rules and regulations to fishermen?

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5.Comentários (Review)

Agradecemos pelo preenchimento e conclusão deste questionário

Thank you for filling out and completing this questionnaire

**Delegação Provincial da Administração Pesqueira  
(Provincial Delegation of Fisheries Administration)**

Data (e)\_\_\_\_/\_\_\_\_/ 2017  
(Place)\_\_\_\_\_

Lugar

**PARTE A**

**PART A:**

Perfil do entrevistado (Respondent's Profile):

1.Nome (Opcional) \_\_\_\_\_

Name (Optional)

2.Favor indique o seu género                      Masculino [ ] Feminino [ ]

Please, indicate your gender                      Male                      Female

3.Favor preencha a sua idade (Please fill in your age):

a.     20 - 30    [ ]

b.     31 – 40    [ ]

c.     41 - 50    [ ]

d.     51 – 60    [ ]

e.     61+        [ ]

4.Qual é a sua função na Delegação Provincial da Administração Nacional das Pescas (Se não é o Delegado, favor de especificar o departamento ou repartição)

What is your position in the Provincial Delegation of Fisheries Administration (please specify the department or division)

\_\_\_\_\_

5.Há quanto tempo você trabalha em sua instituição?

(How long have you been working in ADNAP?)

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6. Nas suas funções diárias tem se deparado com a pesca ilegal, não reportada e não regulamentada? Se sim, de que maneira?

In your daily functions have you been impeded by illegal, unreported and unregulated fishing? If yes, in what way?

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## **SECÇÃO B**

### **SECTION B**

Esta secção pretende compreender sobre o nível de conhecimento e envolvimento da Delegação Provincial da Administração Nacional das Pescas nas acções de prevenção e combate da pesca ilegal, não reportada e não regulamentada:

This section seeks to understand about the level of knowledge and involvement of the Provincial Delegation of the Fisheries Administration in actions to prevent and combat illegal fishing, not reported and unregulated

1. Quais os tipos de pesca ilegal não reportada e não regulamentada que têm sido registados na província?

What are the types of illegal unreported and unregulated fishing which have been registered in the province?

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2. Quais têm sido as estratégias da sua instituição em relação a prevenção e combate da pesca ilegal, não reportada e não regulamentada?

What are the strategies of ADNAP regarding the prevention and combating of illegal fishing, not reported and unregulated?

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3.Quais são as ferramentas que a sua instituição tem para o combate da pesca ilegal, não reportadas e não regulamentada? E como você tem usado?

What are the frameworks that ADNAP use to combat illegal fishing, unreported and unregulated? And how have you used?

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4.Qual é o nível de recursos e capacidade disponível para aplicação das normas no combate a pesca ilegal, não reportada e não regulamentada?

What is the level of resources and available capacity for implementation of standards in combating illegal, unreported and unregulated fishing?

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5.Quais têm sido os problemas enfrentados pela sua instituição na aplicação das normas e regulamentos aos pescadores?

What are the problems that ADNAP has faced in the application of rules and regulations to fishers?

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6.Comentários (Reviews)

Agradecemos pelo preenchimento e conclusão deste questionário  
(Thank you for filling out and completing this questionnaire)

**Direcção Provincial do Mar, Aguas Interiores e Pescas(DPMAIP)**  
**Provincial Direction of the Sea, Inland Waters and Fisheries**

Data(e) \_\_\_\_/\_\_\_\_/ 2017

Lugar(Place)

\_\_\_\_\_

**PARTE A**

**PART A**

Perfil do entrevistado (Respondent's Profile):

1.Nome (Opcional) \_\_\_\_\_  
Name (Optional)

2.Favor indique o seu género                      Masculino [ ] Feminino [ ]  
Please, indicate your gender                      Male                      Female

3.Favor preencha a sua idade(Please fill in your age):

- a.     20 - 30    [ ]
- b.     31 – 40    [ ]
- c.     41 - 50    [ ]
- d.     51 – 60    [ ]
- e.     61+        [ ]

4.Qual é a sua função na Direcção Provincial do Mar, Águas Interiores e Pescas  
(Se não é o director, favor de especificar o departamento ou repartição)

What is your position in the Direcção Provincial do Mar, Águas Interiores e Pescas  
(Please specify the department or division)

\_\_\_\_\_

5.Há quanto tempo você trabalha na DPMAIP?

(How long have you been working at DPMAIP?)

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6. Nas suas funções diárias tem se deparado com a pesca ilegal, não reportada e não regulamentada? Se sim, de que maneira?

In your daily functions have you been impeded by illegal, unreported and unregulated fishing? If yes, in what way?

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## **SECÇÃO B**

### **SECTION B**

Esta secção pretende compreender sobre o nível de conhecimento e envolvimento da Direcção Provincial do Mar, Aguas Interiores e Pescas (DPMAIP) nas acções de prevenção e combate da pesca ilegal, não reportada e não regulamentada:

This section seeks to understand about the level of knowledge and involvement of the DPMAIP in actions to prevent and combat illegal, unreported and unregulated fishing:

1. Quais os tipos de pesca ilegal não reportada e não regulamentada que têm sido registados na província? What are the types of illegal unreported and unregulated fishing which have been registered in the province?

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2. Quais têm sido as formas de prevenção e combate à pesca ilegal, não reportada e não regulamentada que a sua instituição tem realizado? What are the ways of prevention and combating illegal, unreported and unregulated fishing, that DPMAIP has done?

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3.Quais as instituições que colaboram na questão do combate da pesca ilegal, não reportada e não regulamentada? What are the institutions that collaborate on the issue of combating illegal, unreported and unregulated fishing?

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4.Quais são as ferramentas que a sua instituição tem para o combate da pesca ilegal, não reportadas e não regulamentada? E como você tem usado?  
What are the frameworks that DPMAIP use to combat illegal fishing, not reported and unregulated? And how have you used?

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5.Quantos funcionários de fiscalização da pesca operam ao nível dos centros de pesca da província de Nampula?  
How many fishing surveys operate at the level of fishing centers in the province of Nampula?

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6.Qual têm sido os principais desafios na aplicação das normas e regulamentos no seio dos pescadores?  
What are the main challenges in the application of rules and regulations within the fishers?

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## 7.Comentários (Reviews)

Agradecemos pelo preenchimento e conclusão deste questionário

Thank you for filling out and completing this questionnaire