



# **The protection of deep-water ecosystems by the North East Atlantic Fisheries Commission:**

**How external factors determine the effectiveness of the regime**

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**WAGENINGEN UNIVERSITY**

*Cover picture: Lophelia pertusa are common deep-water corals in the North East Atlantic. In the background are Alfonsino (Beryx decadactylus); a commonly targeted high sea fish species. Source of picture: <http://www.photolib.noaa.gov/bigs/expl2317.jpg>*

# **The protection of deep-water ecosystems by the North East Atlantic Fisheries Commission:**

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## Foreword

“Saving the oceans” was my initial motive to study Forest and Nature Conservation at the Wageningen University. I have to say, in the first three year of my study, all I ever saw were leaves, grasses and the occasional peat bogs. During my bachelor thesis, I finally saw the opportunity to specialize in my major interest: environmental marine conservation. I wrote a bachelor thesis on the designation of EU marine protected areas (MPAs) by the Netherlands. From that moment, I was certain that my master thesis would head in the same direction. I am very thankful, that my study has the possibilities to research the topics I am the most interested in. Nature conservation is not just about what we can see with our own eyes, without getting wet. Not seeing what happens beneath the surface of the ocean, does not mean that we should not worry about it.

You cannot even see deep-water ecosystems when getting wet, as these ecosystems are found at depths of over multiple kilometers. However, the amount of biodiversity in deep-water ecosystems, such as coral reefs and hydrothermal vents, has astonished many scientists. Many more species are left to discover; far less species are actually known. Not only biological science is necessary to protect these ecosystems; effective policies and management measures are important as well. This has been my main motive to study the effectiveness of conservation measures developed by the North East Atlantic Fisheries Commission (NEAFC) for the protection of deep-water ecosystems.

I want to thank my supervisor Dr. Ingrid Visseren-Hamakers for her effort in guiding me through the process. I really enjoyed her straightforward way of thinking and speaking, as well as her tactical ‘exaggerations’ to make things clear. I definitely benefited from her comments and advice. I also want to thank Dr. Oscar Bos for his time, advice and the opportunity to go to a workshop in Lisbon, I almost dared to take on. I want to thank Dr. Matthew Gianni for our conversation in a pub in Amsterdam, I also obtained some valuable data. I want to thank Dr. Erik Jaap Molenaar for his time in explaining all the applicable policies. Of course, I also want to thank all the other interviewees for their cooperation; from ethical considerations, I cannot mention their names.

I also want to thank the people who are close to me. I want to thank Meike for her support, advise, track changes and good food. I want to thank Gijs for playing tennis and table tennis. I want to thank Guus for feeding the carp in the Lumen pond, and Peter for feeding the carp in Zeewolde. Last, I want to thank my parents for their support, even though they were in Suriname most of the time.

Without all these people, writing my thesis would not be as enjoyable or even possible.

Rutger de Jong,

September, 2011

## Summary

The deep-water fishery in the North East Atlantic has developed rapidly since the invention of new resources such as fossil fuels and technologies such as sonars, freezers, and GPS since the middle of the 20<sup>th</sup> century. A deep-water fishery is defined, by the International Council for the Exploration of the Sea (ICES), as fishery taking place at depths of over 400 meters. However, these days vessels are able to fish at depths of more than 2 kilometers. The depletion of several fish stocks close to shore have increased the deep-water fishery more dramatically. As a result, some deep-water fish stocks are being overfished as well. Furthermore, the bycatch of deep-water corals and sponges have caused concern, as these deep-water ecosystems are often very old (some are over 4000 years old) and provide important habitats for other species. From all the deep-water fishing methods used in the North East Atlantic (deep-water bottom trawling, longline fishing and drift net fishing), deep-water bottom trawling has the most profound impact on deep-water ecosystems. Deep-water bottom trawling is, in fact, the most impacting human activity on deep-water ecosystems in the North East Atlantic.

Because of this reason, this research focuses on deep-water bottom trawling in the north East Atlantic. Furthermore, the geographical area is limited to the high seas; an area outside the Exclusive Economic Zone (EEZ), 200 nautical miles from shore. In this area, the North East Atlantic Fisheries Commission (NEAFC) is the only applicable organization with regard to developing management measures for the protection of deep-water ecosystems. The aim of this study, is to find out how effective the NEAFC is in developing measures for the protection of deep-water ecosystems against deep-water bottom trawling. I focus on the effectiveness of the output (rules, regulation) and the outcome (behavioral change of the fishery). This has resulted in the following research questions:

1. What is the effectiveness of the North East Atlantic Fisheries Commission with regard to the protection of deep-water ecosystems against deep-water bottom trawling?
  - a. What is the output effectiveness?
  - b. What is the outcome effectiveness?
  - c. What are the side-effects?
2. How can this effectiveness be explained?

For answering these research questions, the regime theory is used. On this premises, the NEAFC is regarded as a regime. For researching the output effectiveness (stringency, inclusiveness and collaboration) and outcome effectiveness of the NEAFC regime, the regime effectiveness literature is used. The side-effects derive from the methods; there is no accurate classification of side-effects available in the literature as they will vary greatly among different regimes. For assessing how this effectiveness can be explained, the regime effectiveness literature is used for the following variables; scientific uncertainty, problem malignancy, rules for decision-making, the presence of an inter-governmental organization (IGO), the presence of an epistemic community, and the division of basic power and leadership. External factors can influence a regime effectiveness as well. One predetermined external factor was used: regime interaction, the other external factors were left open as they were derived from the data.

The selected research design is an in-depth qualitative case study. Data gathering is done by

interviewing 11 experts related to the regime. The semi-structured interviews were mainly done by telephone and Skype. As the NEAFC is a Regional Fisheries Management Organization (RFMO), developed under the United Nations Fish Stock Agreement (UNFSA), it has an international obligation to embed provisions for the protection of vulnerable marine ecosystems (VMEs), such as United Nations General Assembly (UNGA) resolutions. Therefore, documents such as UNGA resolutions were compared the NEAFC's output.

On the basis of the results, the main conclusions are, that the output effectiveness is moderately high, but there are some major shortcomings. Some regulations such as the move-on rule, and the differentiation between new and existing bottom fishing areas are ineffective. This ineffectiveness is caused by cognitive interaction, as the regulations are adopted under another RFMO: the North West Atlantic Fisheries Organization (NAFO). However, the regime's age is another factor as the regulations are only in place since 2008, and the first review of these regulations will not be done before 2012. The stringency of the NEAFC is high as it has gained the status of international law, the precision is high as all of NEAFC's texts related to the subject, leave little room for interpretation. Only the 'unconditionality' of obligation is low, as Contracting Parties can object thereto, meaning that the recommendations will not be legally binding on them.

The outcome effectiveness is difficult to value because of the regime's age. However, external factors such as high oil prices combined with long distances from shore, and sufficient quota of high value fish species within EEZs, have led to an ever decreasing deep-water fishery in the NEAFC convention area. On the Mid-Atlantic Ridge, there is no fishing at all, since the Russian Federation abandoned the area in the 1980s. Furthermore, the differentiation between existing and new bottom fishing areas (resulting from the output), means that the new regulations do not require behavioral change as vessels can continue to fish in roughly the same areas. There are increasingly fewer VMEs encountered. This can also be attributed to the ever decreasing deep-water fishery. Furthermore, there is a surge in 'bank fisheries'; in these areas VMEs are less abundant. There were few side-effects, although the lack of fishing on the Mid-Atlantic Ridge means, that fewer scientific data is gathered as most of the scientific data originates from VME encounters.

The main determine factors, explaining the regime effectiveness of the NEAFC in protecting deep-water ecosystems against deep-water bottom trawling, are therefore external factors. The presence of an IGO has added pressure on the NEAFC to honor their obligation for embedding the UNGA resolutions into their own regime. Furthermore, the NEAFC's output is mainly derived from cognitive interaction under the NAFO, which is, therefore, another main determining factor.

## List of abbreviations

<b>CBD</b>	<b>Convention on Biological Diversity</b>
<b>CFP</b>	<b>EU Common Fisheries policy</b>
<b>CNCP</b>	<b>Cooperating Non-Contracting Party</b>
<b>CP</b>	<b>Contracting party</b>
<b>EEZ</b>	<b>Exclusive Economic Zone</b>
<b>FAC</b>	<b>Finance and Administration Committee</b>
<b>FAO</b>	<b>United Nations Food and Agricultural Organization</b>
<b>GPS</b>	<b>Global Positioning System</b>
<b>ICCAT</b>	<b>International Commission for the Conservation of Atlantic Tuna</b>
<b>ICES</b>	<b>International Council for the Exploration of the Sea</b>
<b>ISA</b>	<b>International Seabed Authority</b>
<b>IGO</b>	<b>Inter-Governmental Organization</b>
<b>IUU</b>	<b>Illegal, Unreported, and Unregulated fishing</b>
<b>MPA</b>	<b>Marine Protected Area</b>
<b>NAFO</b>	<b>North West Atlantic Fisheries Organization</b>
<b>NASCO</b>	<b>North Atlantic Salmon Conservation Organization</b>
<b>NEAFC</b>	<b>North East Atlantic Fisheries Commission</b>
<b>OSPAR</b>	<b>Oslo and Paris Conventions</b>
<b>PECCOE</b>	<b>Permanent Committee on Control and Enforcement</b>
<b>PECMAS</b>	<b>Permanent Committee on Science and Management</b>
<b>RFMO</b>	<b>Regional Fisheries Management Organization</b>
<b>SEAFO</b>	<b>South East Atlantic Fisheries Organization</b>
<b>UNCLOS</b>	<b>United Nations Convention for the Law of the Sea</b>
<b>UNFSA</b>	<b>United Nations Fish Stock Agreement</b>
<b>UNGA</b>	<b>United Nations General Assembly</b>
<b>VME</b>	<b>Vulnerable Marine Ecosystem</b>
<b>VMS</b>	<b>Vessel Monitoring System</b>



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# 1 Introduction

Deep-water fishing, as it is done today, is a relatively new fishery. Before the middle of the 20<sup>th</sup> century, it was technically impossible to fish at great depths on a large scale. However, resources like fossil fuels and technologies like freezers, sonar and GPS have transformed this. Since these developments, fishing vessels are able to fish further from shore, find productive fishing grounds in deep water, and the catch can be preserved better on long fishing trips (Cullis-Suzuki and Pauly, 2010; Gordon et al., 2003). Today, fishermen are able to fish at depths of around 2,000 meters (Gjerde, 2006) although the most productive 'deep-water' fishing grounds are found at depths no more than 1,500 meters (Gordon, 2001). A fishery is defined by the International Council for the Exploration of the Sea (ICES) as a 'deep-water fishery' at depths of over 400 meters. True deep-water fish species are regarded as fish which on average live at depths of over 400 meters and are scientifically poorly understood (Bjørndal, 2009; Gordon et al., 2003). Besides an increase in technology, this deep-water exploitation was triggered by a large decrease in fish stocks at lower depths and closer to shore (Freestone, 2010; Davies et al., 2007). This certainly applies to the deep-water fishery in the North East Atlantic. For the North-East Atlantic, new technologies and the depletion of coastal fish species did trigger a large increase in deep-water fishing. A large decrease in the catches of some coastal fish species like Atlantic cod (*Gadus morhua*) triggered deep-water fishing in this region (Hall-Spencer et al., 2002). Even though there were some deep-water fishing activities before the middle of the 20th century, this was mainly on the Azores and of the west coast of Portugal where the continental shelf is both narrow and close to shore. The slopes of the continental shelf are good deep-water fishing grounds with steep drop-offs. Because of this proximity of the continental shelf to the coast, fishermen were able to fish in deep water without traveling long distances (Gordon et al., 2003; Hall-Spencer et al., 2002). The consequences of this relatively recent exploitation of newly targeted fish species are profound as many targeted deep-water fish species are already heavily exploited (Cullis-Suzuki and Pauly, 2010; Gordon et al., 2003; Hall-Spencer et al., 2002; Bjørndal, 2009; Davies et al., 2007).

In this study, I will focus on the North East Atlantic region, because it fits into the historic representation of global deep-water fishing as the increase of deep-water fishing was triggered by a decrease in accustomed species like Atlantic cod. Furthermore, the North East Atlantic is an interesting area in terms of ecology. The region has large deep-water ecosystems consisting of by benthic fauna like cold water corals and sponges. There are cold-water coral reef systems of over 4,500 years old (Hall-Spencer et al., 2002) and cover around 100 km<sup>2</sup> (Gjerde, 2006). These reefs contain a very high biodiversity (Gjerde, 2006; Hall-Spencer et al., 2002; Blaustein, 2010) and are threatened by deep-water fishing activities (Gjerde, 2006, Hall-Spencer et al., 2002; Roberts, 2002; Gordon et al., 2003; Davies et al., 2007).

There are two main deep-water fisheries in the North-East Atlantic: Longline fishing (long lines with intervals of extension lines with baited hooks) and deep-water bottom trawling (Gordon, 2001; Gordon et al., 2003). Even though longline fishing is capable of overexploiting fish stocks and it is notorious for its bycatch (accidental catch of untargeted species such as sharks, seabirds, turtles, seals and whales (Roberts, 2002), the real impact on deep-water ecosystems is caused by deep-water bottom trawling (Gordon et al., 2003, Hall-Spencer et al., 2002; Benn et al., 2010; Davies et al.,

2007; Bailey et al., 2009). This type of deep-water fishing involves trawling nets which are towed over the ocean floor and held apart by large and heavy trawl doors. In order to follow the contours of the ocean floor with the nets, rock hoppers (large rollers at the bottom of the net) are used. These rock hoppers enable fishermen to trawl across very rugged terrain such as large boulders and rocks while decreasing the chance of getting stuck to the ocean floor and damaging expensive nets (Roberts, 2002; Davies et al., 2007; Hall-Spencer et al., 2002). Unfortunately, these devices have a devastating impact on deep-water ecosystems like cold-water corals and sponges (Hall-Spencer et al., 2002; Roberts, 2002; Gordon et al., 2003; Gjerde, 2006). In fact, in some fisheries like the Orange Roughy fishery in New Zealand, more than twice as much mass in coral is brought on board than the targeted fish itself (Gjerde, 2006). As these corals and sponges create important habitats for other organisms, the impact is far reaching (Hall-Spencer et al., 2002; Gordon, 2001; Gordon et al., 2003; Davies et al., 2007; Blaustein, 2010). Not only do these deep-water ecosystems provide food and shelter for other species, such as fish and crustaceans, but they also serve other ecosystem services such as pharmaceuticals, medicines and drugs against a variety of diseases (Beaumont et al., 2007; O'Hanlon, 2006). Due to its profound impact on the ocean floor, its ecosystems and individual species, I will focus on deep-water bottom trawling. Fortunately, unlike in some other regions in the world (North-East Pacific and the South-West Atlantic), deep-water fish stocks in the North East Atlantic are managed, and some policies for the protection of benthic fauna are in place (Ardron et al., 2008).

Within the Exclusive Economic Zones (EEZs) of European Union Coastal states, which stretches for 200 nautical miles (370,4 kilometers) from the baseline of coastal states (Freestone, 2010), fish stock regulation is embedded into the Common Fisheries Policy (CFP) of the European Union (EU). In addition, fisheries in these waters are obliged to take measures according to the more progressively regarded Marine Strategy Framework Directive (MSFD) (Rätz et al., 2010). Outside the EEZ of coastal states in the North East Atlantic, referred to as the 'high seas', fisheries are managed by the North East Atlantic Fisheries Commission (NEAFC). The NEAFC is a Regional Fisheries Management Organization (RFMO) according to the 1995 United Nations Fish Stock Agreement (UNFSA). The UNFSA is an agreement under the United Nations Convention on the Law of the Sea, which was first agreed to in 1982 (Bjørndal, 2009; Rätz et al., 2010). Also, the 1992 Oslo Paris (OSPAR) Convention on the Protection of the Marine Environment of the North-East Atlantic made some provisions for the protection of high seas deep-water ecosystems and species, though these provisions are not legally binding and do not concern fishery's impacts (Dotinga and Molenaar, 2008).

Researching the actual impact of these rules, regulations and programmes on the status of deep-water ecosystems in the North East Atlantic is very relevant. However, there are almost too many variables to positively link the causes and effects (Underdal, 2002a). Abiotic variables like climate change and biotic variables like predation or fertility cannot be excluded as variables determining the results. Furthermore, to assess the impact effectiveness a much longer time-span is needed than feasible for this thesis (Underdal, 2002a). On the other hand, a vast body of literature has been developed on the possible effectiveness of these rules, regulations and programs in terms of behavioral change (Miles et al., 2002; Herndon et al., 2010). Authors like Young (1980), and Miles et al. (2002) have used the term 'regime' for all the applicable rules, norms and regulations on a certain topic.

Within the regime literature, some authors have measured the effectiveness of fisheries regimes, including high sea fishery regimes (Stokke, 2007a/b). Even the effectiveness of the NEAFC has already been studied. However, this was done on the basis of organizational performance; how rules are adopted from overarching policies and whether the fishery itself has improved since the establishment of the NEAFC (Bjørndal, 2009). Furthermore, the study of Bjørndal (2009) did not go into great detail about the protection of deep-water ecosystems. Building on this research, this study tries to find out whether the regime covering the deep-water fishing in the North East Atlantic is effective in terms of its output (rules, norms and principles) and its outcome (the consequences of its output in terms of behavioral change) in protecting deep-water ecosystems from the impacts of deep-water bottom trawling. Furthermore, this study wants to find out whether the effectiveness can be explained through existing theories on regime effectiveness. As deep-water fishing is regarded as the most impacting human activity on deep-water ecosystems (Benn et al., 2010), the applicable regime which will be researched is the North East Atlantic Fisheries Commission (NEAFC). Since the NEAFC is the only regime in the North East Atlantic, authorized to install fisheries management measures; this selection and scientific objective leads to the following main research questions:

1. What is the effectiveness of the North East Atlantic Fisheries Commission with regard to the protection of deep-water ecosystems against deep-water bottom trawling?
  - a. What is the output effectiveness?
  - b. What is the outcome effectiveness?
  - c. What are the side-effects?
2. How can this effectiveness be explained?

## 2 Empirical background

In this chapter the historical and contextual background of the deep-water fishery in the North East Atlantic will be elaborated upon. First, the fishing method (deep-water bottom trawling) and the issues concerning this method is shortly described after which the applicable policies and policy issues are explained.

### 2.1 Deep-water bottom trawling

Deep-water bottom trawling started at the end of the 1960s by the Soviet Union and other Eastern European countries west of the Rockall Plateau and the Hatton Bank (Annex 1). At that time, fishing was mainly focused on roundnose grenadier (*Coryphaenoides rupestris*), but no exact data from catches was recorded and bycatch was probably marketed as well (Gordon, 2001; Gordon et al., 2003). In the Northern parts of the Rockall Bank, German trawlers started fishing on spawning aggregations of blue ling (*Molva dypterygia*) at the beginning of the 1970s. This German fleet was eventually replaced as the dominant fleet by the French in the middle of the 1970s. The French, who were fishing for coalfish (*Pollachius virens*) at the edge of the continental shelf, started to fish in deeper water where they overtook the blue ling fishing. In these days, other species like deep-water sharks and current target species such as black scabbard fish (*Aphanopus carbo*) and roundnose grenadier were discarded as bycatch (Gordon, 2001). In the late 1980s, deep-water bottom trawling expanded greatly as a result from the sharply declining catches in shallow seas (Hall-Spencer et al., 2002). It was also at the end of the 1980s when the French started with a multi-species fishery resulting from a marketing initiative by the French industry to sell more species of fish. By now, deep-water shark species like gulper shark (*Centrophorus granulosus*), leafscale gulper shark (*Centrophorus squamosus*) and Portuguese dogfish (*Centroscymnus coelolepis*), and other fish species such as roundnose grenadier and black scabbardfish are deliberately caught and marketed (Gordon, 2001). The French benefited from an easy access to local markets that easily accept new fish species (Gordon et al., 2003). Apart from this mixed bag fishery, the French also developed a fishery for orange roughy (*Hoplostethus atlanticus*) which takes place at different places (steep drop-offs and sea mounts) and at greater depths (up to 1,700 meters) (Gordon, 2001).

Where longline fishing is relatively selective and has a low impact on the ocean floor, deep-water bottom trawling is the opposite. In fact, deep-water bottom trawling has little bycatch in the shape of seabirds and turtles, but far more bycatch in the shape of juvenile and non-target fish species (Roberts, 2002; Davies et al., 2007; Hall-Spencer et al., 2002; Gordon, 2001; Gordon et al., 2003). Furthermore, the mortality of discarded bycatch is 100% as fish hauled in from great depths expand their swim bladder too much when the change in water pressure suddenly decreases. Their physical properties make it impossible to recover from a haul. Next to the caught fish, a large number of fish are lost from the nets when the mesh size is too large. These fish usually still come in contact with the net and as deep-water fish species often have a soft and fragile body structure, the mortality of escaped fish is high (Roberts, 2002; Gordon, 2001).

Consequently, other life forms are damaged by deep-water bottom trawling as the ocean floor gets 'ploughed'. In fact, deep-water bottom trawling is by far the most damaging human activity on the deep seafloor in the North East Atlantic. Deep-water bottom trawling is more damaging than other



human activities like scientific research, submarine communication cables, waste disposal, military activities, and the oil and gas industry (Benn et al., 2010). Benthic (Bottom confined) fauna such as sponges and corals are easily damaged by rock hoppers and trawl doors and are often hauled in. In some cases, the amount of coral brought on board exceeds the amount of targeted fish. In the beginning of the fishery on orange roughy in the South Tasmanian Rise near New Zealand, 10,000 ton of cold water corals was hauled, which was nearly 2,5 times more than the amount of orange roughy caught (Gjerde, 2006). Such a damaging impact on benthic fauna, in turn, changes the whole state of the ecosystem (Hall-Spencer et al., 2002; Gordon, 2001; Gordon et al., 2003; Davies et al., 2007; Blaustein, 2010). In fact, benthic fauna are often mentioned as the foundations of many deep-water ecosystems as they create opportunities for other life forms for feeding, sheltering and as nursery grounds (Roberts, 2002).

Another major issue regarding damage to deep-water benthic fauna is its slow growth rate. In deep-water ecosystems, the conditions of low light and cool temperatures generally causes low growth rates, which is at least the case for deep-water corals. Some deep-water coral reef systems are 8,500 years old (Gjerde, 2006), and in the North East Atlantic, broken pieces of corals were estimated to be at least 4,550 years old (Hall-Spencer et al., 2002). Because of their slow growing rates, deep-water corals will not easily recover, if they recover at all (Gjerde, 2006; Roberts, 2002).

## **2.2 Policies**

In this paragraph, the existing policies with regard to the protection of deep-water ecosystems against deep-water bottom fishing in the North East Atlantic will be presented. In this section, the existing policies are structures from an international level towards a regional level.

### **2.2.1 United Nations policies**

The policies regarding deep-water fishing in the North East Atlantic cannot be directly enforced by individual countries, because some of the fishery on deep-water species occurs outside national jurisdiction on the high seas (Bjørndal, 2009). The high seas refer to the area beyond the national jurisdiction of coastal states, as determined by the United Nations Convention on the Law of the Sea (UNCLOS), which was agreed upon in Jamaica in 1982. The area within the national jurisdiction of coastal states is known as the Exclusive Economic Zone (EEZ) which stretches 200 nautical miles (370,4 kilometers) from the baseline of coastal states (Freestone, 2010).

In contrast to the EEZs, coastal states have no explicit jurisdiction on the high seas. Instead, every nation on has the same rights over the high seas whether it is a coastal state or a landlocked state (a state not bordering sea or ocean). For landlocked states, access to resources on the high seas is obviously more difficult (Kaye, 2004).

The UNCLOS, article 87 states the freedom of the high seas in 6 ways:

1. Freedom of navigation
2. Freedom of overflight
3. Freedom to lay submarine cables and pipelines
4. Freedom to construct artificial islands and other installations permitted under international

law

5. Freedom of fishing
6. Freedom of scientific research

Still, countries do not only have rights regarding the high seas, they also have duties. Since the foundation of the UNCLOS, there has been some jurisdictional agreements on high seas resources, but only for non-living resources such as gas and mineral resources. The jurisdiction over these resources belongs to the International Seabed Authority (ISA) which came into force in 1994 under the UNCLOS. Also, both under the UNCLOS and the Convention on Biological Diversity (CBD) (1992), nations have the duty to prevent harm to the environment in areas beyond national jurisdiction (Freestone, 2010).

Under the UNCLOS, the most recent resolutions related to the protection of deep-water ecosystems are rendered by the United Nations General Assembly (UNGA). In 2004 the UNGA declared in resolution UNGA 59/25 that states and regional fisheries management organizations (RFMOs) should take urgent action for the protection of vulnerable marine ecosystems (VMEs). The definition of VMEs according to the Food and Agricultural Organization (FAO) is presented in Annex 6. In short, a VME is a term used for deep-water ecosystems, particularly in UN policy with regard to the protection of deep-water ecosystems. Since 2004, there have been two resolutions reaffirming the urge for states and RFMOs to take measures for the protection of VMEs: UNGA61/105 in 2007 and UNGA64/72 in 2010.

Even though the UNFSA has increased the pressure on fishermen to practice sustainable fishing, the UNCLOS itself has no legal instruments to protect deep-water ecosystems. Furthermore, the UNCLOS has no provisions to apply a strategic environmental assessment (SEA) (Ardron et al., 2008). Instead, the UNFSA works through Regional Fisheries Management Organizations (Freestone, 2010).

### **2.2.2 Regional Fisheries management Organizations**

Under the UNFSA, all countries who commercially fish on the high seas have to oblige to the regulations of the relevant RFMO. Today, most of the high seas are covered by a RFMO, thus on paper, the high seas are not an entirely open-access resource anymore (Cullis-Suzuki and Pauly, 2010). In the North East Atlantic, the area is covered by the North east Atlantic Fisheries Commission (NEAFC), the International Commission for the Conservation of Atlantic Tuna (ICCAT) and the North Atlantic Salmon Conservation Organization (NASCO). However, only the NEAFC concerns the protection of deep-water ecosystems as the fishing for Atlantic Salmon and Atlantic Tuna is no deep-water bottom fishery (Bjørndal, 2009; Dotinga and Molenaar, 2008).

### **2.2.3 North East Atlantic Fisheries Commission**

In the North East Atlantic region, the RFMO regulating the deep-water fishery on the high seas is the North East Atlantic Fisheries Commission (NEAFC). In its current form, the NEAFC came into force in 1982, replacing the North East Atlantic Fisheries convention of 1959, which had replaced the 1946 convention for the Regulation of Meshes and Fishing Nets and the Size Limits of Fish. Its current form was established after the transition from individual EU countries as member states to the EU as one single member state in 1963, and the introduction of the EEZ in 1977 (Bjørndal, 2009). The

current convention is called 'the "New" Convention' which came into force in 2007 and is a follow up from the London Declaration of 2005 (NEAFC, 2005; 2007). These are the 'basic texts' which encompass NEAFC's main objectives, definitions, and decision-making procedures.

The NEAFC's current form is mainly to manage highly migratory and straddling stocks on the high seas according to the 1995 UNSFA, although biodiversity protection has become a more urgent issue. The first time the NEAFC agreed on provisions for the protection of VMEs was in 2008 which resulted in 'Recommendation XVI: 2008' (NEAFC, 2008). It has to be clarified though, that the NEAFC can only install measures related to fishing activities in its regulatory area. This area consists of all of the high seas in the North East Atlantic between the ocean floor and water surface (Figure 1). The NEAFC consists of five contracting parties (CPs): the EU, Denmark (in relation to the Faroe Islands and Greenland), Iceland, Norway, and the Russian federation. These parties are involved in the management of fish stocks and decide upon management measures (Bensch et al., 2008). The EU has an exclusive competence within the NEAFC, which means that individual member states are not present as individual CPs, but are actually presented by the EU. However, this does not necessarily mean that the EU is the most powerful player within the NEAFC, as each Contracting Party has one vote. Denmark is an exception within the EU, but only for the areas of the Faroe Islands and Greenland; in other cases Denmark is presented by the EU as well (Interview). Besides contracting parties, the NEAFC also consists of cooperating non-contracting parties with a "real interest" in the fishery in the NEAFC area. These nations are also referred to as Cooperating Non-Contracting Parties (CNCs) and consist of Belize, Canada, the Cook Islands, Japan, and New Zealand (Bjørndal, 2009). Every other nation or fleet fishing in the NEAFC area and not reporting their activities is automatically involved in Illegal, Unreported, and Unregulated Fishing (IUU). If a fishing vessel or transshipment vessel (distributing its catch to another vessel at sea) is reported as being involved in IUU, it can be listed on the IUU-Vessel List of the NEAFC. After this, these vessels are not allowed to land these fish in any of the harbors inside the NEAFC region, the North West Atlantic Fisheries Organization (NAFO) region, and the South East Atlantic Fisheries Organization Region (SEAFO) (Interview).

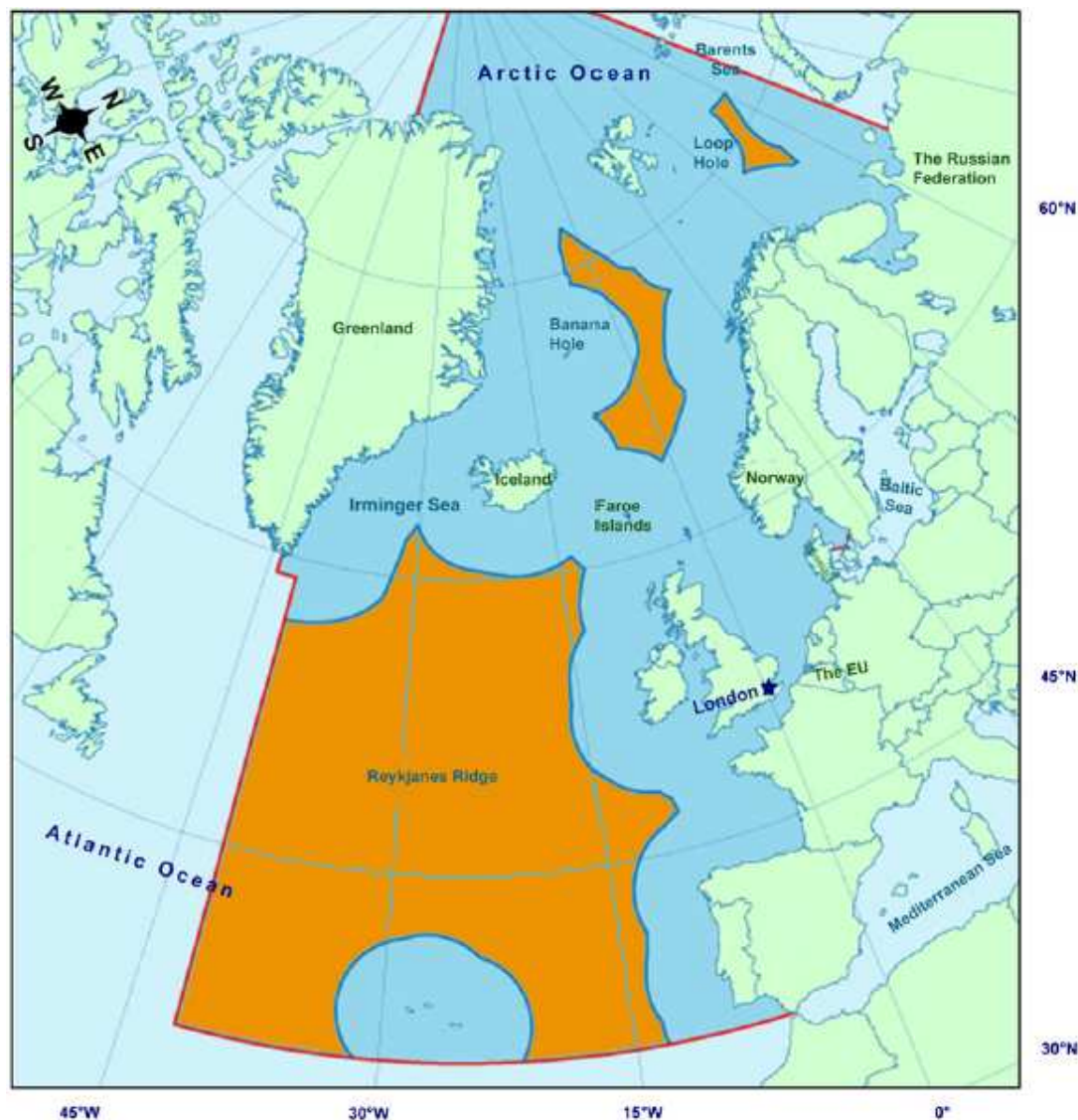


Figure 1, Bjørndal (2009), the part within the red (outer) line is the North East Atlantic Fisheries Commission Convention area. The blue part (coastal area) lies within (EEZ) and the orange part (Reykjanes Ridge, Banana Hole and Loop Hole) lies outside national jurisdiction (high seas). The NEAFC can only make recommendations and regulations for the orange part (high seas).

Unlike some other RFMOs like the NAFO, the NEAFC has no scientific body on its own. Rather, it calls for advice from ICES. NEAFC has a memorandum of understanding with ICES. The NEAFC consists of a commission, three committees, four working groups, and a secretariat based in London. The committees are the Permanent Committee on Control and Enforcement (PECCOE), the Finance and Administration Committee (FAC), and the Permanent Committee on Management and Science (PECMAS); four working groups: Working Group on the Future of NEAFC, Working Group on Deep-Sea Species, Working Group on Blue Whiting, Advisory Group on Data Communications. For this research, the PECMAS and the Working Group on Deep-Sea species is the most relevant. The PECMAS does, however, rely on the scientific advice from ICES as the NEAFC has no scientific body or commission of its own (Bjørndal, 2009).

#### 2.2.4 Food and Agricultural Organization

The United Nations Food and Agricultural Organization (FAO) has a department concerning the improvement of sustainable fisheries and aquacultures. On the issue of deep-water ecology protection, the FAO has set up 'International Guidelines for the Management of Deep-Sea Fisheries in the High Sea'. The idea behind these guidelines is for nation states and RFMOs to act according to the precautionary approach and ecosystem-based approach to strengthen the protection of VMEs (FAO, 2009). The most relevant guidelines are presented in Annex 6. Besides these guidelines, the FAO publishes documents and statistics on the state of the world's ocean (FAO, 2008; 2010).

'The guidelines', referred to in the UNGA resolutions, are developed as a guidance for the implementation of the UNGA resolutions by states and RFMOs. Therefore, these guidelines should not be seen as a separate policy, but rather as a tool for states and RFMOs to commit to the UNGA61/105 and the UNGA64/72 resolutions (Rogers et al., 2008).

#### 2.2.5 Regional policies

Another program established to protect the marine environment and its resources is the Regional Seas program established under the United Nations Environment Programme (UNEP) in 1974. More than 140 nations are involved in thirteen Regional Sea programmes, under which action plans are developed and in most cases conventions and protocols are integrated (Freestone, 2010; UNEP, 2010).

Partner programmes outside the cover of the UNEP have been developed as well. However, policies and jurisdiction are mostly implemented by clusters of coastal states designed for coastal zones. The partner programmes which do involve high seas issues are the Mediterranean, OSPAR convention, the South Pacific, the Antarctic Treaty System and the Convention for the Conservation of Antarctic Living Marine Resources (CCAMLR). For the North East Atlantic area, the 1992 Convention on the Protection of the Marine Environment of the North-East Atlantic (OSPAR) is the most relevant, as this convention covers roughly the same area as the NEAFC, but OSPAR has divided its region in five sub-regions (figure 2). This division is largely based on large-scale ecological and geographical differences, rather than political differences (OSPAR, 2010a). The Loop Hole, and the Banana Hole are located in OSPAR-area I, while the Reykjanes Ridge is located in OSPAR-area V (Figure 1 and Figure 2).

OSPAR has a broader mandate than the NEAFC in which individual EU states participate next to the EU itself as a member (Interview; Freestone, 2010). At the moment, there are 16 members: all the coastal states (except the Russian Federation), the EU, Switzerland and Luxemburg. Switzerland and Luxembourg are OSPAR members although they are landlocked states. This due to their upstream position; issues like river pollution can lead to oceanic pollution as well (Dotinga and Molenaar, 2008). The issues dealt by the OSPAR convention are embedded into five different strategies besides an additional, more widely intertwined strategy on climate change, and a strategy concerning the assessment of ecosystems and implementation of strategies (Strategy for the Joint Assessment and Monitoring Programme). The five issue-specific strategies are: the Biodiversity and Ecosystem

Strategy, the Eutrophication Strategy, the Hazardous Substances Strategy, the Offshore Industry Strategy and the Radioactive Substances Strategy. All the strategies are implemented from an ecosystem approach (OSPAR, 2011).

Regarding the protection of deep-water ecosystems, the Biodiversity and Ecosystem Strategy is the most relevant. Even though OSPAR does not actually involve the management of fish stocks, it has provisions to list endangered species and habitats for protection which are embedded into the Biodiversity and Ecosystem Strategy.

For these listed species and ecosystems, member states are expected to take proper measures and to take part in adopting programmes to control human activities. Species which are present in the NEAFC regulatory area, and targeted by deep-water fisheries are the Portuguese dogfish (present in area I and V), the gulper shark (present in area V), the leafgulper shark (present in area I and V), common skate (*Dipturus batis*) (present in area I and V), spotted ray (*Raja montagui*) (present in area V), and the orange roughy (only present in area I and V). All of these species are regarded as threatened, and/or declining (OSPAR, 2010).

Besides species, some habitats are listed for protection which are present in the OSPAR I and V areas. These areas are *Lophelia pertusa* (coral species) reefs, coral gardens, carbonate mounds, deep-sea sponge aggregations, oceanic ridges with hydrothermal vents/fields, and seamounts. All of these habitats occur in both area I and V, and at least in area V, all of these habitats are threatened and/or declining (OSPAR, 2010a).

The Biodiversity and Ecosystem Strategy is one specific strategy of OSPAR applicable to fishing on the high seas of the North East Atlantic, the Strategy for the Joint Assessment and Monitoring Programme (JAMP) is a more general strategy which also applies to these species and habitats listed under the OSPAR convention (Interview; OSPAR, 2010b).



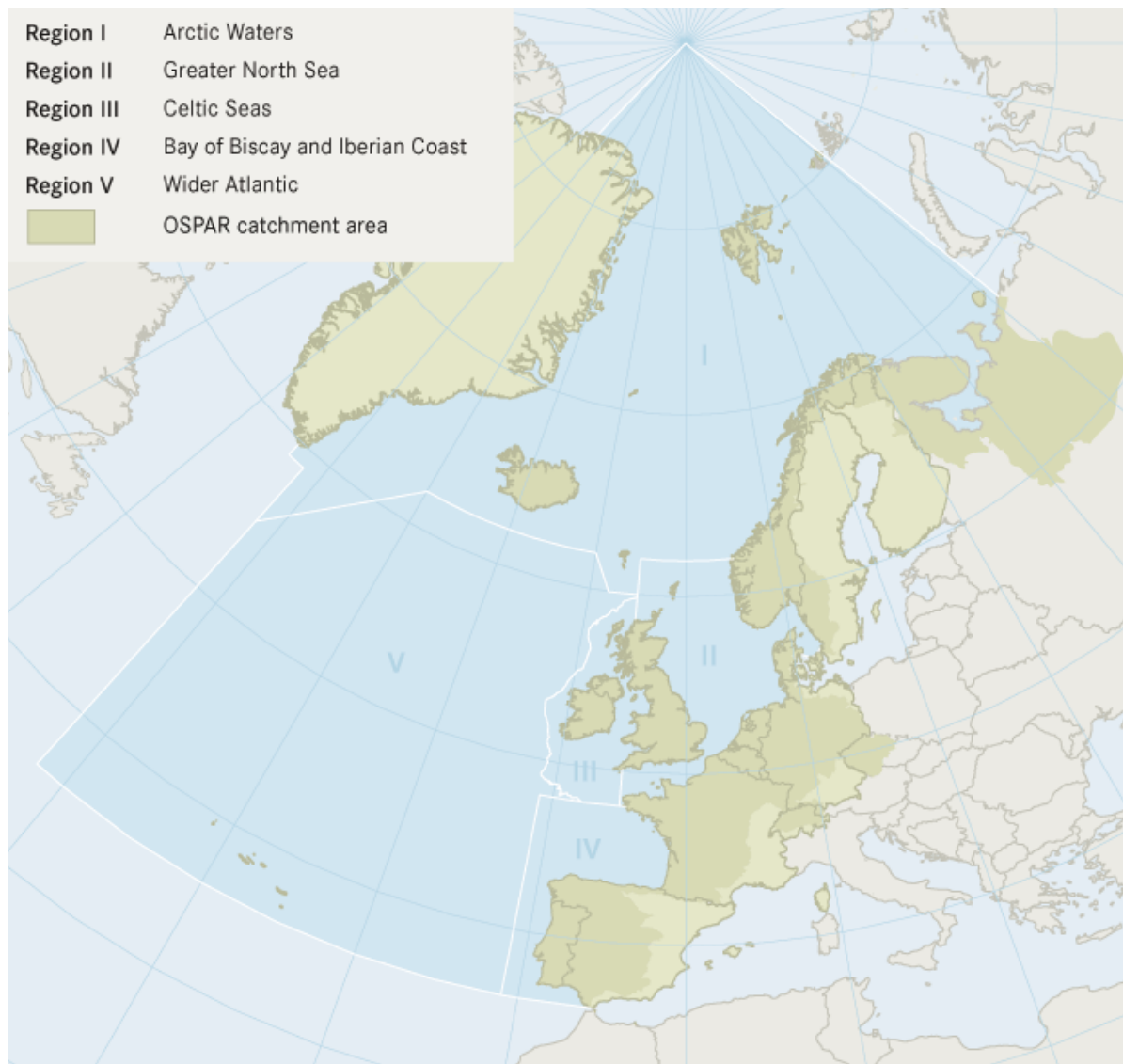


Figure 2, OSPAR regions with areas I and V also covering high sea areas (OSPAR, 2010a)

## 2.2.6 Summary of relevant policies

The NEAFC is the only competent body in the North East Atlantic with regard to the protection of deep-water ecosystems against deep-water bottom trawling. The NEAFC is a RFMO which stems from the UNFSA which in turn, stems from the UNCLOS. There are other RFMOs in the North East Atlantic such as the ICCAT and the NASCO, but these RFMOs do not concern deep-water bottom trawling. In the UNGA61/105 and UNGA64/72 resolutions there are paragraphs for the protection of VMEs. These resolutions urge states and RFMOs to take action by embedding these paragraphs into their own policies. The UNGA resolutions also call upon states and RFMOs to act according the FAO's 'International Guidelines for the Management of Deep-Sea Fisheries in the High Sea'. However, these guidelines are non-binding and cannot be enforced upon states. The FAO guidelines can be considered as a guidance for the embedment of the UNGA resolutions by states and RFMOs.

In addition to 'UN related' policies, some regional policies have been developed of which OSPAR is the most relevant. OSPAR does concern the high seas and deep-water ecosystems, but has no

competences concerning fisheries. Instead, OSPAR focusses on deep-water ecosystem protection against mining, pollution and shipping. With regard to the management of high sea fisheries and protection of deep-water ecosystems against fisheries, there is no overlap between different policies. Only the NEAFC has the competence to install management measures to prevent damage to deep-water ecosystems against fisheries on the high seas (Dotinga and Molenaar, 2008).



### 3 Theoretical framework

In this chapter, I will first describe the basic concept of international environmental regimes according to Young (1980) after which I will describe the theory of regime effectiveness as proposed by Young (1999 and 2001) and Miles et al. (2001).

#### 3.1 International regimes

The international regime theory which will be used in this research is primarily based on authors such as Young (1980; 1982) and Ostrom (1986; 1993). The theory on regimes and institutions covers a whole range of issues such as regime development and design, Institutional Analyses and Development Framework (IAD), effectiveness and institutional interaction or interplay (Young, 2002; Ostrom, 1986; Schweik and Kitsing, 2010; Bingham, 2010; Jentoft, 2004). Even though a lot has been written on international regimes before the article of Young in 1980 (Haas, 1975; Keohane and Nye, 1977), the work of Young is useful as it conceptualizes international regimes and recognizes patterns all regimes possess. Before the publication of his article there was little written about the concept itself as well as its primary characteristics (Young, 1980).

##### 3.1.1 Concept

According to Young (1980, P: 332), “Regimes are social institutions governing the actions of those interested in specifiable activities (or meaningful sets of activities)”. Regimes are social structures; they are not a formation of actors, but a formation of rules, decision-making procedures and programmes. For instance, in a high sea deep-water fishery situation, an actor can be a NGO like Greenpeace or a market actor like a fish processing company, while an institution could be a set of rules developed under the UNSFA or more specific rules determined by a RFMO.

Institutions are defined in many ways and definitions often partly overlap (Jentoft, 2004). Ostrom (1984), who is regarded as an influential author on institutional theory, defines institutions as “Rules used by individuals for determining who and what are included in decision situations, how information is structured, what actions can be taken and in what sequence, and how individual actions will be aggregated into collective decision” (Jentoft, 2004, P: 140). In Miles et al. (2002, P: 24), institutions are referred to as “constellations of right and rules that define social practices, assign roles to participants in those activities, and guide interaction among those who occupy those roles”.

Ostrom (2005) developed a framework to analyze institutions. Even though her work is more focused on local institutions and more regularized institutions such as markets, sports, natural resource management, and families, the framework is useful for gaining understanding about the variety of institutions and how they work. This framework on Institutional Analyses and Design (IAD) is often used to analyze the action situation which is done by using seven categories of information; the set of participants, the positions to be filled by the participants, the potential outcomes, the set of allowable actions and the function that maps actions into realizable outcomes, the control that an individual has in regards to this function, the information available to participants about actions and outcomes and their linkages, and costs and benefits assigned to actions and outcomes. After gaining understanding of the action arena, zooming out is done for gaining knowledge about the outside – variables in a two-stage process. First, three variables are identified which are affecting the action

arena: the rules, the attributes of the biophysical world, and the structure of the community within (culture). Second, linkages are to be examined between one action arena and the other simultaneously or in sequence (Bingham, 2010).

Regimes or institutions can concern both the international level as well as the national or local level (Young, 1980; 1982; 1989; Ostrom et al., 1993). However, there are differences in terms of arrangements of institutions at different levels as well as the binding capacities of policies, rules and regulations. Both national and international institutions can be more or less formally established with or without their own incorporated organizational arrangements. However, international regimes encompass a two-step procedure regarding the implementation of agreements. While the members of international regimes are states, the execution of an agreement is mostly done by private parties. For example, while member states can make agreements on total allowable catches (TACs) or the realization of a marine protected area (MPA), private entities such as fishing companies and their fleets need to carry out their agreed upon action (Young, 1980).

In general, international regimes have less binding force than national regimes, as international regimes often cover issues which exceed national jurisdiction or concern many jurisdictions. (Young, 1980). For instance on the high seas of the North East Atlantic, agreements on the realization of MPAs under OSPAR, cannot always be enforced as not every nation sailing in the North East Atlantic region is an OSPAR member (Dottinga and Molenaar, 2008). On a national level (within a country's EEZ), MPAs can generally be enforced regardless of the vessel's origination. A certain set of rules agreed upon by a national government and relevant stakeholders, for instance, will be binding in most cases including the use of fines and penalties. On the other hand, execution of penalties or rewards will be far less used under international regimes, even though there are exceptions (Young, 1980).

### **3.1.2 International regime dynamics**

International regimes are not always fixed or predefined an highly coherent constructions. In reality, regimes are ambiguous, unsystematic and analytically constructed. International regimes are classified by people and can therefore be interpreted in a different way depending on who classified a regime. Consequently, regime 'on paper' are often different from regimes in reality. However, differences between regimes on paper and regimes in reality are not the cause of human interpretation or misunderstanding. Actually, regimes are often developed under intense bargaining and can evolve and change over time (Young, 1980 and 1989). Therefore, a regime can be realistically classified or determined at some time, but be outdated at another point in time.

Bargaining happens during the formation of a regime under which critical compromises of interested actors are excluded. Bargaining is an element of regime formation which incorporates negotiated orders (Young, 1982). According to Young (1982), the development of regimes can occur in three ways: negotiated orders, spontaneous orders, and imposed orders.

Under negotiated orders, the regime is consciously developed under a process of negotiations on requirements, consensus of the individual members and results. Negotiated orders can be divided into two categories: constitutional contracts and legislative bargains. Under constitutional contracts, the involved parties subjected to the regime are directly involved in the related negotiations.

Contrary to constitutional contracts, under legislative bargains, the subjected parties are represented rather than directly involved in the negotiations. Furthermore, a distinction should be made between comprehensive negotiated orders and negotiated orders which are partial or piecemeal. Regimes with a comprehensive nature can originate from systematic and watchful negotiations. Frequently though, negotiations have a more piecemeal nature. Issues are left to be dealt with at a later stage based on practice.

Some regimes can be classified as spontaneous orders. In this case, regimes are the result of human action, but not the result of human intention. They are rather an evolvement on the premises of interaction behavior, but not directly guided in a pre-intended direction. Young (1982) compares it to the evolvement of language, which is really hard to create effectively on the spot.

Lastly, some regimes are imposed orders. Dominant powers, such as dominant actors, can direct the establishment of a regime and its major provisions. Two distinctions of imposed orders can be made. First, overt hegemony occurs when a dominant actor, such as a member state, actively proposes institutional arrangements and forces other actors to comply with them. Second, de facto imposition occurs when an actor is capable of endorsing institutional arrangement through the usage of incentives and several forms of leadership (Young, 1982; 1989).

Beside regime formation, regime transformation will often occur. This means that regimes evolve and change over time. Furthermore, regimes become less consistent over time and obtain additional elements (Young, 1980 and 1982). According to Young (1982, P: 291), regime transformation refers to: "significant alterations in a regime's structures of rights and rules, the character of its social choice mechanisms, and the nature of its compliance mechanisms". Ambiguity is involved in the debate around regime transformation as it is impossible to demonstrate exactly at what point a regime is exposed to enough alterations to confirm a regime transformation has taken place. According to Young (1982), the factors causing a regime transformation, are therefore a more useful focus in regime transformation. He suggests that three patterns are the most dominant factors in regime transformation; internal contradictions, underlying structure of power and exogenous forces.

First, internal contradictions can cause a failure of the regime which can lead to alterations in a regime's main structure. Young (1982) uses an example on the high seas where unrestricted access (open resource) might lead to internal contradictions when a resource gets depleted.

Second, a shift in the underlying structure of power can lead to a regime transformation. This can happen in the case of declining power of a dominant actor or multiple actors. Just as regimes can be formed as imposed orders, they can transform when the power of a dominant actor diminishes and the power of an actor increases. As different actors will often have different objectives and foci, a shift in underlying power can lead to alterations within a regime's structure.

Third, exogenous forces may alter a regime's structure. Exogenous forces are societal developments which arise outside a certain regime. Examples of exogenous forces are technological changes such as technological capabilities of modern trawlers to fish more efficiently and at greater depths. Before this technology, the common property regime of the high sea was manageable for centuries as the difficulty to fish on the high seas meant that stocks were not collapsing (Young, 1982). Other larger forces are often the main drivers of such developments as, for instance, the urge of modern

society to catch fish at increasingly larger depths is strengthened by the depletion of fish stocks at lower depths. In turn, this can be accredited to an ever increasing human demand for fish (Young, 1982, Björndal, 2009; Gordon, 2001).

Still, regime transformation does not always occur and, therefore, international regimes are not always sufficiently dynamic. According to Young (2009), regimes can become relatively unchanged even beyond the point where they have become ineffective, while some other regimes change or even collapse after modest events. Environmental regimes are often unable to respond well to abrupt and non-linear changes in the socio-ecological environment even if these changes are well documented and known by scientists and the increasing disparity between biophysical and socioeconomic systems is no more than common knowledge (Young, 2009).

### **3.1.3 Components of international regimes**

Even though every regime is different and regimes differ on different assets, there are some components which all regimes possess. The first component is the substantive component. This is the indispensable notion, that the center of every regime is its collection of rights and rules. There are many types of right, but a very eminent right in many high sea issues concerns property rights. Rules, on the other hand, intend to do the opposite of rights as they intent to restrict rather than safeguard the actor's freedom. An example in high sea fisheries is, that of those involved in fishing on the high seas should obey by the rules, to ensure the conservation of fish stocks.

The second component is the procedural component. This covers arrangements made to resolve situations which require social or collective choices. These arrangements are needed when, for instance measures for the protection of deep-water coral reefs are made. Social choice mechanisms are institutional arrangement specialized in resolving problems of social choice. A common example of such a social choice mechanism is a voting procedure.

The last component is its implementation. This quite difficult to achieve as rights are not always respected, rules are not always obeyed and actors are not always accepting the outcomes of a regime. This can be assessed by studying the effectiveness of a regime (Young, 1980).

## **3.2 Evaluating regimes**

According to Crabbé and Leroy (2008, P: 1): "Policy evaluation is a scientific analysis of a certain policy area, the policies of which are assessed for certain criteria and on the on the basis of which recommendations are formulated". For policy to be evaluated, policy needs to be analyzed. The difference in analyzing and evaluating policy is that for evaluating policy, criteria are used on which the policy is assessed and mirrored. After the evaluation of policy, recommendations can be made. These three elements of policy evaluation; analysis, evaluation, and recommendation require three different types of knowledge. Policy analysis requires analytical knowledge which covers questions like "what is the main goal of the regime?" or "How does the regime react to collapsing fish stocks?" Evaluation requires evaluative knowledge which covers questions like "How good is the regime in forcing behavioral change?" or "How suitable are the regulations of the regime in avoiding misinterpretation?" Recommendation require prescriptive knowledge like "How could the regime

improve their regulations in order to avoid future misinterpretation?” (Crabbé and Leroy, 2008).

The type of policy evaluation conducted largely depends on a person's view or scope of policy (Crabbé and Leroy, 2008). According to Crabbé and Leroy (2008), there are three main views on policy resulting in three different types of evaluation. The first view regards policy as goal-oriented rational synoptic process. Under this view, policy evaluation is about a problem-solving rationale; trying to tackle social problems in a rational engineering fashion. This rationality appears from its objective to look for the most effective and efficient strategies which try to continuously adjust to generate the best situation. This is compared to a thermostat, continuously adjusting in order to maintain a constant and desired temperature. In fact, this way of policy evaluation and thinking about policy is mainly inspired on an economics and engineering.

The second view, regards policy as political interaction. This view is generally thought to be more realistic as more attention is given to the process-side of policy. However, this focus does make it a more complex process as many factors are influencing policy. In this view, Policy is seen as a “...product of power relations between various social and political actors, groups, convictions, and interests” (Crabbé and Leroy, 2008, P: 13). Policy evaluation from this standpoint is based on process evaluation. Furthermore, the focus is rather on goal-seeking than on goal-orientation as the process of how decisions are made and by which actors is central rather than whether the eventual goal is reached.

The third and last view, regards policy as an institutional phenomenon. Under this view, policy evaluation looks at “...whether the institutional context is suitable and adequately equipped for the type of policy one intends to pursue” (Crabbé and Leroy, 2008, P; 20). There are three ways to evaluate institutions, the first is to compare one international institution with another institution in another field, the second way is to compare institutions on a national level (cross-sector approach), and the last way is to use a longitudinal approach by comparing one institution or institutional context with a the context 20 years ago. For this last approach, some intervening variable needs to be in place such as regulatory, economic or communicative efforts (Crabbé and Leroy, 2008).

### 3.3 Regime effectiveness

According to Underdal (2002) (in Miles et al, 2002,P: 4): “A regime can be considered effective to the extent that it successfully performs a certain (set of) function(s) or solves the problem(s) that motivated its establishment.” Stokke (2009, p: 348) translated this definition to the subject of IUU: “A fisheries management measure regime is effective if it serves to change target-group behaviour in ways that improve the harvesting pressure and, ultimately, the state of stocks.” However, Underdal (2002), claims that this definition is not specific enough in order to be used as a tool for determining regime effectiveness. Certainly, measuring effectiveness requires detailed information and for comparing regimes, effectiveness should be somehow standardized. According to Young (2001), an index should be constructed in which regimes can be compared and causal inference is somehow tangibly measurable.

The literature of regime effectiveness can be placed both under the view of policy evaluation as an institutional phenomenon and goal-orientation. The object of interest is whether the institutional context is adequately equipped for the type of policy it targets; its effectiveness. However, the

definition from Stokke (2009) also implies that assessing regime effectiveness is about a problem-solving rationale. Certainly, regime effectiveness is not only about knowing whether a regime is adequately equipped for the type of policy it targets, but also whether the regime is effective in reaching its goals (Miles et al., 2002).

The regime effectiveness literature has been used on high sea fisheries regimes to some extent. Especially authors like Miles (2002), Underdal (2002a/b), Stokke (2007a,b & 2009) and Stokke & Coffey (2001 & 2004) have done some research and preliminary studies on regime effectiveness on the high seas. In a research conducted by Miles et al. (2002), the regime effectiveness of high seas salmon management in the North Pacific is evaluated as well as other fisheries within the EEZs of countries. Also Stokke (2007a,b & 2009) researched regime effectiveness related to high seas fishery regimes and the role of institutional interaction on the effectiveness (§3.4). The organizational performance of the NEAFC has been researched before, but not on the premises of regime effectiveness (Bjorndal, 2009). In this part, the theory on regime effectiveness will be based on the work of Miles et al. (2002), because this work includes a largely comprehensive framework useful for the assessment of both the output effectiveness, outcome effectiveness, and the factors determining regime effectiveness.

### **3.3.1 Object of study**

In the end, the objects of study are, of course, regimes. However, there are several components on the basis of which choices should be made for the selection of the object of study or evaluation. First, regime effectiveness can be evaluated by studying the impact of the regime itself or by studying the problem-solving efforts of processes of the regime. This means that the unintended costs and side-effects of regime will be evaluated. Even though the evaluation of these indirect effects can be challenging, it is often relevant (Sprinz and Helm, 1999; Mitchell, 2003; Young et al., 2008). For example, a regime can score very high in terms of safeguarding a fish stock on the high seas, but can bring about large social costs. Similarly, a regime concerning the protection of a fish stock or species can have positive side-effects in terms of the protection of other species or fisheries (Young, 2001).

One example of such a phenomenon is described by Miles (2002) regarding the management of high sea salmon in the North Pacific. In this example, the effectiveness of the regime in safeguarding Pacific salmon stocks was very effective. A positive side-effect of the regime was a huge increase in scientific knowledge about Pacific salmon migration. Moreover, the salmon were well protected by prohibiting high sea salmon fishing in an attempt to ban Japan from taking part in the harvest of Pacific salmon. However, the costs arose when Japan began to invest in salmon aquaculture in Chile. These salmon flooded the US and Japanese markets which caused a large decrease in the prices for salmon. Thus, in this case, the regime caused both positive and negative side-effects. Unfortunately, no comprehensive classification of unintended indirect regime effects have been established (Young et al., 2008). Some common examples of unintended indirect regime effects are: a process of increased scientific knowledge (learning), economic change (efficiency, equity, cost-effectiveness), social justice, cultural impacts, and good governance (Young et al., 2008; Mitchell, 2003). Without specifically describing and explaining the above mentioned effects, the important point made here is that there are many unintended indirect effects, and their importance should not be

underestimated (Mitchell, 2003).

Second, a division can be made between the formal output of a regime and its consequences. The output of a regime include all its norms, rules and principles, while the consequences of a regime are the change in human behavior (outcome) and the eventual change in the biophysical state of the environment (impact). Thus, where the *output effectiveness* of a regime can be determined in the regime formation stage, the *outcome effectiveness* and *impact effectiveness* can only be determined in a much later stage (Underdal, 2002; Young, 2001). This is expressed as a chain of events where a change in the output will lead to a change in the outcome which in its turn will lead to a change in the impact. Of course, whether this happens or not and whether the causality can be determined is challenging (Young, 2001). A very simplified and optimistic example on high sea fisheries, is a change in rules or regulations under a regime in order to conserve deep-water ecosystems (output), which will lead to a change in the behavior of fisheries organizations or fishermen themselves (outcome), which in the end will protect the targeted deep-water ecosystems (impact).

### 3.3.2 Output effectiveness

The output effectiveness is determined by its stringency, inclusiveness, and the level of collaboration. The stringency of a regime's output consists of the degree of precision and the degree of obligation. The scale of the degree of precision describes the exactness of how the rights, rules and regulations can be interpreted (Abbott et al., 2000). This implies how rules can be interpreted by actors or member states in order to duck the rules without negative consequences or legal punishment. Under a low degree of precision, rules might be interpreted in many ways, and are generally defined only in very broad terms. Would a regulation, for instance, impose members to 'fish responsibly', the regulation is prone to be judged in many different ways. However, would the rules be very determinate, interpretation would be limited to way the rules were initially established for. Another fictitious example might be a rule designated for members to 'immediately stop fishing and move on to other locations once deep-water corals are caught in the trawling net'. In such a case, interpretation is limited and the degree of precision high (Miles et al., 2002).

The degree of obligation basically implies the level of legal binding of the regime's output. The degree of obligation is low when there is a clear objective or aim not to add any legal provisions on the regime's output. Conversely, the degree of obligation is high if the regime's output would be unconditionally legally bound (Miles et al., 2002).

In Miles et al. (2002), inclusiveness is not thoroughly elaborated. However, according to Zelli (2008, P: 6) it means: "the degree to which a regime has brought the targeted system of activities under its jurisdiction". This definition is not further on elaborated by Zelli (2008) and the activity of bringing activities under a jurisdictional system has some resemblance with the notion of stringency. However, stringency is more about the multi-interpretability of rights and rules, and whether rules and regulations are just guiding or also binding. Instead, the term 'inclusiveness' is used to describe whether to what extent the whole range of issues and debates under the regime's issue-area is covered by the regime's rights, rules and decision-making procedures. In other words; to what extent the regime's system contains gaps concerning the issue-area it is concerned with. In other words, inclusiveness can be seen as 'comprehensiveness' of the regime, thus whether it has included



all the regulations and provisions to be able to achieve its target (Williams and Johnson, 2005).

The level of collaboration can be described as the extent of cooperation embedded into the regime. This can be seen as a procedural component explicitly arranged within the regime. This includes coordination of action, planning, implementation, and appraisal of effectiveness. When the level of collaboration is low, coordination of action is based on common understanding rather than fully integrated into planning and implementation. Would the level of collaboration be high, coordination is fully integrated into planning, implementation and appraisal of effectiveness (Miles et al., 2002). The level of collaboration is not about collaboration between different regimes, but about the collaboration within one regime (Stein, 1983). In this case, the level of collaboration within the NEAFC is about the provisions in place to coordinate action between the Contracting Parties. Three elements lead to a degree of collaboration. The first element is whether the coordination of actions is fully planned within the regime. This implies whether the NEAFC has provisions to plan which Contracting Parties should do what in order to conserve deep-water ecosystems. Second, the coordination of implementation means that besides the planning of activities, the implementation of regulations is also coordinated by the NEAFC. Last, the centralized appraisal of effectiveness will be achieved by the NEAFC when they will also provide constructions for the evaluation of the implementation of regulations.

### **3.3.3 Outcome effectiveness**

For the outcome effectiveness to be measured, a point of reference is needed as effectiveness cannot be assessed without a point of reference. When assessing output effectiveness, this point of reference is easy to establish as if the regime would not be in place, it would just simply be a situation without any output. However, this is not so easy when determining the point of reference for assessing the outcome effectiveness of the regime. After all, determining the behavior of actors would the regime not be in place seems to be a difficult task (Miles et al., 2002). There are two ways to assess the outcome effectiveness of a regime. First, an estimate can be derived from experts to find out how certain behavioral changes occurred in the absence of a regime. In this case,  $t^0$  is the situation right before the regime, and  $t^1$  is the situation since then. The second way is to measure how far a regime is situated from its collective optimum. Measuring the distance from the collective optimum will give information on what the regime still has to achieve (Miles et al., 2002).

### **3.3.4 Impact effectiveness**

The impact effectiveness relates to the actual biophysical state of, in this case, a deep-water ecosystem. Determining the impact effectiveness is regarded difficult by many authors (Miles et al., 2002; Young et al., 2008) and no clear method for the assessment of impact effectiveness is made so far. The main difficulties with regard to assessing the impact effectiveness concern causal inference. This is due to the fact that there are many variables influencing a biophysical state which can make it impossible to assess whether significant changes in the biophysical state of an ecosystem are the result of a regime's output and outcome.

### **3.3.5 Factors determining regime effectiveness**

According to Miles et al. (2002), two main aspects influence a regime's effectiveness. The first aspect



is the type of problem; whether a problem is malignant or benign in nature as well as the state of knowledge about a problem. The second aspect is the problem-solving capacity of regime. This is divided into five different elements: rules for decision-making, the presence of an inter-governmental organization (IGO), the presence of an epistemic community, the distribution of power, and the presence of parties as leaders (leadership).

### Problem type

A malignant problem is characterized by three elements; incongruity, asymmetry and cumulative cleavages. Incongruity occurs when one party conducts a cost-benefit analyses in which they bias this analysis in favor of their own good. The exploitation of a common-pool resource, such as a fish stock, at the expense of another party is a common example. Asymmetry occurs when values or objectives of different parties are negatively correlated (Herndon et al., 2010). For instance, one party can admire sharks as important species to protect, whereas another party will admire sharks as important species for consumption. Both incongruity and asymmetry can lead to difficulties for parties to decide upon issues. Cumulative cleavages occur under multidimensional problems. This implies that parties who are in a winning or losing position on one issue are in a winning or losing position on every other issue as well (Miles et al., 2002; Hendron et al., 2010). A perfectly benign problem is close to harmony which implies that the political element of problem solving is not a real issue (Table 1). A regime will be less effective when dealing with a malignant problem where little is known about the extent and character of the problem, than a regime dealing with a benign problem where the extent and character of problem is well known, assuming all other factors being equal (Herndon et al., 2010; Miles et al., 2002). However, Miles et al. (2002) suggest that even when there is perfect harmony, coordination can be useful when the end result depends on the compatibility of individual choices, there are different routes which can lead to a collective optimum (the maximum achievable effective state of a regime), and the eventual choices among or between these routes are not obvious. These issues are summarized as the coordination problem.

Characteristics of malign and benign problems	
Malign	Benign
Incongruity (in particular relationships of competition)	Coordination (synergy or contingency relationships)
Asymmetry	Symmetry or indeterminate distribution <sup>a</sup>
Cumulative cleavages	Cross-cutting cleavages <sup>a</sup>
a. As indicated above, these dimensions are relevant primarily for problems of incongruity.	

Table 1, Miles et al. (2002)

### Problem-solving capacity

Where the knowledge about a problem and the type of problem (malignant versus benign) lies outside a regime's capacity to control, the problem-solving capacity of a regime lies largely within a regime's control (Herndon et al., 2010). According to Miles et al. (2002), there are five factors to be identified which are directly related to the problem-solving capacity of a regime (Table 2).

### Problem-solving variables predicting determining regime effectiveness

<i>Variables impacting problem-solving capacity</i>	<i>Characteristics of each variable under regimes of:</i>	
	<i>High effectiveness</i>	<i>Low effectiveness</i>
(1) Rules for decision making	Requires majority approval	Requires unanimity or consensus
(2) An IGO with significant actor capacity serving the regime	A strong and effective IGO serves the regime	An IGO with little effectiveness serves the regime
(3) Presence of epistemic community	High level of involvement by epistemic community	No epistemic community or low level of involvement
(4) How power within the regime is distributed	Power is distributed to parties active and capable in advancing the regime's agenda	Power is distributed to parties less interested in seeing the regime's agenda advanced
(5) Presence of parties as leaders within a regime	One or few parties provide leadership	Leadership is scant or lacking

Table 2, Herndon et al. (2010) as adapted from Miles et al. (2002)

First, the rules for decision making or voting should be approved by a vast majority of the parties involved. A regime which only requires a simple majority in the voting procedure is expected to be more effective than a regime which requires consensus. Second, when an inter-governmental organization, such as the UN serves a regime, its effectiveness will increase. Especially if the IGO itself is effective. Third, the presence and high involvement of an epistemic community will increase a regime's effectiveness. An epistemic community is a network of experts with renowned skills and knowledge on one or a few issues. Members of an epistemic community share a common belief which gives their actions a value-base. Besides, they share a causal believes between practices and issues, and they share a common belief in the validity of knowledge (Haas, 1992). In short, this means that the scientific community involved in the regime, has certain believes about what, for instance, deep-water ecosystem protection should look like. This can mean that they are convinced of certain principles like the precautionary approach or marine protected areas (MPAs). Fourth, power distributed in the hands of capable and actively involved parties increases a regime's effectiveness. Last, the presence of informal leadership increases a regime's effectiveness (Herndon et al., 2010).

Power and informal leadership are used by Miles et al. (2002) in the basic sense and combined with each other. In that sense, power and informal leadership are about who takes the lead, whether the actor wants to move the regime forward or backwards (pusher or laggard) and what kind of tools the actor has to motivate others to follow (capability) (Herndon et al., 2010). A pusher is, however, not automatically a leader. Informal leadership comes in different forms. There is intellectual leadership; an individual actor has the intellectual capability to inform other actors during negotiations and change their perspective. Under instrumental leadership, an actor generally uses the intellectual capital from an intellectual leader to provide means for further regime development. Last, power-based leaders are capable of using threats and other 'sticks' to impose their perception and will on

others (Andresen and Agrawala, 2002). Power-based leadership can thus only be achieved by actors if it has the capabilities to do so (Miles et al., 2002).

### **3.4 Regime interaction**

Regime interaction, institutional interaction, or 'interplay' is a reaction on a previously dominant assumption that institutions are elements in international governance and operate in isolation from each other. Authors like Sebastian Oberthür and Thomas Gehring have produced a whole array of insights on institutional interaction, and conceptualized the theory into a framework useful for the study on institutional interaction. Rather, institutions interact and these interactions occur on different levels and in different directions (Gehring and Oberthür, 2009). Horizontal interaction occurs when institutions on the same level, for instance on the international level, interact. Vertical interaction, on the other hand, implies that institutions on different levels interact. For instance, from an international level down to the European level and national level (Gehring and Oberthür, 2008). The occurrence of interactions can influence how regimes develop and perform and thereby influence regime effectiveness (Gehring and Oberthür, 2009; Oberthür and Gehring, 2003). In this part of the theoretical framework, the theory on regime interaction will be described according to the framework designed by Oberthür and Gehring (2003) while some fictitious examples are given to clarify the different concepts. The basic dimensions of institutional interaction are summarized in Table 3.

#### **3.4.1 Concept**

Institutional interaction demands unraveling the cause-effect relationship between regimes or institutions which highlight the notion of institutional interaction as a factor determining regime effectiveness. Certainly, according to Oberthür and Gehring (2003, P: 5): "...institutional interaction exists if one institution affects another one's development and performance/effectiveness".

The cause-effect relationship between regimes is determined by a dependent variable and an independent variable which are both institutions. The independent institution is the institution responsible for exercising influence on the dependent institution. Beside the notion of an independent institution (source institution) and a dependent institution (target institution), the causal pathway leading from the source to the target institution is to be identified (Oberthür and Gehring, 2003). As institutions cannot interact themselves, actions of actors within the source institutions are responsible for a change in effectiveness of the target institution ().

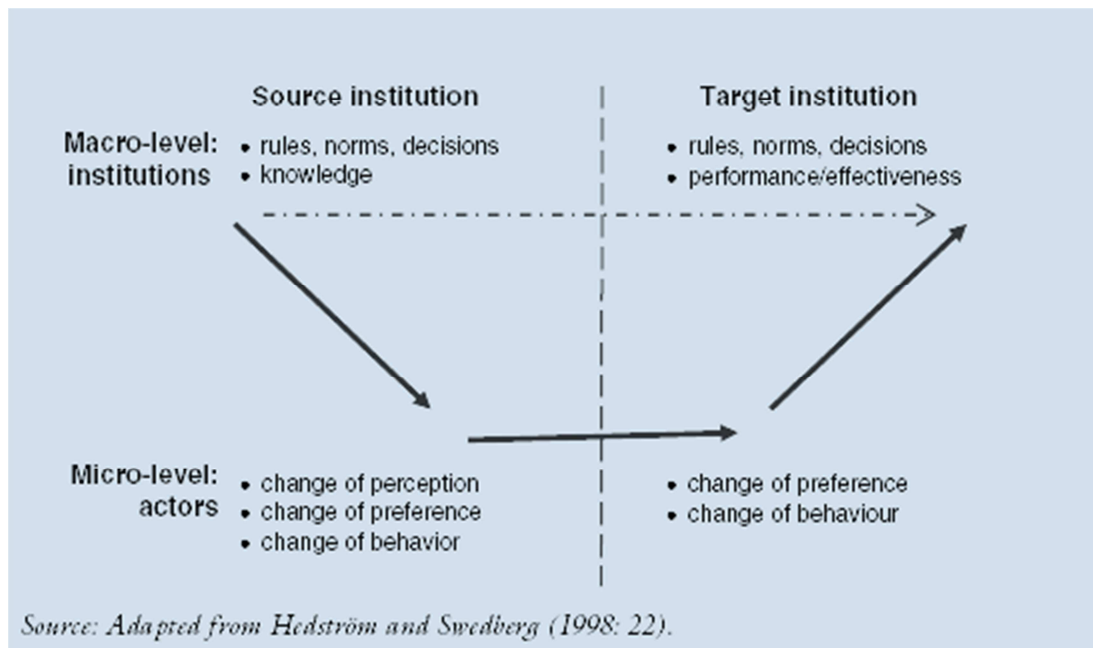


Figure 3, Oberthür and Gehring, (2006)

#### Causal pathway

The route between the source and target institution is referred to as 'causal pathway'. This causal pathway presents the causality between institutions which is an important part of regime interaction. Certainly, as many factors can influence a regime's effectiveness, determining causality is a vital part of understanding a regime's effectiveness (Oberthür and Gehring, 2003). The causal pathway can be on both the output, outcome and impact level although research on the impact level is hardly ever done because of the complexity and long chains of effect (Oberthür and Gehring, 2003).

Under interaction on an output level, the rules, norms, decisions and knowledge of the source institution will ultimately change the rules, norms, decisions and effectiveness of the target institution. As can be seen from Figure 3, this is by actors where a change of perception, preference, or behavior of actors from the source institution can cause a change of preference or behavior of actors from the target institution (Oberthür and Gehring, 2003). Consequently, there are three actions which will cause a change in effectiveness of the target institution. First, components of the source institution will alter the decision situation of actors of the target institution. Second, this alteration in the decision situation of these actors will subsequently alter the actual behavior of these actors. Third, the occurred behavioral change will have its effect on the target institution's effectiveness. On the outcome level, the source institution might directly influence the behavior targeted by the target institution.

#### 3.4.2 Causes for interaction

According to Oberthür and Gehring (2003), there are three main causes which are the driving forces behind institutional interaction: objectives, means, and memberships. These causes are basically differences between institutions that are an important part of the problem structure leading to cases of interaction. Differences are a main motive for interaction because without any difference

between a source and a target institution, a source institution would not be able to apply any influence on the target institution. A difference in objectives can be a motive for a source institution to interact with a target institution. For instance, one regional institution has implemented MPAs for the protection of deep-water corals on the high seas, whereas a similar institution in different region has no such provisions. In order to achieve a more comprehensive protection of deep-water corals, a source institution might want to convince the target institution to implement MPAs as well. In such a case, the target institution did not have the objectives for the protection of these deep-water corals through the use of MPAs and therefore a difference in objectives is the driving force behind the interaction. However, in this case, the driving force behind the interaction seems very similar to a difference in membership. However, a difference in membership as the main driving force behind an interaction often occurs at different vertical levels. For instance, provisions suggested on a global level might be obstructed by parties, while on a regional level, such provisions might be accepted. In such a case, regional implementation of high sea MPAs could strengthen the supporting coalition and weaken the opposing coalition leading to more support on a global level (Oberthür and Gehring, 2003). Last, a difference in means between institutions can be the motive behind an interaction. Certainly, soft law measures are often more readily accepted than hard law measures. Furthermore, once agreements are reached under a soft law institution, agreements under hard law institutions are more easily reached. In other words, creating provisions for the implementation of MPAs under soft law institutions will ultimately facilitate the provisions for MPAs under hard law treaties (Oberthür and Gehring, 2003).

### **3.4.3 Ability to exert influence**

Actors within the source institutions may or may not intentionally create a situation of interaction, though intentionality differs from anticipation. Should an unintended interaction still occur though anticipated, the costs for avoiding an interaction were likely to be higher than the benefits. Besides intentionality, institutions have different levels of ability to exert influence on another institution under different cases of interaction. Oberthür and Gehring (2003) distinguish three levels of ability in cases of interaction: high, low, and intermediate. When a regime has a high ability to influence another institution when the target institution lacks the means to prevent a source institution from influencing its effectiveness. For example, decisions agreed upon by the source institution on prohibiting a damaging fishing technique will influence the effectiveness of the target institution if it has provisions for catching a certain species only catchable with that certain fishing technique. A regime has a low ability to influence another regime when the ability to influence a target regime depends entirely on the consent of that target regime. In such a case, the source institution has no means to affect the target institution's effectiveness. A medium ability of influence occurs under situations where the source institution has the means to impose extra costs on the target institution without the ability to directly influence its effectiveness. For instance, agreements under the source institution on the implementation of MPAs for the protection of a fish species might impose extra costs on the target institution. Still, such a measure might not automatically influence the quota set by the target institution, or even prevent over-exploitation (Oberthür and Gehring, 2009).

### **3.4.4 Institutional effects towards interaction events**

There are basically three types of effect possible in situations of institutional interaction: synergy,

neutral, and disruption (Gehring and Oberthür, 2009). Even though interaction implies the notion that one institution will change the effectiveness of another institution, the quality of effect is not always clear. Synergy occurs when interaction has a beneficial effect on the objectives of the target institution. For example, when a regional soft-lawed treaty is being applied to a hard-lawed global treaty, the effect of interaction is clearly synergetic. In contrast to a synergetic effect, a disruptive effect occurs when an event of interaction has a negative influence on the effectiveness of the target institution. For example, provisions for the implementation of MPAs on the high seas under one institution might negatively affect the objectives of another regime's objectives in terms of reaching their fishing quota.

Whether the effects of institutional interaction are synergetic or disruptive largely depends on the policy fields in which the institutions operate. Similar policy fields will generally create more synergy, and subsequently, institutions located in different policy fields are more likely to cause disruption. For example, one environmental institution is more likely to create disruption on a fishery institution than on another environmental institution. The most relevant policy response is a collective response. A collective response can be intra-institutional, inter-institutional, or not happening at all. An intra-institutional response occurs when the members of the institutions amend their rules, or norms through collective decision-making. An inter-institutional response occurs when the two institutions exchange secretariats or negotiations and thus, requires an overarching communication process involving both institutions (Oberthür and Gehring, 2003).

### **3.4.5 Types of interaction**

There are four types of institutional interaction identified by Gehring and Oberthür (2008): cognitive interaction, interaction through commitment, behavioral interaction, and impact-level interaction. Like regime effectiveness, regime interaction occurs at three levels where cognitive interaction and interaction through commitment occurs at the output level, behavioral interaction occurs at the outcome level, and impact-level interaction at the impact level.

### **3.4.6 Cognitive interaction**

Cognitive interaction is based on the process of learning. For example, if the source institution gains a new understanding on how a species could be protected more effectively, it might develop new protective measures. Such new information might then be adopted by the target institution under a process of interaction (Oberthür and Gehring, 2003; Oberthür and Gehring, 2006).

### **3.4.7 Interaction through commitment**

Interaction through commitment occurs when the source institution has an international obligation which will affect the target institution on a specific theme. There are two main motives for a source institution to engage in such an interaction: stabilization and disruption. The first motive is legal consistency. Legal consistency applies to a source institution which is benefitted by decision-making procedures to be overarched in multiple regimes. Such an extension of commitments might suit one institution well. On the other hand, a regime might strive for strategic inconsistency. In order to achieve strategic inconsistency, actors may even adopt commitments in other institutions in order to confine the policy choices available in other institutions (Oberthür and Gehring, 2006). In contrast to

cognitive interaction, under interaction through commitment there are legally binding measures available and thus, adopting rules and norms is not an entirely voluntary process. There are three subtypes of interaction through commitment: jurisdictional delimitation issues, interaction between nested institutions, and realizing additional means (Oberthür and Gehring, 2003; Oberthür and Gehring, 2006).

Jurisdictional delimitation issues might occur in situations where jurisdictional overlap and differing objectives occur at the same time. In these situations of differing objectives, institutions will try to diverge overlapping issues where the membership of both institutions is often similar. A fictitious example could be a case where one institution has made regulations on a moratorium for deep-water sharks, where another institution is conflicting these regulations with their own regulations for enhancing a multi-species fishery. Under such circumstances, a source institution could interact with the target institution in order to adjust these regulations in such a way, that conflicts are minimized. In the above mentioned example, a solution could be a change in objectives where a multi-species fishery tries to exclude deep-water shark species. In contrast to jurisdictional delimitation issues, interaction between nested institutions will occur where objectives are similar and rather than trying to diverge issues, issues will be expanded throughout multiple institutions. By doing so, institutional interaction might expand rules and regulations from institutions with a small membership to institutions with a much larger membership. For example, regulations regarding the implementation of high sea MPAs might be developed under regional institutions, but could be expanded under a more comprehensive global institution. Another type of interaction between nested institutions occurs under largely identical membership where the target institution might take over an obligation of the source institution. Under largely identical memberships, there will hardly be any contest (Oberthür and Gehring, 2003; Oberthür and Gehring, 2006). Lastly, additional means can be a driving force behind interaction where the main aim is not to achieve a broader membership for regulations, but rather to add extra binding force to these regulations (Oberthür and Gehring, 2003; Oberthür and Gehring, 2006).

### **3.4.8 Behavioral interaction**

The previously described types of interaction only affect the outcome effectiveness of the institutions indirectly through the output effectiveness of the institutions. However, an institution or regime can also interact with another regime directly through behavioral change. In other words, when one regime has implemented MPAs for the protection of corals, the resulting behavioral change by fishermen (not to fish in these areas) might also affect targets set by another regime (for instance a seasonal abortion of deep-water bottom trawling on sea mounts). This type of interaction is also referred to as interaction without consent as regimes interact in terms of directly influencing each other's impact or outcome effectiveness. However, this type of interaction does not involve a direct contact with actors of the source and target regimes (Oberthür and Gehring, 2003). In the previous fictitious example, behavioral interaction was synergetic rather than disruptive. However, regimes can also negatively affect the effectiveness of other regimes in terms of behavioral change. An example is given by Oberthür and Gehring (2003) who mention that the objective of the Kyoto Protocol to plant fast growing mono-culture of tree species in order to fix carbon, might negatively affect the CBD's objectives for protective measures for certain rare species depending on mixed forests. Similarly, the proposal by OSPAR to create a network of MPAs (including on the high seas)



for the protection of both habitats and species might negatively affect the outcome effectiveness of the UNCLOS article 87 freedom to fish.

### 3.4.9 Impact-level interaction

Impact-level effectiveness occurs when one regime's impact directly affects the impact of another regime. An example is given by Oberthür and Gehring (2006) where one regime focuses on protection of Atlantic cod stocks and another regime focuses on protecting Atlantic herring (*Clupea harengus*) stocks. Because cod predate on herring, an increase in Atlantic cod, because of the protective measures implemented by the cod regime, could cause a decrease in Atlantic herring stocks and therefore negatively influence the herring regime's impact effectiveness. Similarly, such effects could be synergetic. A fictitious example could quite easily be figured the other way around, where an increase in Atlantic herring stocks has a positive influence on Atlantic cod stocks by increasing the food supply of the Atlantic cod.

**Dimensions of institutional interaction and relevant distinctions**

Dimension	Relevant Distinctions
Causal pathway	<ul style="list-style-type: none"> <li>- output level</li> <li>- outcome level</li> </ul>
Causes	<ul style="list-style-type: none"> <li>- different objectives of source and target</li> <li>- different means of source and target</li> <li>- different memberships of source and target</li> </ul>
Intentionality (of the triggering action of the source institution)	<ul style="list-style-type: none"> <li>- intentional</li> <li>- unintentional</li> </ul>
Ability of the source to influence unilaterally	<ul style="list-style-type: none"> <li>- high ability</li> <li>- medium ability</li> <li>- low ability</li> </ul>
Quality of effect (within the target institution)	<ul style="list-style-type: none"> <li>- synergy</li> <li>- disruption</li> </ul>
Policy fields (of source and target institution)	<ul style="list-style-type: none"> <li>- same policy field</li> <li>- different policy fields</li> </ul>
Policy responses	<ul style="list-style-type: none"> <li>- collective response (intra-institutional and/or inter-institutional)</li> <li>- no collective response</li> </ul>

Table 3, Oberthür and Gehring (2003).



## 4 Conceptual framework

The main theories as discussed in the previous chapter will be used in this research to assess the effectiveness of one component of the North east Atlantic deep-water fishery regime: the implementation of high seas MPAs. In this chapter though, a selection is made between and within the discussed theories. The end product is a framework (Figure 4) dealing with the relevant components of the different theories necessary to answer the research questions. Being the main research object, the NEAFC will be referred to as 'the regime'. This chapter is structured according to the research questions and subjects related to the research questions. The research questions of this study are:

1. What is the effectiveness of the North East Atlantic Fisheries Commission with regard to the protection of deep-water ecosystems against deep-water bottom trawling?
  - a. What is the output effectiveness?
  - b. What is the outcome effectiveness?
  - c. What are the side-effects?
2. How can this effectiveness be explained?

### 4.1 What is the effectiveness of the North East Atlantic deep-water fishery regime?

#### Output and outcome effectiveness

This study aims to assess the North East Atlantic deep-water fishery regime in terms of its output and outcome effectiveness. The impact effectiveness will not be assessed, because there are far too much external variables which make the casualty between rules and natural effects hard to prove. Moreover, the causal chains between rules and natural state are often very long, resulting in more variables influencing the impact effectiveness (Miles et al., 2002; Mitchell, 2003). Additionally, assessing the impact effectiveness can only be done after a long time, especially in a slow developing ecosystem like deep-water ecosystems (Miles et al., 2002; Mitchell, 2003), and it is doubtful whether the North East Atlantic deep-water fishery regime exists long enough for this to be assessed. However, the output effectiveness can be assessed as the formal output of a regime which is generated in the beginning of a regime's existence: the formation phase. Considering the outcome of a regime as a resultant of a regime's output, assessing outcome effectiveness can be done after the implementation phase (Miles et al., 2002).

#### The problem of causality

Once the effectiveness has been assessed, there are essentially two results; the effectiveness of the North East Atlantic deep-water fishery regime in terms of its output and outcome. Even though individual components have been assessed to draw conclusions on the effectiveness of the regime, there is no evidence to prove why the regime is effective or not. Moreover, even though the effectiveness literature suggests that rules, rights, principles and regulations (output) will lead to a behavioral change (outcome), which in turn will lead to a change in the biophysical state (impact), such direct linkages are hard to prove. Certainly, implementation of rules, rights and regulations

provide their own issues as people will often find creative ways to avoid regulations (Miles et al., 2002). Would this problem not arise, it would have been possible to derive the cause of an effective regime in terms of outcome, directly from its output. In order to find out why the regime is to a certain extent effective, the output and outcome effectiveness will be separately assessed. First, I will conceptualize how I will answer the question on output and outcome effectiveness and finally, I will conceptualize how I will answer the question on why the regime has its result in terms of effectiveness (§4.2 below).

#### **4.1.1 What is the output effectiveness?**

Determining the regime's effectiveness in terms of output, means assessing the regime on the stringency of its rules and regulations, the extent to which the regime's intended set of activities is covered under its jurisdiction or domain (inclusiveness), and the level of collaboration (Miles et al., 2002; Zelli, 2008). A clear picture of what the regime looks like, will be useful in the process of determining the regime's effectiveness (Miles et al., 2002). Therefore, the functional scope, area and membership of the regime will be assessed in this study (Young, 1980). Knowing the functional scope of the regime will be important in determining the effectiveness in terms of the effect of the regime itself as this will be the direct goal of a regime. Another useful tool is to draw a geographical boundary around an area. This will facilitate the process of determining a regime's effectiveness by serving as the boundary of the case study. The same applies for knowing the membership of the regime as this will be necessary for determining the level of collaboration between members, the balance of power within the regime and presence of informal leadership (Miles et al., 2002). In short, determining the output effectiveness of the North East Atlantic deep-water fishery regime requires a full understanding and an exhaustive picture of the formal output of the regime. The eventual assessment of the regime's output effectiveness will be done on the basis of three previously mentioned qualitative criteria of the regime's output; the stringency of its rules and regulations, its inclusiveness and the level of collaboration.

#### **4.1.2 What is the outcome effectiveness?**

Although the outcome effectiveness can be assessed in two ways; a no-regime counterfactual, and the distance from the collective optimum, only the distance from the collective optimum will be used for the assessment of the regime's outcome effectiveness. The main reason for this is the difficulty of gaining any insight in a situation where no regime is in place. Therefore, I chose to use the distance from the collective optimum as there are basically two sources from which a judgment of the collective optimum can be retrieved. First, the regime itself will have some objectives or targets documented and second, experts might have an opinion on how far the regime is in terms of changing the behavior of states and actors (Underdal, 2002a).

Determining behavioral effectiveness does bring about some level of subjective judgment. However, by applying conservative measures, the regime effectiveness is generally underestimated. Furthermore, although the classification on an ordinal scale requires a level of subjective judgment, by using the same scale over and over again the assessment of different outcomes will be comparable. A lot will depend on the research questions and finding evidence for baselines and optimums (Miles et al., 2002). This, however, will be elaborated more extensively in the chapter on

methods.

#### **4.1.3 What are the side-effects?**

Another choice to be made is whether to assess just the direct effect as intended by the regime, or also the side-effects and costs of the regime (Miles et al., 2002; Young, 2001). The focus of this study will be on both the direct and indirect effects of the regime in terms of its output and outcome. Indirect regime effects can be very relevant and there are both positive and negative examples of such effects of which authors (Young, 2001; Mitchell, 2003) have claimed they can be more significant than the direct effects of a regime. Young (2001), emphasizes that externalities should not be underestimated. He states that without assessing externalities, the effectiveness of a regime can be underestimated or overestimated.

Gaining a full understanding of the indirect effects is time consuming and a complete picture of both the costs and side-effects of regimes is difficult to achieve because relevant data is sometimes hard to obtain or provided in ways which complicate analysis (Mitchell, 2003; Young, 2001; Sprinz and Helm, 1999). Furthermore, proving causal inference can be challenging when assessing side-effects and costs. Such 'externalities' can have much longer causal chains than direct effects which makes it challenging to assess the complete picture of externalities (Underdal and Young, 2004). According to Mitchell (2008), a more comprehensive list of indirect and unintended regime effects is still to be developed. However, this does not mean that obtaining data on indirect regime effects is without value when incomplete, as valuable new information about unintended regime effects can be retrieved once researching such effects (Mitchell, 2008). In this research, I will analyze the regime's side-effects.

### **4.2 How can this effectiveness be explained?**

In order to answer this question, three determinants for predicting effective regimes will be used to evaluate the reason behind the regime's effectiveness. Thus, the effectiveness itself is not being assessed anymore, but the effectiveness of the regime is mirrored to these predicting factors. The first factor to be evaluated is the knowledge base of the regime. The second factor is malignity of the problem and the last factor is the problem-solving capacity of the regime.

#### **4.2.1 Problem type**

##### **Uncertainty**

According Miles et al. (2002), a regime is more effective when the state of knowledge about the problem is well known. For this research, the level of uncertainty about the problem will be assessed in order to understand some part of the regime's effectiveness. Would the knowledge base around the problem be unambiguous, the regime has a higher probability to tackle the problem and be an effective regime (Herndon et al., 2010).

### **Malignity of the problem**

According to Miles et al. (2002), a regime is more effective when the problem type is highly benign, rather than highly malign. Incongruity, asymmetry, and cumulative cleavages will make a regime less effective in tackling the regime's issues. Therefore, problem malignancy will be used as a factor for determining regime effectiveness.

#### **4.2.2 Problem-solving capacity of the regime**

The problem-solving capacity of the regime will be assessed on the basis of five factors: the rules for decision making, whether an IGO with significant actor capacity is serving the regime, the presence of an epistemic community, how power within the regime is distributed, and the presence of parties as leaders within a regime.

#### **4.2.3 External factors**

Beside the previous factors determining the effectiveness of the regime, other factors outside the regime can influence regime effectiveness as well (Haas et al., 2001; Young et al., 2008; Oberthür and Gehring, 2003). In this research, external factors will be assessed in terms of its effect on the output and outcome of the regime.

External effects can originate from many sources like market structures and other regimes. However, listing, framing and narrowing down such external effects imposes the danger of missing out on valuable external factors which could prove to be important aspects of the regime's effectiveness. Therefore, rather than listing all the possible factors to be found in the literature, I will focus on regime interaction, and try to obtain other external factors from the interviews. The reason behind a further elaboration on regime interaction is because of the widespread recognition of its importance for determining regime effectiveness (Oberthür and Gehring, 2003; Young, 2008; Stokke and Coffey, 2001), and its conceptual necessities for explaining regime interaction as a determining factor for the regime's effectiveness.

### **Regime interaction**

Regime interaction is considered as an important factor altering a regime's effectiveness and will therefore be included as an external factor explaining the regime's effectiveness. However, conceptually some choices need to be made. Rather than using institutional interaction as the main theory of this research, it will only be used as one external determinant for the regime's effectiveness. In other words, institutional interaction will be used as a determinant for the output and outcome effectiveness of the regime. This automatically implies that two types of institutional interaction are being assessed: cognitive interaction, interaction through commitment, and behavioral interaction (Oberthür and Gehring, 2003).

### **Identifying cases of interaction**

For the research on institutional interaction, cases of interaction need to be identified. According to Oberthür and Gehring (2003), larger entities as the "UN system", and cases of interaction within one system should be excluded. On this specific subject, a case of interaction between the UNSFA and

the NEAFC would not be assessed as the NEAFC is a RFMO which can be considered as an instrument of the UNSFA itself. Three components of institutional interaction need to be identified: the source institution (independent variable, the target institution (dependent variable), and the causal pathway. Of course, because the effectiveness studied in this paper is the effectiveness of the NEAFC, the NEAFC will always be the dependent variable, and therefore, only the independent variable and the causal pathway need to be identified. Once these components are identified, the causality needs to be recognized by indicating how the component influences the decision-making done by the applicable actors. Next, behavioral change of these actors needs to be identified, and how this will produce the observed effect within the target institution (Oberthür and Gehring, 2003).

Identifying these components can be difficult, because of three reasons: two institutions might interact in multiple ways at the same time, there are more than two institutions in one interaction event, or institutions have co-evolved which means that they would not have existed individually. For these situations, disaggregation is important. Disaggregation means that individual cases of interaction need to be identified and thus, other interactions need to be disregarded (Oberthür and Gehring, 2003).

### **Identifying motivations for interaction**

Whether an interaction has occurred by the motive of different objectives, memberships, or means, needs to be assessed by comparing the regimes on these issues. Clearly, if the NEAFC has the exact membership of the source institution, this will not have been the motivation behind the interaction. Furthermore, issues like anticipation and intentionality will not by themselves be important for assessing the role of regime interaction on the output effectiveness of the regime, because the effectiveness at this stage is already assessed, and the main interest is to know whether regime interaction has played a role in this process. However, the ability of the NEAFC to avoid unwanted interaction can be a factor determining the resilience of the regime. Thus, it can be interesting to know whether the NEAFC has the ability to avoid interaction through consent. Last, synergy or disruption will be determined by comparing the result of the interaction with the objectives of the regime.

### **Response to the interaction**

Would there have been no response to an interaction, there would be no interaction as the effectiveness will not be influenced. An intra-institutional response will be the actual amending of norms or rules and will therefore be readily identified as this is the formal output itself. Basically, this type of response is the dependent institution itself which needs to be identified as a case of interaction. Identifying inter-institutional responses, implies the identification of overarching communication processes, secretariats and negotiations (Oberthür and Gehring, 2003).

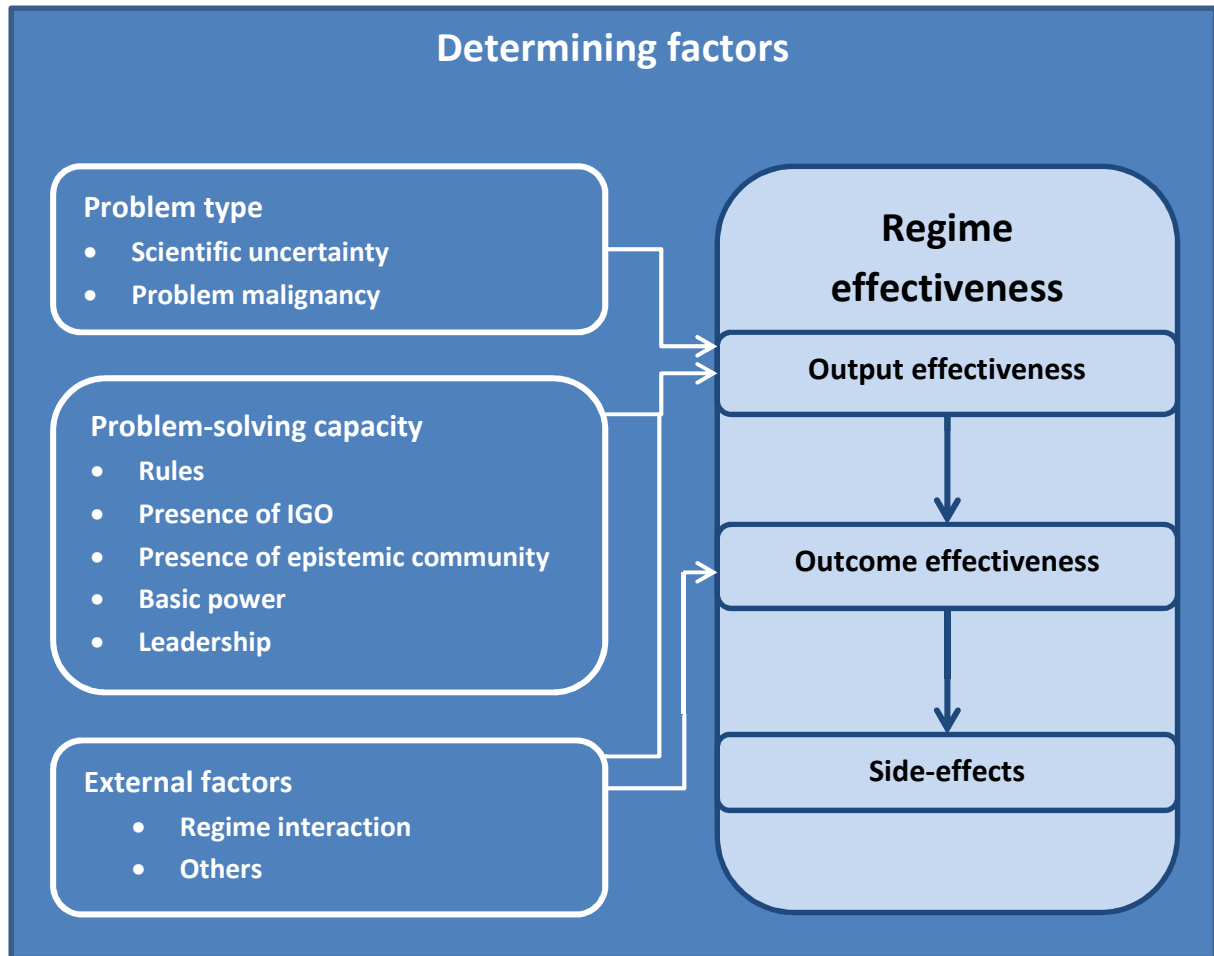


Figure 4, Conceptual framework. Determining factors (dark blue area) describe how the effectiveness (light blue area) can be explained. Arrows can be either positive or negative, this accounts for all the arrows in the figure.

## 5 Methods

In this chapter, the methodology used in this study will be described. First the research design will be presented and elaborated. Second, the data collection, will be described. Third, the used documents and the interviewees are described and last, ethical considerations are clarified.

### 5.1.1 Research design

The interest and result of this study is qualitative data. Neuman (2003) clearly differentiates quantitative research from qualitative research on this point as quantitative research is about measuring objective facts, where qualitative research is constructing social reality. Thus rather than a statistical analyses, this research applies a thematic analyses, and rather than many cases or subjects, this study focuses on a few cases and subjects (Neuman, 2003).

The goal of this research is analytical in nature as this research aims at analyzing the effectiveness of the NEAFC in protecting deep-water ecosystems from deep-water bottom trawling. This can be seen as an in-depth qualitative case study as qualitative data is used to get an in-depth insight into deep-water ecosystem protection by the NEAFC which is used as the case study (Underdal, 2002b).

### 5.1.2 Data collection

The data collection of literature and policy documents is mainly done by internet. Some books are used which are either loaned from the University library or from my supervisor. Some additional documents are obtained through my interviewees. Often, during the interview, they were able to email me these documents directly as they had my contact details. This way, they could clarify issues while being interviewed. Contact data was therefore collected through snowball sampling (Kumar, 2005).

The selected interviewees are all experts who were contacted by email. The email addresses are often available on the websites of their organization. After each interview, I asked whether they could give me contact details of other people, or whether they could give me names of interesting people to interview. This way, I obtained some additional interviewees. The interviews were predominantly done by telephone or Skype. The telephone interviews are not recorded, some of the Skype interviews were recorded. I only spoke to one interviewee face-to-face as most of my interviewees are from overseas. I have written down all of my interviews to facilitate the data analysis process. The interview protocol and a list of the interviewees is presented in Annex 7.

### 5.1.3 Data collection for assessing the output effectiveness

For assessing the output effectiveness, data is gathered from policy documents, minutes, and scientific article. Written documents are the most important data here, as the output of the regime is mostly documented.

Besides documents, interviews are done to assess whether some data is correct (contrasting and structural questions), and for retrieving missing data. This part of the interview contains structured questions (Kumar, 2005), as the main aim of this research question is to gain conclusiveness on the

way the output is conceived.

#### **5.1.4 Data collection for assessing the outcome effectiveness**

Obtaining information about the factors determining the observed effectiveness is mainly done by conducting interviews. Besides, information published by the regime such as texts and statements (primary data) is used to compare the outcome with. Secondary data in the shape of scientific articles, reports and news articles is used for the comparison with the NEAFC's output as well.

The collective optimum is assessed by the primary goals of the regime from which the distance from its optimum can be assessed. Each component or goal of the regime is assessed individually. The goals of the regime are obtained from the objectives stated in the “‘New’ Convention’ (Basic Text) (NEAFC, 2007) as well as from NEAFC's response to the UNGA61/105 resolutions (NEAFC, 2009). Semi-structured in-depth, interviews are used to retrieve data from experts to gain primary and secondary data on behavioral change.

#### **5.1.5 Data collection for assessing the side-effects**

The side-effects are attained from open in-depth interview questions. The side-effects were mainly attained from the interviews as these, often unforeseen, effects are not documented. Some data was derived from these questions, but the main data was only observed during the analysis.

#### **5.1.6 Data collection for assessing how the effectiveness can be explained**

Data is obtained through both interviews and documents. Semi-structured interviews are used to validate data and find missing data. Most of the interviewees are asked roughly the same question to validate how the balance of power and informal leadership is distributed under the regime. For obtaining information about regime interaction, in each of the cases, both parties are interviewed to validate the data.

#### **5.1.7 Data analysis**

For this research, both comparative and explanatory analysis is used. A comparative analysis is used to compare the output of the NEAFC with the output of the North West Atlantic Fisheries organization (NAFO) for determining a case regime interaction. Furthermore, a comparative analysis is used to compare the output of the NEAFC with the UNGA61/105 and UNGA64/74 resolutions. The same is done with regard to the FAO's International Guidelines for the Management of Deep-Sea Fisheries. Explanatory analysis was then conducted to get more insight in the data. The same is done with other literature and documents.

The interviews are written out after which a coding system was conducted. Every section of the conceptual framework was labeled with a code, consisting of the first two letters of the section, or the first letter of every word of the section or theory. For example, the code derived from the outcome effectiveness is 'OE', for uncertainty is 'Un' and so on. The interview sheets were coded in the margin, once relevant data was detected. Later on, this data was compiled and analyzed.

#### **5.1.8 Overview of the used data**

The main document used is the Consolidated text of all NEAFC recommendations on regulating



bottom fishing; this is the output of the regime in terms of fisheries management regulations with regard to deep-water ecosystem protection. The NEAFC's "New" Convention is the basic text of the NEAFC and is used for its decision-making rules and objectives. Other NEAFC documents were used as extra data. The UNGA61/105 and UNGA64/72 resolutions were used as these documents requires states and RFMOs, including the NEAFC, to embed provisions with regard to Vulnerable Marine Ecosystem (VME) protection. This is used to assess the NEAFC's inclusiveness. For the outcome effectiveness, some news articles are used as evidence for cases of non-compliance by fishing vessels. Other literature such as reports and scientific article, and ICES journals are used as additional data. The work of Rogers and Gianni (2010) was the most frequently used report in this research as in this report, the commitment of RFMOs, including the NEAFC, with regard to the embedment of the UNGA resolutions is assessed. The following 11 experts are interviewed for this research

1. The Secretariat of the NEAFC
2. The Secretariat of the NAFO
3. Contracting Party / Scientist
4. Contracting Party
5. Contracting Party
6. Contracting Party
7. Seas at Risk (NGO) / Scientist
8. WWF (NGO)/ OSPAR/ Scientist
9. Former NGO
10. Scientist
11. Expert on Control and Enforcement

Although the number of interviewees is not very high, almost every group I have interviewed almost every group I wanted. Some Contracting Parties are hard to approach or do generally not respond to interview requests (according other interviewees). The same applies for the fishing industry; despite numerous of attempts, I did not manage to contact any of them. I also did not manage to approach someone involved in the UN. However, the persons I did interview are all experts and, except for the data from the fishing industry, most of the answers were repeated multiple times. This means that the largest part of the required data was conclusive.

### **5.1.9 Ethical considerations**

Because I had trouble with getting response from interview requests, I contacted my interviewees with the promise to stay as anonymous as possible. This means, that I am not able to present names, and in the case of Contracting Parties, even their country of delegation. Furthermore, some data is sensitive. The data I gathered from the Control and Enforcement expert was very precise and confidential and I am requested not to be too detailed about these issues. The same accounts for the data obtained from the interviewee who was formerly working for a NGO. This does imply, however, that in the results section I did not specify exactly where the quotes derived from. The list presented above is the only specification I can use.

## 6 Results

In this chapter, the results from documents and interviews will be discussed. This chapter has the same structure as the conceptual framework, starting with the output and outcome effectiveness, and ending with how this effectiveness can be explained. At the end of each section, a short summary will be given. The used documents are presented in §6.1 whereas a list of interviewees and the used interview protocol is presented in Annex 7.

### 6.1 Research question 1: What is the effectiveness of the NEAFC in terms of protecting deep-water ecosystems against deep-water bottom trawling?

All of the NEAFC's regulations for deep-water bottom fishing, including deep-water bottom trawling, are embedded into the 'Consolidated text of all NEAFC recommendations on regulating bottom fishing' (NEAFC, 2011a). From here, this text will be referred to as the 'Consolidated Text'. The Consolidated Text is presented below (§6.1.1). For the assessment of regime interaction, the Consolidated Text is used as the output of the regime from which both the output effectiveness, the outcome effectiveness and the side-effects are assessed. The Consolidated Text is compared with the UNGA61/105 and UNGA64/72 resolutions (Annex 5) for determining the inclusiveness. The FAO's 'International Guidelines for the Management of Deep-Sea fisheries in the High Seas' is, additionally, because the UNGA resolutions refer to these guidelines. They are presented in Annex 6 and are referred to as 'the Guidelines'. The Consolidated Text is presented in Annex 2. Besides the Consolidated Text, 'the NEAFC scheme of Control and Enforcement' (NEAFC, 2011b) will be used for compliance and enforcement issues, the most relevant articles are presented in Annex 3 which will be referred to as the 'Enforcement Scheme'. For the basic rules and decision-making processes of the NEAFC, the "'New" Convention' (NEAFC, 2007) is used which is presented in Annex 4. From here, the "New" Convention will be referred to as the 'Basic Text'. These three text cover the entire regime in terms of deep-water bottom trawling regulations and compliance regulations for the North East Atlantic high sea area. Some literature is used, especially the work of Rogers and Gianni (2010) as this work is a review of the commitment by RFMOs, including the NEAFC, to embed the UNGA resolutions.

#### 6.1.1 Consolidated text of all NEAFC recommendations on regulating bottom fishing

##### Article 1. Use of terms

1. The term 'bottom fishing activities' means bottom fishing activities where the fishing gear is likely to contact the seafloor during the normal course of fishing operations.
2. The term "existing bottom fishing areas" initially means areas where VMS data and/or other available geo-reference data indicating bottom fishing activities have been conducted at least in two years within a reference period of 1987 to 2007. This shall be revised regularly in accordance with Article 3.4.
3. The term "new bottom fishing areas" means all other areas within the Regulatory Area which are not defined as existing bottom fishing areas.

## Article 2. Organisation of work

It is recognised that the Permanent Committee on Management and Science (PECMAS) in implementing this Recommendation seeks comments from and advice by the International Council for the Exploration of the Sea (ICES) in accordance with the Memorandum of Understanding between NEAFC and ICES.

## Article 3. Identification of existing bottom fishing areas

1. NEAFC shall proceed to map existing bottom fishing areas within the Regulatory Area for bottom fishing activities. Mapping of bottom trawling activity shall be given priority.
2. The Secretary shall develop a preliminary map based on VMS data and other geo-reference data presently available in the Secretariat and/or provided subsequently by Contracting Parties.
3. Contracting Parties with vessels involved in bottom fishing activities in the period 1987 to 2007 shall, for the purpose of paragraph 1, submit to the extent possible comprehensive maps of existing fishing areas to the Secretary according to the guidelines set out in annex 3.
4. The comprehensive map of existing bottom fishing areas referred to in paragraphs 1 and 3 shall be revised regularly to incorporate any relevant information. Coordinates for existing fishing areas are listed in Annex 6

## Article 4. Bottom fishing activities in new bottom fishing areas

1. From 1 January 2009, all bottom fishing activities in new bottom fishing areas or with bottom gear not previously used in the area concerned, shall be considered as exploratory fisheries and shall be conducted in accordance with an Exploratory Bottom Fisheries Protocol to be adopted by the Commission as soon as possible. Until such a protocol is adopted the interim protocol set out in Annex 1 shall apply.
2. The exploratory bottom fishing activities shall be subject to the assessment procedure set forth in Article 5, with the understanding that particular care Consolidated text of all NEAFC recommendations on regulating bottom fishing shall be taken in the evaluation of risks of the significant adverse impact on vulnerable marine ecosystems, in line with the precautionary approach.
3. Contracting Parties shall communicate the required information under the exploratory fisheries protocol referred to in paragraph 1 to the Secretary for forwarding to PECMAS and to all Contracting Parties, together with the information or preliminary impact assessment referred to in Article 5, paragraph 3 (i), below.
4. Contracting Parties shall provide promptly a report of the results of such activities to the Secretary for circulation to all Contracting Parties.
5. Prior to commencing new bottom fishing activities based upon the results of exploratory bottom fisheries conducted in the prior two years, the Commission shall review the assessments undertaken in accordance with Article 5 below and the results of the fishing protocols implemented by the

participating fleets, and shall:

(i) Authorise these bottom fishing to proceed and establish conservation and management measures to prevent significant adverse impacts on vulnerable marine ecosystems from individual bottom fishing activities and to ensure the long-term sustainability of deep sea fish stocks, or

(ii) not authorize these bottom fishing activities to proceed.

6. Contracting Parties shall ensure that vessels flying their flag conducting exploratory fisheries have an observer on board. Observers shall collect data in accordance with a Vulnerable Marine Ecosystem Data Collection Protocol to be adopted by the Commission as soon as possible. Until such a protocol is adopted, the interim protocol set out in Annex 2 shall apply.

#### Article 5. Assessment of bottom fishing activities

1. On the basis of the best available scientific information, PECMAS shall identify vulnerable marine ecosystems in the Regulatory Area and map sites where these vulnerable marine ecosystem are known to occur or likely to occur and shall provide such data and information to the Secretary for circulation to all Contracting Parties.

2. Assessments shall follow the procedures set out below:

(i) Each Contracting Party proposing to participate in bottom fishing shall submit to the Secretary information on and, where possible, an initial assessment of the known and anticipated impacts of its bottom fishing activities on vulnerable marine ecosystems, in advance of the next meeting of PECMAS. These submissions shall also include the mitigation measures proposed by the Contracting Party to prevent such impacts. The Secretary shall promptly forward these submissions to PECMAS and to the Commission.

(ii) The submission of such information shall be carried out in accordance Consolidated text of all NEAFC recommendations on regulating bottom fishing with guidance developed by PECMAS on the basis of advice from ICES or, in the absence of such guidance, to the best of the Contracting Party's ability.

(iii) On the basis of an assessment made by ICES, according to its own internally developed procedures and standards, PECMAS shall provide advice to the Commission as to whether the proposed bottom fishing activity would have significant adverse impacts on vulnerable marine ecosystems and, if so, whether mitigation measures would prevent such impacts. In this assessment, any other necessary information required, including information from other fisheries in the region or similar fisheries elsewhere may be used.

3. Taking account of the advice and recommendations provided by ICES and considered by PECMAS, concerning bottom-fishing activities, including data and information arising from reports pursuant to Article 6, the Commission shall adopt conservation and management measures to prevent significant adverse impacts on vulnerable marine ecosystems. Such measures may include:

(i) If proposed bottom fishing is outside of the existing bottom fishing areas identified by the

Commission in accordance with Article 3, or if there are significant changes to the conduct, or technology of existing bottom fisheries, or new scientific information indicating a VME in a given area, the Contracting Party proposing to participate in bottom fishing shall submit to the Secretary an initial assessment of the known and anticipated impacts of its bottom fishing activities on vulnerable marine ecosystems, in advance of the next meeting of PECMAS. Assessments should address the elements as set forth in Annex 3. The Secretary shall promptly forward these submissions to PECMAS and to the Commission.

(ii) Requiring specific mitigation measures for bottom fishing activities;

(iii) Allowing, prohibiting or restricting bottom fishing with certain gear types, or changes in gear design and/or deployment; and/or

(iv) Any other relevant requirements or restrictions to prevent significant adverse impacts to vulnerable marine ecosystems. The Commission shall periodically ask ICES to provide advice to NEAFC for consideration by PECMAS on the timing and requirements for the assessment of a previously assessed bottom fishery. Areas closed to bottom fisheries are set out in Annex 7.

#### Article 6. Encounters with vulnerable marine ecosystems

Contracting Parties shall require that vessels flying their flag without delay cease bottom fishing activities in any site in the Regulatory Area where, in the course of fishing operations, evidence of vulnerable marine ecosystems is encountered, and report the encounter, including the location, and the type of ecosystem in question, to fishing the Secretary so that appropriate measures can be adopted in respect of the relevant site. Such sites will then be treated in accordance with Article 4, paragraph 5. Encounters are defined in Annex 4

#### Article 7. Review

The Commission shall review this Recommendation at the latest at its Annual Meeting in 2012. The Commission shall biannually thereafter examine the effectiveness of these provisions in protecting Vulnerable marine ecosystems from significant adverse impacts.

## **6.2 Sub-question (a): What is the output effectiveness?**

In order to be able to value the regime's effectiveness the point of reference will be described per section of the output effectiveness. This is done to clarify the elements of output effectiveness. This way shortcomings and achievements can be detected. The points of reference are adopted or adjusted from Miles et al. (2002), Abbott et al. (2000), and Zelli (2008) as discussed in the theoretical framework. The different elements of output effectiveness are: stringency (obligation and precision), inclusiveness, and collaboration.

### **6.2.1 Stringency**

#### **1. Obligation**

The degree of obligation is described as one aspect of stringency by Miles et al. (2002). According to

Abbott et al. (2000) p: 410, a high level of obligation is achieved once there is an “unconditional obligation; language and other indica of intent are legally bound”. The Basic text will be analyzed on its level of obligation as all the legal provisions are accommodated in this text. Other NEAFC texts such as the Consolidated Text and the enforcement Scheme are exposed to the Basic Text. This means that the legality of recommendations made under the Consolidated Text and the Enforcement Scheme is determined in the Basic Text (Article 3.2, Annex 4).

The current obligations for contracting parties are written and declared in the Basic Text. This basic text starts with a caption noting: “Amendments to the 1982 Convention have been adopted in 2004 and 2006 by the NEAFC Commission. Contracting Parties have agreed to us the “New” Convention on a provisional basis, pending ratification”. Thus in theory so far, the Basic Text seems to apply to only the signatories, and is no international law. However, the convention has acquired the status of international law. Furthermore, if a country with serious interest in fishing in the NEAFC area wants to engage in fishing, including deep-water bottom trawling, it must register as a Co-operating non-Contracting Party (CNCp). This implies, that it must obey to all the NEAFC regulations including the regulation in place for the protection of Vulnerable Marine Ecosystems (VMEs) (Bjørndal, 2009). Fisheries in the area conducted by other vessels than those flying the flag of a contracting party or co-operating non-contracting party are automatically engaged in IUU-fishing (NEAFC, 2011b, Article 11, Annex 3). Thus in practice, the NEAFC can legally authorize every vessel, engaged in fishing in the NEAFC regulatory area, to act according to the NEAFC’s regulations. This authority corresponds to the point of reference where ‘unconditional obligation’ is stated as one aspect of obligation.

The central statement, reflecting NEAFC’s legal binding capacity, is represented in article 3.2 of the Basic Text: “The Commission shall have legal personality and shall enjoy in its relations with other international organizations and in the territories of the Contracting Parties such legal capacity as may be necessary to perform its functions and achieve its ends.” This article is key in determining the degree of obligation of the NEAFC. This article clearly states that the NEAFC is capable of executing legally binding measures and will do so if necessary for the achievement of their objectives.

Article 12 does, however, add some reservation to the unconditional obligation aspect of the NEAFC. Article 12.1 states: “A recommendation shall become binding on the Contracting Parties subject to the provisions of this Article and shall enter into force on a date determined by the Commission, which shall not be before 30 days after the expiration of the period or periods of objection provided for in this Article.” This article corresponds to the binding capacity of ‘language and other indica’ as formulated in the point of reference. The objection system accommodated in the Basic Text is extraordinary; it means to some extent that even though a measure or recommendation is approved by a (large) majority of Contracting Parties, a Contracting Party can still decide not to adhere. One interviewee described this as an “opt-out law”. This opt-out law is described in the remaining text of Article 12 of the Basic Text. Article 12.2a: “Any Contracting Party may within 50 days of the date of notification of a recommendation... object thereto. In the event of such an objection, any other Contracting Party may similarly object... Contracting Parties are allowed a final period of 40 days after receiving notification of that objection in which to lodge objections.” In short, other Contracting Parties can object similarly to the recommendations (within 50 days of the notification of a recommendation), after which they have 40 days to contain their objection.

Article 12.2b describes the alteration in obligation for the objecting Contracting Party once it has made an objection: “A recommendation shall not be binding on a Contracting Party which has objected thereto.” Furthermore, multiple objections may even undo the binding capacity of a recommendation to all Contracting Parties according to Article 12.2c: “If three or more Contracting Parties have objected to a recommendation it shall not become binding on any Contracting Party.” However, in the case of Article 12.2b a Contracting Party can still withdraw its objection at any time meaning the recommendation will be binding for the Contracting Party again (Article 12.2d). Furthermore, even though a recommendation has lost its binding power to all Contracting Party as stated in Article 12.2c, two or more Contracting Parties can still decide to obey to these recommendations on their own initiative and give ‘effect-thereto’ (Article 12.2e). Thus, according the Basic Text, there is an unconditional legal obligation to obey the regulations put in place by the NEAFC when fishing in the convention area. However, if a contracting party does object to the recommendation, it can ignore these regulations.

## **2. Precision**

The degree of precision is described as one aspect of stringency by Miles et al. (2002). The highest level of precision is adopted from Abbott et al. (2000) p: 415: “Determinate rules: only narrow issues of interpretation.” Both the Basic Text (Annex 4), the Consolidated Text (Annex 2) and the Enforcement Scheme (Annex 3) are used for this analysis. Examples from these texts will be used to illustrate the level of interpretation involved. However, not every single recommendation or regulation will be described. Instead, some general examples and the main shortcomings will be used to illustrate the NEAFC’s level of precision.

### *Basic text*

The precision of the Basic Text can be deduced from Article 1. First, the exact coordinates of the convention area, for which the regulations apply, are given. Second, the most important definitions are explicated. On a definition on “Fishery resources”, the document refers to another convention, namely the UNCLOS. Another definition is described very broad which makes it explicit. In this case, “living marine resources” are described as “all living components of marine ecosystems.” In the case of “Marine biological diversity” a very detailed and explicit definition is given. Although not every possible term is described, the terms which are described under Article 1 leave little room for interpretation.

### *Consolidated Text*

In the ‘Consolidated Text’, there is little room for interpretation either. The use of terms are explained immediately. This means that terms like ‘new bottom fishing areas’ ‘existing bottom fishing areas’ and ‘bottom fishing activities’ can only be interpreted in a narrow way. Furthermore, for every involved party, the text clearly states who should do what. For example, when encountering a VME in a new bottom fishing area a vessel should report this without delay to its flag state. The flag state shall forward this to the Secretary, or the vessel shall report the encounter directly to the secretary. Then, the Secretary shall request the Contracting Parties to install a temporary closure after which in the PECMAS meeting with advise from ICES, the closure shall be assessed by the Commission. With advise from ICES, the Permanent Committee on Management



and Science (PECMAS) shall evaluate whether it does consist of a VME and decides whether the closure should be maintained or reopened for fishing. Also what exactly constitutes of a VME encounter is clearly defined in Annex 4.4. There is some criticism about the clarity of the objectives with regard to VME protection according to a Contracting Party:

*“The objectives are not clear; does every coral or sponge has to be protected? Some are very prolific. How much damage is too much? I miss a detailed discussion on this issue.”*

However, the threshold levels for reporting a VME leave little room for self-interpretation as these are fixed values: 60kg of corals and 800 kg of sponges (Annex 4.4). This is more an issue which has to do with malignancy (§6.5.2) than an issue which has to do with the precision of recommendations as the threshold levels are clear. Some Contracting Parties are concerned these threshold levels constraint their ability to fish on deep-water fish species.

### *Enforcement Scheme*

The Enforcement Scheme leaves little room for interpretation as well. Definitions are clarified in Article 1, and in Article 15, 16, and 17, the text clarifies who should do the inspections and surveillances, what is allowed, how the vessels should react and cooperate and on what premises inspections and surveillances are conducted.

### **Summary**

The stringency is made up by two elements: obligation and precision. The level of obligation is high as the NEAFC recommendations have gained the status of international law. However, for Contracting Parties there is, in theory, no unconditional obligation as they can object thereto. This enables Contracting Parties to ‘opt-out’ and theoretically maintain their destructive fishing methods, potentially damaging VMEs. The level of precision is high as both the Basic text, Consolidated Text, and the Enforcement Scheme leave little room for interpretation.

### **6.2.2 Inclusiveness**

The point of reference for the highest level of inclusiveness is derived from Zelli (2008, p: 6): “the degree to which a regime has brought the targeted system of activities under its jurisdiction”. In order to determine whether every aspect on the protection of VMEs targeted by the NEAFC is brought under its jurisdiction, the targeted system of activities is identified. The targeted system of activities is interpreted as the provisions which are embedded into the NEAFC in order to achieve its objectives (protecting VMEs against deep-water bottom trawling).

In the first part, the analyses is done on the basis of whether the NEAFC has the exclusive right for making recommendations for the protection of VMEs against deep-water bottom trawling. In other words, does the NEAFC have the sole right to make these recommendations in its convention area or are there other institutions involved as well. At a lower level, the NEAFC is analyzed on its comprehensiveness. In the second part, this is done by assessing whether they have incorporated all possible activities they are obliged to by the UNGA61/105 and UNGA64/72 resolutions (Annex 5). In the last part, some additional findings outside the UNGA resolutions are given, these are mainly



derived from interviews.

### **Sole right**

The NEAFC is the accounting regime for the protection of VMESs against significant irreversible impacts (SIAs) resulting from fishing. Certainly, no other management measures or provisions are incorporated into other regimes. In theory, the NEAFC has the sole right and duty to protect VMESs against SIAs resulting from fishing. As the NEAFC is a regional fisheries management organization, it does not account for, and does not possess the provisions and legal capacity to install measures against other activities damaging VMESs. The NEAFCs inclusiveness on this aspect is high.

### **Embedment of UNGA61/105 and UNGA64/72**

The relevant paragraphs of the UNGA61/105 resolution will be presented in the first part between the brackets and the related paragraphs of the UNGA64/72 resolution will be presented in the second part between the brackets. The actual text is presented in Annex 5. A very useful document on the embedment of these resolutions by RFMOs is made by Rogers and Gianni (2010) which will be used as a source to identify the major shortcomings.

#### *1. Requirement for VMS system: UNGA §(54/64)*

In the Consolidated Text, the VMS data is mainly used for the development of mapping existing bottom fishing areas (Article 1, 3.1, 3.2). The VMS recommendations are implemented in the Enforcement Scheme (Article 11). The main provisions are the installment of VMS systems on board of every vessel exceeding 24 meters (Article 11.1). The system should then send the VMS signals autonomously to a land-based fisheries monitoring center (FMC) (Article 11.1a). The main data sent to the FMC are the vessel identification, most recent geographical position, the date and time and where applicable data on catch and transshipment (transshipping of the catch to another vessel) (Article 11.1b). The Contracting Parties have the obligation to secure the transmission of the previously mentioned data (11.2, 11.3).

Would a failure of the system occur, it has to be repaired within a month, after that period the vessel will not be authorized to engage in fishing in the regulatory area (11.3). Furthermore, when a vessel encounters a defective VMS it has to report at least daily the data under Article 11.1b. The NEAFC did make this recommendation to reach the deadline of implementing VMS systems.

#### *2. Control and enforcement: UNGA §(52/70)*

The surveillance and enforcement provisions of the NEAFC are arranged in the Enforcement Scheme (Article 15, 16, 17). The inspectors themselves belong to the different Contracting Parties; the NEAFC does not have their own inspectors (Article 15.1). Vessels are obliged to allow inspectors from other Contracting Parties on board for inspection (Article 15.2). Apart from inspections, surveillances are carried out as well by plane or vessel (Article 17.1). The VMS data is the most important part of surveillance under the NEAFC in relation to enforcing spatial protection:

*“Vessels are obliged to report every second hour their position, so we will know and always have a*

*full picture of who is out there. VMS data are quite precise, tell us exactly where they are.”*

The NEAFC does regulate the enforcement on the high seas, the VMS system is an important tool to know whether a vessel is entering a protected area. Still, some improvements on these provisions can be made. ICES made recommendations on VMS signals to be sent every hour rather than every two hours in order to increase precision. Furthermore, the type of gear used by a vessel could also be put on the list of data sent by the VMS signals in order to precisely know what type of fishing is occurring at that moment. This is important as fishing with non-bottom contacting gear (referred to as a pelagic trawl) is not illegal in these closed areas and cannot be detected by the VMS system (Rogers and Gianni, 2010).

### *3. Increasing scientific research: UNGA §(78/110)*

Information about scientific research in the Consolidated Text is embedded in Article 2. Scientific research will be integrated into the recommendations by PECMAS with advice from ICES. Furthermore, Article 5 and 6 will increase knowledge on VMEs as information from encounters (bycatch of VMEs such as corals and sponges above the given threshold level) will increase the mapping of where VMEs occur.

However, the current threshold levels for VME encounters might not give an accurate estimate of the occurrence of VMEs. These threshold levels imply at which amount of live corals (60 kg) and sponges (800kg) vessels are committed to report an encounter. A similar issue accounts for the differentiation between dead and live corals, as scientific research indicates dead corals are important structures for live corals to settle (Rogers and Gianni, 2010). Furthermore, under the Guidelines (Annex 6, §33) socio-economic assessments should be made for both catches as well as for management measures. So far, no socio-economic elements are implemented in the data collection system of the NEAFC as an interviewee clarified:

*“...Most CPs don’t want to discuss socio-economic data, only biological data, I think that’s silly, but that’s the way it is. Most CPs think that’s an internal matter for the EU, Norway or whatever. I think you have to get the full picture in fisheries, that gives you a more informed basis about the situation and making the correct measures. ICES are now going to look in socio-economic situations.”*

### *4. Embedment of ecosystem-based approach and precautionary approach according to the Guidelines: UNGA §(83/113)*

The NEAFC has embedded the provisions for assessments in Article 4.2, 4.5 and 6 of the Consolidated Text. In Article 4.2 is stated: “The exploratory bottom fishing activities shall be subjected to the assessment procedure... with the understanding that particular care shall be taken in the evaluation of risk of the significant adverse impact on vulnerable marine ecosystems, in line with the precautionary approach.” As the assessments for fishing in new areas is done prior to every individual fishing activity, the precautionary approach is embedded into these regulations. The same applies for Article 6 with regard to VMS encounters in new fishing areas as in these cases a precaution is made in closing the area around the encounter until more is known. Also, the vessel is obliged to move on from the encounter at a minimum distance of 2 nautical miles.

However, for the existing fishing areas (Annex 2), the precautionary approach is less presented. There is no assessment made prior to every bottom fishing activity. Rather, the VMEs are mapped and identified on the best available knowledge, but no environmental impact assessment of the fishing activity is done in advance. Furthermore, threshold levels for encountering corals are said to be too high (Rogers and Gianni, 2010). Applying the precautionary approach should also mean taking precaution with scientific uncertainty about such levels. Moreover, in existing fishing areas only the move-on rule is applied; no temporary closures are immediately installed when a VME is encountered. The move-on rule implies that a vessel has to move on two nautical miles away from the location where they encountered the VME before they can start fishing again.

The ecosystem approach is applied throughout these regulations as the entire 'Consolidated Text' has been constructed around the objective of protecting VMEs against significant adverse impacts.

#### *5. Conducting assessments: UNGA §(83a/119a)*

The NEAFC has embedded these provisions in Article 4.2-4.5 of the Consolidated Text. This concerns the regulations for new fishing areas. This has been implemented in such a way that the exploratory fishing (fishing in new bottom fishing areas) will be exposed to a similar assessment, as set out in Article 5, *prior* to a fishing trip is conducted. Article 5.2i asks for Contracting Parties to give information to the Secretary on the impact its fishing activity is likely to have on VMEs and also includes mitigation measures proposed by the Contracting Parties to avoid these impacts. Preferably, this information is based on "guidance developed by PECMAS on the basis of advice from ICES" (Article 5.2ii). In return, PECMAS will advise the Commission on whether the proposed activity will have negative effects on VMEs (Article 5.2iii). The Contracting Parties will have to report on the results of their fishing activities (Article 4.4). Before any new bottom fishing activities are conducted, the previous assessment will be reviewed (Article 4.5).

Criticism regarding the implementation of this resolution is mainly concerned with differentiation between existing fishing areas and new fishing areas. Such an assessment is not required prior to a fishing activity in an existing fishing area, but only prior to a fishing trip in a new fishing area. As no deep-water bottom trawling activity has been conducted so far in the new fishing area, no impact assessments have been conducted either. According to Rogers and Gianni (2010), this means that the required assessment prior to a vessel's engagement in deep-water bottom trawling, called for under the UNGA64/72, §119a (Annex 5) is not yet included in the areas where the main deep-water bottom trawling activity takes place.

#### *6. Increasing scientific data on VME occurrence and taking appropriate management measures: UNGA §(83c/119b)*

The NEAFC has implemented these provisions in Article 5 of the Consolidated Text. PECMAS will identify and map areas where VMEs are likely to occur with the best scientific data possible (Article 5.1). The assessment is done in the exact same way as under Article 4, with the exception that the assessment on identifying VMEs is not done prior to every individual fishing activity, but in general by PECMAS on the basis of which management measures are installed. Data will mostly come from VME encounters by fishing vessels (Article 6). PECMAS will assess whether deep-water fishing in certain areas will have significant adverse impacts for which mitigation measures need to be

established. Also information from other regions or fisheries will be used (Article 5.2iii). In doing so, PECMAS will ask for advice from ICES (Article 2).

Once the assessment is done on the basis of advice from ICES and considerations from PECMAS including the data gathered as under Article 6 (clarified in the next section: section 7), the commission will adopt management and conservation measures (Article 5.3). The decision on measures will be based on the differentiation between new and existing fishing areas. When a proposal is made to fish in existing fishing areas, the previously described assessment (under 83a/119a) will be in place. For fishing in existing fishing areas, the decision on extra measures will only apply if there are “significant changes to the conduct, or technology of existing bottom fisheries, or new scientific information indicating a VME in a given area.” The Contracting Party proposing to engage in deep-water fishing is requested to give an initial assessment on the impact of its proposed activity to the Secretary to be discussed under the next annual meeting of PECMAS (Article 5.3i). During this meeting, three options are decided upon: “Requiring specific mitigation measures for bottom fishing activities” (Article 5.3ii), “Allowing, prohibiting or restricting bottom fishing with certain gear types, or changes in gear design and/ or deployment” (Article 5.3iii), “Any other relevant requirements or restrictions to prevent significant adverse impacts to vulnerable marine ecosystems” (Article 5.3iv). Under Article 5.3iii, the installment of closures for certain gear types is arranged. These closures are presented on the map in Annex 1.

The NEAFC has closed major areas as a result of the assessment under Article 5. However, not all areas where there is a strong indication that VMEs occur are closed (Rogers and Gianni, 2010). Furthermore, the differentiation between existing fishing areas and new fishing areas has potential negative impacts on VMEs within the existing fishing areas. In fact, where a true precautionary approach is applied when fishing in new fishing areas. Decisions on closures in existing fishing areas, resulting from encountering VMEs or based on new scientific data on VMEs, will only be made at the annual PECMAS meeting. This means, that potential damage to VMEs, might go one for up to a year resulting from the flaws under Article 6 (Rogers and Gianni, 2010).

#### 7. Dealing with VME encounters: UNGA §(83d/119c)

The NEAFC has implemented these provisions in Article 6 of the Consolidated Text. What exactly consists of an encounter is defined in Annex 4: “An encounter is defined to be, above threshold levels as set out in paragraph 4, with indicator species of coral identified as *Antipatharians*, *Gorgonians*, *Cerianthid anemone fields*, *Lophelia*, and sea pen fields or other VME elements.” The threshold levels as referred to in paragraph 4: “For both existing and new fishing areas, an encounter with primary VME indicator species is defined as a catch per set (e.g. trawl tow, longline set, or gillnet set) of more than 60 kg of live coral [and/or 800 kg of live sponge]. These thresholds are set on a provisional basis and may be adjusted as experience is gained in the application of this measure.” When a vessel does encounter a VME it must immediately cease fishing according to the protocol under Annex 4.

There is a differentiation made between existing and new fishing areas in the protocol for encountering VMEs (Annex 4). In existing bottom fishing areas, the vessel must report the encounter to the flag state who will report the encounter *without delay* to the Secretary (§2.2a). In new fishing

areas, the vessel must *without delay* report the encounter to the flag state after which it must report the encounter to the Secretary. The Contracting Parties are obliged to “immediately alert all vessels flying their flag” (§3.2a)

In existing bottom fishing areas, the vessel needs to cease fishing and move at least 2 nautical miles away from the spot they are most certain of encountering the VME (§2.2b). In new bottom fishing areas, “the Secretary shall... request Contracting Parties to implement a temporary closure of two miles radius around the reporting position” (§3.2b). The temporary closure will be examined by PECMAS combined with advice from ICES which will advise whether the closure should be maintained (§3.2c) after which the vessel (similar to §2.2b) should cease fishing and move away at least 2 nautical miles from the encounter (§3.2d). In both cases, the Secretary will make an annual report for each area consisting the encounters which will be send to PECMAS. PECMAS, with the assessment of ICES, will advise the Commission whether these VMEs exist (§2.2c and §3.2e). Furthermore, in new bottom fishing areas, a vessel is required to take an observer on board, whereas in an existing bottom fishing area, this is not obligatory. This contradicts with the North West Fisheries Organization (NAFO) where an observer is obligatory despite fishing in an existing bottom fishing area or a new bottom fishing area (interview).

Article 6 and Annex 4 did receive some major criticism. According to Rogers and Gianni (2010) the threshold levels only apply to corals and sponges and these threshold levels might not even represent the actual conservation value of these corals. Small amounts of corals might result from fragile and small species from which smaller segments are lost through the mazes of nets during the tow. Thus, a move-on rule might not be triggered even though VMEs occur (Rogers and Gianni, 2010).

Differentiation of bycatch between dead and live corals is not based on good scientific understanding as many live corals use dead corals for their structure forming. The move-on rule itself is ineffective as it is impossible to determine when making a tow for several hours to know where the encounter has occurred. The differentiation between existing bottom fishing areas and new bottom fishing areas is not consistent with the importance of VMEs. In existing fishing areas, a VME is not immediately closed while the conservation value could be exactly the same (Rogers and Gianni, 2010).

### **Additional findings**

During the interviews, I asked the interviewees whether the regulations are comprehensiveness enough, or if there were things they missed and would like to see embedded into the regulations. Most of the interviewees said that the regulations themselves were complete, the intentions were good, and NEAFC has come a long way:

*“The closures on the Rockall and Hatton Bank for instance were fished regularly and (the area around the closures, (own interpretation)) is still being fished today. So it has really been a success to close them against any form of fishing.”*

A few respondents said that they missed the socio-economic data. Although this is already discussed in this paragraph, behavioral influence of the regime resulting from the regulations is not taken into

account in the decision-making process. Of course, Contracting Parties take it into account, but the data is not readily available. For economic data it is the same story. In other words, the recommendations made under the NEAFC are purely based on biological data and catch data. Transparency during the meetings is another thing which came forward. NGOs and scientists do not have access to any of the meetings. Especially the PECAMS meetings are interesting and important for NGOs and scientists to attend as that is where advice is decided upon.

Another thing, which slightly coincides with the lack of socio-economic data, is that the transparency of the data collected by the NEAFC is lacking in some cases. For instance, VMS data is not readily available. This means that other parties like NGOs and scientists do not really know whether the enforcement is successful. This is contradictory to the NAFO where a compliance report is published annually. Such a report will not only increase transparency, but can also provide more scientific knowledge and advice about control and enforcement.

The closed areas which are in place at the moment are temporary closures. Some interviewees suggest permanent closures are better as future events could cause these closures to be reopened. According to some, there should also be a decision made on a permanent closure to all types of fishing, purely as a scientific reference. Other types of fishing could change some parts of the ecosystems as well, including deep-water ecosystems. By safeguarding a reference point as a more or less natural state, the status of other parts of the NEAFC area can be compared and assessed.

## Summary

The inclusiveness is divided into three aspects: NEAFC's sole right on developing fisheries management measures on the high seas of the North East Atlantic, the embedment of the UNGA resolutions, and additional findings. NEAFC has the sole right in terms of developing fisheries management measures for the protection of VMEs on the high seas in the North East Atlantic. On this element, the inclusiveness of the NEAFC is high.

The NEAFC has embedded most of the UNGA resolutions. It has made the VMS system obligatory for vessels exceeding 24 meters, but some data sent by the VMS system could be improved such as fishing methods and fishing gear. Furthermore, the NEAFC did not adopt the advice from ICES to shorten the VMS signal interval from once in every two hours to every hour. Scientific advice is integrated into the recommendation made by PECAMS, but no improvements on threshold levels or the differentiation between dead corals and live corals are made. Furthermore, the Guidelines advises RFMOs to increase scientific data on socio-economic effects, but this has not been done so far.

The precautionary approach and ecosystem-based approach are well integrated into the NEAFC's regulations, but this accounts mainly for exploratory fishing. In existing fishing areas, the precautionary approach is insufficient as no ecosystem-based assessment needs to be submitted to the commission prior to every fishing activity. Furthermore, in existing bottom fishing areas, an area is not immediately closed after a VME encounter; only the move-on rule applies. This means that, in theory, the area can be fished again until the commission makes a final decision. Unlike new bottom fishing areas, no assessments are done prior to every fishing activity in existing bottom fishing areas.

The NEAFC has closed major areas against deep-water bottom trawling, but some areas where VMEs are likely to occur, are still left open for deep-water bottom trawling. The move-on rule is widely recognized as being ineffective as it is impossible to know where a VME was encountered during a long trawl. Furthermore, some scientist and NGOs suggest that the threshold levels for corals and sponges is too low as corals and sponges can fracture during a trawl and disappear through the nets. This way, no VME encounter is triggered.

Additional findings suggest that some major improvements can still be made. The main suggestions are: permanent closed areas for all (fishing) activities as a reference point for scientific research, improving transparency on socio-economic effects and on compliance and enforcement issues, and the obligation to have observers on board in both existing and new bottom fishing areas.

### **6.2.3 Collaboration**

The highest level of collaboration is adopted from Miles et al. (2002, P7): “Coordination through fully integrated planning and implementation with centralized appraisal of effectiveness.” The main information about the collaboration within the NEAFC is found in the Basic Text and the Consolidated Text. The coordination is fully integrated through planning and implementation with a centralized appraisal of effectiveness as is clarified under the London Declaration (2005, Article 3): “The Commission shall provide a forum for consultation and exchange of information on the state of the fishery resources in the Convention Area and on the management policies, including examination of the overall effects of such policies on the fishery resources and, as appropriate, other living marine resources and marine ecosystems.” The first part where the Commission will provide a forum illustrates that the degree of collaboration is done on both information and management policies (implementation) while the latter part on “examination of the overall effect of such management policies” illustrates that the effectiveness of the policies is centrally examined (centralized appraisal of effectiveness). Article 5.2b and 5.3 illustrate the integrated planning part of collaboration as “the appropriate Contracting Party and Commission shall accordingly promote the co-ordination of such recommendations, measures and decisions” (Article 5.2b) and “... each Contracting Party shall keep the Commission informed of its measures and decisions.”

The coordination is not fully integrated through implementation, even though this is a rare thing in international regimes (Miles et al., 2002). The fisheries regulations are implemented by the NEAFC itself and no domestic laws are required, but the control and enforcement activities on the high seas are carried out by the nation states. The inspection vessels, helicopters and inspectors are delivered by the nation states themselves. The NEAFC lacks these provisions. However, the NEAFC does have inspection centers where the VMS data is monitored and checked (NEAFC, 2011, Articles 3,4,5).

The evaluation of regulations for the protection of VMEs, are not evaluated yet; the last performance review of the NEAFC dates back to 2007. This was before the VME regulations were in place (NEAFC, 2007). However, according Article 7 of the Consolidated Text, all of the NEAFC’s recommendations for regulating bottom fishing will be evaluated not later than at its annual meeting in 2012. The evaluation of VMS data on control and enforcement has not yet been conducted or published. The NAFO does publish a compliance report every year (interview), but the NEAFC has not developed such provisions yet (Rogers and Gianni, 2010). The level of collaboration is



high as the regulations and implementation of these regulations is done by the NEAFC itself, but the NEAFC does lack a 'centralized appraisal for effectiveness' with regard to VME regulations and compliance to these regulations.

## Summary

The level of collaboration is high in terms of coordination through planning and implementation. However, this does not account for control and enforcement issues as Contracting Parties have to provide for inspectors, inspection vessels and helicopter by themselves. There is a centralized appraisal of effectiveness, but with regard to VME protection measures, this will probably not be done before its annual meeting in 2012. Unlike the NAFO, no compliance report has been published.

## 6.3 Sub-question (b): What is the outcome effectiveness?

The results on the outcome effectiveness of NEAFC regime, with regard to protecting VMEs will be presented by showing the behavioral effects which have occurred after the implementation of the NEAFC regulations. These regulations are presented in the Consolidated Text and the Enforcement Scheme. The collective optimum is used as a standard against which the effectiveness will ultimately be judged. The outcome is divided in three sections. First, all of the observed outcomes will be listed. Second, the collective optimum will be presented and clarified. Finally, the observed outcome will be compared to the collective optimum to assess the actual outcome effectiveness.

### 6.3.1 List of the outcome

Outcome	Cause of outcome: output or others
The deep-water fishing industry is ever decreasing; both in fishing effort and number of vessels engaged in deep-water fishing.	<i>Output:</i> the NEAFC has decreased the fishing effort for deep-water species by 35%. <i>Others:</i> costly because of high fuel prices and long distances, sufficient quota within EEZs
Since the development of VME protecting regulations by the NEAFC, there seems to be no behavioral change at all as vessels are still only fishing in the existing bottom fishing areas.	<i>Others:</i> existing bottom fishing areas are still the current fishing areas; no need for exploratory fishing as the existing fishing areas are productive fishing areas.
With regard to the new bottom fishing areas, fishing vessels are avoiding the area altogether, as not one request for exploratory fishing has been made, so far (same for NAFO). Therefore, closed areas within the new bottom fishing areas are obeyed to. Entire new bottom fishing area can be regarded as 'protected'.	<i>Output:</i> application for exploratory fishing is too much of a 'hassle'; many forms and assessments need to be made, required observer is said to be too costly and the industry does not like others monitoring their work. <i>Others:</i> existing bottom fishing areas are still the current fishing areas; no need for exploratory fishing, fuel prices make fishing in areas further from shore very expensive, the deep-water fishery in the North East Atlantic is decreasing in terms of fishing effort and number of vessels.
In theory, vessels can get in and out of an area without being detected by the VMS system,	<i>Output:</i> The two hour intervals are too long; one hour is more appropriate.



because the VMS signals are send every two hours. Others suggest, that fishermen do not know when a signals is send; there are differing opinions about this issue.	
In theory, the VMS system can be tempered with by: software (exact fishery not known), covering the system up, or even replacing it on another boat while the fishing vessel enters a closed area. However, there is no real evidence for this with regard to deep-water bottom-trawling in the convention area.	<i>Output:</i> VMS system is not fully unavoidable.
There is some evidence from fishing vessels illegally fishing inside closed areas, but in one case, the date suggests this was either inside an EEZ or an area known as a 'box'. A box is an area designated for the conservation of a fish stock rather than a VME. Such closures are often temporarily. Another case was inside the Scottish EEZ. In another case, the actual situation was unknown (interviewee). In general, vessels seem to comply with the regulations.	<i>Output:</i> It is not possible to derive from VMS data whether someone is sailing through an area or fishing. The VMS system lack data on fishing methods and targeted species. However, the VMS system makes it more difficult for vessels to enter closed areas. <i>Others:</i> In court only images or 'caught in the act' will suffice, long distances from shore and the 'vastness' of the area make control and enforcement very difficult.
It is impossible to know for fishermen where a VME encounter took place as a trawl can be up to 14 kilometers.	<i>Output:</i> the move-on rule is ineffective; Rogers and Gianni (2010) suggest that moving on parallel to the previous trawl, more than 2 nautical miles will be more effective. <i>Others:</i> the use of echo sounders for VME encounters is ineffective.
Reporting of VME encounters is decreasing.	<i>Output:</i> A lack of observers in existing fishing areas means that enforcing these regulations is difficult. <i>Others:</i> vessels fish in areas where VMEs are not present (better fishing grounds) this is called 'bank fisheries', vessels know where VMEs occur and avoid these areas as they can damage their nets (too much corals and sponges make fishing impossible), the deep-water fishing industry is ever decreasing (both in fishing effort and number of vessels).

### 6.3.2 Collective optimum

The objectives set by the NEAFC for the protection of VMEs are presented in the 'Response of the North East Atlantic Fisheries Commission, NEAFC, to the Secretary-General of the UN on actions taken pursuant to paragraphs 83-84 of resolution 61/105' (NEAFC, 2009): "The objective of this Convention is to ensure the long-term conservation and optimum utilization of the fishery resources in the Convention Area, providing sustainable economic, environmental and social benefits." One

remark must be made; as this study is on the effectiveness of the NEAFC regime in terms of protecting VMEs, sustainable utilization of the fishery resources will not be discussed here.

In the Basic Text, the main objective comes from Article 4.2d which corresponds the best to the research question in this study and will be therefore be used as the basis for the collective optimum: “Take due account of the need to conserve marine biological diversity”. This results in the aggregate collective optimum:

***The regulations implemented by the NEAFC have resulted in a behavioral effect of fishermen perfectly matching the output of the regime in place to conserve vulnerable marine ecosystems.***

This general collective optimum can be divided according the regulations in place under consolidated text. I developed these collective optima from the Consolidated Text, being as comprehensive as possible ensuring that the main behavioral changes (targeted by the NEAFC) are included. Flawless behavioral changes under this collective optima in general are:

1. Vessels treating the VMS regulations as presented in Article 11 of the Enforcement Scheme.
2. Vessels avoiding closed areas as presented in Article 5, Annex 7 of the Consolidated Text.
3. Vessels applying the move-on rule when encountering VMEs with respect to the negotiated threshold levels as presented in Article 6, Annex 4 of the Consolidated Text.
4. Vessels recording these VME encounters according the right threshold levels and sending the data to the Contracting Party flying their flag immediately Article 6, Annex 4.4 of the Consolidated Text.

1. This implies whether vessels obey to the VMS regulations; whether they do or do not cheat with the system or get around the system.

2. This implies whether vessels are engaged in deep-water bottom trawling inside closed areas or whether they avoid closed areas.

3. This implies whether vessels do apply the move-on rule when encountering a VME or continue fishing the same area.

4. This implies whether vessels report a VME when encountering a VME according the provided threshold levels.

### **6.3.3 Comparing the outcome to the collective optima**

The actual output of the regime is already provided under the paragraph on ‘Inclusiveness’. Merely the implementation of this output will be discussed here. In other words, what is the effect of these regulations on the behavior of fishermen? The results will be presented in the same order as the specific collective optimums described above. Documents and interviews will be used as data for these results.

## **1. Vessels treating the VMS regulations as presented in Article 11 of the NEAFC Scheme on Control and Enforcement.**

The VMS signal is sent every two hours, however some evidence suggests that this is not sufficient. Some interviewees suggested that this allows vessels to enter a closed area in between the signals are sent and therefore suggest shorter intervals of one hour:

*“The two hour signal of the VMS is too long especially if you add the possible length of the trawl to that. We have made several proposals to the Commission on that, but with no success.”*

In some cases, the notion was made that the system can be avoided quite easily by pretending a breakdown, place a bucket on top, or even in more peculiar ways:

*“These VMS systems can be tempered with, they can be manipulated. There are sets on the market you can buy which manipulate VMS. I do not say they do it, but as people sell these kinds of things they are being bought... I have even heard of someone that they had found that the VMS was put on a rubber boat by the fishing vessel, so the rubber boat stayed out where it was supposed to be and the fishing vessel could enter the protected area.”*

*“There are cases (exact fishery not known) where they messed with the software, I know of such a case.”*

Also ICES is aware of the possibility of tempered signals (ICES, 2007). Still, some reservation should be made as some interviewees disagreed with such problems as they believed the fishermen are not aware when the signal is sent. Still, shorter intervals are suggested by various interviewees, especially because enforcement on the high seas is very difficult due to the long distances from shore. Furthermore, from the VMS data so far, you cannot see what kind of gear is used and only bottom-contacting gear is prohibited in these areas. However, there is a major difference between pelagic trawling gear and deep-water bottom trawling gear. They cannot be placed on board at the same time as the nets are huge; there is simply not enough space on board for that (interviews). It is therefore unclear whether the output is implemented.

## **2. Vessels avoiding closed areas as presented in Article 5, Annex 7 of the Consolidated text of all recommendations on regulating bottom fishing.**

This issue has to do with the VMS data as well. The VMS data is not readily available for public use or NGOs, therefore no accurate judgment can be made on this issue.

*“We have no access to VMS data from fishing vessels. We know they are being collected in the hands of the NEAFC and probably include the European Fishery Agency I think.”*

It seems that fishermen are avoiding the new bottom fishing areas altogether as not one request for bottom fishing has been received by any Contracting Party or the Commission. There are probably different reasons for that and they will be described in the paragraph on side-effects and external factors. The main factor is, that the deep-water bottom fishery in the NEAFC convention area is

decreasing; the fishing effort has decreased as well as the number of vessels engaged in this fishery. This accounts for both the existing bottom fishing areas as well as for the new bottom fishing areas. With regard to new bottom fishing areas, some interviewees mentioned that the obligation for these vessels to take observers on board discourages vessels to enter closed areas. What this automatically means for this part of the outcome, is that the closed areas in the new fishing area are at least avoided:

*“Nobody has asked for authorization to go to these new fishing areas. So in a sense, much more than the closed areas is now closed to fishermen.”*

However, what the main answer has been during the interview on behavioral change due to the closed areas was that there is no behavioral change so far, because fishermen still only fish in the existing fishing areas:

*“There has been no behavioral change in terms of industry, because they fish in the same areas as before and no new fishing areas are explored by fishermen.”*

There was a case reported in the NEAFC regulatory area where fishermen claimed Russian trawlers were illegally fishing in these closed areas in 2004 (BBC News, 2004). However, in 2004, there were no NEAFC recommendations for the protection of VMEs yet. Therefore, this case was either inside the EEZ or the closed area was a ‘box’, meaning an area designated for the conservation of a fish stock (interview). There has been a second case where a Norwegian longliner was arrested by a Scottish inspection, but this was in the EU part of a closed area on the Rockall Bank (Hebrides News, 2011). Also one interviewee mentioned an incident with a Scottish trawler although he could have mentioned the same incident as Scottish trawlers alerted the inspectors on this:

*“There has been one case where a Scottish was fined because it went in a closed area on the Rockall.”*

From the above mentioned incidents, social control by other fishermen played its part. Social control could therefore make enforcement more successful, but only if another vessel is in the area and able to notice it. Furthermore, fining a vessel simply by VMS data is not that straightforward. There is more evidence needed to make it worthwhile to go to court:

*“You cannot see whether someone is trawling or sailing through the area, you still need the prove, VMS does register speed, but in court only evidence of nets in the water is good enough. So you need to send a plane or vessel for pictures which is difficult enough.”*

Some major issues on these closed areas seem to be the long intervals of VMS signals, the possible tempering with the VMS equipment, the difficulty of enforcement far away at sea and the lack of transparency on VMS data. Furthermore, there is hardly any information on control and enforcement:

*“The compliance committee of the NEAFC never committed a review on data on VMS or compliance regulations.”*

**3. Vessels applying the move-on rule when encountering VMEs with respect to the negotiated threshold levels as presented in Article 6, Annex 4 of the Consolidated text of all recommendations on regulating bottom fishing.**

Even though this issue is based on the precautionary approach on some level, there is a real debate whether this has been implemented effectively and whether the rule itself can ever be effective:

*“The move-on rule is widely recognized as being ineffective.”*

This has been discussed under the paragraph on ‘Inclusiveness’ which is mainly based on Rogers and Gianni (2010). The main issue with the implementation of moving-on after encountering a VME is that it is impossible to know where in your tow you have actually encountered the corals or sponges. Especially considering a trawl can be up to 14 kilometers long. For the existing fishing areas, one vessel can encounter a VME and report it after which the other vessels are made aware of these VMEs. However, no closure will be in place in the existing fishing areas at least until the next meeting, unless there is a strong advice from ICES to do so. This means that the vessels can keep fishing in the same areas for a long period of time.

Echo sounders are also not sufficient in detecting VMEs as only the really large formations will be detected. Furthermore, detecting these large pieces will also imply that someone should keep a constant eye on the monitors. Moving away from the entire trawl-track seems to be the best solution (Rogers and Gianni, 2010).

**4. Vessels recording these VME encounters according the right threshold levels and sending the data to the Contracting Party flying their flag immediately Article 6, Annex 4.4 of the Consolidated text of all recommendations on regulating bottom fishing.**

There have been fewer encounters with VMEs in the NEAFC regulatory area. According to some interviewees there are basically three possible reasons for that. The first reason is that the fishing effort has dropped. The second reason is that fishermen are avoiding the areas where corals do occur, and the last reason is cheating or misreporting of coral catches. It is hard to say which one of these possible reasons is the actual one, but the interviewees emphasized that the reporting of VMEs is, in practice, done on a ‘voluntary’ basis. They are obliged to do that, but it is nearly impossible to monitor or control. Only in the new bottom fishing areas an observer is compelled to be on board to monitor the catches of corals and sponges. Some interviewees claimed that the reason behind the downward trend in VME encounter has to do with fishing in other areas:

*“I think that in general there has been a surge in what we call ‘bank fisheries’ where there generally don’t grow corals and sponges.”*

*“Skippers usually know where these corals are and avoid these areas.”*

No real evidence for misreporting is shown from any data. However, as the paragraph on ‘other factors’ describes later on, fishermen often deliberately avoid these areas because corals can damage their nets. In fact, some interviewees suggest that in areas with too much VMEs, deep-water bottom trawling is impossible. Furthermore, areas with a high abundance of VMEs might not be quality fishing grounds altogether which could be the reason why vessels continue to fish in

existing bottom fishing areas (interview).

### Summary

The NEAFC has not reached its collective optimum as the outcome does not perfectly match the output. This does not mean that the NEAFC's outcome effectiveness is insufficient; it is about how far the NEAFC is from its collective optimum. With regard to vessels treating the VMS data properly (sub-collective optimum 1), the main shortcomings are the cases where the VMS system is avoided although the exact fishery is unknown. This has to do with the regime's output as the VMS system is not entirely unavoidable. Another shortcoming is the length of the VMS intervals; vessels might get in and out of a closed areas without being detected. However, evidence with regard to the deep-water bottom trawling in the NEAFC convention area is unknown. Therefore, it is unclear how the output is implemented.

With regard to vessels avoiding closed areas (sub-collective optimum 2) the main shortcomings are, that there have been cases of vessels fishing inside closed areas. However, this does not concern deep-water bottom trawling in the NEAFC convention area. There could have been such cases, but the lack of transparency on enforcement and compliance means that this data is unavailable. Unlike the NAFO, the NEAFC does not publish a compliance report every year. The main achievements are that the bureaucracy involved in exploratory fishing means that no application for exploratory fishing has been submitted by the commissions so far. The new bottom fishing areas are, therefore, protected altogether. Furthermore, the deep-water bottom fishery has decreased in terms of fishing effort a number of vessels. Another achievement is that the requirement for VMS systems on board of vessels exceeding 24 meters. This makes it, at least, more difficult to engage in deep-water bottom trawling inside a closed area without being caught. These achievements result from the outcome.

With regard to applying the move-on rule when encountering a VME (sub-collective optimum 3), the main shortcoming is that it is impossible to know where a VME is encountered during a long trawl. This is a flaw resulting from the output; the move-on rule is recognized as being ineffective.

The main shortcoming, with regard to vessels recording VME encounters (sub-collective optimum 4), is the difficulty of control and enforcement on the high seas (other factor), and the lack of observers on board in existing bottom fishing areas (output). This means that it is unknown whether fishermen report all their VME encounters. There are increasingly fewer VMEs encountered. This could mean, that vessels are cheating their obligation, but there is no evidence of misreporting. It is also likely that vessels avoid areas where VMEs are abundant as they damage their nets. Furthermore, vessels are currently more engaged in bank fisheries. In these areas, little VMEs occur. This is a positive trend, as avoiding VMEs means that it will not be in contact with fishing gear.

## 6.4 Sub-question (c): What are the side-effects?

Side-effects or unintended effects of the regulations installed by the NEAFC regime can be both indirect and direct. A direct side-effect occurs when the regulations themselves (the output) creates an incentive not foreseen by the regime. An indirect side-effect occurs when the outcome of the regime creates an unforeseen effect. Thus, by a behavioral change of the targeted fishery, another

effect occurs unforeseen by the regime (Sprinz and Helm, 1999; Mitchell, 2003; Young et al., 2008). However, one side-effect is both positive and negative depending on the issue affected. Therefore, a similar side-effect will be mentioned under both the positive and negative heading.

#### 6.4.1 Positive

##### *New fishing areas*

The most frequently mentioned side-effects during the interviews have to do with the regulations on the classification of the NEAFC area in three sub-areas (Consolidated text of all NEAFC recommendations on regulating bottom fishing, PECMAS, 2011): existing fishing areas (article 1.2), areas closed to fishing (article 5.3, 6, 4.5 annex 7), and new fishing areas (article 1.3). If a fishing vessel wants to engage in exploratory fishing, it has to follow a certain procedure (article 4, annex 1) which includes a harvesting plan (which species in which areas on which dates), a mitigation plan (which measures to be taken in order to prevent significant damage to VMEs), a catch monitoring plan (recording or monitoring of all species caught), and a data collection plan (facilitation of the identification of VMEs brought on board). The data collection of VMEs has to be conducted by observers on board (article 4.6). According to the interviewees, this procedure is too much of a hassle for most of the fishermen, meaning that so far not one vessel has requested for exploratory fishing yet. This can be seen as a direct side-effect responding to the regulations (output) of the regime. Because rather than monitoring and protecting the VMEs during exploratory fishing, there is not being fished at all. This is illustrated by several interviewees:

*“Definitely, I definitely think these new regulations can be too much of a hassle, I mean... you don’t want to go on something that is very difficult and more expensive, unless it is very attractive...”*

*“I have been told and it has been said publically during meetings, that the exploratory regulations, the more detailed requirements for fishing in these new fishing areas in the NEAFC area as adopted in 2010, have acted as a disincentive for vessels to go to these new areas...”*

*“There is a lot of fuss involved in fishing new areas which can be an extra burden for those who want to engage in exploratory fishing, so far our country did not get any application for fishing new areas.”*

Also the requirement for a vessel conducting in fishing new areas to take an observer on board is seen as a disincentive for vessels to explore new areas:

*“The industry does not like observers on board, especially the smaller boats. They get in the way, you have to pay for them, and of course, you have got someone monitoring what you are doing.”*

*“They (fishermen) do not like someone on board keeping an eye on everything they do, let alone pay for them!”*

The reason why this issue can be seen as a positive side-effect is that no disturbance by fishing will be positive for the deep-water environment. At the same time, the side-effect of the regulations in discouraging vessel to operate in new fishing areas has a positive effect on the outcome effectiveness of the regime. Certainly, the main objective of high sea closed areas by the NEAFC is to



protect VMEs from the impacts of deep-water fishing.

The bureaucracy part of the problem appears to be a greater incentive than the economic part of the problem related to these regulations. According to some interviewees, there is more than enough money made in this industry. Also the argument that there is too much bureaucracy and management involved in fishing these new areas is denied by some interviewees. They argue that the problems in deep-water fishing have not been the result of too much management, but too little management. However, the issue has appeared to be one part of the reason why, so far, no application for exploratory fishing in new fishing areas has been made. There are other factors involved in the absence of any application for fishing new fishing areas like increasing oil prices, long distances, sufficient quota within EEZs etc. which will be discussed under 'external factors'.

#### **6.4.2 Negative**

##### *New fishing areas*

With regard to the same issue of bureaucracy involved in applying for fishing in new fishing areas, there are some negative side-effects involved as well. The main problem with an absence of fishing in areas other than existing fishing areas is that this leads to an absence in the obtainment of scientific data on VMEs as well. Currently there is no other method possible in gathering data on VMEs than by permitting fishing vessels on the high seas. Monitoring of bycatch of corals and sponges is obligatory when fishing in new fishing areas and will be conducted by observers (article 4.6). Without any ongoing fishing in new fishing areas, no scientific data will be gathered on VMEs. Monitoring the seabed for VMEs is too costly which is an indirect negative side-effect of the absence of deep-water fishing on the high seas. This indirect side-effect will in turn have its own negative effect on the outcome, because fewer new MPAs will be installed when VMEs are not detected due to a lack of fishing (article 6, 4.5, annex 4). This point is also made clear by some of the interviewees:

*"Exploratory fishing in new fishing areas is the best way to gain information, how else do you want to measure this?"*

*"The data sources of corals and VMEs do only come from records from fishermen and fisheries independent surveys, the report are regularly send to ICES. This information is the basis for many MPAs."*

*"Scientific research vessels are extremely expensive... so the only way to know about VMEs will come from fisheries, and if there are more vessels going to new areas, we could gain more information which might lead to other closures or whatever."*

##### *Spatial displacement of fishing effort*

The spatial displacement of fishing effort means, that in a fishery like the deep-water fishery in the NEAFC area where the fishing effort is fixed, the installment of closed areas will lead to an increase of fishing effort in areas outside these closed areas. In other words, if you are allowed to fish a fixed effort, dispersed over an area of a certain size, and the size of the area decreases because some areas are closed, the pressure on the other areas will increase (Greenstreet et al., 2009). This issue is a side-effect of any designating MPA when Total Allowable Catches (TACs) or fishing efforts are not



adjusted. However, even though this is a side-effect resulting from the outcome of the NEAFC regime and it is an unintended effect of the regime, it cannot be labeled as unforeseen. In fact, the spatial displacement of fishing effort is something which is continuously discussed by the NEAFC during the designations of MPAs (NEAFC, 2009) and something which is regularly raised by NGOs. Moreover, the NEAFC has decreased the fishing effort by 35% and as there is currently no deep-water fishing on the Mid-Atlantic Ridge, the displacement problem will not be an issue there. The extent of the displacement problem in the NEAFC area is therefore something where no unambiguous answer was given to:

*“I think the issue of spatial displacement was discussed through a good extent because that is always the case if you close down areas for fishing. On the Mid-Atlantic Ridge it will be no problem for sure, and for the Rockall and Hatton Bank perhaps, but the objective there was to protect corals and sponges and that is what we did.”*

*“That is a serious problem yes, but at the same time there is a reduction in TACs and I mean, catching fish is one thing, damaging VMEs is another thing.”*

*“There is a potential problem with effort in this area with closures as it displaces effort to other VMEs and fish stocks, but in the case of the Mid-Atlantic Ridge that is very unlikely because of the low fishing effort and the area is huge.”*

Scientific data on spatial displacement is lacking in the NEAFC area. Therefore, no definitive answer can be given on whether this is a problem or not. The interviewees do mention, however, that there is no spatial displacement problem in Mid-Atlantic Ridge area. They also mention that spatial displacement is a problem to consider in any case of MPA designation and that the Rockall and Hatton Bank areas are the most likely areas to be affected. Similarly, a shift from deep-water species to other species or fisheries is a question no interviewee could answer.

## **Summary**

The main positive side-effect of the NEAFC's output is that the bureaucracy involved in fishing in new bottom fishing areas, means that these areas are protected against fishing altogether. Although this does influence the outcome effectiveness, the effect was not entirely foreseen. The main negative side-effect concerns this lack of exploratory fishing. As the main scientific data on VMEs results from encounters by deep-water fishing, a lack of deep-water fishing in the new bottom fishing area means that less scientific data will be gathered. Spatial displacement will always occur when installing closed areas. However, the NEAFC did foresee this and by reducing the fishing effort by 35%, spatial displacement is diminished.

## **6.5 Research question 2: How can this effectiveness be explained?**

In this paragraph, the factors determining the level of effectiveness are described and linked to the specific part of the NEAFC's output, outcome, and side-effects.

### **6.5.1 Problem type**

The results on the problem type described in this study are divided in malignancy and uncertainty.

Malignancy and uncertainty tend to affect the decision-making processes of a regime. Uncertainty concerns the available amount of scientific knowledge while malignancy concerns the political problems during decision-making processes.

### 6.5.2 Malignancy

Malignancy is mainly about the political agenda of Contracting Parties which are taken into the decision-making process of the NEAFC. There are three types of malignancy: incongruity, asymmetry, and cumulative cleavages. Simply said, incongruity means that a Contracting Party will act on its own behalf despite disadvantaging other Contracting Parties. Asymmetry implies that Contracting Parties have differing or opposing standpoints and values on similar topics. Last, cumulative cleavages imply that a Contracting Party's decision-making position is affected by their position(s) on other issues (Miles et al., 2002; Herndon et al., 2010). No incongruity was detected from the data of this study. Therefore, only cases of asymmetry and cumulative cleavages will be discussed here.

#### Asymmetry

There has been some asymmetry involved in the process of creating the provisions for the protection of VMEs. According to some interviewees there are three proposition represented within the NEAFC on this issue: the Contracting Parties with an interest in deep-water fishing, the Contracting Parties with an interest in sustainable use of fishery resources, and the Contracting Parties which are conservation minded.

The EU is in a different league as there are member states within the EU like Germany and Sweden which are pro-conservation, but there are also member-states with a real interest in bottom fishing like Spain, Portugal and France. This has also influenced the discussion in the beginning of the process:

*“Portugal and Spain had problems in the beginning and there is no full consensus within the EU on that (closed areas)”*

Norway is said to be a country which want to sustainably use fishery resources while Denmark (with respect to the Faroe Islands and Greenland), Iceland and Russia can be seen as countries with a real interest in fishing. Especially the Faroe Islands are pro fishing and as a consequence, have proposed for the differentiation in fishing areas between new bottom fishing areas and existing bottom fishing areas. However, these measures can be seen as beneficial for both conservation and fishing as fishing in existing areas can be continued with relative ease while the new fishing areas are better protected. The Faroe Islands have been critical about the current the protection of VME.

There is one other issue of asymmetry between the Secretariat and the Contracting Parties which is the integration of socio-economic effects into the decision-making process on management regulations. The issue has been raised several times, but most Contracting Parties see this as an issue which should only be discussed under domestic laws:

*“It is a general thing in international negotiations; it is a rare thing economics are involved in the discussion.”*

## Cumulative cleavages

The issue on integrating socio-economic data into the negotiation process can also be interpreted as a cumulative cleavage. Contracting Parties might, for instance, be afraid that presenting their income from catches, could affect their negotiation positions. One example is that effort could be decreased or more areas could become closed if the fishing industry make a lot of money. However, this was denied by an interviewee.

A definite example of a cumulative cleavage arose when Iceland mentioned the issue to extend their continental shelf far out in the high seas. The continental shelf of a country can be larger than the actual EEZ of a country. In the case of Iceland, the shelf consists of a shallow sand bank running much further from shore than the 200 nautical miles of a EEZ. They call this an 'extended continental shelf' which in the case of Iceland probably contains geothermal energy (interview). Such an energy source could provide a new inflow of money in Iceland. Although this does not directly implies fishing, this issue did disrupt the negotiations under OSPAR:

*"The EU suggested that we should follow OSPAR, OSPAR has a slightly bigger area proposed on the Mid-Atlantic Ridge than we have suggested so far. But then came the discussion about the continental shelf of Iceland which has kind of made it impossible for OSPAR to decide upon some areas in the Mid-Atlantic Ridge."*

Because of this cleavage, Iceland did not want to approve an agreement under OSPAR for the implementation of OSPAR MPAs. These MPAs, although not legally binding, could have made a more comprehensive network of MPAs which would not only protect VMEs against deep-water fishing, but also against mining, chemicals, shipping etc. Such an agreement could also strengthen the goal of NEAFC to "Take due account of the need to conserve marine biological diversity" as written in Article 4.2d of the Basic Text.

### 6.5.3 Uncertainty

Uncertainty about the issue discussed by the regime has influenced the whole discussion on VME protection. From the UNGA resolutions, the notification of applying the precautionary principle is based on the great amount of uncertainty involved in subject. The NEAFC has implemented this into their texts as well.

Uncertainty has influenced the output of the NEAFC on the issue of protecting VMEs. In fact, the closures on the Mid-Atlantic Ridge are precautionary closures in the sense that they are installed on the basis of assuming that VMEs will be present. Uncertainty could have a positive influence in this case. On the other hand, the closed areas on the Rockall and Hatton bank, for instance, were based on actual knowledge about the presence of VMEs (see map Annex 1). Therefore in this case, less uncertainty was positive as well. However, the problem is that there is no real reference data about a pristine VME:

*"It is hard to know whether VMEs are recovering since their closure, time series are missing and there is few data."*

*“We proposed areas closed for all types of fishing as a scientific reference, but had no success so far.”*

The level of uncertainty is obviously the result of the vast distances from shore where scientific data needs to be gathered. The area itself is vast, so trying to monitor the entire area is a difficult and costly affair, especially taking into account the great depths (HERMIONE, 2011).

## **Summary**

Both problem malignancy and uncertainty have influenced NEAFC's output effectiveness. Malignancy has caused a less comprehensive regime in terms of VME protection. Although Iceland's extended continental shelf does not directly influence the decision-making processes under the NEAFC, agreeing upon a network of MPAs under OSPAR could facilitate NEAFC's objectives for biodiversity protection. Asymmetry with regard to conservation objectives did not influence the decision-making processes on VME protection to a great extent. This is mainly caused by the differentiation between new and existing bottom fishing areas. This way, vessels can still fish in largely the same areas as before. The main asymmetry, which actually influences scientific uncertainty, is about the embedment of socio-economic provisions into the NEAFC. The secretariat proposed it multiple times, but the Contracting Parties believe this a domestic issue rather than an international issue. This means, that the regime's output is less effective as socio-economic issues are not incorporated into their recommendations.

The NEAFC's scientific uncertainty is profound; there is still little known about deep-water ecosystems. Especially on the Mid-Atlantic Ridge, the closed areas are installed as a precautionary measure. Because there are no deep-water bottom trawling vessels engaged in fishing in this new bottom fishing area, no new scientific data is gathered. Currently closed areas where fishing was taking place, such as the closures on the Rockall and Hatton Bank (Annex 1), are actually based on knowledge about VME occurrence.

### **6.5.4 Problem-solving capacity**

The problem-solving capacity consists of the rules for decision-making, the presence of an inter-governmental organization (IGO), the presence of an epistemic community, and the division of (basic) power and leadership.

### **6.5.5 Rules for decision-making**

As written in the “New” Convention, a general majority is sufficient for deciding on recommendations, but in special cases a 75% majority is requested (Article 9): “Each Contracting party shall have one vote in the Commission. Decisions of the Commission shall be taken by a simple majority, or, if this Convention specifically requires a qualified majority, by a two-thirds majority of the votes of all Contracting Parties present and casting affirmative or negative votes, provided that no vote shall be taken unless there is a quorum of at least two thirds of the Contracting Parties. If there is an even division of votes on any matter which is subject to a simple majority decision, the proposal shall be regarded as rejected.”

However, as discussed in the paragraph on ‘Obligation’ a Contracting Party can ‘Object thereto’.

Furthermore, the Commission does strive for the highest possible majority:

*“NEAFC has a voting procedure, and you need a 75% majority for it to be legally binding, however, they generally try to gain consensus.”*

With only five Contracting Parties, the NEAFC therefore needs at least 4 votes for it to be legally binding. This could be considered as a weakness although gaining consensus will be something that could strengthen the regime. However, compared to consensus, achieving majority is effective.

#### **6.5.6 Presence of an inter-governmental organization**

Both the UNFSA, under which the RFMOs are developed, and the resolutions made by the UNGA are elements of the UN which in itself is an inter-governmental organization (IGO). The UN has influenced the formal output of the NEAFC in terms of protecting VMEs to a great extent as one interviewee declares:

*“Our objective for implementing the measures for the protection of VMEs was to honor our obligation for biodiversity protection and general conservation (UNGA resolutions).”*

The compliance of the NEAFC to the proposed provisions under the UNGA is described in the paragraph on ‘Inclusiveness.’ Although RFMOs have some freedom to embed the UNGA resolution in their own way, non-compliance will mean that in an upcoming resolution, RFMOs are being urged to agree on better measures. In that same sense, the UNGA64/72 was a follow-up from the UNGA61/105 asking states and RFMOs to make more effort for the protection of VMEs and strengthen their control and enforcement. These UNGA resolutions add pressure on states and RFMOs to embed conservation measures with regard to VME protection.

#### **6.5.7 Presence of an epistemic community**

ICES is involved in the scientific advice on fisheries and partly on environmental protection within the North East Atlantic as well (Gray and Hatcher, 2007). There is an on-going shift within fisheries management towards more environmentally based principles and beliefs, and ICES is one example where such principles are well established (Gray and Hatcher, 2007; Christie, 2011). Examples of such shared principles and beliefs within the scientific community are the practice of precautionary principle or approach (PA), the ecosystem-based management or approach (EBA), and MPAs. All of these terms and approaches are regularly used by ICES, and are common principles within the scientific community concerned with marine environmental protection (Christie, 2011; ICES, 2005). Terms like EBA and PA are also integrated into the basic text of the NEAFC and thereby integrated into the NEAFC’s basic principles (NEAFC, 2007). Furthermore, in the FAO guidelines and UNGA resolutions, the same terms and management practices are being mentioned and advised.

Thus, ICES is part of an epistemic community build around marine environmental protection and fisheries management, based on the description of an epistemic community by Haas (1992). Therefore, an epistemic community is present within the NEAFC as a regime. ICES is involved as a scientific body and advises the PECCMAS on decisions made for closures, and other recommendations for regulations regarding the protection of VMEs. As the scientific uncertainty about deep-water ecosystems is large, the presence of an epistemic community has led to better protection as the

precautionary principle and ecosystem based management are both applied throughout the NEAFC for the protection of VMEs.

### 6.5.8 Power (basic) and leadership

The unique position of the EU within the NEAFC is said to be respected by other Contracting Parties. According to some interviewees, the EU has “extra weight to them” as they consist of 27 member states. However, this extra weight should not be overestimated. The voting procedure within the NEAFC makes that every Contracting Party has one single vote:

*“The EU, I mean NEAFC is just one part of the fishing game and fishing is just a minor part of the overall game. And in the overall game the EU is strong, stronger than any others on that table. So it is just a part of a larger diplomacy. So I think because of that, EU also in NEAFC is a little stronger, but they come up with initiatives which are blocked by the other CPs. So it is not like they can force things through.”*

Therefore you could also argue for the other way around; a European country like Norway, which is not a part of the EU, has more voting power than a European country like Spain, which is part of the EU. Furthermore, a country with a tiny population like the Faroe Islands have used their ‘disproportionate’ voting power to blow of a moratorium on the Orange Roughy fishery in the NEAFC regulatory area:

*“I think it was the Faroes who blocked an agreement on closure for Orange Roughy fishing. They simply blocked! “No! We don’t agree, we have one boat and it is going to fish! That’s it!” ICES says it is mining of non-renewable resource. So I think that little parties are not marginalized.”*

In the beginning, the leadership on the protection of deep-water ecosystems, came from Norway. According to some interviewees, Norway had a real concern about these corals within their own EEZ and took this concern into the NEAFC. Norway took the position of leadership, both from the perspective of intellectual leadership, as well as instrumental leadership. Because Norway had experience with both scientific data about the occurrence of corals and the protection of corals within their own EEZ, they did not only put the issue on the agenda, but also proposed provisions for the protection of corals. The EU more or less took it over from there; they took the role of instrumental leader by trying to maintain the topic on the agenda. Another factor which probably influenced both Norway and the EU was the pressure from OPSAR. Norway and the EU can be considered as pushers as they moved the regime forward.

On the other hand, the Faroe Islands provided instrumental leadership when proposing for the differentiation between existing bottom fishing areas and new bottom fishing areas. This was not because of pressure from other regimes or NGOs. The Faroe Islands can be considered as laggards as their objectives are generally pro-fisheries. The differentiation between existing and new bottom fishing areas does certainly facilitate the fishing industry. However, prioritizing the protection of pristine deep-water ecosystems does make sense. Therefore, the Faroe Islands did move the regime forward in protecting deep-water ecosystems as well.

## Summary

The problem-solving capacity consists of different components: the rules for decision-making, the presence of an IGO, the presence of an epistemic community and the division of (basic) power and leadership. The rules for decision-making are based on a 75% majority under the voting procedure, although the NEAFC generally tries to gain consensus. The main constraint of this voting procedure is its limited number of Contracting Parties (5) which means that only one Contracting Party may vote against a recommendation for the 75% majority to be achieved. The presence of an IGO, in the shape of the UNFSA and resolutions from the UNGA, means that the NEAFC is repeatedly requested to embed provisions for the protection of VMEs. This is a major determining factor for the NEAFC's output effectiveness on this issue. The presence of an epistemic community, in the form of ICES, means that terms like precautionary approach and ecosystem-based management are applied throughout NEAFC's recommendations. There is no definite difference in power between the Contracting Parties as they all have one vote. However, the special role of the EU, presenting 26 countries, is respected. Norway and the EU took the lead in the discussion on closed areas for VME protection. The Faroe Island took the lead and initiated the plan for the differentiation between new and existing bottom fishing areas.

### 6.5.9 External factors

In the case of the NEAFC, external factors have proven to be very evident in the development of the regime's output. Furthermore, both the actual outcome and side-effects are influenced by a great extent resulting from external factors such as political, economic, and geographical factors. Regime interaction will first be discussed after which the other external factors are discussed.

### 6.5.10 Regime interaction

There have been two main sources of interaction during the development of the NEAFC's output concerning the protection of VMEs. The main source is the NAFO, and the other source is OSPAR. These interaction events have occurred in on the output level. No interactions on the outcome level are detected by this study. Both cases of interaction were cognitive interactions, meaning that on the basis of new knowledge on the provisions for protecting VMEs, the interaction occurred.

#### The North West Atlantic Fisheries organization (NAFO)

The NEAFC and the NAFO have a memorandum of understanding. As the NEAFC and NAFO have the same membership, decisions made under NAFO are often implemented by the NEAFC once agreement is reached. The interaction will mostly occur in this direction as NAFO always have their annual meetings in September while the NEAFC always have their annual meetings in November. As they try to reach consistency, many regulations are adopted along this way. However, as the NAFO has its own scientific body and the NEAFC uses advice from ICES, they do not use the same scientific data. This also means that the closed areas themselves are not implemented on the basis of the same criteria or scientific knowledge:

*"With respect to the closed areas we have a slightly different approach and that is partly because our scientific bodies are different. NAFO has its own scientific commission and does all of its own scientific work. We get scientific data and advice from ICES and they work in a slightly different way*



*from NAFO, so that is the reason why the establishment of the closed area is slightly different, but with respect to the new and existing fishing area it is exactly the same system/ approach in both areas. It is simply an overlap of persons that go to the same meetings and try to get it done in the same way in both though that is not always possible.”*

The interaction which did occur was about the differentiation of existing bottom fishing areas and new bottom fishing areas. This has been agreed upon under the NAFO after a proposal by Denmark in respect to the Faroe Islands. This was a case of cognitive interaction, where a difference in objectives was the incentive for the interaction; achieving consistency regarding the objectives. An intra-institutional response occurred as this interaction changed the regulations. The same applies for the general measures with regard to VME protection according to the Consolidated Text. Except for some details, such as the observer requirements and dates on which reviews are to be made, the text of the NEAFC and the NAFO are exactly the same (interview). In general, the effect of the interaction can be seen as synergetic as new regulations are developed for the protection of VMEs. However, as some regulations (move-on rule, existing bottom fishing areas) are recognized as ineffective, the effect has disruptive elements as well.

## **OSPAR**

The interaction which occurred in relation to OSPAR was less clear-cut. WWF ‘kick-started’ the whole discussion on protecting VMEs according one interviewee:

*“In 2003 under OSPAR the ministers, environment minister made a commitment to protect cold-water reefs before the UN addressed the issue for example. And following that commitment, uhm the OSPAR commission started writing letters and correspondence with the competent fishing authorities not only NEAFC, but NEAFC for the high seas, also EC, Norwegian fishing authorities and Icelandic ones and asked them to take urgent steps to protect cold-water coral reefs and this came under NEAFC’s as well.”*

Although on this general discussion under OSPAR no real measures were taken in a direct sense, some members like the EU and Norway are also members in OSPAR. This means that, although the membership is not exactly the same, these Contracting Parties do keep this in mind when negotiating in the NEAFC meetings:

*“Well OSPAR alerted us to the corals on the Rockall Hatton bank area already in 2001, and we chose those areas already that time simply reacting to that. The system is that if they have some information they might draw attention on other competent bodies about that to do something about that.”*

However, there have been more direct measures adopted from OSPAR by the NEAFC:

*“Under OSPAR there we proposed the big Charlie Gibbs Fracture zone MPAs on the Mid-Atlantic Ridge (see map Annex 1), this is mainly from WWF scientific proposal, adopted by OSPAR. This is almost the same area, and similar boundaries was closed for bottom-trawling by NEAFC for the time being. It is a temporary measure subject to review of course.”*

The motive for this case cognitive interaction by OSPAR comes from a difference in means. OSPAR



has no legal power, therefore, it raises important issues to other competent bodies, hoping they will make legally binding regulations. In this case, the response was an inter-institutional response. This means that the interaction was done through communication processes, sharing secretariats, and the engagement in each other's negotiations.

## Summary

The cognitive interaction between the NAFO and the NEAFC has created almost exactly the same recommendations with regard to VME protection. The difference in Scientific body between the NEAFC and the NAFO, means that closed areas are designated on different premises. The interaction between OSPAR and the NEAFC is less direct, but some large areas on the Mid-Atlantic Ridge are exactly the same as those proposed by OSPAR. As OSPAR has less binding force than the NEAFC, their motive for interaction derives from a difference in means. For the NAFO, the motive of interaction was achieving consistency regarding their objectives.

### 6.5.11 Other factors

Many other factors have influenced the effectiveness of the NEAFC regime in protecting deep-water ecosystems. These other factors have influenced the regime both on the output, outcome, and the occurred side-effects.

The main factor which has influenced the NEAFC's output effectiveness is the deep-water fishing effort (amount of fishing often measured in days at sea) on the high seas. The fishing effort has decreased and still is decreasing. On the Mid-Atlantic ridge for instance, hardly any fishing has taken place since, the Russians fished several areas in the 70s and 80s. The reason why the Russians abandoned the area had mainly to do with the change in the nation's political structure. During the 70s and 80s, Russia was still known as the USSR and during that time, economic values were different. This meant, that the huge journeys these vessels had to undertake, and the vast amount of fuel and market prices were not such a big issue. When they changed towards the Russian federation they are today, the economic mindset changed:

*"...they explored the Reykjanes ridge in the North Atlantic all the way to the Azores, they explored the area west of the British Isles and found some fishing locations. I have the feeling they did that to explore, but there was no well-funded economy behind it. After the collapse of the USSR, they started thinking more about price of getting those fishes and I also think that the oil price has affected it as well. They, like other, want to have value for the project. Not a state anymore, but a private company who want to get the cost out of the price."*

This part of the interview also touches upon another issue: oil prices. Many interviewees declared this is one of the main reasons why the deep-water fishery on the high seas is decreasing. The long distances from ports, mean that a lot of oil is needed when engaged in this type of fishing. Furthermore, towing a large net on the bottom uses substantially more fuel than towing a net through the water column during a pelagic trawl. A net which is continuously contacting the bottom creates a lot of resistance or drag which has a negative effect on the fuel consumption. Not only did the fishing effort decrease, there are also less vessels engaged in deep-water fishing. Thus, the fleet has shrunken which in turn has also decreased the fishing effort. Compared to, for instance, high sea

pelagic trawling, the deep-water bottom trawling industry is already a small industry and continues to become even smaller. Another factor, which has been mentioned in the interviews, is the status of the fish stock within the EEZs. Some quota within the EEZs of countries is sufficiently large to be a disincentive for fishermen to engage in deep-water fishing on the high seas. Furthermore, the market value of fish like Atlantic cod is higher than of many deep-sea species.

There have been decreasingly less encounters with VMEs as described under the outcome effectiveness. This change in outcome can also be accredited to a diminishing deep-water fishery on the high seas. As the fishing effort decreases, fewer encounters are likely to occur. Another factor described under the outcome effectiveness is that fishermen usually know where these VMEs occur and avoid these areas. One of the main reasons for this is that corals can damage the nets and the catch which is an expensive affair.

These previously mentioned examples, which have significantly decreased the deep-water fishing effort on the high seas, have had its own side-effects as well. Certainly, because there was no fishing effort on the Mid-Atlantic Ridge for a long, Contracting Parties had not much to lose when deciding upon the large closures in this area. Together with the differentiation between existing bottom fishing areas and new bottom fishing areas, this meant that consensus was easily made:

*“There is a natural economical reason why people are not fishing there. For example: from Spain to the MAR is quite a trip to go there and fishing possibilities are limited. So I think it is a simple general economic law why deep-water fisheries are decreasing. And that is probably also, to be franked, why NEAFC has passed these measures because there is not a big economic interest to pursue these fishery otherwise it would have been much more difficult.”*

Exogenous effects such as vast distances and increasing costs due to the high oil prices have their effects on enforcement as well. Fishing on the high seas is expensive, enforcing fisheries on the high seas is expensive as well. Furthermore, the VMS is an important tool for enforcing closed areas, but the signals are only sent every second hour which has been criticized by some experts. This interval can be shortened, but not endlessly as this takes too much data storage.

For scientific research and thus diminishing uncertainty, seabed monitoring can be an important tool. Again, the long distances from the coast, the great depths and the vast scale of the area mean that this is far too time consuming and costly to undertake on a large scale. Scientific uncertainty is, therefore, something which is not expected to diminish to a great extent in the short run.

The influence of the WWF as a NGO on the output is an important other factor as well. First of all, the WWF made an effort to put the issue of deep-water ecosystem damage by fisheries on the agenda. They also provided knowledge about the presence of VMEs on the Mid-Atlantic ridge (Charley Gibbs Fracture Zone) through the backdoor of OSPAR, which. Eventually, this led to cognitive interaction by OSPAR, which eventually led to closed areas.

## Summary

External factors have been determinate in explaining the outcome effectiveness of the NEAFC in terms of protecting deep-water ecosystems. Exogenous forces such as the long distances from shore,

combined with economic factors such as increasing oil prices mean that deep-water bottom trawling on the high seas of the North East Atlantic has become less profitable and, thereby, less attractive. As a result, the deep-water fishing industry is ever decreasing; in the case of the NEAFC, not only is the fishing effort decreasing, but also the number of vessels engaged in deep-water fishing has decreasing. Deep-water bottom trawling is a small industry compared to, for instance, pelagic trawling. On the Mid-Atlantic Ridge, there is no fishing at all; since the Russian Federation originated from the USSR, they became more aware of economic necessities. Resulting from this, they abandoned the area in the 1980s. Since then, no deep-water fishing activity has taken place on the Mid-Atlantic Ridge.

Other reasons for the decreasing fishing effort on the high seas is that for many Contracting Parties, there are sufficient quota within their EEZs. Obviously, fishing closer to shore on fish species such as cod which have a higher market value, means that this fishery is more profitable. The fishing method of deep-water bottom trawling is equivalent to a high fuel consumption; rock hoppers and heavy trawl doors are dragged along the bottom at large depths. This means, that the drag of towing such a net along the bottom is much higher than the drag involved in a pelagic trawl in mid-water. This has a negative influence on the fuel economy.

There are increasingly less encounters with VMEs. This is also positively influences the outcome effectiveness. The main reasons for this are, that vessels are avoiding VMEs, because VMEs can damage their nets. Furthermore, currently, vessels are more involved in bank fisheries where VMEs are less abundant.

The influence of NGOs have positively influenced the output effectiveness as they have pointed out areas where VMEs are likely to occur and added pressure on the NEAFC. The limited amount of VMS data storage and the difficulty of enforcement on thigh seas, due to exogenous forces, have negatively influenced the NEAFC's output on control and enforcement. Economics and the difficulties involved in seabed monitoring on the high seas, have negatively influenced the output effectiveness of the regime, as little scientific data is gathered.

## 7 Discussion

In this chapter, I discuss the used literature and assess the literature on the applicability for my research. Furthermore, considerations about my own choices for the use of concepts and theories will be discussed as well as the contribution of this research to the used theories. The methodological considerations and shortcomings are integrated throughout the text. Last, my conceptual framework will be reviewed on its applicability for this research after which it will be renewed to fit better into the development of this research.

### **The NEAFC as a regime**

In this research, the NEAFC, being a RFMO, is depicted as a regime. However, there are some concerns related to portraying a RFMO as a regime. First, RFMOs, in their current form, are founded under the UNFSA in 1995 and this means it is not an autonomously formed regime. Instead, it is developed as a decision-making instrument under the UNCLOS for the implementation of fisheries management regulations (Hart, 2008). Secondly, UNGA resolutions from the scope of the UNCLOS do specifically “Call upon States to take action immediately, individually and through regional fisheries management organizations and arrangements, and consistent with the precautionary approach and ecosystem approaches, to sustainably manage fish stocks and protect vulnerable marine ecosystems...” (UNGA61/105, p: 16). From such a statement, the direct link between the UNFSA, being an agreement made under the UNCLOS, and the RFMOs is obvious. The connection between RFMOs and the UNFSA is still present and it appears that RFMOs are still used by the UN as a mean to implement fisheries management regulations.

From this conception, RFMOs can be seen as a ‘nested regime’. According to Aggrawal (2005, p: 1), the study on nested regimes “...focuses on how international regimes and institutions might be reconciled in some type of “hierarchical” ordering and examines how these institutions are influenced by one another.” Without going too deep into this extensive literature, the hierarchical ordering is clearly present; the highest system being the UN, followed by the UNCLOS under which the UNFSA is agreed upon from which the RFMOs derive. According to Abbott and Snidal (2006), nested regimes are also characterized by a single issue area and by conflicts which are resolved by rules. The hierarchy of this nested regime is occupied with one issue area: fisheries management on the high seas (in this case the North East Atlantic). The hierarchical structure of resolving? conflicts as disobeying or non-cooperating has broader consequences. RFMOs are urged by the UNGA resolutions to take conservation measures for the protection of VMEs and to apply the precautionary approach. Not complying to this, might not have consequences in terms of fines or penalties, but all the Contracting Parties of the NEAFC signed and ratified the UNCLOS and the UNFSA agreements as well (UNCLOS, 2011). As came forward in the interviews, implementing the UNGA resolutions is done by the argument of honoring their obligations towards the UN; RFMOs have a commitment to embed the UNGA resolutions.

The question remains whether the NEAFC can be identified as a separate regime or whether it is just part of a larger regime. According to the definition by Young (1980, p: 332) used in this research, “regimes are social institutions governing the actions of those interested in specifiable activities (or meaningful sets of activities)”. This definition does not exclude the NEAFC from being a regime; the

NEAFC can be considered as a social institution governing the actions (setting up rules for the regulation of high sea fisheries) of those interested in high sea fisheries. Furthermore, regimes are not fixed structures; one person might interpret the NEAFC as a regime in a different way than others (Young, 1980; 1989). However, the autonomy of the NEAFC can be questioned. Would the NEAFC have no room for self-interpreting UNGA resolutions or initiate protective measures outside the UNGA resolutions, the NEAFC by itself would perhaps be too constrained to be referred to as a regime. However, the NEAFC does develop their own regulations even though they take the UNGA resolutions into account. Furthermore, the threshold levels for VME encounters are not defined under the UNGA, neither are the move-on rule or the exact premises on which an area is closed to fishing. In other words: the NEAFC has some autonomy with regard to the protection of deep-water ecosystems. Including the UNFSA into the regime would have made this research more comprehensive as the NEAFC would not have existed in its current form, would the UNFSA have refrained from agreeing upon the development of RFMOs.

On the premises of other studies (Oberthür and Gehring, 2003), the UNFSA and the NEAFC should be categorized as two different instruments belonging to the same regime. In fact, a RFMO like the NEAFC is often categorized as an international organization rather than an international regime although they can both be classified as international institutions (Haas et al., 1993). International organizations are often characterized by the presence of a secretariat and the capability to encompass legal contract; the NEAFC possesses both features (Keohane, 1989; Oberthür and Gehring, 2003; DeSombre, 2006). However, this depends on your concept of a regime. A regime can be conceptualized from different levels of 'broadness'. A regime can be conceptualized as a 'regime complex', being a broad and holistic regime covering all the rules of the research subject, or as an 'elemental regime', being a narrow regime only covering a single international agreement (Visseren-Hamakers et al., 2011). The NEAFC can be conceptualized as an elemental regime as it only covers one single agreement. I made the assumption of the NEAFC being a regime, although others might conceptualize the NEAFC as an international organization. Nevertheless, the study on the effectiveness of the NEAFC, being an international regime or organization, did not come into much jeopardy. Whether the UNFSA would have been included or not, the NEAFC would still be the instrument under which regulations are made (output), and fisheries are required to obey to (outcome). Furthermore, both the regime effectiveness literature and the regime interaction literature were useful and comprehensive enough to bring about the major achievements, shortcomings and determinants for the effectiveness of the NEAFC on the issue of deep-water ecosystem protection.

### **Inclusiveness**

I had difficulties with conceptualizing 'inclusiveness' for assessing the output effectiveness. Miles et al. (2002) is used as the main guidance for the theoretical and conceptual framework. Yet, the term is hardly elaborated in Miles et al. (2002, P: 6): "the degree to which a regime has brought the targeted system of activities under its jurisdiction". Zelli (2008) uses this exact definition for determining inclusiveness. A more common definition for inclusiveness within natural resource management and policy (including fisheries) has to do with participation, and whether all actors are involved in the process (Mahon and McConney, 2004; Hartley and Robertson, 2006), but this is not the kind of inclusiveness meant by Miles et al. (2002) or Zelli (2008). For such an important part of

the NEAFC's effectiveness, only little has been published. I utilized inclusiveness by comparing the UNGA resolutions with the NEAFC's regulations and identified the gaps and incompatibilities. Furthermore, I asked interviewees whether the output could be improved.

The NEAFC is inclusive in terms of covering the entire fisheries on the high seas of the North East Atlantic. However, OSPAR, the International Maritime Organization (IMO) and the United Nations Convention on Biological Diversity (CBD) are also part of the 'deep-water ecosystem conservation regime' in the North East Atlantic. In the beginning of my research I focused on the deep-water fishery in the North East Atlantic and fish stocks were included as well. Therefore I did not focus on other institutions or a larger regime. After focusing on the status of deep-water ecosystems, the regime would have been more comprehensive if I included OSPAR, the IMO and the CBD as well. However, bottom-trawling is by far the most damaging human activity on deep-water ecosystems in the North East Atlantic (Benn et al., 2010). Therefore, my research covers the most important part of the deep-water ecosystem conservation regime in the North East Atlantic.

### **Implications resulting from the age of the NEAFC's VME regulations**

Regimes tend to get more effective during time (Young, 1999b; Mitchell, 1994; Underdal and Young, 2004). The idea behind this conception, is that after the establishment of regimes, all of its sets of rules and regulations will be more effective because over time, more regulations and measures are installed. This has to do with the 'regime versus no-regime counterfactual'; without a regime, no regulations are in place, after two years a number of regulations can be in place and after 50 years, one can expect that there are even more regulations (for instance measures for the protection of VMEs) than after two years. Furthermore, a regime can 'learn' over time. Regulations are often assessed on its effectiveness which implies that over time, more effective measures can be taken. The same accounts for the decision-making processes; regimes can become more successful in deciding upon regulations and taking the right measures. However, the effectiveness of regimes do not increase linearly, it often levels over time (Mitchell, 1994, Underdal, 2002a).

The regulations of the NEAFC, with regard to the protection of VMEs, are only in place since the 31<sup>st</sup> of December 2008. This is the date required by the UNGA to take relevant measures for the identification and protection of VMEs (Brock et al., 2009). Such a short time frame has multiple implications. First, the regime might not be as effective as at a later stage. Of course, this is impossible to examine at this stage, but some issues suggest improvements can be made in the near future. There has been one performance review undertaken by the NEAFC, but on the issue of VMEs little has been evaluated (NEAFC, 2007). This is mainly due to the year the review was published; no real measures for the protection of VMEs were taken in 2007. According to Article 7 of the Consolidated Text, the NEAFC will review the VME regulations not later than at its annual meeting in 2012. From this notion, it is clear that the NEAFC is in its learning stage; on the issue of VME protection the effectiveness resulting from learning is not leveled yet. Secondly, assessing the outcome effectiveness is difficult to achieve as it will often take several years before the outcome effectiveness can be determined in a proper manner (Underdal, 2002a,b). The difficulty here is to know whether the regulations of the NEAFC are in place long enough for the outcome to be assessed. In other words: is three years enough for the outcome effectiveness to be assessed? There is no straightforward answer to this question, nevertheless once a regime is in place (after the stage of

regime formation) and fisheries have experienced this regulation, some conclusions can be made (Miles et al., 2002).

With respect to this conception, the outcome of the NEAFC regime in protecting deep-water ecosystems is researchable, but the newness of the regime caused some complications. First, the NEAFC did not assess the compliance of regulations so far. Whether this will happen in the near future is unknown, but the North West Atlantic Fisheries Organization (NAFO) does publish a compliance report every year. The close relationship between the NEAFC and NAFO might well lead to such conditions under the NEAFC as well. Secondly, VMS data is not readily available for NGOs and scientists. This lack of transparency makes it hard to assess the outcome. Interviewing the fishing industry is the best option to overcome this lack of data. I did approach multiple organizations, but was not able to contact any of them. This is clearly a shortcoming of my own research.

### **Uncertainty**

The assumption made in the literature is that a higher degree in uncertainty will make the regime less effective as it will be more difficult to install the right measures to tackle the problems (Miles et al., 2002; Hendron et al., 2010). The biophysical status of deep water ecosystems is a very uncertain topic; the great depths, distances and scale make research very difficult and costly. These properties make that the issue of deep water ecosystem protection by the NEAFC involves a great degree of uncertainty. Consequently, one would be certain that the NEAC regime's effectiveness is negatively affected by its high degree of uncertainty. Yet, because of this high uncertainty, the regime has used the precautionary approach throughout its regulations for the protection of VMEs. Although the differentiation between existing bottom fishing areas and new bottom fishing areas has led to the discrimination between the levels of precaution, the output of the regime might well be more effective than in the case where more is known about the biophysical status of deep water ecosystems. Of course, a full picture of the ocean floor, including the occurrence of VMEs, could well result in more direct measures, but with such a high level of uncertainty as present, the effectiveness of the regime's output in terms of protecting deep water ecosystems is rather good.

### **Rules for decision-making**

Under the decision-making rules of the NEAFC, a 75% majority of votes is needed for a recommendation to be passed. However, in most cases, the NEAFC strives for consensus. The opt-out law (enabling Contracting Parties to object thereto and not comply to the recommendations) makes the conception of rules, being part of the problem-solving capacity of the regime (Miles et al., 2002), more complicated. The opt-out law can be perceived as an instrument which enhances the problem-solving capacity of the NEAFC as agreement can be reached more easily. Would a Contracting Party disagree with the rules, the ability to 'opt-out' means that in theory, less conflicts need to be resolved. In such cases, the problem-solving capacity would be positively influenced, leading to a more effective regime on paper. However, the objective of the NEAFC to "...ensure the long-term conservation... of the fishery resources in the Convention Area, providing sustainable economic, environmental and social benefits" (NEAFC, 2009) might come in jeopardy by this opt-out law. For example, would a Contracting Party decide to object thereto to a



recommendation with regard to the protection of VMEs, and if their fishery would continue to harm deep-water ecosystems, the NEAFC would be less effective in reaching its objectives. Summarizing: although the opt-out law might lead to a better problem-solving capacity of the NEAFC, it could also result in a worse biophysical status of deep-water ecosystems in the NEAFC convention area.

### **Excluding the UNFSA from regime interaction**

In this research, regime interaction is not used in the case of other UN policies higher up the hierarchy. This decision is made, because Oberthür and Gehring (2003) propose that instruments of one single regime should not be included into the study on regime interaction. Would the regime interaction from the UNFSA on the NEAFC be discussed in this research, it would have been a case of interaction through commitment (Oberthür and Gehring, 2003; Oberthür and Gehring, 2006). On this output-level interaction, it would have been a case of interaction between nested institutions where the motive of interaction is to achieve additional means. The NEAFC has the ability to decide upon actual regulations to be obeyed to by the fisheries; the UNFSA does not have this ability. By bringing the UNGA resolutions to the level of a RFMO, the UNFSA has expanded their abilities by additional means.

In actual fact, viewing this previous example as a case of regime interaction creates some friction. RFMOs are developed by the purpose of additional means, meaning that the interaction events are more the result of this development rather than a case of interaction between two different regimes. The NEAFC is an instrument of the UNFSA, which is perceived as one single regime by Oberthür and Gehring (2003). Thus, instead of the UNFSA being one regime which interacts with the NEAFC being another regime, the interaction between these two instruments is actually seen as a communication process within one single regime. According to this view, the interaction between the UNFSA and the NEAFC should be excluded from the research on regime interaction (Oberthür and Gehring, 2003).

### **Conceptual considerations in two cases of regime interaction**

The two source regimes, from which clear cases of institutional interaction are identified, are the same regimes with whom the NEAFC has declared a memorandum of understanding; OSPAR and the NAFO. The case of OSPAR and the case of the NAFO did differ from each other in the sense of membership and in the sense of policy response (Oberthür and Gehring, 2006; Oberthür and Gehring, 2003). Yet, all cases of interaction occurred through a process of learning and were thus classified as cognitive interaction. The division between existing fishing areas and new fishing areas, the move-on rule and the actual threshold levels for corals and sponges are equal between the NEAFC and the NAFO. In fact, on paper, the regulations for VME protection overlap completely. These have all resulted from cognitive interaction and the occurrence of the NAFO having its annual meeting before the NEAFC meeting. Yet, the NEAFC did not take all of its regulations from the NAFO meetings. Indeed, the difference in scientific bodies between the NEAFC and the NAFO resulted in a different selection procedure for closed areas.

This almost identical overlap of regulations, combined with concerns about defining the NEAFC as a regime, creates friction on the case of regime interaction between the NEAFC and the NAFO. As both the NEAFC and the NAFO are RFMOs, they are both instruments under the UNFSA. You could even suggest, that they are both part of one more comprehensive regime under which all the RFMOs

(except those that have no provisions for VME protection) and the UNFSA are constructed. Of course, there is a geographical difference in place but they are agreed upon under the foundation of the UNFSA in 1995 (Dotinga and Molenaar, 2008). The NAFO might well have adopted these regulations from the same motives as the NEAFC: honoring their obligation towards the UNGA resolutions. From that respect, identifying the interaction between the NAFO and the NEAFC as cognitive interaction brings about some reservation. Cognitive interaction is about adopting rules, norms, and decisions from a motive of 'learning' (Oberthür and Gehring, 2003). While learning is still in place, as the exact regulations were adopted from the NAFO, both RFMOs have the same level of commitment with regard to embedding the UNGA resolutions. You could question whether without this interaction event, the NEAFC would have still adopted nearly identical measures resulting from the commitment towards the UNGA. The fact that the NEAFC's regulations are exactly the same as those of the NAFO is the result of almost identical memberships and the interaction event. From this perspective, little learning is in place as almost similar measures would probably be installed anyway.

Cognitive interaction might intentionally or unintentionally occur from the motive of the source institution (Oberthür and Gehring, 2003). Although there was certainly intention in place, it probably was the intention of the target institution (NEAFC) as much as from the source institution (NAFO). Although the NAFO will benefit from consistency in the North Atlantic with regard to fisheries regulations, the NEAFC clearly benefits from this interaction event in terms of reducing negotiations and administrative labor as most of the work is already done. Of course, as they share most of their membership, Contracting Parties of the NEAFC worked on the regulations under the NAFO as well. Nevertheless, the intentionality was not primarily derived from the source institution only.

OSPAR did influence the decision of the NEAFC to close an area: the Charlie Gibbs Fracture Zone (Annex 1) on the Mid-Atlantic Ridge. The area overlaps the area proposed by OSPAR almost completely. Yet, OSPAR was influenced to a great extent by the WWF. The WWF might not have directly interacted with the NEAFC, but this could also have something to do with transparency issues as NGOs are not allowed at every NEAFC meeting. The influence of NGOs on regimes is nothing new though, and a lot has been published about this issue (Arts, 1998; Hoel, 1998; Simmons, 1998). Yet, it would have been an interesting determining factor to specifically mention in the interviews. NGO influence has now been placed under 'other factors'. The same issue accounts for the leading role of Norway and the EU on the protection of deep water ecosystems. The agenda setting role of the WWF through the backdoor of OSPAR might well have put the pressure on Norway and the EU to take the role of leaders on this topic as both are members of OSPAR as well.

### **Conceptual framework**

The chosen conceptual framework for this research was comprehensive in most cases for this study. The influence of NGOs on the effectiveness of the regime missed out during the analyses. This has been placed under other factors. Although, this is where this heading is used for, it meant that during the interviews no such questions were asked. Adding to that, the NGO influence came forward during the last few interviews. The same applies for the transparency; more transparency could well decrease the amount of scientific uncertainty of the regime. Perhaps not in terms of biological data, but more transparency surrounding socio-economic effects or compliance and

control could urge the NEAFC to evaluate these issues more and take measures accordingly.

The arrows presenting the causal inference between the different aspects of the conceptual framework need some shifting as well. For instance, the arrow showing the cause and effect relationship between uncertainty and output effectiveness is presented as having a merely negative effect on the regime's output. However, as illustrated before, the high degree of uncertainty has urged the need to apply the precautionary principle. This in turn, has also led to a positive effect on the level of deep water ecosystem protection by the regime. Furthermore, the indirect effect of the absence of fishing on the Mid-Atlantic Ridge and the decrease in bottom fishing overall has influenced the level of uncertainty. So there is some feedback as well.

Likewise, external factors did not only indirectly influence the outcome effectiveness, but also directly. This could be foreseen as exogenous factors like oil prices and sufficient quota within EEZs directly influence the outcome effectiveness. The factors lie outside the regime's control and directly affect whether it is reasonable to engage in high sea deep water fishing or not. The output has also had a direct effect on the side effects which in turn gave feedback to the regime's outcome. Indeed, an unforeseen side effect of the bureaucracy involved in exploratory fishing in new bottom fishing areas (output) resulted in an absence of fishing in these areas at all (outcome). Another case in which the output directly influenced the side effects arose when a decrease in fishing effort reduced the impact of spatial displacement of fishing effort. Yet, this cannot be seen as a totally unforeseen side effect as the NEAFC discussed this issue thoroughly. The improved conceptual framework is presented below (Figure 5).

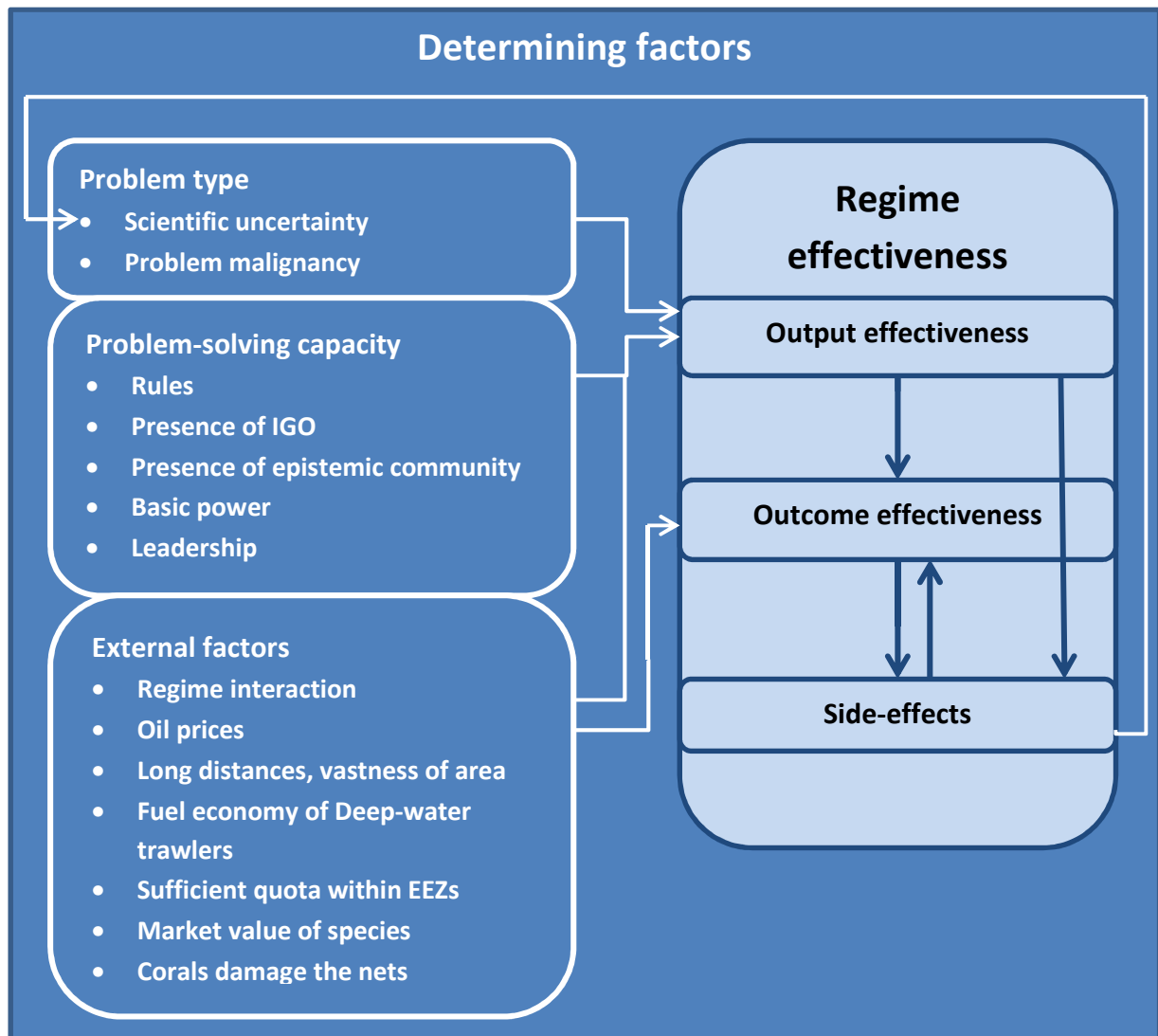


Figure 5, Renewed conceptual framework. Determining factors (dark blue area) describe how the effectiveness (light blue area) can be explained. Arrows can be either positive or negative, this accounts for all the arrows in the figure.

## 8 Conclusion

The aim of this research is to find out whether the North East Atlantic Fisheries Commission (NEAFC) is effective in protecting deep-water ecosystems from deep-water bottom trawling on the level of output and outcome of the regime. Furthermore, this research aims to clarify which factors have caused the observed output and outcome effectiveness of the NEAFC in protecting deep-water ecosystems from deep-water bottom trawling. The research questions, used to research this scientific objective are:

1. What is the effectiveness of the North East Atlantic Fisheries Commission with regard to the protection of deep-water ecosystems against deep-water bottom trawling?
  - a. What is the output effectiveness?
  - b. What is the outcome effectiveness?
  - c. What are the side-effects?
2. How can this effectiveness be explained?

The structure of the conclusion is partly based on the research questions. First, conclusions on the output effectiveness are made. Second, the main conclusions on the outcome effectiveness are given, and third, the main conclusions on the side-effects are given. In the last part, some theoretical and practical recommendations are made, resulting from this research. The second question, on how the observed effectiveness can be explained, will be integrated into the sections on output effectiveness, outcome effectiveness, and side-effects. This way, the effectiveness will be explained directly, rather than separately in a next section. However, some main conclusions on determining factors will be given in the fourth section of this chapter to clarify which factors were decisive on the effectiveness of the regime

### What is the output effectiveness?

The output effectiveness of the NEAFC is reasonably high. The NEAFC has closed some large areas against deep-water bottom-fishing, and made a number of precautionary measures as well. On the other hand; some major improvements still need to be made. The major achievements and shortcomings of the output are presented in this section. The output effectiveness consists of the stringency (obligation and precisions), inclusiveness, and collaboration. The level of stringency is moderately high. The NEAFC recommendations have achieved the status of international law; recommendations are legally binding for both Contracting Parties and non-Contracting Parties. However, a negative aspect of the NEAFC's level of obligation is the possibility for Contracting Parties to object thereto. This means, that they can 'opt-out' and the recommendation will not be legally binding for the Contracting Parties who objected. The level of precision is high as all of NEAFC's recommendations and texts leave little room for interpretation.

The inclusiveness has some major shortcomings, despite the fact that the NEAFC has the sole right to make fisheries management measures for the protection of vulnerable marine ecosystems (VMEs). The main shortcomings have to do with the embedment of the United Nations General Assembly (UNGA) resolutions: 61/105 and 64/72. One major shortcoming is the lack of installing closed areas in

every area VMEs are known to occur. Furthermore, some management measures are ineffective for protecting deep-water ecosystems. The move-on rule, for instance, is widely recognized as being ineffective; when encountering VMEs in a net, it is impossible to determine where an encounter has taken place during or after a trawl of multiple kilometers. These measures are adopted after the North West Atlantic Fisheries Organization (NAFO)'s annual meeting. Therefore, cognitive interaction is one determinant for the ineffectiveness of this measure. NEAFC's measures, with regard to VME protection, will only be reviewed at its annual meeting in 2012. The regime's age is therefore another cause for this ineffective measure. The same factors are also the cause for the ineffective threshold levels for VME encounters. As corals and sponges can fragment in trawling nets, the actual weight of the damaged corals and sponges can be much higher than those encountered in the nets.

The differentiation between existing bottom fishing areas and new bottom fishing areas has received some major criticism. The main shortcoming of this recommendation is that it discriminates these areas on the level of precaution. One example is that for new bottom fishing areas, an area is immediately closed after an encounter and the move-on rule is applied, while in an existing bottom fishing area, only the move-on rule is applied. In existing bottom fishing areas, the decision for closing an area where a VME has been encountered will only be made at the annual meeting of the Permanent Committee on Management and Science (PECMAS). This means that, potentially, an area can still be fished despite the presence of VMEs. Another shortcoming, resulting from the differentiation between existing and new bottom fishing areas, is that an observer is only required on board a vessel engaged in deep-water fishing in the new bottom fishing areas. This is in contrast to the NAFO, where an observer is obligatory in both new and existing bottom fishing areas. Although the differentiation between new and existing bottom fishing areas is adopted by the NAFO as well, regime interaction has not resulted in similar recommendations with regard to observer requirements. There is also good reasoning behind the differentiation between new and existing bottom fishing areas; existing bottom fishing areas have experienced more fishing pressure resulting in more damaged deep-water ecosystems. Therefore, adding extra protective measures on more pristine deep-water ecosystems in new bottom fishing areas makes sense. This differentiation has also facilitated the decision-making process of designating VME protection measures as fishing vessels can continue to fish the same areas without too many extra regulations. In a way, this has decreased the malignancy of the problem as asymmetry on the issue of VME protection was diminished.

The lack of socio-economic data used by the NEAFC, means that management measures are only made on the available biological and ecological data. This shortcoming was stressed multiple times by the NEAFC Secretariat, but Contracting Parties suggest this is a domestic issues. Therefore, asymmetry between the Secretariat and Contracting Parties was the main determining factor for this issue. With regard to control and enforcement, the vessel monitoring system (VMS), only sends out a signal every two hours. ICES suggested to shorten the interval to one hour, but this provision has not been installed. However, every vessel exceeding 24 meters in length is required to use the VMS system; the NEAFC has embedded these provisions, making enforcement more successful. The UNGA resolution has clearly effected NEAFC's output effectiveness. Although there are shortcomings, they have embedded most of the UNGA resolutions into their "Consolidated text of all NEAFC

recommendations on regulating bottom fishing' (Consolidated Text). The presence of an inter-governmental organization (IGO) was, therefore, the main factor determining the inclusiveness of the NEAFC.

The level of collaboration is moderately high. Coordination through planning and implementation is high as they have the ability to implement management measures, such as closed areas and fishing effort. However, monitoring and control is largely done by Contracting Parties themselves; they have to conduct surveillances and use their own ships and helicopters. The central appraisal of effectiveness is translated into the review of VME measures, which will be done at NEAFC's annual meeting in 2012. However, unlike the NAFO, the NEAF has not published a compliance report yet. On this issue, the NEAFC lacks transparency as the VMS data is only available to the Commission.

### **What is the outcome effectiveness?**

From this research, behavioral change has been observed. However, most of the behavioral change did not result from NEAFC's output, but from external factors. The lack of transparency on enforcement and control issues, make it difficult to assess the compliance of vessels to the NEAFC's output. There are cases of non-compliance, but the vessels in these cases cannot be ascertained as vessels engaged in deep-water bottom trawling in the NEAFC convention area. Furthermore, the regime's age is an important factor here; after the NEAFC's annual meeting in 2012, it is likely that more conclusions on the outcome effectiveness can be made.

The most important outcome resulting from this study is the decreasing deep-water fishery in the NEAFC convention area. As the fishing effort and the number of fishing vessels decrease, it is likely that fewer VMEs are encountered. Certainly, increasingly fewer VMEs have been encountered which can also largely be accredited to this decrease in fishing. Furthermore, fewer VMEs are encountered because the main deep-water fishery is engaged in 'bank fisheries'. In these areas, VMEs are not abundant. Economic factors such as high oil prices, large distances from shore, the high fuel consumption of deep-water bottom trawling vessels, and sufficient quota within nation's EEZs of species with a high market value, have all resulted in an ever decreasing deep-water fishery on the high seas of the North East Atlantic. Especially on the Mid-Atlantic Ridge, no deep-water fishery has taken place since the Russian Federation abandoned the fishery in the 1980s.

In theory, the new bottom fishing areas, including the largest part of the Mid-Atlantic Ridge, can be seen as protected at the moment. There are no fishing vessels engaged in exploratory fishing; since the establishment of the differentiation between existing and new bottom fishing areas, no applications for exploratory fishing are received by the NEAFC. Bureaucracy involved in exploratory fishing, such as impact assessments and other paper work, and the obligation to take an observer on board have acted as a disincentive for vessels to engage in exploratory fishing. In this case, the regime's output has caused a behavioral change among fishermen.

### **What are the side-effects?**

The bureaucracy involved in exploratory fishing has been a disincentive for vessels to engage in exploratory fishing. Although this bureaucracy affects the outcome effectiveness, it is also a side-effect of the regime; it was an unforeseen effect resulting from the output. The main negative side-



effect is the lack of knowledge production resulting from the absence of exploratory fishing. As most of the scientific data on VME occurrence comes from VME encounters and fisheries surveys, the absence of fishing in the new bottom fishing areas means, that no additional data is collected. This means that no additional data for permanent closures is attained. Would the deep-water fishery increase in the future, deep-water ecosystems could have a lower degree of protection than in the case of active fishery in the new bottom fishing areas.

### **Major factors determining regime effectiveness**

The three main factors determining the NEAFC's effectiveness are: external factors, the presence of an IGO and regime interaction. Economic factors combined with the long distances from shore have decreased the deep-water fishing activity. It also complicates control and enforcement, and makes scientific research difficult and costly.

Regime interaction has played a major part in the development of the output. Although, the presence of an IGO, in the shape of the UNGA, has added pressure on the NEAFC to designate provisions for VME protection, the actual recommendations are made by the membership of the NEAFC and the NAFO. Aspects of the output, such as the differentiation between new and existing bottom fishing areas, the move-on rule, and threshold levels, are all the result of regime interaction. Furthermore, some large closed areas on the Mid-Atlantic Ridge are the result of interactions with OSPAR and indirect influence of NGOs. OSPAR also alerted the NEAFC about the presence of VMEs on the Rockall Bank; the NEAFC simply adopted these areas and installed closed areas.

### **Theoretical and practical recommendations**

Future research on the effectiveness of high sea fisheries regimes can be advised to take exogenous factors into account. As there is little data on specific external factors, it is often hard to grasp beforehand what these constitute of. Of course, external factors should not be fixed as this leaves the chance of missing out external factors. However a simple list can still be made: socio-economic aspects, geographical aspects (including infrastructure), regime interaction, and NGO influence. Of course, this is a regime specific case, but geographical factors and socio-economic factors are likely to be present in any high sea fishery regime. Certainly, the high seas are always, at least 200 nautical miles from shore.

Scientific uncertainty is not automatically a determining factor which has a negative influence on the regime's effectiveness. Scientific uncertainty, on the issue of deep-water ecosystems, has led to a situation in which the precautionary approach is applied by the NEAFC to a great extent. Therefore at least the output of the regime can be considered as more effective in terms of protecting deep-water ecosystems. The rules for decision-making under the NEAFC are extraordinary; the opt-out law diminishes the 'un-conditionality' of the binding capacity of the regime. In this research, this resulted in a condition where the problem-solving capacity of the regime was high, but the influence on the output effectiveness could be negative.

This study focused on the protection of deep-water ecosystems by the NEAFC. However, other RFMOs have implemented such provisions from the UNGA resolutions as well. It would be interesting for future research to study the regime effectiveness of other RFMOs on the protection

of deep-water ecosystems. Individual measures can be compared on its effectiveness and the determining factors causing the effectiveness. As these RFMOs are influenced by the same UNGA resolutions, comparing them would be both interesting and useful. Certainly, from both the positive and negative aspects RFMOs can learn from each other.

Publishing compliance reports can enhance NEAFC's transparency. Furthermore, by publishing VMS data to scientists and NGOs, the scientific debate and knowledge on enforcement can be enhanced. Such compliance reports could be published every year, similar to the NAFO. Adding more data to the VMS system, such as gear type and targeted fish species, will give the Commission more insight into spatial trends of the different fisheries in the convention area. Such data could, for instance, point out how deep-water bottom trawling is developing in terms of targeted fish species, the areas used for the fishery, and fishing effort for certain species throughout the year. Furthermore, control and enforcement will be enhanced as such data will clarify whether a pelagic trawler is legally fishing through a closed area, or a deep-water bottom trawler is engaged in illegal activities, as only bottom contacting gear is prohibited in VME closures.

The differentiation between existing and new bottom fishing areas, is based on common sense. Prioritizing pristine 'unfished' areas over heavily fished areas, is a good motive for the establishment of this differentiation. However, the move-on rule should be adapted. Rather than moving away 2 nautical miles from an encounter, it would be better to move away a lot further. Moreover, moving away parallel from the 'trawl track', the area fished in the previous trawl, ensures that the same area will not be fished again. In both new and existing fishing areas, the entire trawl track should be closed. This way, enough precaution is applied to ensure that the area, where the VME was encountered, is closed until appropriate measures will be taken. For existing fishing areas, this means that vessels cannot fish in an area where an encounter has occurred, until the Commission has decided upon appropriate measures.

The main issues which arose during this research are the difficulty of enforcement and the low rate of scientific knowledge production. One option to tackle both issues is to compel vessels to take, at least, two scientific observers on board. There should not be any discrimination on where they fish; existing bottom fishing areas or in a new bottom fishing areas. As came forward from this research, one observer is often not sufficient to know exactly what is going on during a fishing activity. Furthermore, ensuring that these observers have a scientific background, will positively influence the quality of data gathering by the regime and ensures that non-reporting of VMEs will be excluded. However, there are some issues to tackle before this could be a success. First of all, the observers themselves should be professional enough to resist bribing. I do not say this is happening all the time, but as there have been such cases in other regions, this should be avoided. Furthermore, some provisions should be made to ensure that these observers do not get in the way too much, and that they do not get too costly for the industry.

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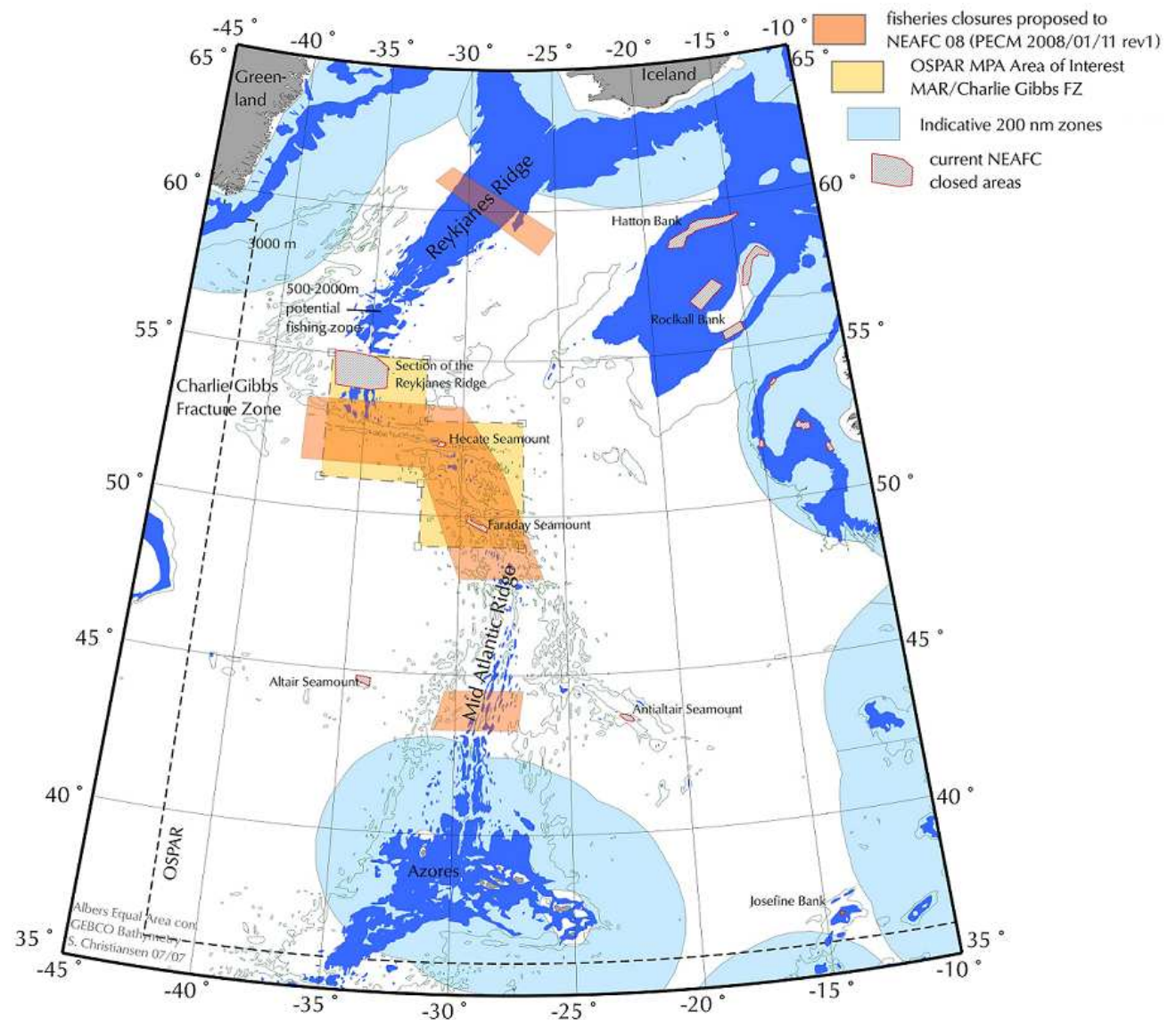
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## 10 Annexes

### 10.1 Annex 1

#### Map of NEAFC closures, OSPAR closures and proposed closures



Adjusted from WWF (2008) as in NGO GRIDA

## 10.2 Annex 2

### Annexes of Consolidated text of all NEAFC recommendations on regulating bottom fishing

#### Annex 1

##### Interim Exploratory Bottom Fishing Protocol for New Bottom Fishing Areas

Until the Commission adopts a new protocol in accordance with Article 4, paragraph 1 of this Recommendation, exploratory bottom fisheries may commence only when the following information has been provided to the Secretary by the relevant Contracting Party:

- (a) A harvesting plan which outlines target species, dates and areas. Area and effort restrictions shall be considered to ensure fisheries occur on a gradual basis in a limited geographical area.
- (b) A mitigation plan including measures to prevent significant adverse impact to vulnerable marine ecosystems that may be encountered during the fishery.
- (c) A catch monitoring plan that includes recording/reporting of all species caught. The recording/reporting of catch shall be sufficiently detailed to conduct an assessment of activity, if required.
- (d) A data collection plan to facilitate the identification of vulnerable marine ecosystems/species in the area fished. The Secretary shall promptly forward this information to all Contracting Parties and PECMAS.

#### Annex 2

##### Interim Vulnerable Marine Ecosystem (VME) Data Collection Protocol

Observers on fishing vessels in the NEAFC Regulatory Area who are deployed pursuant to Article 4, paragraph 6 of this Recommendation shall:

1. Monitor any set for evidence of VMEs and the presence of vulnerable marine species.
2. Record the following information for identification of VMEs: vessel name, gear type, date, position (latitude/longitude), depth, species code, trip-number, setnumber, and name of the observer on datasheets, if possible.
3. Collect representative samples from the entire catch (Biological samples shall be collected and frozen when requested by the scientific authority in a Contracting Party.)
4. Provide samples to the scientific authority of a Contracting Party at the end of the fishing trip.

#### Annex 3

##### Guidelines for producing maps according to article 3

For fishing activity using fishing gear that is likely to come into contact with the seafloor during the normal course of fishing operations, each party shall prepare a list of subsquares where fishing activity has taken place during the reference period 1987-2007. The data shall be delivered by year. Each ICES statistical rectangle (30 min latitude and 1° longitude) shall be divided into 36 sub-squares (5 min latitude and 10 min longitude). The position given for each square shall be the NW corner of the square. Information on gear type shall be given, using

following broad categories: Bottom trawl (B), longline (L), gillnets (G), bento-pelagic (BP) (i.e. grenadier and bluntnose grenadier fishery) and others (O) (meaning other gears that have bottom contact during normal operation). Therefore, the data shall be delivered as a table including following information for subsquares where fishing operations have occurred:

Party	Lat	Lon	Year	Gear type
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## Annex 4

### Definition of encounter

Pursuant to Article 6 of the NEAFC Recommendation on bottom fishing activities in the NEAFC Regulatory Area, the Commission has adopted the following measure: An encounter is defined to be, above threshold levels as set out in paragraph 4, with indicator species of coral identified as *Antipatharians*, *Gorgonians*, *Cerianthid anemone fields*, *Lophelia*, and sea pen fields or other VME elements. Any encounter with a VME indicator species or merely detecting the presence of an element itself is not sufficient to identify a VME. That identification should be made on a case-by-case basis through assessment by relevant bodies.

## 2 Existing bottom fishing areas

2.1 Vessels shall quantify catch of VME indicator species, i.e. coral and sponge.

2.2 If the quantity of VME elements or indicator species caught in a fishing operation (such as trawl tow or set of a gillnet or longline) is beyond the threshold defined in paragraph 4 below, the following shall apply:

(a) The vessel master shall report the incident to the flag state, which without delay shall forward the information to the Secretary. Contracting Parties may if they so wish require their vessels to also report the incident directly to the Secretary. The Secretary shall archive the information and report it to all Contracting Parties. The Contracting Parties shall immediately alert all fishing vessels flying their flag.

(b) The vessel master shall cease fishing and move away at least 2 nautical miles from the position that the evidence suggests is closest to the exact encounter location. The master shall use his or her best judgment based on all available sources of information.

(c) The Secretary shall make an annual report on single and multiple encounters in discrete areas within existing fishing areas to PECMAS. On the basis of an assessment by ICES, PECMAS shall evaluate on a case-by-case basis the information and provide advice to the Commission on whether a VME exists. The advice shall be based on annually updated assessments from ICES of the accumulated information on encounters and PECMAS's advice on the need for action, using FAO guidelines for management of deep-sea fisheries in the high seas as a basis.

## 3 New fishing areas

3.1 Vessels shall quantify catch of VME indicator species, i.e. coral and sponge. Observers deployed shall identify corals, sponges and other organisms to the lowest possible taxonomical level. The sampling protocol found in Annex 1 of the Recommendation on bottom fishing activities in the NEAFC Regulatory Area shall be used.

3.2 If the quantity of VME element or indicator species caught in a fishing operation (such as trawl tow or set of a gillnet or longline) is beyond the threshold defined in paragraph 4 below, the following shall apply:

(a) The vessel master shall report the incident without delay to its flag State, which shall forward the information to the Secretary. Contracting Parties may if they so wish also require their vessels to report the incident directly to the Secretary. The Secretary shall archive the information and without delay transmit it to all Contracting Parties. The Contracting Parties shall issue an immediate alert to all vessels flying their flag.

(b) The Secretary shall at the same time request Contracting Parties to implement a temporary closure of two miles radius around the reporting position. The reporting position is that provided by the vessel position that the evidence suggests is closest to the exact encounter location.

(c) PECMAS at its next meeting shall examine the temporary closure. If, on the basis of assessment by ICES, PECMAS advises that the area consists of a VME, the Secretary shall request Contracting Parties to maintain the temporary closure until such time that the Commission has acted upon the advice from PECMAS. If the PECMAS evaluation does not conclude that the proposed area is a VME, the Secretary shall inform Contracting Parties which may re-open the area to their vessels.

(d) The vessel shall cease fishing and move away at least 2 nautical miles from the position that the evidence suggests is closest to the exact encounter location.. The master shall use his or her best judgment based on all available sources of information.

(e) The Secretary shall make an annual report on archived reports from encounters in new fishing areas to PECMAS. This report shall also include reports from the exploratory fishing activities that were conducted in the last year. ICES shall assess the reports and PECMAS shall evaluate the information and provide advice to the Commission on the appropriateness of temporary closures and other measures. The advice should be based on annually updated assessments of the accumulated information on encounters as well as other scientific information. The PECMAS advice should reflect provisions outlined in the FAO guidelines for management of deep-sea fisheries in the high seas.

#### **4 Threshold levels**

For both existing and new fishing areas, an encounter with primary VME indicator species is defined as a catch per set (e.g. trawl tow, longline set, or gillnet set) of more than 60 kg of live coral [and/or 800 kg of live sponge]. These thresholds are set on a provisional basis and may be adjusted as experience is gained in the application of this measure

#### **Annex 5**

##### **Assessment of Bottom Fishing Activities**

Assessments should address, *inter alia*:

1. Type(s) of fishing conducted or contemplated, including vessels and gear types, fishing areas, target and potential by catch species, fishing effort levels and duration of fishing (harvesting plan);
2. Best available scientific and technical information on the current state of fishery resources and baseline information on the ecosystems, habitats and communities in the fishing area, against which

future changes are to be compared;

3. Identification, description and mapping of VMEs known or likely to occur in the fishing area;

4. Identification, description and evaluation of the occurrence, scale and duration of likely impacts, including cumulative impacts of activities covered by the assessment on VMEs;

5. Data and methods used to identify, describe and assess the impacts of the activity, the identification of gaps in knowledge, and an evaluation of uncertainties in the information presented in the assessment;

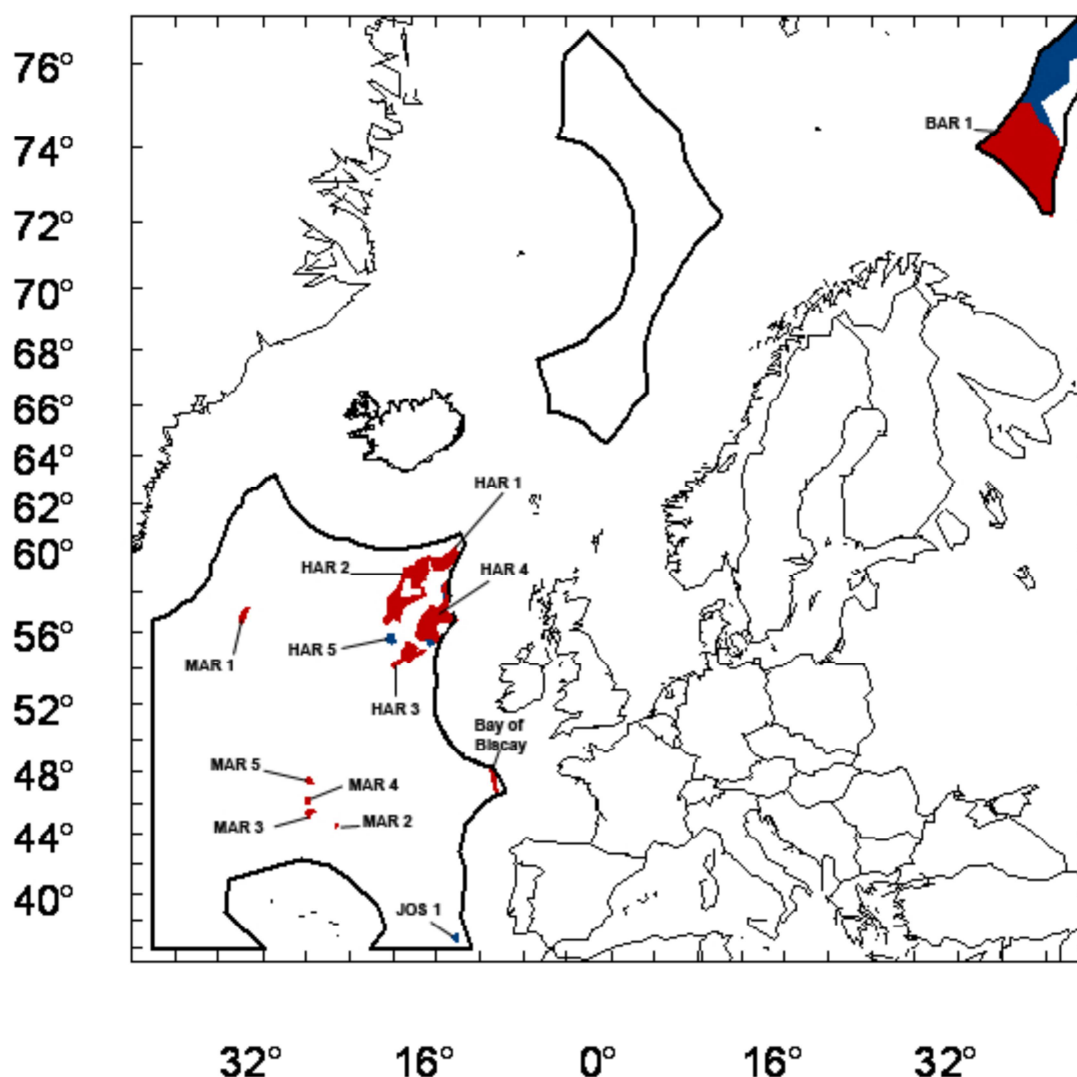
6. Risk assessment of likely impacts by the fishing operations to determine which impacts on VMEs are likely to be significant adverse impacts; and

7. The proposed mitigation and management measures to be used to prevent significant adverse impacts on VMEs, and the measures to be used to monitor effects of the fishing operations.



## Annex 6

### Existing fishing areas



- Areas in Red or Blue are Existing fishing areas
- Areas shown in red are the areas defined in Recommendation 11 2010: Bottom Fishing.
- Areas in blue are extensions / additions as defined in the Recommendation on New and Existing Fishing Areas (accepted by postal vote in August 2010 and entering into force Oct 30th 2010).

## Annex 7

### Area closures for the Protection of Vulnerable Marine Ecosystems.

1. The use of fishing gear which is likely to contact the seafloor during the normal course of fishing operations shall be prohibited in the following areas:

- (a) Northern MAR Area
- (b) Middle MAR Area (Charlie-Gibbs Fracture Zone and sub-Polar Frontal Region)
- (c) Southern MAR Area
- (d) Altair Seamount
- (e) Antialtair Seamount

The coordinates delimiting each area are set out in the appendix below

2. This measure shall be in force until 31 December 2015. Before that time, the measure shall be reviewed by the Commission with the intention of extending the period that the recommendation is in force, unless the conclusion of the review is that the continued application of the measure or parts of the measure is not required.
3. If scientific research demonstrates that there are sub-areas where no vulnerable marine ecosystems are found within the areas referred to in paragraph 1 of this measure, the measure shall be amended by the Commission to exclude those subareas from the prohibition under paragraph 1.
4. Within the area defined in paragraph 1 Contracting Parties intending to conduct fisheries related scientific research shall notify NEAFC of their intended research programmes.
5. Any additional closures of areas in the NEAFC Regulatory Area shall be based on the best available scientific advice and on the procedures set out in recommendations regulating fishing activities in the NEAFC Regulatory Area.
6. Closures shall be without prejudice to any sovereign rights of Coastal States over the continental shelf in accordance with the United Nations Convention on the Law of the Sea, including sovereign rights of Coastal States to exploit sedentary species on the continental shelf.

## 10.3 Annex 3

### NEAFC Scheme of Control and Enforcement

#### Article 1 - Definitions

For the purpose of this Scheme:

- a. "Convention Area" means the waters of the Convention Area as defined in Article 1(1) of the Convention;
- b. "Regulatory Area" means the waters of the Convention Area, which lie beyond the waters under the fisheries jurisdiction of Contracting Parties;
- c. "fisheries resources" are those referred to in Article 1 (2) of the Convention;
- d. "regulated resources" are those of the fisheries resources which are subject to recommendations under the Convention and are listed in Annex I;
- e. "fishing vessel" means any vessel used or intended for use for the purposes of the commercial exploitation of fisheries resources, including fish processing vessels and vessels engaged in transshipment;
- f. "foreign fishing vessel" means a fishing vessel flying the flag of another Contracting Party;
- g. "non-Contracting Party vessel" means any fishing vessel not flagged in a Contracting Party of NEAFC, including vessels for which there are reasonable grounds for suspecting them to be without nationality;
- h. "fishing activities" means fishing, including joint fishing operations, fish processing operations, the transshipment or landing of fish or fish products and any other commercial activity in preparation for or related to fishing;
- i. "transshipment operation" means the transfer, over the side, of any quantity of fisheries resources or products thereof retained on board, from one fishing vessel to another;
- j. "joint fishing operation " means any operations between two or more vessels where catch is taken from the fishing gear of one fishing vessel to another;
- k. "port" means any place used for landing or a place close to the shore designated by a Contracting Party for transshipping of fisheries resources;
- l. "the term "IUU" means illegal, unreported and unregulated fishing activities as referred to in paragraph 3 of the FAO International Plan of Action to prevent, deter and eliminate illegal, unreported and unregulated fishing.

#### Article 2 - Scope

Unless otherwise stated, this Scheme shall apply to all vessels used or intended for use for fishing

activities conducted on fisheries resources in the Regulatory Area.

### **Article 3 - Co-operation and contact points**

1. Contracting Parties shall consult, co-operate and exchange information with other Contracting Parties and the Secretary in order to facilitate the implementation of this Scheme.
2. Contracting Parties shall designate the competent authority which shall act as the contact point for the purposes of receiving surveillance and inspection reports in accordance with Articles 14, 17, 18 and 27 and for receiving notifications and issuing authorisations in accordance with Articles 22 and 23. Contact points for receiving notifications and issuing authorisations in accordance with Articles 22 and 23 shall be available 24 hours a day. Each Contracting Party shall send to the Secretary the telephone number, e-mail address and fax number of the designated contact point before 1 February 2007. Any subsequent changes to the list shall be notified to the Secretary at least fifteen days before the change shall come into force. The Secretary shall put the details of the contact points and any changes thereto on the NEAFC website without delay.

### **Article 11 - Vessel Monitoring System**

1. Each Contracting Party shall implement a vessel monitoring system (VMS) for its fishing vessels exceeding 20 metres between perpendiculars or 24 metres overall length which fish, or plan to fish, in the Regulatory Area and:
2. require its fishing vessels, fishing in the Regulatory Area, to be equipped with an autonomous system able to automatically transmit messages to a land-based fisheries monitoring centre (FMC) allowing a continuous tracking of the position of a fishing vessel by the Contracting Party of that fishing vessel in conformity with the specifications and schedule set out in Annex VII;
3. ensure that the satellite device shall enable a fishing vessel to communicate by satellite to the Contracting Party messages relating to the following data:
  - the vessel identification;
  - the most recent geographical position of the vessel (longitude, latitude) with a position error which shall be less than 500 metres, with a confidence interval of 99%;
  - the date and time of the fixing of the said position of the vessel;
  - where applicable, data relating to the catch on board;
  - where applicable, data relating to transshipment.
4. Each Contracting Party shall take the necessary measures to ensure that the FMC receives through the VMS the messages requested in paragraph 1(b).
5. Each Contracting Party shall ensure that the masters of fishing vessels flying its flag shall ensure that the satellite tracking devices are at all times fully operational and that the information in paragraph 1(b) is transmitted. In the event of a technical failure or non-operation of the satellite

tracking device fitted on board a fishing vessel, the device shall be repaired or replaced within one month. After this period, the master of a fishing vessel shall not be authorised to commence a fishing trip with a defective satellite tracking device. Where a device stops functioning and a fishing trip lasts more than one month, the repair or the replacement has to take place as soon as the vessel enters a port, the fishing vessel shall not be authorised to continue or commence a fishing trip without the satellite tracking device having been repaired or replaced.

6. Each Contracting Party shall ensure that a fishing vessel with a defective VMS tracking device shall communicate, at least daily, reports containing the information in paragraph 1(b) to the FMC in accordance with the format set out in Annex VIII (5).
7. Contracting Parties shall establish a data-base delimiting the Regulatory Area by latitude and longitude co-ordinates. This shall be without prejudice to each Contracting Party's position concerning the delimitation of sea areas under their sovereignty and jurisdiction.

#### **CHAPTER IV - Inspections at Sea**

##### **Article 15 - NEAFC Inspectors**

1. Control and surveillance shall be carried out by inspectors of the fishery control service of the Contracting Parties following their assignment to the Scheme (NEAFC inspectors). Each inspector shall carry special documentation of identity as a NEAFC inspector issued by the respective Contracting Party in accordance with the format set out in Annex XI. Each inspector shall carry and produce this document of identity when boarding a fishing vessel.
2. Each Contracting Party shall ensure that NEAFC inspectors from another Contracting Party shall be allowed to carry out inspections on board those of its fishing vessels to which this Scheme applies. Furthermore, it shall adopt measures obliging the masters of the fishing vessels to co-operate with the NEAFC inspectors and to ensure their safety throughout the inspection.
3. Each Contracting Party shall ensure that inspections carried out by that Party shall be carried out in a non-discriminatory manner and in accordance with the Scheme. The number of inspections shall be based upon fleet size, taking into account the time spent in the Regulatory Area. In its inspections, each Contracting Party shall aim at ensuring equal treatment between all Contracting Parties with fishing vessels operating in the Regulatory Area through an equitable distribution of inspections.
4. Inspectors shall avoid the use of force except when and to the degree necessary to ensure the safety of the inspectors. When carrying out inspections on board fishing vessels, inspectors shall not carry any fire-arms.
5. Without limiting the capability of inspectors to carry out their mandates, inspections shall be made so that the fishing vessel, its activities and the catch retained on board do not suffer undue interference and inconvenience.

##### **Article 16 - Means of Inspection**

1. Each Contracting Party shall notify the Secretary before 1 January each year of the names of the NEAFC inspectors and special inspection vessels as well as the type of aircraft and the details of their identification (registration number, name, radio call-sign) which they are assigning to the Scheme for that year. Modifications by Contracting Parties to such notifications shall be communicated to the Secretary giving one month's notice.
2. The Secretary shall circulate to all Contracting Parties the notifications received from any Contracting Party under the Scheme, within 15 days of receipt.
3. Any vessel assigned to the Scheme and carrying NEAFC inspectors, as well as the boarding craft deployed by that vessel shall display the NEAFC inspection signal illustrated in Annex XI to indicate that inspectors on board may carry out inspection duties in accordance with the Scheme. Aircraft assigned to the Scheme shall have their international radio call sign clearly displayed.
4. Each Contracting Party shall keep a record for their assigned inspection vessels and aircraft of the date and hour of the start and termination of their duties under the Scheme as set out in Annex X. The Contracting Party shall notify this information to the NEAFC Secretary. The Secretary shall promptly inform the other Contracting Parties accordingly.
5. Where, at any time, more than 10 fishing vessels of any one Contracting Party are engaged in fishing activities conducted on regulated resources in the Regulatory Area, the Contracting Party shall, during that time, have an inspection vessel in the Regulatory Area, or shall co-operate with another Contracting Party to jointly operate an inspection vessel.

#### **Article 17 - Surveillance procedure**

1. Surveillance shall be based on sightings of fishing vessels by assigned inspectors from an inspection vessel or aircraft assigned to the Scheme.
2. The inspector shall complete the surveillance report in the form set out in Annex XII(A).
3. A copy of each surveillance report shall be forwarded without delay by electronic transmission, in the form set out in Annex XII(B), to the Contracting Party of the vessel concerned or a designated authority of that Contracting Party and to the Secretary. A hard copy of each surveillance report and any photographs shall be forwarded on request to the Contracting Party of the vessel concerned.
4. The Secretary shall make available as soon as possible the information received under this Article to other Contracting Parties with an active inspection presence in the Area. All reports and messages communicated shall be treated in a confidential manner.

#### **Article 18 - Inspection procedure**

1. No boarding shall be conducted without prior notice by radio being sent to the fishing vessel or without the fishing vessel being given the appropriate signal using the International Code of Signals, including the identity of the inspection platform, whether or not such notice is

acknowledged as received.

2. An inspector has the authority to examine all relevant areas, decks and rooms of the fishing vessels, catch (whether processed or not), nets or other gear, equipment, and any relevant documents which the inspector deems necessary to verify the compliance with the measures established by NEAFC and to question the master or a person designated by the master.
3. The fishing vessel to be boarded shall not be required to stop or manoeuvre when fishing, shooting or hauling. The inspectors may order the interruption or delay in the hauling of the fishing gear until they have boarded the fishing vessel and in any event no more than 30 minutes after receiving the signal.
4. Inspectors may instruct a fishing vessel to delay its entry into or exit from the Regulatory Area for up to 6 hours from the time of transmission by the fishing vessel of the notification communicated in accordance with Article 12(1)(a) and (c).
5. The duration of an inspection shall not exceed 4 hours, or until the net is hauled in and the net and catch are inspected, whichever is longer. In the case of an infringement being detected the inspectors may stay on board for the time necessary for the completion of measures provided for in Article 28(1)(b). However, in special circumstances relating to the size of a fishing vessel, and the quantities of fish retained on board, the duration of the inspection may exceed the limits stipulated above. In such a situation, the inspection Party shall in no case stay longer on board the fishing vessel than the time required to complete the inspection. The reasons for exceeding the limit stipulated above shall be recorded in the inspection report referred to in paragraph 6.
6. There shall be no more than two inspectors in an inspection party from one Contracting Party boarding a fishing vessel of another Contracting Party.
7. Each inspection shall be documented by completing an inspection report as set out in Annex XIII.
8. In carrying out their inspection, the inspectors may request of the master any assistance required. The report of the inspection may be commented upon by the master and shall be signed by the inspectors at the end of the inspection. A copy of the inspection report shall be given to the master of the fishing vessel.
9. Inspectors shall not interfere with the master's ability to communicate with the authorities of the flag State during the boarding and inspection.
10. Each Contracting Party shall ensure that its inspection platforms manoeuvre at a safe distance from the fishing vessels according to good seamanship.
11. A copy of each inspection report shall be transmitted without delay to the Contracting Party of the inspected vessel and to the Secretary. The original or a certified copy of each inspection report shall be forwarded on request to the Contracting Party of the inspected vessel.

#### **Article 31 - Measures taken by Contracting Parties**



1. Each Contracting Party shall ensure that the appropriate measures be taken, including administrative action or criminal proceedings in conformity with their national law, against the natural or legal persons responsible where NEAFC measures have not been respected.
2. The proceedings initiated pursuant to paragraph 1 shall, in accordance with the relevant provisions of national law, be capable of effectively depriving those responsible of the economic benefit of the infringements or of providing sanctions proportionate to the seriousness of such infringements, thus effectively discouraging future infringements.

#### **Article 32 - Reportings on surveillance and inspection activities**

Each Contracting Party shall report to the Secretary by 1 March each year for the previous calendar year:

- a. the number of inspections conducted by it under Articles 17, 18 and 25 of the scheme specifying the number of inspections on the vessels of each Contracting Party and, in the case of infringement, the date and position of the inspection of the individual vessel and the nature of infringement;
- b. the number of hours flown and the number of days at sea on NEAFC patrols, the number of sightings (Contracting Party vessels and non Contracting Party vessels) and the list of individual vessels for which a surveillance report has been completed.

#### **Article 34 - Co-operating non-Contracting Party status**

1. A non-Contracting Party which seeks the status of a co-operating non-Contracting Party shall submit a request to the Secretary by 30 September, accompanied by a report containing the following information:
  - a) Full data on its historical fisheries in the NEAFC area, including nominal catches, number/type of vessels, name of fishing vessels, fishing effort and fishing areas;
  - b) Details on current fishing presence in the Regulatory Area, number of vessels and vessels characteristics;
  - c) Details of research programmes it has conducted in the Regulatory Area, the results of which it shall share with NEAFC.

Furthermore, the non-Contracting Party concerned shall:

- Undertake to respect the provisions of this Scheme and all other Recommendations established under the Convention;
- Inform NEAFC of the measures it takes to ensure compliance by its vessels, including inter alia, observer programmes, inspection at sea and in port, and VMS;
- Communicate annually catch and effort data and size frequency distribution of the catches (when possible) in due time and appropriate format for scientific evaluation of the stocks.

On the basis of the request submitted according to the provisions of paragraph 1 as well as any other relevant information, PECCOE shall recommend to the Commission, if appropriate, that the status of co-operating non-Contracting Party be granted. Non-Contracting Parties accorded this status, which shall be decided by the Commission on a year-to-year basis, shall be invited to participate at plenary and scientific meetings, as an observer.

#### **Article 38 - Inspections at sea**

1. NEAFC inspectors shall request permission to board and inspect non-Contracting Party vessels sighted or by other means identified by a Contracting Party as engaging in fishing activities in the Convention Area. If the master of the vessel consents to be boarded the inspection shall be documented by completing an inspection report as set out in Annex XIII. The inspectors shall transmit a copy of the inspection report without delay to the Secretary who shall put it on the inspectors' area of the NEAFC website and send a copy to the flag State of the vessel.
2. The master of the non-Contracting Party vessel which is boarded shall be provided with a copy of the inspection report. Where evidence so warrants, a Contracting Party may take such action as may be appropriate in accordance with international law. Contracting Parties are encouraged to examine the appropriateness of domestic measures to exercise jurisdiction over such vessels.
3. If the master does not consent for his vessel to be boarded and inspected or does not fulfil any one of the obligations laid down in Article 19(a) to (e), the vessel shall be presumed to have engaged in IUU activities.

## 10.4 Annex 4

### NEAFC's "New" Convention

#### ARTICLE 1

For the purpose of this Convention the following definitions apply:

a) "*The Convention Area*" means the areas (1) within those parts of the Atlantic and Arctic Oceans and their dependent seas which lie north of 36° north latitude and between 42° west longitude and 51° east longitude, but excluding:

(i) the Baltic Sea and the Belts lying to the south and east of lines drawn from Hasenøre Head to Griben Point, from Korshage to Spodsbjerg and from Gilbjerg Head to the Kullen. and

(ii) the Mediterranean Sea and its dependent seas as far as the point of intersection of the parallel of 36° latitude and the meridian of 5°36' west longitude

(2) within that part of the Atlantic Ocean north of 59° north latitude and between 44° west longitude and 42° west longitude.

b) "*Fishery resources*" means resources of fish, molluscs, crustaceans and including sedentary species, excluding, in so far as they are dealt with by other international agreements, highly migratory species listed in Annex I of the United Nations Convention on the Law of the Sea of 10 December 1982, and anadromous stocks;

(c) "*Living marine resources*" means all living components of marine ecosystems;

(d) "*Marine biological diversity*" means the variability among marine living organisms and the ecological complexes of which they are part; this includes diversity within species, between species and of ecosystems.

#### ARTICLE 2

The objective of this Convention is to ensure the long-term conservation and optimum utilisation of the fishery resources in the Convention Area, providing sustainable economic, environmental and social benefits.

#### ARTICLE 3

1. For the purposes of this Convention the Contracting Parties agree to establish and maintain a North-East Atlantic Fisheries Commission, hereinafter referred to as "the Commission".

2. The Commission shall have legal personality and shall enjoy in its relations with other international organisations and in the territories of the Contracting Parties such legal capacity as may be necessary to perform its functions and achieve its ends.

3. Each Contracting Party shall appoint to the Commission not more than two representatives who may be accompanied at any of its meetings by experts and advisers.

4. The Commission shall elect its own President and not more than two Vice Presidents.
5. The Office of the Commission shall be in London.
6. Except when the Commission determines otherwise, it shall meet once a year in London at such time as it decides; provided, however, that upon the request of a Contracting Party and subject to the concurrence of three other Contracting Parties, the President shall, as soon as practicable, convene a meeting at such time and place as he may determine.
7. The Commission shall appoint its own Secretary and such other staff as it may require.
8. The Commission may set up such Committees and other subsidiary bodies as it considers desirable for the exercise of its duties and functions.
9. Each Contracting party shall have one vote in the Commission. Decisions of the Commission shall be taken by a simple majority, or, if this Convention specifically requires a qualified majority, by a two-thirds majority of the votes of all Contracting Parties present and casting affirmative or negative votes, provided that no vote shall be taken unless there is a quorum of at least two thirds of the Contracting Parties. If there is an even division of votes on any matter which is subject to a simple majority decision, the proposal shall be regarded as rejected.
10. Subject to the provisions of this Article, the Commission shall adopt its own Rules of Procedure, including provisions for the election of the President and Vice- Presidents and their terms of office.
11. Reports of the proceedings of the Commission shall be transmitted as soon as possible to the Contracting Parties in English and French.

#### **ARTICLE 4**

1. The Commission shall perform its functions in order to fulfil the objective set out in Article 2,
2. When making recommendations in accordance with Article 5 or 6 of this Convention the Commission shall in particular:
  - a) ensure that such recommendations are based on the best scientific evidence available;
  - b) apply the precautionary approach;
  - c) take due account of the impact of fisheries on other species and marine ecosystems, and in doing so adopt, where necessary, conservation and management measures that address the need to minimise harmful impacts on living marine resources and marine ecosystems; and
  - d) take due account of the need to conserve marine biological diversity.
3. The Commission shall provide a forum for consultation and exchange of information on the state of the fishery resources in the Convention Area and on the management policies, including examination of the overall effects of such policies on the fishery resources and, as appropriate, other living marine resources and marine ecosystems.

## ARTICLE 5

1. The Commission shall, as appropriate, make recommendations concerning fisheries conducted beyond the areas under jurisdiction of Contracting Parties. Such recommendations shall be adopted by a qualified majority.

2. The Commission in the exercise of its functions under paragraph 1 shall seek to ensure consistency between:

(a) any recommendation that applies to a stock or group of stocks occurring both within an area under the jurisdiction of a Contracting Party and beyond, or any recommendation that would have an effect through species inter-relationships on a stock or group of stocks occurring in whole or in part within an area under the jurisdiction of a Contracting Party, and

(b) any measures and decisions taken by such Contracting Party for the management and conservation of that stock or group of stocks with respect to fisheries within the area under its jurisdiction. The appropriate Contracting Party and the Commission shall accordingly promote the co-ordination of such recommendations, measures and decisions.

3. For the purpose of paragraph 2 each Contracting Party shall keep the Commission informed of its measures and decisions.

## ARTICLE 6

1. The Commission may make recommendations concerning fisheries conducted within an area under jurisdiction of a Contracting Party, provided that the Contracting Party in question so requests and the recommendation receives its affirmative vote.

2. The Commission may give advice concerning fisheries referred to in paragraph 1 if the Contracting Party in question so requests.

## ARTICLE 7

In the exercise of its functions, as set out in Articles 5 and 6, the Commission may consider *inter alia* measures for:

(a) the regulation of fishing gear and appliances, including the size of mesh of fishing nets,

(b) the regulation of the size limits of fish that may be retained on board vessels, or landed or exposed or offered for sale,

(c) the establishment of closed seasons and of closed areas,

(d) the improvement and increase of fishery resources, which may include artificial propagation, the transplantation of organisms and the transplantation of young,

(e) the establishment of total allowable catches and their allocation to Contracting Parties,

(f) the regulation of the amount of fishing effort and its allocation to Contracting Parties.

## **ARTICLE 8**

1. The Commission may by a qualified majority make recommendations concerning measures of control relating to fisheries conducted beyond areas under the jurisdiction of Contracting Parties for the purpose of ensuring the application of this Convention and any recommendations adopted thereunder.

2. The Commission may also make recommendations concerning measures of control relating to fisheries conducted within an area under the jurisdiction of a Contracting Party, provided that the Contracting Party in question so requests and the recommendation receives its affirmative vote.

3. Recommendations adopted under this Article may include provisions for termination different from those provided for in Article 13.

## **ARTICLE 9**

1. The Commission may by a qualified majority make recommendations providing for the collection of statistical information relating to fisheries conducted beyond areas under the jurisdiction of Contracting Parties.

2. The Commission may also make recommendations providing for the collection of statistical information relating to fisheries conducted within an area under the jurisdiction of a Contracting Party, provided that the recommendation receives the affirmative vote of that Contracting Party.

## **ARTICLE 10**

When adopting recommendations the Commission shall determine whether, and under which conditions, those recommendations shall apply to fishing operations conducted solely for the purposes of scientific investigation carried out according to relevant principles and rules of international law.

## **ARTICLE 11**

1. The Commission shall, without undue delay, notify Contracting Parties of the recommendations adopted by the Commission under this Convention.

2. The Commission may publish or otherwise disseminate reports of its activities and other information relating to the fisheries in the Convention Area.

## **ARTICLE 12**

1. A recommendation shall become binding on the Contracting Parties subject to the provisions of this Article and shall enter into force on a date determined by the Commission, which shall not be before 30 days after the expiration of the period or periods of objection provided for in this Article.

2. (a) Any Contracting Party may, within 50 days of the date of notification of a recommendation adopted under paragraph 1 of Article 5, under paragraph 1 of Article 8 or under paragraph 1 of Article 9, object thereto. In the event of such an objection, any other Contracting Party may similarly object within 40 days after receiving notification of that objection. If any objection is made within this further period of 40 days other Contracting Parties are allowed a final period of 40 days after receiving notification of that objection in which to lodge objections.

(b) A recommendation shall not become binding on a Contracting Party which has objected thereto.

(c) If three or more Contracting Parties have objected to a recommendation it shall not become binding on any Contracting Party.

(d) Except when a recommendation is not binding on any Contracting Party according to the provisions of sub-paragraph (c), a Contracting Party which has objected to a recommendation may at any time withdraw that objection and shall then be bound by the recommendation within 70 days, or as from the date determined by the Commission under paragraph 1, whichever is the later.

(e) If a recommendation is not binding on any Contracting Party, two or more Contracting Parties may nevertheless at any time agree among themselves to give effect thereto, in which event they shall immediately notify the Commission accordingly.

3. In the case of a recommendation adopted under paragraph 1 of Article 6, under paragraph 2 of Article 8, or under paragraph 2 of Article 9, only the Contracting Party exercising jurisdiction in the area in question may, within 60 days of the date of notification of the recommendation, object thereto, in which case the recommendation shall not become binding on any Contracting Party.

4. The Commission shall notify the Contracting Parties of any objection and withdrawal immediately upon the receipt thereof, and of the entry into force of any recommendation and of the entry into effect of any agreement made pursuant to subparagraph (e) of paragraph 2.

## **ARTICLE 13**

1. (a) After the expiration of one year from the date of entry into force of a recommendation adopted under paragraph 1 of Article 5, paragraph 1 of Article 8, or paragraph 1 of Article 9, any Contracting Party may notify the Commission of the termination of its acceptance of the recommendation and, if that notification is not withdrawn, the recommendation shall cease to be binding on that Contracting Party at the end of one year from the date of notification.

(b) A recommendation which has ceased to be binding on a Contracting Party shall cease to be binding on any other Contracting Party 30 days after the date on which the latter notifies the Commission of the termination of its acceptance of the recommendation.



2. In the case of recommendations adopted under paragraph 1 of Article 6, paragraph 2 of Article 8 or paragraph 2 of Article 9, only the Contracting Party exercising jurisdiction in the area in question may notify the Commission of termination of its acceptance of the recommendation, in which event it shall cease to be binding on any Contracting Party at the end of 90 days from the date of the notification.

3. The Commission shall notify the Contracting Parties of any notification under this Article immediately upon the receipt thereof.

#### **ARTICLE 14**

1. In the interest of the optimal performance of the functions set out in Articles 4, 5 and 6, the Commission shall seek information and advice from the International Council for the Exploration of the Sea. Such information and advice shall be sought on matters related to the Commission's activities and falling within the competence of the Council, including information and advice on the biology and population dynamics of the fish species concerned, the state of the fish stocks, the effect of fishing on those stocks, and measures for their conservation and management.

2. In order to facilitate the tasks of the International Council for the Exploration of the Sea in providing information and advice to the Commission, the Commission shall seek to establish in co-operation with the Council, arrangements to ensure that research studies for this purpose, including joint studies, are encouraged and conducted efficiently and without undue delay.

3. The Commission may establish working arrangements with any other international organisation which has related objectives.

#### **ARTICLE 15**

1. Without prejudice to the rights of Contracting Parties in regard to waters under their jurisdiction, the Contracting Parties shall take such action, including the imposition of adequate sanctions for infractions, as may be necessary to make effective the provisions of this Convention and to implement any recommendation which becomes binding under Article 12.

2. Each Contracting Party shall transmit to the Commission an annual statement of the actions it has taken pursuant to paragraph 1.

#### **ARTICLE 16**

1. Each Contracting Party shall inform the Commission of its legislative measures and of any agreements which it may have concluded, in so far as those measures and agreements relate to the conservation and utilisation of fishery resources in the Convention Area.

2. Each Contracting Party shall furnish on the request of the Commission any available scientific and statistical information needed for the purposes of this Convention and such additional information as may be required under Article 9.

#### **ARTICLE 17**

1. Each Contracting Party shall pay the expenses of its own delegation to all meetings held under this Convention.
2. At its first meeting the Commission shall adopt a budget for its first financial year. At this meeting the Commission may also, as appropriate, adopt a budget for the second financial year.
3. At each annual session the Commission shall adopt a budget for the following financial year and a budget estimate for the financial year following thereafter. A draft budget and draft budget estimate shall be submitted by the President of the Commission to the Contracting Parties not less than 40 days before the meeting of the Commission at which they are to be considered.
4. The Commission shall determine the contributions due from each Contracting Party under the annual budgets according to the following formula:
  - (a) one-third of the budget shall be divided equally among the Contracting Parties,
  - (b) two-thirds of the budget shall be divided among the Contracting Parties in proportion of their nominal catches in the Convention Area, on the basis of the International Council for the Exploration of the Sea definitive catch statistics for the calendar year ending not more than 24 and not less than 18 months before the beginning of the budget year,
  - (c) however, the annual contribution of any Contracting Party which has a population of less than 300,000 inhabitants shall be limited to a maximum of 5% of the total budget. When this contribution is so limited, the remaining part of the budget shall be divided among the other Contracting Parties in accordance with subparagraph (a) and (b). This rule shall be effective for the first five budget years of the Commission and thereafter it shall be subject to annual review by the Commission which may change it by a decision adopted by a three-fourths majority of all Contracting Parties.
5. The Commission shall notify each Contracting Party of the contribution due from that Party as determined under paragraph 4 and of the date as determined by the Commission by which this contribution shall be paid.
6. The contribution of a Contracting Party which has acceded to this Convention during the course of a financial year shall, in respect of that year, be a part proportional to the number of complete months remaining in the year of the annual contribution calculated in accordance with paragraph 4.
7. Contributions shall be payable in the currency of the country in which the Office of the Commission is located.
8. A Contracting Party which has not paid by the date determined by the Commission its contributions for two years shall not enjoy the right of casting votes and of making objections under this Convention until it has fulfilled its obligations, unless, at the request of the Contracting Party concerned, the Commission decides otherwise.
9. The Commission shall adopt rules for the conduct of its financial affairs.

## ARTICLE 18

By a qualified majority the Commission may sub-divide the Convention Area into regions and may alter the boundaries and vary the number of regions provided that the decision receives the affirmative vote of each Contracting Party exercising jurisdiction in any part of the area affected.

#### **ARTICLE 18 bis<sup>11</sup>**

The Commission shall make recommendations establishing procedures for the settlement of disputes arising under this Convention.

#### **ARTICLE 19**

1. Any Contracting Party may propose amendments to this Convention. Any such proposed amendment shall be sent to the Secretary at least 90 days prior to the meeting at which the Contracting Party proposes it to be acted upon. The Secretary shall transmit the proposal immediately to the Contracting Parties.

2. The adoption of a proposed amendment requires a three-fourths majority of all Contracting Parties. The text of any proposed amendment so adopted shall be transmitted by the Commission to the Depositary which shall forthwith forward it to the Contracting Parties.

3. An amendment shall take effect for the Contracting Parties 120 days following the date of the notification by the Depositary of receipt of written notification of approval by three-fourths of all Contracting Parties, unless any other Contracting Party notifies the Depositary, within 90 days of the date of the notification by the Depositary of such receipt, that it objects to the amendment, in which case the amendment shall not take effect for any Contracting Party. A Contracting Party which has objected to an amendment may at any time withdraw its objection. If all objections to an amendment are withdrawn, the amendment shall take effect for the Contracting Parties 120 days following the date of the notification by the Depositary of receipt of the last withdrawal.

4. A Party which ratifies, accepts, approves or accedes to this Convention after an amendment has been adopted in accordance with paragraph 2 shall be deemed to have approved the said amendment.

5. The Depositary shall promptly notify the Contracting Parties of the receipt of notifications of approval of amendments, the receipt of notification of objection or withdrawal of objections, and the entry into force of amendments.

#### **ARTICLE 20**

1. This Convention shall be open for signature from 18 November 1980 to 28 February 1981 by the following Parties: Bulgaria, Cuba, Denmark in respect of the Faroe Islands, the European Economic Community, Finland, the German Democratic Republic, Iceland, Norway, Poland, Portugal, Spain, Sweden and the Union of Soviet Socialist Republics. It shall be ratified, accepted, or approved as soon as possible and the instruments of ratification, acceptance or approval shall be deposited with the Government of the United Kingdom of Great Britain and Northern Ireland, referred to in this Convention as "the Depositary".

2. This Convention shall enter into force upon the deposit of instruments of ratification, acceptance or approval by not less than seven Signatories, provided that these include at least three Signatories exercising jurisdiction within Convention Area. If, however, this Convention has not entered into force one year from the date on which this Convention is opened for signature, but not less than five Signatories have deposited instruments of ratification, acceptance or approval, including at least three Signatories exercising jurisdiction within the Convention Area, these Signatories may agree among themselves by special protocol on the date on which this Convention shall enter into force; in that case this Convention shall enter into force with respect to any Party that ratifies, accepts or approves thereafter on the date of deposit of its instrument of ratification, acceptance or approval.

3. Any of the Parties referred to in paragraph 1 which has not signed this Convention may accede thereto at any time after it has entered into force in accordance with paragraph 2.

4. Any state not referred to in paragraph 1, except a Member State of the European Economic Community, may accede to this Convention at any time after it has entered into force in accordance with paragraph 2, provided that an application for accession of that State meets with the approval of three-fourths of all the Contracting Parties. An application for accession shall be addressed in writing to the Depositary which shall notify all Contracting Parties thereof. The application is approved if within 90 days from the date of such notification three-fourths of all the Parties in respect of which this Convention has already entered into force by that date have notified the Depositary of their approval of the application. The Depositary shall notify the State applying for accession and all Contracting Parties of the result of the application.

5. Accession shall be effected by the deposit of an instrument of accession with the Depositary and shall take effect on the date of its receipt. As from that date any Party which accedes to this Convention shall be bound by the recommendations which are, at the time of its accession, binding on all the other Contracting Parties as well as by any other recommendations which are, at that time, binding on one or more of the Contracting Parties and are not specifically excluded by the acceding Party in its instrument of accession.

6. The Depositary shall inform all Signatories and all acceding Parties of all instruments of ratification, acceptance, approval or accession deposited, and shall notify Signatories of the date and the Parties in respect of which this Convention enters into force.

7. The Depositary shall call the first meeting of the Commission as soon as practicable after the entry into force of this Convention and shall communicate the provisional agenda to each Contracting Party.

## **ARTICLE 21**

At any time after two years from the date on which this Convention has entered into force with respect to a Contracting Party, that Party may denounce the Convention by means of a notification in writing addressed to the Depositary. Any such denunciation shall take effect twelve months after the date of its receipt, and shall be notified to the Contracting Parties by the Depositary.

## 10.5 Annex 5

### UNGA61/105 and UNGA64/72

#### Selection of the most relevant UNGA resolutions (UNGA61/105 and UNGA64/72) adapted from UNGA64/72

The two most recent resolutions in this respect are the 2007 UNGA61/105 resolution with the reaffirmation of this resolution being the UNGA 64/74 resolution of 2010. For the UNGA61/105, the most relevant paragraphs concerning the protection of VMEs are paragraphs 80-84 and for the UNGA64/72 the most relevant paragraphs are paragraphs 107-119. These paragraphs are presented below and cited from the UNGA64/72.

The relevant paragraphs of the UNGA61/105 resolution will be presented in the first part between the brackets, where the related paragraphs of the UNGA64/72 resolution will be presented in the second part between the brackets.

§(54/64) “Urges States, individually and through relevant regional fisheries management organizations and arrangements, to establish mandatory vessel monitoring, control and surveillance systems, in particular to require that vessel monitoring systems be carried by all vessels fishing on the high seas as soon as practicable, recalling that paragraph 62 of resolution 63/112 urged that large-scale fishing vessels be required to carry vessel monitoring systems no later than December 2008, and to share information on fisheries enforcement matters.”

§(52/70) “Encourages States to establish and undertake cooperative surveillance and enforcement activities in accordance with international law to strengthen and enhance efforts to ensure compliance with conservation and management measures, and prevent and deter illegal, unreported and unregulated fishing.”

§(78/110) “Encourages States to increase scientific research in accordance with international law on the marine ecosystem.”

§(83/113) “Calls upon States to take action immediately, individually and through regional fisheries management organizations and arrangements, and consistent with the precautionary approach and ecosystem approaches, to implement the 2008 International Guidelines for the Management of Deep-sea Fisheries in the High Seas of the Food and Agriculture Organization of the United Nations (“the Guidelines”)<sup>23</sup> in order to sustainably manage fish stocks and protect vulnerable marine ecosystems, including seamounts, hydrothermal vents and cold water corals, from destructive fishing practices, recognizing the immense importance and value of deep sea ecosystems and the biodiversity they contain.”

§(83a/119a) “Conduct the assessments called for in paragraph 83 (a) of resolution 61/105, consistent with the Guidelines, and ensure that vessels do not engage in bottom fishing until such assessments have been carried out.”

§(83c/119b) “Conduct further marine scientific research and use the best scientific and technical information available to identify where vulnerable marine ecosystems are known to occur or are

likely to occur and adopt conservation and management measures to prevent significant adverse impacts on such ecosystems consistent with the Guidelines, or close such areas to bottom fishing until conservation and management measures have been established, as called for in paragraph 83 (c) of resolution 61/105.”

§(83d/119c) “Establish and implement appropriate protocols for the implementation of paragraph 83 (d) of resolution 61/105, including definitions of what constitutes evidence of an encounter with a vulnerable marine ecosystem, in particular threshold levels and indicator species, based on the best available scientific information and consistent with the Guidelines, and taking into account any other conservation and management measures to prevent significant adverse impacts on vulnerable marine ecosystems, including those based on the results of assessments carried out pursuant to paragraph 83 (a) of resolution 61/105 and paragraph 119 (a) of the present resolution.”

## 10.6 Annex 6

### FAO Guidelines

#### Selection of the most relevant FAO's 'International Guidelines for the Management of Deep-Sea fisheries in the High Seas'

##### Definition of VMEs according the FAO:

"Areas that are easily disturbed by human activities, and are slow to recover, or which will never recover. Marine ecosystems may be easily disturbed if: (1) they are characterised by low-levels of natural disturbance and / or low levels of natural mortality; (2) component species are fragile and are easily killed, damaged or structurally or biologically altered by human impacts, in this case mechanical disturbance by fishing gear; (3) distribution is spatially fragmented with patches of suitable habitat that are small in area and "rare" in comparison to the overall area of seabed; or (4) important ecosystem functions are disrupted or degraded." (Rogers et al., 2008, p: 10)

##### Identifying vulnerable marine ecosystems and assessing significant adverse impacts

§42. A marine ecosystem should be classified as vulnerable based on the characteristics that it possesses. The following list of characteristics should be used as criteria in the identification of VMEs.

1. Uniqueness or rarity – an area or ecosystem that is unique or that contains rare species whose loss could not be compensated for by similar areas or ecosystems. These include:
  - habitats that contain endemic species;
  - habitats of rare, threatened or endangered species that occur only in discrete areas; or
  - nurseries or discrete feeding, breeding, or spawning areas.
2. Functional significance of the habitat – discrete areas or habitats that are necessary for the survival, function, spawning/reproduction or recovery of fish stocks, particular life history stages (e.g. nursery grounds or rearing areas), or of rare, threatened or endangered marine species.
3. Fragility – an ecosystem that is highly susceptible to degradation by anthropogenic activities.
4. Life-history traits of component species that make recovery difficult – ecosystems that are characterized by populations or assemblages of species with one or more of the following characteristics:
  - slow growth rates;
  - late age of maturity;
  - low or unpredictable recruitment; or
  - long-lived.
5. Structural complexity – an ecosystem that is characterized by complex physical structures created by significant concentrations of biotic and abiotic features. In these ecosystems, ecological processes are usually highly dependent on these structured systems. Further, such ecosystems often have high diversity, which is dependent on the structuring organisms. Examples of potentially vulnerable species groups, communities and habitats, as well as features



that potentially support them are contained in the Annex.

§43. These criteria should be adapted and additional criteria should be developed as experience and knowledge accumulate, or to address particular local or regional needs.

§44. As a necessary step towards the identification of VMEs, States and RFMO/As, and as appropriate FAO, should assemble and analyse relevant information on areas under the competence of such RFMO/As or where vessels under the jurisdiction of such States are engaged in DSFs or where new or expanded DSFs are contemplated.

§45. Where site-specific information is lacking, other information that is relevant to inferring the likely presence of vulnerable populations, communities and habitats should be used.

§46. When designating an ecosystem as vulnerable, habitats and ecosystems should be evaluated against the criteria presented in paragraph 42, individually or in combination, using the best available scientific and technical information. Characteristics should be weighted according to their relative contribution to an ecosystem's vulnerability.

§47. Flag States and RFMO/As should conduct assessments to establish if deep-sea fishing activities are likely to produce significant adverse impacts in a given area. Such an impact assessment should address, inter alia:

1. type(s) of fishing conducted or contemplated, including vessels and gear types, fishing areas, target and potential bycatch species, fishing effort levels and duration of fishing (harvesting plan);
2. best available scientific and technical information on the current state of fishery resources and baseline information on the ecosystems, habitats and communities in the fishing area, against which future changes are to be compared;
3. identification, description and mapping of VMEs known or likely to occur in the fishing area;
4. data and methods used to identify, describe and assess the impacts of the activity, the identification of gaps in knowledge, and an evaluation of uncertainties in the information presented in the assessment;
5. identification, description and evaluation of the occurrence, scale and duration of likely impacts, including cumulative impacts of activities covered by the assessment on VMEs and low productivity fishery resources in the fishing area;
6. risk assessment of likely impacts by the fishing operations to determine which impacts are likely to be significant adverse impacts, particularly impacts on VMEs and low-productivity fishery resources; and
7. the proposed mitigation and management measures to be used to prevent significant adverse impacts on VMEs and ensure longterm conservation and sustainable utilization of low-productivity fishery resources, and the measures to be used to monitor effects of the fishing operations.

§48. Risk assessments referred to in paragraph 47 (vi) above should take into account, as appropriate, differing conditions prevailing in areas where DSFs are well established and in areas

where DSFs have not taken place or only occur occasionally.

§49. In conducting impact assessments, States and RFMO/As should consider, as appropriate, the information referred to in these Guidelines, as well as relevant information from similar or related fisheries, species and ecosystems. Notwithstanding paragraph 34, it should be recognised that there may be circumstances in which States may have to rely on information and data obtained only from vessels flying their flags or their own research activities when assessing DSFs that take place in areas where no competent RFMO/A is in place.

§50. RFMO/As should develop an appropriate mechanism for reviewing assessments, determinations and management measures, including evaluation and advice by a scientific committee, other appropriate body or, as appropriate, a relevant multi-lateral body, including on whether the deepsea fishing activity would have significant adverse impacts on VMEs and, if so, whether proposed or additional mitigation measures would prevent such impacts.

§51. States, in accordance with domestic laws, and RFMO/As should make publicly available: (i) impact assessments as described in paragraph 47; (ii) existing and proposed conservation and management measures; and (iii) advice and recommendations provided by the appropriate RFMO/A scientific or technical committee, or other relevant body.

§52. For areas not regulated by a RFMO/A, States should, on an annual basis, submit their impact assessments as well as any existing or proposed conservation and management measures to FAO, which should make them publicly available.

§53. Where an assessment concludes that the area does not contain VMEs, or that significant adverse impacts are not likely, such assessments should be repeated when there have been significant changes to the fishery or other activities in the area, or when natural processes are thought to have undergone significant changes.

### **Management and conservation tools**

§61. A functioning regulatory framework should include an appropriate set of rules and regulations for the management of existing fisheries, as well as for the opening of new areas to exploratory fishing, consistent with these Guidelines and other relevant instruments. Such a framework should also include regulations to protect vulnerable populations, communities and habitats.

§62. States and RFMO/As should adopt specific conservation and management measures for all DSFs pursuant to these Guidelines. Where no competent RFMO/A exists, or where interim measures governing such fisheries have not been established, such measures should be developed and implemented by flag States.

§63. Until a functioning regulatory framework is developed to prevent significant adverse impacts on VMEs and to ensure the long-term sustainability of DSFs, conservation and management measures should include, at a minimum:

1. closing of areas to DSFs where VMEs are known or likely to occur, based on the best available scientific and technical information;

2. refraining from expanding the level or spatial extent of effort of vessels involved in DSFs; and
3. reducing the effort in specific fisheries, as necessary, to the nominal levels needed to provide information for assessing the fishery and obtaining relevant habitat and ecosystem information. Such interim measures are without prejudice to future allocations and participatory rights in the fishery, in accordance with international law.

§64. Comprehensive maps showing the spatial extent of existing fisheries should be compiled by RFMO/As. For areas not covered by RFMO/As, each flag State should develop such maps and cooperate with other States concerned and FAO in developing joint maps for relevant areas.

§65. Precautionary conservation and management measures, including catch and effort controls, are essential during the exploratory phase of a DSF, and should be a major component of the management of an established DSF. They should include measures to manage the impact of the fishery on low-productivity species, non-target species and sensitive habitat features. Implementation of a precautionary approach to sustainable exploitation of DSFs should include the following measures:

1. precautionary effort limits, particularly where reliable assessments of sustainable exploitation rates of target and main bycatch species are not available;
2. precautionary measures, including precautionary spatial catch limits where appropriate, to prevent serial depletion of lowproductivity stocks;
3. regular review of appropriate indices of stock status and revision downwards of the limits listed above when significant declines are detected;
4. measures to prevent significant adverse impacts on vulnerable marine ecosystems; and
5. comprehensive monitoring of all fishing effort, capture of all species and interactions with VMEs.

§66. In areas where VMEs have been designated, or are known or likely to occur, based on seabed surveys and mapping or other best available information, States and RFMO/As should close such areas to DSFs until appropriate conservation and management measures have been established

to prevent significant adverse impacts on VMEs and ensure long-term conservation and sustainable use of deep-sea fish stocks, in accordance with paragraphs 42 to 53.

§67. States and RFMO/As should have an appropriate protocol identified in advance for how fishing vessels in DSFs should respond to encounters in the course of fishing operations with a VME, including defining what constitutes evidence of an encounter. Such protocol should ensure that

States require vessels flying their flag to cease DSFs fishing activities at the site and report the encounter, including the location and any available information on the type of ecosystem encountered, to the relevant RFMO/A and flag State.

§68. In designing such protocols and defining what constitutes an encounter, States and RFMO/As should take into account best available information from detailed seabed surveys and mapping, other relevant information available for the site or area, and other conservation and management measures that have been adopted to protect VMEs pursuant to paragraphs 70 and 71.

§69. States and RFMO/As should, in light of reports (as referred to in paragraph 67), and in

accordance with developed protocols and paragraphs 42 to 53, adopt or modify management measures, appropriate for the DSF concerned, in regard to the relevant site or area to prevent significant adverse impacts on the VME.

§70. States and RFMO/As should, based on the results of assessments carried out pursuant to paragraphs 42 to 53, adopt conservation and management measures to achieve long-term conservation and sustainable use of deep-sea fish stocks, ensure adequate protection and prevent significant adverse impacts on VMEs. These measures should be developed on a case-by-case basis and take into account the distribution ranges of the ecosystems concerned.

§71. Conservation and management measures pursuant to paragraph 70, may include:

1. effort controls and/or catch controls;
2. temporal and spatial restrictions or closures;
3. changes in gear design and/or deployment or operational measures (as discussed in the 2006 Bangkok Expert Consultation), including:
  - reduction of contact between the fishing gear and the seabed,
  - use of effective bycatch reduction devices, and
  - use of technical measures to eliminate or minimize ghost fishing; or
4. other relevant measures necessary to achieve the objective of paragraph 70.

The performance of each measure depends on many factors related to the particular fishery, ecosystem, and how these measures are implemented. Management measures for DSFs, where applicable, should take account of appropriate biological reference points. Such measures should be accompanied by an effective set of MCS measures sufficient to ensure compliance with agreed measures.

§72. Some of the above management measures for DSFs, such as effort, catch and temporal controls, may be limited in their effectiveness for the protection of some types of VMEs. Effective protection of such VMEs will usually require complementary measures, such as gear restrictions and spatial controls, as appropriate.

§73. States and RFMO/As should assess, on the basis of the best available scientific and technical information, whether DSFs activities would have significant adverse impacts on VMEs. They should ensure that these activities are managed to prevent such impacts or not authorized to proceed, if it is assessed, in accordance with paragraphs 42 to 53 of these Guidelines, that they would have significant adverse impacts.

§74. If after assessing all available scientific and technical information, the presence of VMEs or the likelihood that individual DSFs activities would cause significant adverse impacts on VMEs cannot be adequately determined, States should only authorize individual DSFs activities to proceed in accordance with:

1. precautionary conservation and management measures to prevent significant adverse impacts as described in paragraph 65;
2. a protocol for encounters with VMEs consistent with paragraphs 67 to 69; and

3. measures, including ongoing scientific research, monitoring and data collection, to reduce uncertainty.

#### *Fishery management plans*

§75. States and RFMO/As should develop and adopt fishery management plans for specific DSFs, including a set of measures with defined longterm/ multi-annual management objectives. Such plans should be tailored on a case-by-case basis to the characteristics of each fishery, making use of relevant management tools and consistent with paragraphs 11, 12, 21 and 22, and other relevant provisions of these Guidelines.

§76. Fishery management plans for DSFs should include biological reference points set at levels that ensure, at a minimum, that fish stocks are harvested at levels that are sustainable in the long term. Appropriate biological reference points for stock assessment and management need to be set in a precautionary manner and determined on a case-by-case basis, taking into account the different target stocks, fishery characteristics, and the state of knowledge about the species and fishery.

§77. In general, for low-productivity species, fishing mortality should not exceed the estimated or inferred natural mortality. Sustainable management strategies that would be robust to uncertainties are likely to require low exploitation rates.

§78. In developing or revising fisheries management plans, flag States and RFMO/As should consider relevant available information from similar or related fisheries, species and ecosystems. Appropriate procedures should be put in place to verify that fishery management plans achieve sustainable fisheries and protect VMEs and the marine biodiversity that these ecosystems contain.

§79. States should develop and adopt fisheries management plans for DSFs, on the basis of a transparent, inclusive and participatory process, consistent with national law. States should make such plans publicly available. RFMO/As should also develop and adopt their fishery management plans for DSFs using a transparent process.

§80. States should encourage dialogue and collaboration with responsible DSF operators in the development of fishery management plans, recognising the value of industry information and experience in resource assessment and fisheries management, identification of VMEs, responsible fishing techniques, gear development, and implementation methods to avoid or mitigate significant adverse impacts on VMEs.

## 10.7 Annex 7

### Interview protocol

*Note: more question are asked; the protocol was used as a guidance for the interview. Often, new questions arose from previous interviews which were used in following interviews.*

#### Problem type

##### *Incongruity*

1. Are there some parties involved, aiming at catching more/ fishing more areas/ trying to receive a larger part of the quota, or making similar decisions/ discussions about subject at the expense of other parties?
2. Is there a general consensus about the nature of the resource, being a common-pool resource, and do parties act in that way? (question 3)
3. How do the parties involved deal with the allocation of the resource during meetings and under decision-making? (question 4)
4. To what extent are the parties willing to share the resource equally without too much protest?
5. Is the process of resource allocation a smooth process?
6. Is the process of resource allocation a time-consuming process? What is causing the delay in this process? Who is causing these delays?

##### *Asymmetry*

1. To what extent are there differences among parties regarding objectives for the protection or management of species?
2. To what extent are there differences among parties regarding objectives for the protection or management of habitats?
3. Are there completely opposing objectives between parties? Where is this asymmetry coming from?

##### *Cumulative cleavages*

1. How does the compliance to this issue relate to other issues the member state is involved in?
2. Would an agreement on such an issues compromise your negotiations on other issues? To what extent?
3. Do other negotiations have an effect on the negotiations made under the NEAFC? Could you exemplify these issues? Where does the friction occur?

#### Problem-solving capacity

##### *Distribution of power*

(Three parts: (1) Who has the power/ difference in power? (2) Is the powerful party/ member willing to advance the regime in its objectives, goals, and ideals? (3) Is the powerful party/ member capable in advancing the regime's agenda?)

1. Are there parties or members involved which are more likely to influence negotiations and decision-making than other regimes? Which members or parties are the most powerful?
2. How can this difference in power be explained?
3. Are the most powerful members likely to create synergy on the topics and issues covered by the regimes, or are these members likely to create disruption on these topics?
4. Are the most powerful members also capable of advancing the regime's agenda? Are these members likely to create progression within the regime in order to tackle these issues (also in the future)?

#### *Presence of instrumental leadership*

1. Is there a party or member actively delegating the work and providing the means to do so?
2. Is there a platform or provision present for the involvement of a leader? How is the delegation of tasks and the means to conduct these tasks arranged within the NEAFC?
3. Is the leadership or delegation of tasks provided by one or just a few members?
4. To what extent is there some sort of a leadership providing with the delegation of tasks?

### **External factors**

#### *Regime interaction*

In order to identify and disaggregate cases of interaction, I will first ask whether other regimes have influenced the development of the regime itself (its output). After that, I will try to figure out how this adoption went, and what the reason behind this adoption was. It will be important to single out such a case of interaction, and therefore, I need to be specific with a single rule, norm etc. These questions will therefore be asked over and over again for every individual case of interaction (independent variable, and causal pathway).

1. Did the NEAFC adopt any rules or norms from other regimes? Which other regime? How did this adopting take place? Was there an active incentive for adoption, did the other regime exert deliberate influence or pressure on the NEAFC?
2. Simplified (when suspecting a certain interaction): Did this interaction take place?
3. What was the reason for this adoption of rules or norms?
4. Did a new understanding on this issue motivate the adoption?
5. Was there any jurisdictional overlap with the other regime concerning this issue?
6. Where there conflicting objectives, rules or norms concerning this issue to be resolved through this interaction?
7. If the objectives were not disrupting or conflicting, was the interaction the result of differing jurisdictions? Was the other regime trying to exert influence on the NEAFC by means of its smaller membership?
8. Was the adoption of rules, norms a case of reducing the hindering overlap?
9. Was the interaction motivated because of the NEAFC's larger jurisdictional power and means?
10. How was the interaction perceived? Largely positive or negative?
11. What was the NEAFC's reaction to the interaction? On what level are provisions applied or adjusted?



### *Other factors*

1. In general, could you tell me what causes have created the rules, norms concerning these high sea MPAs?
2. Which factors are responsible for the NEAFC's provisions concerning the high sea MPAs?

### **Output effectiveness**

#### *Inclusiveness*

1. To what extent are all the relevant issues concerning deep-water coral conservation, included into the NEAFC?
2. Do other regimes cover this issue-area as well? To what extent is there overlap on these issues?
3. Are there still some gaps in the rules/ regulations concerning this issue within the NEAFC?

#### *Level of collaboration*

1. How is the cooperation arranged within the regime?
2. To what extents are the necessary implementation of rules and regulations planned by the NEAFC?

### **Outcome effectiveness**

#### *Distance from collective optimum*

1. What do you consider as a success, or main target concerning the issue managed under these rules, norms, regulations in terms of how rules are implemented and the fishing itself is done?
2. How have member states, fishermen implemented these norms, rules, regulations?
3. How far do you still have to go in order to consider these norms, rules, regulations as success in terms of behavioural change?
4. Which problems do you still face concerning creating the targeted behavioural effect?

### **Unintended indirect effects**

1. To what extent have there been effects, you did not anticipate nor target with the NEAFC's norms, rules and regulations?
2. Are these effects positive/ negative?
3. Have there been economic consequences because of these rules, norms, and regulations?
4. Have there been cultural consequences because of these rules, norms, and regulations?
5. Have there been spatial consequences (fishing other areas etc.) because of these rules, norms, and regulations?
6. Any other unintended effects?

## List of interviewees

1. The Secretariat of the NEAFC
2. The Secretariat of the NAFO
3. Contracting Party / Scientist
4. Contracting Party
5. Contracting Party
6. Contracting Party
7. Seas at Risk (NGO) / Scientist
8. WWF (NGO)/ OSPAR/ Scientist
9. Former NGO
10. Scientist
11. Expert on Control and Enforcement