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Charting the Implementation of the Ecosystem Approach to Fisheries in Tuna RFMOs: Challenges and Opportunities for Future Conservation of Non-Target Species

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Abstract

Fishing alters marine biodiversity. This has been widespread knowledge for decades. Eliminating adverse impacts on vulnerable marine ecosystems and modifying fishing practices, so as to reduce the effects of fisheries on ecosystems, non-target species, and stocks, is together considered one of the main targets to safeguard global biodiversity (see COP CBD 2010). This highlights the need for urgent action to avoid replication of destructive fishing practices. Various normative approaches and principles have been developed in international law and policy to mitigate human-made pressures on marine ecosystems. One of them is the 'ecosystem approach to fisheries.'

This thesis explores the implementation and operationalization of the ecosystem approach to fisheries in the context of tuna RFMOs. In particular, the PhD focuses on the objective of minimizing catch by lost, abandoned, or otherwise discarded fishing gear. It develops a case-study on how the norms and principles relevant to minimize impacts on marine ecosystems and non-target species from this kind of fishing gear are put into practice in and by the tuna RFMOs.

The study of how norms and principles relevant to operationalize the ecosystem approach to fisheries is implemented in the tuna RFMOs reveals significant gaps between these obligations and what is currently done in and by these organizations. The study also identifies some of the key causes of these gaps. The constraints currently affecting the tuna RFMOs' abilities to implement and operationalize the approach exist on multiple levels. This thesis highlights that as the member states of the tuna RFMOs carry the main responsibility for their functioning, they also possess the key to future conservation of marine ecosystems in high seas tuna fisheries.

Sammendrag

I flere tiår har det vært allment kjent at fiske endrer det marine biologiske mangfold og det har vært oppfordret til endringer i eksisterende fiskeripraksis. Ett hovedmål for å bevare verdens biologiske mangfold er å eliminere uønskede påvirkninger på sårbare marine økosystemer, samt endre utøvelsen av fisket for å redusere disse. Flere ulike rettslige tilnærminger og prinsipper av normativ karakter har blitt utviklet gjennom internasjonal rett for å minske menneskeskapte påvirkninger på marine økosystemer. En av disse er tilnærmingen om økosystembasert fiskeriforvaltning.

Denne avhandlingen undersøker hvordan regelverket om økosystembasert fiskeriforvaltning gjennomføres i praksis. Studien ser på regionale fiskeriforvaltningsorganisasjoner med fokus på tunfiskorganisasjonene. Avhandlingen setter søkelys på de internasjonale rettslige forpliktelsene til å minimere spøkelsesfiske fra tapte, gjenstående og kasserte fiskeredskaper. Avhandlingen inneholder en *casestudie* som tar for seg de rettslige forpliktelsene for å minimere slikt spøkelsesfiske.

Studien viser at det foreligger betydelige mangler. Avhandlingen identifiserer noen av årsakene for disse manglene, og finner at de regionale fiskeriforvaltningsorganisasjonene har flere utfordringer som vil kreve handling. Funnene fra avhandlingen tydeliggjør at medlemslandene i disse organisasjonene bærer ansvaret for hvordan organisasjonene fungerer og sitter på nøkkelen til bevaring av marine økosystemer for fremtiden.

Table of Contents

1. Chapter I: Setting the Stage	1
1.1 Introduction.....	1
1.2 Topics, Scope, and Rationale.....	7
1.3 Research Questions.....	20
1.4 Structure of the Thesis	21
1.5 Use of Different Terminology.....	22
1.6 Contributions to existing literature.....	22
2. Chapter II: Research Design and Methodology.....	25
2.1 Introduction	25
2.2 Doctrinal Research	28
2.2.1 Treaties	29
2.2.2 Customary Law	33
2.2.3 General Principles of Law	36
2.2.4 Judicial Decisions and Teachings of the Most Qualified Publicists.....	37
2.2.5 Soft Law	38
2.3 Designing the Case Study	40
2.3.1 Introduction.....	40
2.3.2 Empirical Legal Research	41
2.3.3 Identifying and Analyzing the Conservation and Management Measures Adopted by the Tuna RFMOs	43
2.3.4 Interviews with Key Informants.....	45
2.4 Concluding Remarks	52
3. Chapter III: Highly Migratory Fish Stocks	55
3.1 Introduction	55
3.2 Core Concepts for High Seas Fisheries.....	55
3.2.1 Flag State Jurisdiction	56
3.2.2 The Freedom of Fishing	59
3.2.3 Conservation and Management in the Law of the Sea Convention.....	62
3.2.4 The Duty of “Due Regard”	66
3.2.5 The Duty to Cooperate	70
3.3 The Legal Regime for Management of Highly Migratory Species.....	77

3.3.1 Highly Migratory Fish Stocks and the Law of the Sea Convention	77
3.3.2 The Adoption of the 1995 UN Fish Stocks Agreement	81
3.3.3 The Adoption of the FAO Code of Conduct	88
3.3.4 Determining the Management and Conservation Measures for Highly Migratory Fish Stocks	91
3.4 Concluding Remarks	96
4. Chapter IV: The Ecosystem Approach to Fisheries	97
4.1 Introduction	97
4.2 The Development of the Ecosystem Approach	97
4.2.1 The Concept of Ecosystems	98
4.2.2 Discovering the Ecosystem Approach	103
4.2.3 The History of the Ecosystem Approach to Fisheries	109
4.2.4 Various Levels of Operationalization	114
4.3 The Legal Status of the Ecosystem Approach to Fisheries and the Relevant Sources	118
4.3.1 The Law of the Sea Convention	119
4.3.2 The 1995 UN Fish Stocks Agreement	123
4.3.4 The 1995 FAO Code of Conduct	131
4.4 What Types of Management Measures Need to be Adopted to Comply with the Ecosystem Approach to Fisheries?	142
4.4.1 Catch by Lost, Abandoned, or Otherwise Discarded Fishing Gear	142
4.4.2 Normative Framework	146
4.4.3 Conservation and Management Measures Applicable to Minimize Catch by Lost, Abandoned, or Otherwise Discarded Fishing Gear	155
5. Chapter V: Regional Fisheries Management Organizations	159
5.1 Introduction	159
5.2 What is a Regional Fisheries Management Organization?	159
5.2.1 What Characterizes RFMOs?	159
5.2.2 Different Types of RFMOs	165
5.2.3 Membership of Existing RFMOs	167
5.2.4 What is the Legal Status of Conservation and Management Measures Adopted by RFMOs?	179
5.2.5 What are the Functions of RFMOs Relevant to Implementing and Operationalizing the Ecosystem Approach to Fisheries?	181

5.3 Identifying Constraints on the Functioning of RFMOs.....	189
5.4. Concluding Remarks.....	192
6. Chapter VI: How is the Ecosystem Approach to Fisheries Implemented in the Legal Framework of the Tuna RFMOs?	197
6.1 Introduction	197
6.2 The Five Tuna RFMOs.....	199
6.2.1 Statutes and Founding Conventions.....	201
6.3 The IATTC	204
6.3.1 Historical Remarks	204
6.3.2 Regulatory Area and Management Mandate.....	208
6.3.3 Decision-Making Mechanisms	217
6.3.4 Summary.....	220
6.4 The ICCAT	221
6.4.1 Historical Remarks	221
6.4.2 Regulatory Area and Management Mandate.....	223
6.4.3 Decision-Making Mechanisms	228
6.4.4 Summary.....	230
6.5 The CCSBT	232
6.5.1 Historical Remarks	232
6.5.2 Regulatory Area and Management Mandate.....	234
6.5.3 Decision-Making Mechanisms	239
6.5.4 Summary.....	241
6.6 The IOTC.....	243
6.6.1 Historical Remarks	243
6.6.2 Regulatory Area and Management Mandate.....	247
6.6.3 Decision-Making Mechanisms	250
6.6.4 Summary.....	252
6.7 The WCPFC.....	254
6.7.1 Historical Remarks	254
6.7.2 Regulatory Area and Management Mandates	255
6.7.3 Decision-Making Mechanisms	262
6.7.4 Summary.....	264

6.8 Relevant findings.....	265
7. Chapter VII: A Study of the Tuna RFMOs’ Operationalization of the Objective of Minimizing Catch by Lost, Abandoned, or Otherwise Discarded Fishing Gear	271
7.1 Introduction	271
7.2 Overview of Adopted Conservation and Management Measures and Measures Presently in Force	272
7.3 Regulatory Frameworks for FAD Management	277
7.3.1 The IATTC.....	279
7.3.2 The ICCAT.....	286
7.3.3 The IOTC.....	296
7.3.4 The WCPFC.....	310
7.3.5 Summary of the relevant findings	318
7.4 Regulatory Frameworks for Minimizing Catch by Lost, Abandoned, or Otherwise Discarded Fishing Gear	321
7.4.1 Ban on Certain Gear Types	322
7.4.2 Prohibition of Intentional Discard of Fishing Gear at Sea	330
7.4.3 Establishing Gear Disposal Systems in Landing Places	338
7.4.4 Mandatory Marking, Retrieval, and Reporting of Lost, Abandoned, or Otherwise Discarded Fishing Gear	341
7.4.5 Use of Biodegradable Materials in Fishing Gear and Gear Modifications to Minimize Impacts on the Marine Environment.....	353
7.5 Summary of Relevant Findings	356
8. Chapter VIII: Challenges and Possibilities for the Operationalization of the Ecosystem Approach to Fisheries in the Context of Tuna RFMOs	363
8.1 Introduction	363
8.2 External factors: Legal Framework and Legal Processes	364
8.2.1 Disentangling the Ecosystem Approach to Fisheries Through the Lenses of the Tuna RFMOs.....	365
8.2.2 The Role of the FAO.....	375
8.2.3. Recommendations.....	381
8.3 Internal Factors: Institutional Aspects and Processes	382
8.3.1 The Management Mandates of the Tuna RFMOs	382
8.3.2 The Geographical Areas of Competence of the Tuna RFMOs.....	387
8.3.3 Organizational Structures and Internal Processes.....	392

8.3.4 Scientific Processes	398
8.4 Contextual Issues	408
8.4.1 Diverse Stakeholders, Political Priorities, Capacity and Time Commitments.....	409
8.4.2 Economic Drivers and Capacity	414
8.5 Summary of Relevant Findings.....	431
9. Chapter IX: Findings of the Case Study.....	435
9.1 Introduction	435
9.2 Insights from the Case Study	435
10. Chapter X: Concluding Remarks.....	443
Works cited.....	455
Scholarly Litterature (Books, Book Chapters, Journal Articles, Theses):	455
Reports:	480
Treaties and Other Instruments:.....	481
Judicial Decisions:	483
United Nations Documents (General Assembly Resolutions, Declarations, etc.).....	484
Documents of International Governmental Organizations and other Intergovernmental Arrangements (Resolutions, Recommendations, Reports, Technical Guidelines, etc.)	486
Online sources:	490
Interviews:	492
Other Sources:	492
Annex I	493
Annex II	495
Annex III	497

List of Figures

Figure 1 - An illustration of the research topics relevant to this PhD study.....	7
Figure 2 - An illustration of how the goals is connected to management objectives and management measures in this study.....	113
Figure 3 - An illustration of the relevant management measures in the FAO Guidelines on Bycatch Management and Reduction of Discards, the FAO Guidelines on the Marking of Fishing Gear, MARPOL V/5 and UNGA Resolutions 44/255, 26/215 and 53/33.....	156
Figure 4 - A list of the five tuna regional fisheries management organizations (year of establishment, full names, and acronyms).....	199
Figure 5 - An illustration of the total number of adopted conservation and management measures which relate to the objective of minimizing catch by lost, abandoned, and/or discarded fishing gear, presently in force in the tuna RFMOs by 31 December 2023.....	273
Figure 6 - An illustration of the five tuna RFMOs' adopted conservation and management measures in relation to FAD fisheries relevant to operationalizing the objective of minimizing catch by lost, abandoned, or otherwise discarded fishing gear.....	318
Figure 7- An illustration of the conservation and management measures adopted by the tuna RFMOs in relation to the management objective of minimizing catch by lost, abandoned, and/or discarded fishing gear.....	356
Figure 8 - An illustration of the economic constraints currently affecting one or more tuna RFMOs in their implementation and operationalization of the ecosystem approach to fisheries.....	427

1. Chapter I: Setting the Stage

1.1 Introduction

Fishing and utilization of living marine resources have taken place since ancient times, but the acceleration of human-made pressures on marine ecosystems has led to impacts on approximately 90% of the global ocean surfaces.¹ The magnitude of anthropogenic pressures on the oceans is greater than ever before,² prompted by various human-made impacts.³ Fishing represents one of the human activities that is known to extensively modify marine ecosystems,⁴ and the rapid technological advances and expansion of fishing grounds has led to increasing pressure on the marine environment. Taking a closer look at the history of tuna fisheries illustrates how rapid these advances and expansions have been.

Tuna fisheries are known as one of the fisheries taking place since ancient times, with references to tuna fishing found as early as 2000 BC.⁵ In the 1900s, tuna fisheries were local, generally near the coastlines and seasonal due to the migration patterns of the species.⁶ With an increasing demand for canned tuna, industrial tuna fisheries began and rapidly intensified during the 1940s and 1950s.⁷ Longline fishing gear, introduced in 1952, expanded the fishing

¹ Thomas Luypaert et al., "Status of Marine Biodiversity in the Anthropocene," in *YOUMARES 9 - The Oceans: Our Research, Our Future*, edited by Simon Jungblut, Viola Liebich, and Maya Bode-Dalby (Cham: Springer International Publishing, 2020), 57–82, https://doi.org/10.1007/978-3-030-20389-4_4. Page 58.

² J. B. Haugen et al., "Marine Ecosystem-Based Management: Challenges Remain, yet Solutions Exist, and Progress Is Occurring," *Npj Ocean Sustainability* 3, No. 1 (12. February 2024): 1–11, <https://doi.org/10.1038/s44183-024-00041-1>. Page 1.

³ See United Nations, "The Second World Ocean Assessment" (New York, 2021), <https://www.un.org/regularprocess/sites/www.un.org.regularprocess/files/2011859-e-woa-ii-vol-i.pdf>.

⁴ Larry B. Crowder et al., "The Impacts of Fisheries on Marine Ecosystems and the Transition to Ecosystem-Based Management," *Annual Review of Ecology, Evolution, and Systematics* 39 (2008): 259–78. Page 259.

⁵ Jean-Jacques Maguire et al., "The state of world highly migratory, straddling and other high seas fishery resources and associated species," FAO Fisheries Technical Paper. No. 495 (Rome, Italy: FAO, 2006), <https://www.fao.org/3/a0653e/a0653e00.htm>. Page 12.

⁶ Makoto Peter Miyake, Naozumi Miyabe, and Hideki Nakano, "Historical trends of tuna catches in the world," FAO Fisheries Technical Paper. No. 467. (Rome, Italy: FAO, 2004), <https://www.fao.org/3/y5428e/y5428e00.htm>. Page 2.

⁷ Ibid.

areas beyond the domestic coastlines, marking the transition from local and seasonal fisheries to industrial exploitation of high seas tuna resources.⁸ By the end of the 1960s, Japanese longline vessels had developed cold storage systems, which created new products for Japan's domestic sashimi market, consequently shifting the Japanese target species from yellowfin and albacore tuna to bluefin and bigeye tuna.⁹ In the 1970s, European countries conducted purse seine fishing in the tropical eastern Atlantic for yellowfin and skipjack tuna, and purse seine fishery in the tropical eastern Pacific continued to develop.¹⁰ In the 1980s, purse seine fisheries were introduced in the Indian Ocean, and European vessels shifted their focus from the Atlantic and rapidly transitioned their fishing efforts to the new fishing grounds.¹¹ In the Pacific Ocean, fisheries expanded in the western and central parts, and the major fleets of Brazil and Venezuela entered the tuna fisheries in the Atlantic Ocean.¹² With the entrance of tuna fisheries in the Indian Ocean in the 1980s, all the world's oceans became subject to the exploitation of tuna species, including areas located beyond national jurisdiction. The technological advances in the industrial tuna fishing industry continued and led to the development of fish aggregating devices (FADs) in the 1990s, introducing fishing gear with less selectivity in terms of size, catch composition and bycatch of non-target species, drastically changing existing fishing practices.¹³

Global capture fisheries production reached a record of 96.4 million tons in 2018,¹⁴ and catches of tuna reached the highest level recorded at about 7.9 million tons in the same year.¹⁵ The statistics reveal that among the seven principal tuna species, 66.6 percent of the stocks were exploited at biologically sustainable levels in 2017.¹⁶ Consequently, the UN Food

⁸ Ibid.

⁹ Ibid.

¹⁰ Ibid.

¹¹ Jean-Jacques Maguire et al., *FAO Fisheries Technical Paper No. 495. The State of World Highly Migratory, Straddling and Other High Seas Fishery Resources and Associated Species*. Page 13.

¹² Ibid.

¹³ Ibid. Page 3. Chapter 7 explores how the introduction of FADs had a significant impact on tuna fisheries.

¹⁴ The total catch increased by 5.4 percent from the average of the last three years. See FAO, *The State of World Fisheries and Aquaculture 2020. Sustainability in Action* (Rome, Italy: FAO, 2020), <https://doi.org/10.4060/ca9229en>. Page 6.

¹⁵ Ibid.

¹⁶ Ibid. Page 8.

and Agriculture Organization (FAO) stated that it had become clear that intensively managed fisheries had led to a decrease in average fishing pressure and at the same time an increase in stocks reaching or maintaining biologically sustainable levels.¹⁷ However, the statistics show that fisheries in less developed management systems continue to represent a threat to the stock biomass of marine species.¹⁸

Overfishing and ecological extinction have in the past led to collapses of marine ecosystems, “raising the possibility that many more marine ecosystems may be vulnerable to collapse in the near future.”¹⁹ The “expansion and intensification of different forms of human disturbance and their ecological effects on coastal ecosystems have increased and accelerated” in accordance with “human population growth, unchecked exploitation of biological resources, technological advance and the increased geographic scale of exploitation through globalization of markets.”²⁰

Despite growing concerns about the overexploitation of targeted tuna species, commercial fisheries are also “altering the abundance and population structure of many species, transforming the composition of biological communities, and threatening the integrity and resilience of entire marine ecosystems” through their high exploitation levels of targeted fish stocks.²¹ However, adverse effects of fisheries extend beyond the exploitation of targeted species,²² where incidental capture and other impacts on vulnerable non-target species and habitats may significantly affect the ecosystems that sustain them. Inadvertent impacts on non-target species may lead to substantial shifts in species abundance, consequently altering the natural balance of the marine ecosystems. Additionally, the removal of top predators from ecological communities may trigger cascading ecological changes throughout the

¹⁷ Ibid.

¹⁸ Ibid.

¹⁹ Jeremy B. C. Jackson et al., “Historical Overfishing and the Recent Collapse of Coastal Ecosystems,” *Science* 293, No. 5530 (27 July 2001): 629–37, <https://doi.org/10.1126/science.1059199>. Page 629.

²⁰ Ibid, page 635.

²¹ Guillermo Ortuño Crespo and Daniel C Dunn, “A Review of the Impacts of Fisheries on Open-Ocean Ecosystems,” *ICES Journal of Marine Science* 74, No. 9 (1 December 2017): 2283–97, <https://doi.org/10.1093/icesjms/fsx084>. Page 2283.

²² Ibid. Page 2288.

natural food chains of the respective ecosystems.²³ Pelagic longlines, traditionally utilized to capture various tuna species and billfish are the most widespread fishing gear on the high seas.²⁴ Pelagic longlines are presently a gear type with one of the highest discarding rates across all oceans,²⁵ showcasing how, e.g., bycatch of non-target species may represent a serious problem in commercial tuna fisheries. Scientific studies confirm the gloomy fact that several stocks of vulnerable non-target species such as seabirds,²⁶ sea turtles,²⁷ sharks and other elasmobranchs are declining or have collapsed,^{28,29} prompting an assessment of how these non-target species are conserved and managed in high seas fisheries.

The fact that fisheries alter marine biodiversity has been widespread knowledge for decades,³⁰ and calls for changes to conventional and existing fishing practices have been equally

²³ For more information about the role of marine vertebrates for food-web structures and “ecosystem functions,” see Rebecca L. Lewison et al., “Understanding Impacts of Fisheries Bycatch on Marine Megafauna,” *Trends in Ecology & Evolution* 19, No. 11 (November 1, 2004): 598–604, <https://doi.org/10.1016/j.tree.2004.09.004>. Page 601.

²⁴ Boris Worm et al., “Global Patterns of Predator Diversity in the Open Oceans,” *Science* 309, No. 5739 (26 August 2005): 1365–9, <https://doi.org/10.1126/science.1113399>. Page 1366.

²⁵ Ortuño Crespo and Dunn, “A Review of the Impacts of Fisheries on Open-Ocean Ecosystems.” Page 2288.

²⁶ See, e.g., Can Zhou et al., “Seabird bycatch loss rate variability in pelagic longline fisheries,” *Biological Conservation* 247 (1 July 2020): 108590, <https://doi.org/10.1016/j.biocon.2020.108590>, page 5 and Maria P. Dias et al., “Threats to seabirds: A global assessment,” *Biological Conservation* 237 (1 September 2019): 525–37, <https://doi.org/10.1016/j.biocon.2019.06.033>, page 525.

²⁷ See, e.g., Eric Gilman et al., “Reducing Sea Turtle By-Catch in Pelagic Longline Fisheries,” *Fish and Fisheries* 7, No. 1 (2006): 2–23, <https://doi.org/10.1111/j.1467-2979.2006.00196.x>, page 3 and Rebecca L. Lewison and Larry B. Crowder, “Putting Longline Bycatch of Sea Turtles into Perspective,” *Conservation Biology* 21, No. 1 (2007): 79–86, page 80.

²⁸ See, e.g., Nicholas K. Dulvy et al., “Overfishing drives over one-third of all sharks and rays toward a global extinction crisis,” *Current Biology* 31, No. 21 (8 November 2021): 4773–4787. <https://doi.org/10.1016/j.cub.2021.08.062>, page 4776.

²⁹ Crespo and Dunn have also identified several scientific studies which have assessed the status of vulnerable non-target species frequently caught as bycatch in commercial fishing activities, see, e.g., Bryan P. Wallace et al., “Global Patterns of Marine Turtle Bycatch,” *Conservation Letters* 3, No. 3 (2010): 131–42, <https://doi.org/10.1111/j.1755-263X.2010.00105.x>, Orea R. J. Anderson et al., “Global Seabird Bycatch in Longline Fisheries,” *Endangered Species Research* 14, No. 2 (8 June 2011): 91–106, <https://doi.org/10.3354/esr00347> and Dulvy et al., “Overfishing drives over one-third of all sharks and rays toward a global extinction crisis,” in Ortuño Crespo and Dunn, “A Review of the Impacts of Fisheries on Open-Ocean Ecosystems.”

³⁰ See, e.g., Boris Worm et al., “Impacts of Biodiversity Loss on Ocean Ecosystem Services,” *Science* 314, No. 5800 (2006): 787–90, page 787 and Daniel Pauly, “The Sea around Us Project: Documenting and Communicating Global Fisheries Impacts on Marine Ecosystems,” *Ambio* 36, No. 4 (2007): 290–5, page 292.

widespread.³¹ Eliminating adverse impacts on vulnerable marine ecosystems and modifying fishing practices to reduce the effects of fisheries on ecosystems, non-target species, and stocks have been considered one of the main targets to safeguard global biodiversity.³² This highlights the need for urgent action to avoid replication of destructive fishing practices.³³ Several environmental approaches and principles with normative implications have developed in international law to mitigate human-made pressures on marine ecosystems. One of these approaches is the sector-based ‘ecosystem approach to fisheries,’ which is the focus of this PhD project.

The ecosystem approach is described as one of the pathways to halt degradation of marine ecosystems.³⁴ The approach has received broad recognition through its inclusion in several global legal instruments, most prominently through the explicit reference encompassed in the Convention on Biological Diversity (CBD).³⁵ The approach is further implicitly recognized in the 1995 UN Fish Stocks Agreement,³⁶ and the FAO Code of Conduct.³⁷ Whether the ecosystem approach is also implicitly recognized in the 1982 Convention on the Law of the Sea (Law of

³¹ See, e.g., Delphi Ward et al., “Safeguarding Marine Life: Conservation of Biodiversity and Ecosystems,” *Reviews in Fish Biology and Fisheries* 32, nr. 1 (1. March 2022): 65–100, <https://doi.org/10.1007/s11160-022-09700-3>, pages 66-67, Worm et al., “Impacts of Biodiversity Loss on Ocean Ecosystem Services,” page 790 and Julia L. Blanchard et al., “Linked Sustainability Challenges and Trade-Offs among Fisheries, Aquaculture and Agriculture,” *Nature Ecology & Evolution* 1, nr. 9 (September 2017): 1240–49, <https://doi.org/10.1038/s41559-017-0258-8>, page 1246.

³² CBD, “COP Decision X/2. Annex. Strategic Plan for Biodiversity 2011-2020 and the Aichi Biodiversity Targets. Target 6.” (Secretariat of the Convention on Biological Diversity), Last accessed 6 February 2024, <https://www.cbd.int/decision/cop/?id=12268>.

³³ FAO. 2020. *The State of World Fisheries and Aquaculture 2020. Sustainability in action*. Rome. Page 8.

³⁴ Froukje Maria Platjouw, *Environmental Law and the Ecosystem Approach: Maintaining Ecological Integrity through Consistency in Law* (Routledge, 2016), page 13.

³⁵ The Convention on Biological Diversity (adopted 22 May 1992, entered into force 29 December 1993) 1760 UNTS 79.

³⁶ Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea of 10 December 1982 relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks (adopted 4 August 1995), 2167 UNTS 3.

³⁷ FAO, Code of Conduct for Responsible Fisheries, Rome, FAO Doc. 95/20/Rev. 1, 1995.

the Sea Convention) has been subject to academic debate, and will be explored in Chapter 4 of this thesis.³⁸

Despite the formal recognition of the ecosystem approach, recent studies suggest that challenges remain in relation to its implementation.³⁹ This PhD explores the implementation of the ecosystem approach to fisheries, aiming at identifying the normative scope of the approach, assessing its implementation in the context of Regional Fisheries Management Organizations (RFMOs) and identifying potential existing gaps between what is required by international law and what is currently done in and by these organizations. When existing gaps are identified, this study will aim to explore some of the existing challenges for the implementation of the approach and possible solutions for future conservation of marine ecosystems.

³⁸ As will be illustrated in Section 4.2.1, whether the ecosystem approach is encompassed in the Law of the Sea Convention has been contested and a question open for further discussion.

³⁹ See, e.g., J. B. Haugen et al., "Marine Ecosystem-Based Management: Challenges Remain, yet Solutions Exist, and Progress Is Occurring," Maria José Juan-Jordá et al., "Report Card on Ecosystem-Based Fisheries Management in Tuna Regional Fisheries Management Organizations," *Fish and Fisheries* 19, No. 2 (2018): 321–39, <https://doi.org/10.1111/faf.12256> and Robin Warner, "Conservation and Management of Marine Living Resources beyond National Jurisdiction: Filling the Gaps," in *High Seas Governance*, eds. Robert C. Beckman et al., Vol. 86 (United States: BRILL, 2018). Page 182. The issue of implementation was also recognized by, e.g., Rayfuse as early as in 2004. See Rosemary Rayfuse, "The Challenge of Sustainable High Seas Fisheries," in *International Law and Sustainable Development: Principles and Practice*, eds. Nico J. Schrijver and Friedl Weiss (Boston, United States: BRILL, 2004), 467–99, <http://ebookcentral.proquest.com/lib/tromsoub-ebooks/detail.action?docID=3003983>. Page 476.

1.2 Topics, Scope, and Rationale

The background to this study comprises several different topics and focus areas, as illustrated in Figure 1.



Figure 1. An illustration of the research topics relevant to this PhD study. Created with BioRender.

As briefly introduced in Section 1.1, this research project focuses on how RFMOs are implementing the ecosystem approach to fisheries. The natural starting point for the study is thus the ecosystem approach to fisheries, comprising a framework extending beyond “conventional fisheries management recognizing more explicitly the interdependence between human well-being and ecosystem health and the need to maintain ecosystems productivity for present and future generations, e.g., conserving critical habitats, reducing pollution and degradation, minimizing waste and protecting endangered species.”⁴⁰ The

⁴⁰ Article 87 states that “the high seas are open to all States, whether coastal or land-locked,” and the “freedom of the high seas is exercised under the conditions laid down by this Convention and by other rules of international

sectoral approach was developed and adopted by the UN Food and Agriculture Organization (FAO) in the early 2000s and “strives to balance diverse societal objectives, by taking account of the knowledge and uncertainties about biotic, abiotic and human components of ecosystems and their interactions and applying an integrated approach to fisheries within ecologically meaningful boundaries.”⁴¹ The ecosystem approach to fisheries is examined more closely in Chapter 4, where its development, rationale, the relevant legal instruments encompassing the approach, and the legal requirements of the approach are subject to closer scrutiny.

To provide the necessary context, it is also important to emphasize that the ecosystem approach to fisheries may be regarded as a framework comprising several different management objectives.⁴² These management objectives are in turn split into different concrete management measures which may be applied by the fisheries industry to achieve the overarching objectives. An example of the management objectives of the ecosystem approach to fisheries is to minimize catch by lost, abandoned, or otherwise discarded fishing gear, i.e., ghost fishing, which is the objective subject to closer examination in this PhD.

To provide substance to the overarching objectives established for the ecosystem approach to fisheries, a practical regulatory framework with specific management measures directed at achieving the objectives must be adopted. A central question in this regard is how the approach should be implemented and operationalized, both domestically and in areas beyond national jurisdiction, which brings us to the second layer of research themes and topics in Figure 1.

The present study focuses on the implementation and operationalization of the ecosystem approach to fisheries in areas beyond national jurisdiction, as defined by Article 87 of the Law of the Sea Convention. The rationale for delimiting the study’s geographical scope to areas

law.” The freedom of fisheries is explicitly recognized in Article 87(e) of the Convention by the wording “freedom of fishing, subject to the conditions laid down in section 2.”

⁴¹ Garcia S.M. et al., “The ecosystem approach to fisheries. Issues, terminology, principles, institutional foundations, implementation and outlook,” FAO Fisheries Technical Paper 443 (Rome: FAO, 2003). Page 6.

⁴² Ibid. Page 27.

beyond national jurisdiction is based on the vast areas of the oceans located beyond domestic maritime zones. Close to 60% of the oceans are beyond national jurisdiction,⁴³ and these areas are thus the location of several marine ecosystems. As illustrated by Warner, fishing significantly contributes to loss of marine biodiversity and ecological impacts, particularly in areas beyond national jurisdiction, due to numerous factors, including higher rates of overfishing, higher levels of bycatch and the effects of abandoned, lost, or otherwise discarded fishing gear, and the reduction of ecosystem resilience.⁴⁴ The need for conserving marine biodiversity in areas beyond national jurisdiction has been further enhanced and recognized through the adoption of the Law of the Sea Convention implementation agreement on areas beyond national jurisdiction (BBNJ Agreement).⁴⁵ The BBNJ Agreement has not entered into force, but illustrates the need to focus on conserving the marine environment in areas beyond national jurisdiction.⁴⁶ This study will explore how fisheries management may represent a key element of the conservation of marine ecosystems in these geographical areas.

The right to fish in areas beyond national jurisdiction is an integral part of the freedom of the seas doctrine, which arose when Hugo Grotius presented his work *Mare Liberum* in the seventeenth century.⁴⁷ The principle of freedom aims to ensure the freedom of various activities taking place in the oceans,⁴⁸ including fisheries and activities which utilize living marine resources, as presently reflected in Article 87(2) of the Law of the Sea Convention. The rights and duties imposed on states fishing on the high seas are subject to closer examination

⁴³ See, e.g., Sarika Cullis-Suzuki and Daniel Pauly, “Failing the high seas: A global evaluation of regional fisheries management organizations,” *Marine Policy* 34, No. 5 (1 September 2010): 1036–42, <https://doi.org/10.1016/j.marpol.2010.03.002>. Page 1036.

⁴⁴ Robin Warner, “Conservation and Management of Marine Living Resources beyond National Jurisdiction: Filling the Gaps” Page 182.

⁴⁵ UN General Assembly, Agreement under the United Nations Convention on the Law of the Sea on the Conservation and Sustainable Use of Marine Biological Diversity of Areas beyond National Jurisdiction, 19 June 2023, A/CONF.232/2023/4 (BBNJ Agreement).

⁴⁶ The BBNJ Agreement presently has 90 Signatories and 6 Parties. See United Nations, “United Nations Treaty Collection,” last accessed 03.06.2024, https://treaties.un.org/pages/ViewDetails.aspx?src=TREATY&mtdsg_no=XXI-10&chapter=21&clang=en.

⁴⁷ Hugo Grotius, *The freedom of the seas or the right which belongs to the Dutch to take part in the East Indian trade* (Union, N.J.: Lawbook Exchange, 2001).

⁴⁸ See Article 87 of the Law of the Sea Convention.

in Chapter 3, but to provide contextualization, one of the core obligations in high seas fisheries will be presented in this introductory chapter.

The freedom of high seas fisheries is conditioned by the duty to cooperate in accordance with Articles 116-119 of the Law of the Sea Convention. One mechanism for such cooperation is through RFMOs, which is the key focus of this study.⁴⁹ The duty to cooperate will be explored in Chapter 3, together with an assessment of how the obligation was strengthened by the adoption of the 1995 UN Fish Stocks Agreement, which calls for transnational coordination of high seas fisheries in accordance with Article 8 (4) through RFMOs.

RFMOs represent the third layer of Figure 1 and comprise a group of regional fisheries bodies, which commonly have legal mandates empowering them to adopt legally binding decisions for their member states.⁵⁰ RFMOs are acknowledged to play a vital role in the global coordination of fisheries governance, as they are a primary mechanism for “achieving cooperation between and among fishing countries,” primarily in areas beyond national jurisdiction.⁵¹ RFMOs are also characterized by their distinct legal personalities and their permanent organs that possess decision-making competence on behalf of their member states,⁵² enabling them to manage and conserve fish stocks migrating through or residing in their geographical areas of competence. The core functions and mandates of RFMOs will be more closely examined in Chapter 5 of this thesis.

This study strives to analyze how the ecosystem approach to fisheries has been implemented and operationalized by the five tuna RFMOs, bringing us to the next layer of the research

⁴⁹ It should be emphasized that the implementation of the ecosystem approach to fisheries is a process that is taking place in many different contexts. These vary from national to global initiatives, from small-scale fisheries to industrialized fisheries, and from areas under national jurisdiction to areas beyond national jurisdiction.

⁵⁰ See, e.g., Terje Løbach, T., Petersson, M., Haberkon, E. & Mannini, P. 2020. “Regional fisheries management organizations and advisory bodies. Activities and developments, 2000–2017.” *FAO Fisheries and Aquaculture Technical Paper No. 651*. Rome, FAO. <https://doi.org/10.4060/ca7843en>. Page 7.

⁵¹ Michael Lodge et al., *Report of an Independent Panel to Develop a Model for Improved Governance by Regional Fisheries Management Organizations* (London: Chatham House, 2007). Page 1.

⁵² James Harrison, “Key Challenges Relating to the Governance of Regional Fisheries,” in *Strengthening International Fisheries Law in an Era of Changing Oceans*, eds. Richard Caddell and Erik J. Molenaar (Oxford: Hart Publishing, 2019), 79–102. Page 84.

design of the project. Tuna RFMOs constitute a subgroup of RFMOs, and their management mandate has primarily been to conserve and manage the various tuna species. Presently, the five tuna RFMOs are the Inter-American Tropical Tuna Commission (IATTC),⁵³ the International Commission for the Conservation of Atlantic Tunas (ICCAT),⁵⁴ the Commission for the Conservation of Southern Bluefin Tuna (CCSBT),⁵⁵ the Indian Ocean Tuna Commission (IOTC),⁵⁶ and the Western and Central Pacific Fisheries Commission (WCPFC).⁵⁷ These organizations currently cover approximately 91% of the world's ocean surface,⁵⁸ which emphasizes their significance in global fisheries governance. All five tuna RFMOs adopt binding resolutions, recommendations, and conservation and management measures for their member states and cooperating non-contracting parties. Whether and how the ecosystem approach to fisheries is implemented in and by the tuna RFMOs is subject to closer analysis in Chapter 6, setting the stage for the identification of existing management practices and potential gaps between what is required as a matter of international law and what is currently done by the tuna RFMOs.

⁵³ Convention for the Strengthening of the Inter-American Tropical Tuna Commission Established by the 1949 Convention Between the United States of America and the Republic of Costa Rica of 14 November 2003 (known as the 'Antigua Convention'; available at www.iattc.org).

⁵⁴ The International Convention for the Conservation of Atlantic Tunas of 14 May 1966 (673 UNTS 63, as amended; consolidated version available at https://www.iccat.int/com2019/ENG/PLE_108_ENG.pdf).

⁵⁵ Convention for the Conservation of Southern Bluefin Tuna of 10 May 1993 (1819 UNTS 360; available at www.ccsbt.org/sites/default/files/userfiles/file/docs_english/basic_documents/convention.pdf).

⁵⁶ Agreement for the Establishment of the Indian Ocean Tuna Commission of 25 November 1993 (available at www.iotc.org).

⁵⁷ Convention on the Conservation and Management of Highly Migratory Fish Stocks in the Western and Central Pacific Ocean of 5 September 2000 (2275 UNTS 43; available at www.wcpfc.int).

⁵⁸ See IATTC, Convention for the Strengthening of the Inter-American Tropical Tuna Commission Established by the 1949 Convention Between the United States of America and the Republic of Costa Rica of 14 November 2003 (IATTC Antigua Convention), Article III, ICCAT, The International Convention for the Conservation of Atlantic Tunas of 14 May 1966, as amended (ICCAT Amended Convention or ICCAT Draft Protocol to amend the International Convention for the Conservation of Atlantic Tunas), Article 1, CCSBT, Convention for the Conservation of Southern Bluefin Tuna of 10 May 1993 (CCSBT Convention), Article 3, IOTC, Agreement for the Establishment of the Indian Ocean Tuna Commission of 25 November 1993 (IOTC Agreement), Article 2 and WCPFC, Convention on the Conservation and Management of Highly Migratory Fish Stocks in the Western and Central Pacific Ocean of 5 September 2000 (WCPFC Convention), Article 3 (1). See also The Pew Charitable Trust, "Recommendations to Kobe III Joint Tuna RFMO Meeting," 6 July 2011, <http://bit.ly/1vZ2m38>.

A central question that needs to be explained is why this study has identified the five tuna RFMOs as worthy of closer analysis. A study has revealed that the tuna RFMOs effectively manage their targeted species, and that they generally reach their long-term operational management objective of maintaining many of their targeted fish stocks at their maximum sustainable yields through routine assessments of their exploitation status and subsequent adjustments to their scientific advice.⁵⁹ The same study shows that the tuna RFMOs are progressing in their conservation efforts for non-target species, but also that these organizations are failing to adopt sufficient key “mitigation measures for vulnerable and threatened species, as well as indicators to track the impacts of fisheries,” which is ultimately continuing the “deterioration of threatened bycatch species of sharks, seabirds, sea turtles and marine mammals.”⁶⁰

Chapter 4 of this thesis explores how ecological knowledge has influenced the adoption of the ecosystem approach to fisheries. The scope of existing studies nevertheless suggests that there is a gap between the knowledge advanced and the management approaches adopted by the tuna RFMOs for the conservation of marine ecosystems.⁶¹ Scientific studies have identified key challenges in the operationalization of the ecosystem approach to fisheries, but the current study will strive to examine the governance structures of the tuna RFMOs from a legal perspective, to assess whether there exist critical gaps in binding legal duties, and how soft law instruments are normatively shaping the practice of the RFMOs.

The recent study of ecosystem-based fisheries management in tuna RFMOs by Juan-Jordá et al. emphasizes that these organizations are unable to adopt sufficient conservation and management measures to protect, e.g., non-target species.⁶² This inability to mitigate the

⁵⁹ Juan-Jordá et al., “Report Card on Ecosystem-Based Fisheries Management in Tuna Regional Fisheries Management Organizations.” Page 328.

⁶⁰ Ibid. Page 331.

⁶¹ See, e.g., Eric Gilman, “Status of International Monitoring and Management of Abandoned, Lost and Discarded Fishing Gear and Ghost Fishing,” *Marine Policy* 60 (2015): 225–39, <https://doi.org/10.1016/j.marpol.2015.06.016>, and Eric Gilman, Kelvin Passfield, and Katrina Nakamura, “Performance of Regional Fisheries Management Organizations: Ecosystem-Based Governance of Bycatch and Discards,” *Fish and Fisheries* 15, no. 2 (2014): 327–51, <https://doi.org/10.1111/faf.12021>.

⁶² Juan-Jordá et al., “Report Card on Ecosystem-Based Fisheries Management in Tuna Regional Fisheries Management Organizations.” Pages 326 and 330.

effects on these species implies that there might be weak drivers of institutional or operational practices in the tuna RFMOs. Other studies confirm the sobering fact that issues remain in the implementation of the ecosystem approach to fisheries, and that diverse factors are impeding changes to existing practices.⁶³

This study will contribute to the existing literature by providing an empirical legal study of the normative scope of the legal framework and international legal requirements, assessing whether the actions taken by the tuna RFMOs are in line with these requirements and identifying potential gaps and potential constraints impeding progress in the implementation of the ecosystem approach to fisheries in these international bodies. Fundamental questions regarding the management mandates of the tuna RFMOs, subject to closer analysis in Chapter 6 of this thesis, also trigger questions on how these RFMOs are designed to manage highly migratory species across vast ocean spaces, and how these mandates may impede the operationalization of the ecosystem approach to fisheries in general.⁶⁴ Some preliminary observations in this regard suggest a need for cooperation with other overlapping RFMOs and institutional arrangements to safeguard the overall conservation of the marine environment, and this study will attempt to address how such cooperation is currently carried out and how it potentially can be strengthened in future work of the RFMOs.

Further, the various tuna species are considered as top predators in marine ecosystems, depending on prey resource availability.⁶⁵ Tuna species are located at the top of the food chain, and imbalance in their natural abundance might provoke system-wide trophic cascades

⁶³ See, e.g., Huihui Shen and Liming Song, “Implementing Ecosystem Approach to Fisheries Management in the Western and Central Pacific Fisheries Commission: Challenges and Prospects,” *Fishes* 8, No. 4 (April 2023): 198, <https://doi.org/10.3390/fishes8040198>. Pages 8-10.

⁶⁴ See, e.g., Sarah Ryan Enright and Ben Boteler, “The Ecosystem Approach in International Marine Environmental Law and Governance,” in *Ecosystem-Based Management, Ecosystem Services and Aquatic Biodiversity: Theory, Tools and Applications*, ed. Timothy G. O’Higgins, Manuel Lago, and Theodore H. DeWitt (Cham: Springer International Publishing, 2020), 333–52, https://doi.org/10.1007/978-3-030-45843-0_17, page 343 and Claire Attwood, K. L. Cochrane, and Caroline Hanks, *Putting into Practice the Ecosystem Approach to Fisheries* (Rome: Food and Agriculture Organization of the United Nations, 2005). Page 45.

⁶⁵ Jan McDonald and Shannon Maree Torrens, “Governing Pacific Fisheries under Climate Change,” in *Research Handbook on Climate Change, Oceans and Coasts*, eds. Jan McDonald, Jeffrey McGee, and Richard Barnes (Edward Elgar Publishing, 2020). Page 281.

with consequences for the whole ecosystem.⁶⁶ The recognition that fishing for targeted stocks may cause “large-scale ecosystem perturbation is essential in modern ecological understanding, and it could have profound implications for management.”⁶⁷ However, as emphasized by Daskalov et al., recovery of some ecosystem components, such as targeted fish stocks, will not be sufficient to prevent changes in other ecosystem components which might drive the ecosystem into trophic cascades.⁶⁸ This scenario may ultimately cause changes in the prey resource availability for the tuna species, leading to a spiral of potential cascades in the relevant ecosystems.

Tuna RFMOs are unique in the sense that their rather narrow mandates are primarily directed at conserving and managing the various species of tuna,⁶⁹ and the ecological knowledge of their importance for the ecosystems is inherently disregarded in these original mandates. The tuna RFMOs have been selected for closer assessment in this study to enable an examination of how they have expanded their mandates to include elements that may contribute to an operationalization of the ecosystem approach to fisheries, including recognition of the interdependence of species, habitats, and ecological connections. The recovery of resilient ecosystems requires restoration of all its components to desirable levels by reducing both direct anthropogenic impacts (such as adjusting fisheries’ efforts to a level which does not threaten the targeted stocks) and indirect anthropogenic impacts (such as the phenomenon of ghost fishing, where lost, abandoned, or otherwise discarded fishing gear ends up in the sea as a consequence of fishing operations).⁷⁰ It is beyond doubt that the ecological significance of the tuna species in marine ecosystems requires additional attention and responsibilities of the tuna RFMOs, which makes an assessment of these international bodies suitable for a study of the implementation of the ecosystem approach to fisheries.

⁶⁶ Georgi M. Daskalov et al., “Trophic Cascades Triggered by Overfishing Reveal Possible Mechanisms of Ecosystem Regime Shifts,” *Proceedings of the National Academy of Sciences of the United States of America* 104, No. 25 (June 19, 2007): 10518–23, <https://doi.org/10.1073/pnas.0701100104>. Page 10520.

⁶⁷ Ibid. Page 10522.

⁶⁸ Ibid.

⁶⁹ The mandates of the tuna RFMOs will be examined further in Chapter 6 of this thesis.

⁷⁰ Daskalov et al., “Trophic cascades triggered by overfishing reveal possible mechanisms of ecosystem regime shifts.” Page 10522.

Overall, a study of these RFMOs will provide insights into how they are operationalizing the ecosystem approach to fisheries in terms of conservation of non-target species, the existence of potential gaps impeding such operationalization and how far drivers of institutional and operational practices of the RFMOs facilitate conservation of non-target species. Their similar management mandates make the tuna RFMOs well-suited for a comparative study, where lessons learned from each RFMO might be used to create best practice for future operationalization of the ecosystem approach to fisheries in the RFMOs. Advice on best practice may subsequently also be adopted by other existing conservation and management bodies with a narrow mandate, or as examples of possibilities and constraints for governance in the establishment of new bodies in the future. The vast regulatory areas of the tuna RFMOs spark fundamental questions regarding the role of RFMOs in the general protection and conservation of the marine environment, and this study will aim to contribute to a positive development in regional protection of the marine environment by discovering how the tuna RFMOs currently provide such protection, and whether they can facilitate a novel approach to coordination of protection in the future.

Categorizing the different RFMOs and subsequently selecting only one group of these organizations as the subject of the case study inherently involves some disadvantages. The most obvious one is that the selection will not enable a study of the operationalization of the ecosystem approach in the various RFMOs at a general level. The study will consequently not enable generalization of the findings on the institutional and operational drivers and constraints in the tuna RFMOs. However, the identification of common practices and potential gaps between what is required by international law and what is currently done in and by these organizations may provide significant guidance for future operationalization of the ecosystem approach to fisheries on a more general level, based on the relevant findings. An assessment of how the tuna RFMOs have implemented the ecosystem approach in practice through their adoption of conservation and management measures, and the challenges that may be identified in the process of operationalizing the approach, will be presented in Chapters 7 and 8 of this thesis.

The top layer of Figure 1 encompasses the management objective of minimizing catch by lost, abandoned, or otherwise discarded fishing gear. This objective has been selected as an

example of how the tuna RFMOs are implementing the management objectives identified in the ecosystem approach to fisheries in this study.⁷¹

There are several ways to categorize the management objectives established pursuant to the ecosystem approach to fisheries. A recognized delineation has been made by Garcia and Cochrane, who distinguish how ecosystem impacts caused by fisheries relate “to target stocks (e.g., abundance, productivity, size and species composition), non-target species (e.g., endangered species, bycatch, discards), and critical habitats.”⁷² A similar distinction is made by Hilborn, who categorizes the core aspects of the ecosystem approach to fisheries as consisting of single species management (including keeping fishing mortalities at or below the maximum sustainable yield and maintaining fleet capacity in line with the potential harvesting of the resources), preventing bycatch of non-target species (through, e.g., gear modification, incentives to avoid bycatching, and area and seasonal closures) and avoidance of modifications to habitats (through, e.g., the closure of fishing areas or adopting a ban of certain fishing methods or gears in these areas).⁷³

The main reason for categorizing the management objectives in this research project is to enable a study of how the ecosystem approach to fisheries has been implemented by the five tuna RFMOs. It is evident that the management objectives and associated measures will depend on which aspect(s) of the ecosystem each RFMO is aiming to conserve. This PhD will thus focus on relevant tools to mitigate ecosystem impact in relation to non-target species. Drawing a distinction between target species, non-target species, and their habitats is inherently problematic, as the foundational ecosystem approach represents a holistic and

⁷¹ Several of the FAO reports and guidelines addressing the implementation of the ecosystem approach to fisheries recognize that minimizing ghost fishing is an integral part of the approach. See, e.g., Åsmund Bjordal, “The use of technical measures in responsible fisheries: Regulation of fishing gears,” in *FAO Fisheries Technical Paper 424: A Fishery Manager’s Guidebook - Management Measures and Their Application*, ed. Kevern L. Cochrane (Rome: Food and Agriculture Organization of the United Nations, 2002), page 13 and Claire Attwood, K. L. Cochrane, and Caroline Hanks, *Putting into Practice the Ecosystem Approach to Fisheries*. Page 16.

⁷² Serge M. Garcia and Kevern L. Cochrane, “Ecosystem approach to fisheries: a review of implementation guidelines,” *ICES Journal of Marine Science* 62, No. 3 (1 January 2005): 311–8, <https://doi.org/10.1016/j.icesjms.2004.12.003>. Page 312.

⁷³ Ray Hilborn, “Future Directions in Ecosystem Based Fisheries Management: A Personal Perspective,” *Fisheries Research* 108, No. 2 (2011): 235–9, <https://doi.org/10.1016/j.fishres.2010.12.030>. Page 236.

integrated view of fisheries management, and as these three elements of the ecosystem represent integral parts of the ecosystems that sustain them from a biological perspective.

To make the ecosystem approach to fisheries functional requires in-depth knowledge about each of these elements of the ecosystem and can only be achieved if the specific details of each element are taken into consideration in the overarching management framework. Evidently, conservation of target species, non-target species and habitats requires separate, tailor-made management frameworks, and such categorizations of the elements of the ecosystems might even constitute a way to operationalize the approach. At the same time, general and overarching studies are needed to provide knowledge about, e.g., how these elements affect each other in the ecosystem, and some management objectives should even be tailored towards conservation of the whole ecosystem.

General studies of conservation of target species, non-target species and habitats and in-depth studies of the distinct elements of the ecosystem will naturally complement each other, but they will provide different information on the implementation and operationalization of the approach. This study aims to examine how the ecosystem approach to fisheries has been implemented by the tuna RFMOs, and it seems reasonable to deliberately limit the scope of the project to non-target species, as a study of the actual operationalization requires in-depth knowledge about each of the elements of the ecosystem. The rationale for selecting non-target species as the focus of this research is based on the emphasis on impacts of fishing gear on marine ecosystems in this study. Catch by lost, abandoned, or otherwise discarded fishing gear has multifaceted impacts on the marine environment, predominantly on non-target species and marine habitats.⁷⁴ As will be illustrated in Chapter 4, the conservation of non-target species represents a novelty in conventional fisheries management, making this element of the ecosystem suitable for an assessment of how the ecosystem approach to fisheries is operationalized in the tuna RFMOs.

⁷⁴ The impacts of lost, abandoned, and otherwise discarded fishing gear are subject to closer assessment in Section 4.4.1.

One negative consequence of excluding relevant management objectives of conserving target species and habitats from the scope of this case study is evidently that the research will not enable a study of how the various aspects of the ecosystem approach to fisheries have been implemented in the different tuna RFMOs, and it will be difficult to draw general conclusions on the implementation of the approach. By contrast, choosing to conduct an in-depth study of specific management objectives and associated measures might enable a more detailed exploration of the actual implementation of the approach, which is one of the primary aims of this project.

The first point that typically comes to mind in relation to the assessment of the effects of fisheries on non-target species is how bycatch and subsequent potential discarding affect these species and the relevant marine ecosystems. This point is widely recognized in research assessing the ecological impacts of fisheries on the marine environment.⁷⁵ While the present study shares a common starting point with such research in focusing on the environmental impacts of fisheries on marine ecosystems, it departs from other studies by exploring how the legal obligation to minimize catch by lost, abandoned, or otherwise discarded fishing gear has been implemented and operationalized by tuna RFMOs.

Catch by lost, abandoned, or otherwise discarded fishing gear is regarded as an integral part of the ecosystem approach to fisheries,⁷⁶ but has not been as widely addressed in the context of tuna RFMOs as, e.g., the objective to minimize bycatch in fishing operations.⁷⁷ Performance reviews of the tuna RFMOs conducted by independent review panels highlight the issue at stake, and recognize the need to expand the range of measures needed to fulfill the objective

⁷⁵ See, e.g., the literature review in Guillermo Ortuño Crespo and Daniel C Dunn, “A Review of the Impacts of Fisheries on Open-Ocean Ecosystems.” Page 2288.

⁷⁶ See, e.g., Åsmund Bjordal, “The use of technical measures in responsible fisheries: Regulation of fishing gears,” page 13 and Attwood, Cochrane, and Hanks, *Putting into Practice the Ecosystem Approach to Fisheries (2005)*, page 16.

⁷⁷ See, e.g., Eric Gilman, Kelvin Passfield, and Katrina Nakamura, “Performance of Regional Fisheries Management Organizations: Ecosystem-Based Governance of Bycatch and Discards,” Brianna Elliott, Marguerite Tarzia, and Andrew J. Read, “Cetacean Bycatch Management in Regional Fisheries Management Organizations: Current Progress, Gaps, and Looking Ahead,” *Frontiers in Marine Science* 9 (22. February 2023), <https://doi.org/10.3389/fmars.2022.1006894> and Erika A. Zollett og Yonat Swimmer, “Safe Handling Practices to Increase Post-Capture Survival of Cetaceans, Sea Turtles, Seabirds, Sharks, and Billfish in Tuna Fisheries,” *Endangered Species Research* 38 (14. March 2019): 115–25, <https://doi.org/10.3354/esr00940>.

of minimizing catch by lost or abandoned gear,⁷⁸ to review the “potential impacts of lost or abandoned gear in CCSBT fisheries, and identify mechanisms to mitigate any impacts,”⁷⁹ and to amend the founding instruments in a manner which incorporates the obligations encompassed in the 1995 UN Fish Stocks Agreement.⁸⁰

As presented in Section 1.1, the inclusion of environmental and ecosystem considerations in fisheries management departs from traditional fisheries management, which primarily focuses on and applies single species approaches.⁸¹ A study of how fisheries management has changed after the adoption of the ecosystem approach to fisheries will necessitate a study of how the associated novel management objectives are implemented and operationalized in fisheries management. As will be explored in Chapter 7, the development of a regulatory frameworks encompassing measures to minimize catch by lost, abandoned, or otherwise discarded fishing gear is still in its infancy. Studying the implementation of this specific management objective may provide valuable insights into the different challenges and possibilities for the RFMOs’ endeavor of implementing the ecosystem approach to fisheries.

However, it should be emphasized that several other management objectives may provide similar insights and be of relevance for the case study, such as the obligation to protect biodiversity in accordance with, e.g., Article 5(g) of the 1995 UN Fish Stocks Agreement and the obligation to minimize bycatch pursuant to, e.g., Article 5(f) of the same instrument. However, the choice of the objective of minimizing catch by lost, abandoned, or otherwise discarded fishing gear is suitable to achieve the aim of this study, which is to identify and explore the implementation and operationalization of the ecosystem approach to fisheries, and the potential constraints affecting the ability of the tuna RFMOs to fulfill the management

⁷⁸ See, e.g., ICCAT, “Report of the Independent Performance Review of ICCAT” (Madrid, 2016), https://www.iccat.int/documents/Other/0-2nd_PERFORMANCE_REVIEW_TRI.PDF, page 38 and WCPFC, “Review of the Performance of the WCPFC” (Tumon, Guam, USA, 2012), <https://meetings.wcpfc.int/node/7610>, pages 24 and 70.

⁷⁹ Hussain Sinan et al., “2021 CCSBT Performance Review,” 2021, https://www.ccsbt.org/en/system/files/ESC27_07_PerformanceReviewReport.pdf. Page 22.

⁸⁰ IOTC, “IOTC–PRIOTC02 2016. Report of the 2nd IOTC Performance Review” (Mahé, Seychelles, 2015), <https://iphc.int/uploads/pdf/priphc/priphc02/iphc-2019-priphc02-inf04.pdf>. Page 17.

⁸¹ Section 4.2.4 of this thesis will explore the various operational levels of fisheries management.

objectives adopted based on this approach. As the tuna RFMOs are in the process of responding to the call to implement this particular management objective, it is evident that selecting this objective will offer insights into the various constraints which may affect the RFMOs in this regard.

1.3 Research Questions

Following the establishment of the rationale and scope of this PhD study, this section will introduce the research questions.

To meet the objectives of studying the implementation of the ecosystem approach to fisheries, identifying existing gaps between what is required by international law and what is currently done in and by the tuna RFMOs, in addition to existing challenges affecting their implementation and operationalization of the ecosystem approach to fisheries, this study will assess how the law is functioning in practice.⁸² The study has two main research questions, designed to meet its objectives. The first research question is:

1. What are the legal requirements of the ecosystem approach to fisheries?

This question necessitates the identification and assessment of the legal requirements of the ecosystem approach to fisheries. After establishing the scope and legal obligations of this approach, the focus will shift to the second research question:

2. How have different tuna RFMOs implemented the ecosystem approach to fisheries and what constraints and possibilities can be identified in the operationalization of this approach in the tuna RFMOs?

This research question builds on the assessment that will be conducted when addressing the first research question, and rests on the assumption that the tuna RFMOs are facing some constraints in their endeavor to operationalize the ecosystem approach to fisheries, as illustrated by the existing literature briefly introduced in Section 1.2. The insights provided by

⁸² A clarification of the scope of the two verbs “to implement” and “to operationalize” in their various forms in this PhD is presented in Section 1.5.

exploring this research question will reveal some of the existing barriers to the operationalization of the approach not previously identified in the present body of literature and novel ways to reflect upon the constraints identified.

These two research questions require a wide range of methodological approaches, which will be presented and elaborated upon in Chapter 2 of this thesis. The following section will present the structure of the thesis.

1.4 Structure of the Thesis

This thesis has two main parts: Part I (Chapters 3-5), answering the first research question, and Part II (Chapters 6-9) answering research question 2. These are followed by a concluding chapter summarizing the relevant findings of the study.

Part I provides a detailed presentation and analysis of the different topics presented in Figure 1 in Section 1.2. This part of the dissertation consists of three separate chapters and will provide the necessary context, historical background, and theoretical frameworks relevant to the study. These chapters serve the purpose of identifying and analyzing the law applicable to high seas fisheries (Chapter 3), the ecosystem approach to fisheries (Chapter 4), and the functioning and mandates of RFMOs (Chapter 5) and will answer research question 1.

Part II encompasses a case study undertaken to answer research question 2. This part comprises three separate chapters, the first of which will present an analysis of whether the tuna RFMOs have implemented the ecosystem approach to fisheries in their founding instruments (Chapter 6). Chapter 7 then explores how the tuna RFMOs are operationalizing the ecosystem approach through a thorough assessment of their adopted conservation and management measures, focusing on the objective of minimizing catch by lost, abandoned or discarded fishing gear. Chapter 8 builds on the findings of the two preceding chapters of this part of the thesis and will explore some of the constraints and possibilities that may be identified in the implementation of the ecosystem approach to fisheries by tuna RFMOs. Chapter 9 provides a summary of the relevant findings, and the insights gained from the study.

Chapter 10 is the concluding part of the thesis, providing concluding remarks of the research project.

1.5 Use of Different Terminology

This thesis makes frequent reference to the two verbs “to implement” and “to operationalize” in their various forms, and some clarification of their scope in this project is therefore necessary.

Although the two terms may be perceived as having a similar meaning, they are used to describe two different phenomena in this research. The term “implement” refers to scenarios where the ecosystem approach to fisheries and its management objectives are encompassed in the founding instruments of the tuna RFMOs, whereas the term “operationalize” refers to putting the objectives into practice through the adoption of conservation and management measures. The terms have no reference to enforcement in this project, which requires a different assessment than the scope of this research. Although the study does not cover enforcement, it explores how the ecosystem approach to fisheries is encompassed in the founding instruments of the tuna RFMOs and in their management practice through the adoption of conservation and management measures, which can enable subsequent studies focusing on how the adopted measures are effectuated through, e.g., the existing enforcement mechanisms of the tuna RFMOs.

1.6 Contributions to existing literature

This thesis provides two main contributions to existing research and literature on the topics presented in Section 1.2.

This study will systematically assess all adopted measures in the tuna RFMOs’ regulatory frameworks regulating catch by lost, abandoned, or otherwise discarded fishing gear. The measures will be analyzed by applying a legal doctrinal method to identify whether and how the normative framework is put into practice. The analysis is also suitable to identify existing gaps between the normative framework and what is currently being done in and by these

organizations. This will expand the existing literature on how the tuna RFMOs are implementing and operationalizing the ecosystem approach to fisheries in general and more specifically in terms of how the objective of minimizing catch by lost, abandoned, or otherwise discarded fishing gear is implemented in these regional bodies.⁸³ The study is comprehensive in scope and adds to existing literature by providing knowledge of the current status of the tuna RFMOs' endeavor to minimize ghost fishing.

The second main contribution of this thesis is the findings of the case study, which identifies some of the key constraints affecting the tuna RFMOs' venture of implementing and operationalizing the ecosystem approach to fisheries. The study and its findings are expanding existing knowledge on the topic by identifying challenges related to the implementation and operationalization of the approach not previously discussed in the academic literature. The study and its research findings also serve the purpose of supporting findings presented in the existing literature and provide new knowledge about how the constraints are affecting the tuna RFMOs in practice.⁸⁴

It should also be noted that this thesis uses a mixed methods approach, which has proven to be a rare commodity in legal research.⁸⁵ By applying empirical legal research as one of the main methods in the case study, this PhD is also expanding on the methodological approaches

⁸³ Gilman has made a similar assessment of the implementation of binding measures adopted by RFMOs to regulate ghost fishing, published in 2015. See Eric Gilman, "Status of International Monitoring and Management of Abandoned, Lost and Discarded Fishing Gear and Ghost Fishing." However, recent calls for changes to existing practice in these bodies by their performance reviews indicate that there still exist gaps between the normative framework and the operational practices of the tuna RFMOs, nine years after the study of Gilman was published.

⁸⁴ Section 5.3 will identify existing literature addressing constraints to the operationalization of the ecosystem approach to fisheries. Chapter 8 will also reflect wider literature on factors which may influence the implementation and operationalization of the approach.

⁸⁵ Steven Vaughan, "We Need To Talk About Method: A Call for More and Better Empirical Environmental Law Scholarship," *Journal of Environmental Law* 36, no. 1 (2024): 13–18, <https://doi.org/10.1093/jel/eqae005>, page 14, and Ole W. Pedersen, "The Evolution and Emergence of Environmental Law Scholarship-A Perspective from Three Journals," *Journal of Environmental Law* 34, No. 3 (2022): 457–76, <https://doi.org/10.1093/jel/eqac011>, pages 471–472. Pedersen emphasizes that "environmental law scholarship remains somewhat traditional" and finds that "only 2.3% of the 1,477 articles are based on empirical work" when assessing law scholarship in three journals in 2022, including the *Journal of Environmental Law* (JEL). The findings of Pedersen are reinforced by Vaughan in "We Need To Talk About Method: A Call for More and Better Empirical Environmental Law Scholarship."

traditionally used in environmental law scholarship. This may be perceived as a contribution to the existing practices of legal research on a general basis.

The following chapter will explore the research design and methodologies that will be applied to answer the two research questions of this thesis.

2. Chapter II: Research Design and Methodology

2.1 Introduction

This PhD study adopts a mixed methods approach to address the two research questions presented in Section 1.3. These questions will strive to establish the *lex lata*, whether and how the normative framework regulating the ecosystem approach to fisheries is implemented in and by the tuna RFMOs and identify potential gaps between the normative framework and the practice of these organizations. Ultimately, the selected research questions cover an assessment of the challenges that may be identified for the tuna RFMOs' implementation and operationalization of the ecosystem approach to fisheries. To identify and elaborate on relevant challenges and future possibilities, doctrinal research is not considered sufficient, thereby leading to the use of a combination of doctrinal research and legal empirical research to assess how the normative framework is functioning in practice.

Methodology is described as “a discourse about methods, a study of suitability of techniques in a particular field of study and a way of combining the methods.”⁸⁶ A method “consists of a body of practices, skill, procedures, and rules used by those who work in a discipline or engage in inquiry,”⁸⁷ representing the tools employed to address the research questions.

The first methodology used in this thesis is doctrinal research. This methodology will establish the *lex lata* and will be used in Part I of this thesis to answer research question 1 (“*What are the legal requirements of the ecosystem approach to fisheries?*”). Doctrinal research is considered suitable and sufficient for addressing this specific research question as the aim of addressing it is to establish the scope of the normative framework regulating the ecosystem approach to fisheries.

⁸⁶ P. Ishwara Bhat, “Introduction: Legal Research Methodology, Purposes, and Footsteps,” in *Idea and Methods of Legal Research*, ed. Bhat (Oxford University Press, 2020), 3-29, <https://doi.org/10.1093/oso/9780199493098.003.0001>. Page 15.

⁸⁷ *Ibid.*

The second methodology in this PhD is empirical legal research, which is used in Part II. Empirical legal research will be used to address research question 2 (“*How have different Tuna RFMOs implemented the ecosystem approach to fisheries, and what constraints and possibilities can be identified in the operationalization of the ecosystem approach to fisheries in the tuna RFMOs?*”).

Empirical legal research may be defined in different ways, and there exists no universal definition. Burton emphasizes that empirical legal research is defined as research including “the study of law, legal processes and legal phenomena using social research methods, such as interviews, observations or questionnaires.”⁸⁸ By contrast, the Oxford Handbook of Empirical Legal Analysis adopts a wider definition, where empirical research “involves the systematic collection of information (‘data’) and its analysis according to some generally accepted method. Of central importance is the *systematic* nature of the process, both of collecting and analyzing the information. The information can come from a wide range of sources including surveys, documents, reporting systems, observation, interviews, experiments, decisions, and events.”⁸⁹ As there is no universal definition of the methodology, it is pertinent to explain how the methodology will be understood in this particular study. Empirical legal research encompasses interviews and documentary analysis of primary non-legal sources in this thesis.⁹⁰

Empirical legal research is considered suitable for addressing research question 2, as it opens a “toolbox” for a mixed method approach. The assessment of whether and how the tuna RFMOs are implementing the requirements of the normative framework of the ecosystem approach to fisheries, the potential gaps between the normative framework and the practice

⁸⁸ Mandy Burton, “Doing empirical research: exploring the decision-making of magistrates and juries,” in *Research Methods in Law*, eds. Dawn Watkins and Mandy Burton (London, UK: Taylor & Francis Group, 2013), <http://ebookcentral.proquest.com/lib/tromsoub-ebooks/detail.action?docID=1318978>. Page 55.

⁸⁹ Peter Cane and Herbert M. Kritzer, “Introduction,” in *The Oxford Handbook of Empirical Legal Research*, eds. Peter Cane and Herbert M. Kritzer (Oxford University Press, 2010), <https://doi.org/10.1093/oxfordhb/9780199542475.013.0001>. Page 5.

⁹⁰ The term “primary non-legal sources” refers to conservation and management measures adopted by RFMOs in this study. The normative status of these measures is analyzed in more detail in Section 5.2.4.

of these organizations, and the identification and assessment of potential challenges for the implementation and operationalization of the approach all require different methods.

Thus, several methodological steps will be taken in this thesis, starting with the design of a multiple case study, identifying the five tuna RFMOs as the cases to be more closely examined. As emphasized by Scholz and Tietje, case studies should comprise multiple sources of information.⁹¹ This also applies to the present study, which will assess the conservation and management measures adopted by the tuna RFMOs to establish potential gaps between the normative framework and the practice of these organizations. The adopted conservation and management measures regulating catch by abandoned, lost, or otherwise discarded fishing gear will be identified by thoroughly reading through all measures adopted in 2000-2023. After identifying the relevant measures, a doctrinal assessment of the *lex lata* of these legally binding measures will be conducted. Finally, a literature review and interviews with key informants will be undertaken to identify and assess the current constraints affecting the ability of the tuna RFMOs to implement and operationalize the ecosystem approach to fisheries, and to provide some recommendations for future conservation of non-target species in these organizations. The design of the case study and the ways in which empirical legal research will be used in this thesis will be explored in detail in Section 2.3, and each of the methodological steps mentioned in this presentation will be explained in further detail.

The following presentation will begin with an assessment of how doctrinal research will be used in Part I of this thesis to answer the first research question of this project.

⁹¹ Roland W. Scholz and Olaf Tietje, *Embedded Case Study Methods: Integrating Quantitative and Qualitative Knowledge*, 1st ed. (Los Angeles: SAGE Publications Inc, 2002). Page 13.

2.2 Doctrinal Research

One of the main methodologies applied in this project is doctrinal research. Legal doctrinal analysis is recognized as one of the most widespread methods of legal research.⁹² Doctrinal research is based on legal doctrine, encompassing the “interpretation of legal texts or a series of facts based on legal principles.”⁹³ This method is normally considered as a stepwise process that first involves identifying the sources of law and then interpreting and analyzing these sources.⁹⁴ Here, a key question is: What are considered as the relevant sources of law in the field of international law?

It has been commonly recognized that relevant sources of law are those listed in Article 38 of the Statute of the International Court of Justice (ICJ).⁹⁵

The sources of law mentioned in Article 38(1) of the Statute of the ICJ are:

- a. “international conventions, whether general or particular, establishing rules expressly recognized by the contesting states,”
- b. “international custom, as evidence of a general practice accepted as law,”
- c. “the general principles of law recognized by civilized nations,”
- d. “subject to the provisions of Article 59, judicial decisions and the teachings of the most highly qualified publicists of the various nations, as subsidiary means for the determination of rules of law.”

In such traditional settings, the primary sources of law are (a) treaties, (b) customary international law and (c) general principles of law.⁹⁶ The judicial decisions and teachings in *litra d* are perceived

⁹² Terry Hutchinson and Nigel Duncan, “Defining and Describing What We Do: Doctrinal Legal Research,” *Deakin Law Review* 17, No. 1 (2012): 83–119, <https://doi.org/10.21153/dlr2012vol17no1art70>. Pages 102-105.

⁹³ Uzoma Ihugba, *Introduction to Legal Research Method and Legal Writing*, 1st ed. (Oxford: Malthouse Press, 2020), <https://doi.org/10.2307/jj.8155048>. Page 6.

⁹⁴ Hutchinson and Duncan, “Defining and Describing What We Do: Doctrinal Legal Research.” Page 110.

⁹⁵ See, e.g., H. W. A. Thirlway, *The Sources of International Law*, 2nd ed., Oxford Public International Law (Oxford: University Press, 2019). Page 8 and Sondre Torp Helmersen, *The Application of Teachings by the International Court of Justice*, Studies on International Courts and Tribunals (Cambridge: Cambridge University Press, 2021), <https://doi.org/10.1017/9781108933520>. Page 23.

⁹⁶ Statute of the International Court of Justice, 18th April 1946, 33 UNTS 993 (1946). Article 38 (1).

as subsidiary sources which are used to interpret and determine the rules of international law in accordance with the provision. Despite the sources being listed in what appears to be a hierarchical order, it is important to emphasize that no official hierarchy between the listed sources exists.⁹⁷

The following sections will explore the different sources of international law and how they relate to this study.

2.2.1 Treaties

Treaties establish “rules expressly recognized by the contesting parties,” when states give their express consent to be bound by the rules through their ratifications of such instruments.⁹⁸ As emphasized by the ICJ in, e.g., the *North Sea Continental Shelf Cases*, if states have ratified an international treaty, the relevant provisions of that instrument represent the applicable rules of law and constitute the law for the parties.⁹⁹

International treaties represent one of the main sources of international law in this study. Consequently, this study will seek to establish the scope and content of several provisions of the Law of the Sea Convention and the 1995 UN Fish Stocks Agreement, since these are the primary legally binding instruments regulating high seas fisheries and the role and functions of RFMOs. As the ecosystem approach is a concept that has developed primarily in environmental law, some of the relevant treaties encompassing the approach will also be subject to closer analysis, with particular emphasis on the CBD. Due to the focus of the project on impacts of lost, abandoned, or otherwise discarded fishing gear, the MARPOL 73/78 and the London Convention are two treaties of relevance as they establish binding obligations prohibiting intentional discard of fishing gear at

⁹⁷ Alain Pellet and Daniel Müller, “Statute of the International Court of Justice, Competence of the Court, Article 38”, in *The Statute of the International Court of Justice: A Commentary* 3rd ed. ed. A Zimmermann et al., (Oxford University Press 2019). Page 932.

⁹⁸ Statute of the International Court of Justice. Article 38 (1).

⁹⁹ *North Sea Continental Shelf cases*, Judgment, ICJ Reports (1969), pp. 3, 24, para. 25 and Alain Pellet and Daniel Müller, “Statute of the International Court of Justice, Competence of the Court, Article 38,” Para. 195 on page 890.

sea.¹⁰⁰ The main purpose of examining these treaties is to identify the *lex lata* to enable a case study of whether and how the member states of the tuna RFMOs are implementing the obligations laid down in these instruments through cooperation in these international bodies.

As this PhD includes a case study of the role of the tuna RFMOs in implementing the ecosystem approach to fisheries in areas beyond national jurisdiction, it is also important to emphasize that these organizations were established based on their own founding treaties. These regional treaties are as binding on the ratifying parties as global treaties. The founding instruments of RFMOs define the geographical scope of application of these organizations, and their functions and mandates for conservation and management.¹⁰¹ These instruments thus serve as the key foundation for assessing whether and how the tuna RFMOs are implementing the ecosystem approach to fisheries.

Some of the general fundamental principles governing treaty interpretation are of relevance to this study and will be presented in the following. The first fundamental principle of relevance is the *pacta tertiis* principle in Article 34 of the 1969 Vienna Convention on the Law of Treaties (VCLT), which expressly states: “A treaty does not create either obligations or rights for a third State without its consent.” This principle is of importance in this study, as RFMOs possess decision-making competence on behalf of their member states, empowering them to adopt legally binding conservation and management measures.¹⁰² As will be illustrated in Section 3.2.5, a relevant question is whether the duty to cooperate in high seas fisheries also requires non-members to formally accede to the respective RFMOs to fulfil their duties pursuant to the Law of the Sea Convention, and whether the conservation and management measures adopted by these organizations may be binding on third states operating in the geographical areas of competence of RFMOs, regardless of the status of formal membership. However, rules encompassed in a binding

¹⁰⁰ 1978 Protocol Relating to the 1973 International Convention for the Prevention of Pollution from Ships (including Annexes, Final Act and 1973 International Convention), 1340 UNTS 61 and the Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter, 1046 UNTS 120.

¹⁰¹ A thorough assessment of the founding instruments of the tuna RFMOs will be provided in Chapter 6 of this thesis.

¹⁰² See Section 1.2 for a brief introduction to the decision-making competence of RFMOs. Further, the normative status of RFMOs’ adopted conservation and management measures are subject to closer analysis in Section 5.2.4 of this thesis.

treaty, such as the *pacta tertiis* principle in the VCLT, may simultaneously exist in other legal sources. The most pertinent example is the development of customary international law, which may impose binding obligations on third states regardless of their lack of formal consent to be bound by the relevant treaty. When assessing the normative scope of what is required by law to implement the ecosystem approach to fisheries, this thesis has encountered several discussions on whether it is possible to implicitly infer the approach in existing treaties, and how it may inform the application of existing law.

The second fundamental principle of relevance to this project is that treaties are to be implemented in good faith by their contracting parties, also described as a principle of implementation *bona fide* and the rule of *pacta sunt servanda*. Article 26 of the VCLT states: “Every treaty in force is binding upon the parties to it and must be performed by them in good faith.” In the *Pulp Mills Case*, the Court noted that the principle is applicable to “all obligations established by a treaty, including procedural obligations which are essential to co-operation between States.”¹⁰³ This implies that both global treaties and the regional founding treaties of the tuna RFMOs must be implemented in good faith, including obligations to protect and conserve the marine environment.

Having briefly presented the treaties relevant to this study, it is necessary to explore how these instruments will be interpreted. This thesis will apply the rules for treaty interpretation set out in Articles 31 and 32 of the VCLT.¹⁰⁴

Article 31(1) of the VCLT contains several rules for treaty interpretation. The first paragraph includes the general rule of interpretation, emphasizing: “A treaty shall be interpreted in good faith in accordance with the ordinary meaning to be given to the terms of the treaty in their context and in the light of its object and purpose.” The principle of good faith enshrined in Article 26 of the VCLT has already been presented in previous sections. Taking a literal approach, the “ordinary meaning”

¹⁰³ Case Concerning Pulp Mills on the River Uruguay, Argentina v. Uruguay, Judgment on the merits, ICGJ 425 (ICJ 2010), 20 April 2010, United Nations Para 145. See also, e.g., Alain Pellet and Daniel Müller, “Statute of the International Court of Justice, Competence of the Court, Article 38,” Para. 197 on page 890 for more information about the development of the principle.

¹⁰⁴ United Nations, *Vienna Convention on the Law of Treaties*, 23 May 1969, United Nations, Treaty Series, Vol. 1155, p. 331.

of the treaty must be interpreted in combination with its “context”, meaning that its ordinary meaning must be regarded in relation to the treaty as a whole, including its preamble and annexes.¹⁰⁵ The interpretation of a treaty in accordance with “its object and purpose” represents a general rule of interpretation and brings “the principle of effectiveness into that rule: the terms of a treaty are to be interpreted in a way that advances the latter’s aim.”¹⁰⁶ This rule also introduces the teleological approach to treaty interpretation, where the central question is what the purpose of the treaty provisions is meant to be, representing a “broader inquiry into the objects and purposes of a treaty taken as a whole, and individual provisions of the treaty are constructed so as to give effect to these objects and purposes.”¹⁰⁷

Article 31(2) of the VCLT stipulates that the preamble and annexes of a treaty have the same weight as the provisions of its main text. The provision also defines “agreements relating to the treaty” as context.¹⁰⁸ Of relevance in this thesis is the 1995 UN Fish Stocks Agreement, which represents an implementation Agreement under the Law of the Sea Convention. The relationship between these two instruments will be further explored in Section 3.3.2.

A central question of the present study is whether the ecosystem approach to fisheries is encompassed in the Law of the Sea Convention, which is subject to closer examination in Section 4.3.1. In this regard, Article 31(3)(c) of the VCLT is of relevance. This provision states that “any relevant rules of international law applicable in the relations between the parties” shall be taken into account when a treaty is subject to interpretation. The provision may be characterized as establishing a systemic approach of treaty interpretation, designating “the international legal system as a whole as parts of the context.”¹⁰⁹ As emphasized by Birnie, Boyle, and Redgewell, this rule of treaty interpretation is particularly relevant in environmental law “where older treaties may

¹⁰⁵ United Nations, *Vienna Convention on the Law of Treaties*. Article 31(2).

¹⁰⁶ Oliver Dörr, “Article 31,” in *Vienna Convention on the Law of Treaties: A Commentary*, eds. Oliver Dörr and Kirsten Schmalenbach (Berlin, Heidelberg: Springer, 2018), 557–616, https://doi.org/10.1007/978-3-662-55160-8_34. Page 584.

¹⁰⁷ Francis G. Jacobs, “Varieties of Approach to Treaty Interpretation: With Special Reference to the Draft Convention on the Law of Treaties before the Vienna Diplomatic Conference,” *The International and Comparative Law Quarterly* 18, No. 2 (1969): 318–46. Page 319.

¹⁰⁸ VCLT, Article 31(2)(a). See Dörr, “Article 31” for a detailed assessment of the provision.

¹⁰⁹ Dörr, “Article 31”. Pages 603-604. Dörr emphasizes that “whatever their subject matter, treaties are a creation of the international legal system and their operation is based upon that fact” on page 604.

need to be interpreted in light of more modern developments.”¹¹⁰ The ICJ has explicitly recognized that treaties should be “interpreted and applied within the framework of the entire legal system prevailing at the time of the interpretation.”¹¹¹ In relation to environmental law, the ICJ has also recognized that “newly developed norms of environmental law are relevant for the interpretation” of treaties.¹¹²

Having established that global and regional treaties are among the main sources of international law relevant to this thesis, and that these instruments will be interpreted in accordance with the VCLT, the next section will explore how customary law is also of relevance to this thesis.

2.2.2 Customary Law

Article 38(1)(b) of the ICJ Statute lists “international custom, as evidence of a general practice accepted as law” as one of the primary sources of international law. Although treaties form the basis for most of the analysis in this study, the question of whether the obligations in these treaties also reflect customary law is also subject to analysis to assess whether the scope of these obligations may be applicable to establish normative obligations for third states. This is particularly relevant when assessing the obligations of Article 5 of the 1995 UN Fish Stocks Agreement and those of the non-binding FAO Code of Conduct.

The constitutive elements of Article 38(1)(b) are State practice and *opinio juris*, corresponding to the two elements of the social reality upon which customary law is based.¹¹³ The first is an objective material element, i.e., the practices of states, whereas the other element is subjective and describes the general acceptance of the law (*opinio juris*).

¹¹⁰ Alan E. Boyle and Catherine Redgwell, *Birnie, Boyle & Redgwell’s International Law and the Environment*, 4th ed. (Oxford University Press, 2021). Page 21.

¹¹¹ Legal Consequences for States of the Continued Presence of South Africa in Namibia (South West Africa) notwithstanding Security Council Resolution 276 (1970), Advisory Opinion, [1971] ICJ Rep. 16. Para. 53.

¹¹² Case concerning the Gabčíkovo-Nagymaros Project, Hungary v. Slovakia, Judgment, Merits, ICJ Rep. 7, [1997] Para. 112.

¹¹³ Jean D’Aspremont, “The Custom-Making Moment in Customary International Law,” in *The Theory, Practice and Interpretation of Customary International Law*, eds. Panos Merkouris et al. (Cambridge University Press, 2022). Page 29.

In the *Fisheries Jurisdiction Case*, the ICJ emphasized that State practice represent “an increasing and widespread acceptance of the concept of preferential rights for coastal States” in the relevant context.¹¹⁴ By declaring that acceptance of these rights is increasing and widespread, the ICJ established that the practice is becoming more consistent; however, complete and uniform State practice is not deemed necessary to establish customary law.¹¹⁵ On the question of whether rights and obligations laid down in treaties may crystallize customary law in relation to third states, the ICJ in the *North Sea Continental Shelf Cases* emphasized:

“With respect to other elements usually regarded as necessary before a conventional rule can be considered to have become a general rule of international law, it might be that...a very widespread and representative participation in the convention might suffice of itself, provided it included that of States whose interests were specifically affected.”¹¹⁶

Despite emphasizing that treaties may crystallize custom for third states on a general level, the ICJ rejected the argument that the Geneva Convention on the Continental Shelf of 1958 represented customary law at the time due to its limited number of signatories. This implies that the number of signatories is a substantial element which must be examined closely when analyzing whether treaties may crystallize custom for third states. This element is of relevance to Chapter 4 of this thesis, which assesses the scope of Article 5 of the 1995 UN Fish Stocks Agreement.

The question of how long a general practice must be conducted and upheld to establish customary law was also considered in the *North Sea Continental Shelf Cases*, where the ICJ held that “it might be that, even without the passage of any considerable period of time, a

¹¹⁴ *Fisheries Jurisdiction Case*, (Germany v. Iceland), Interim Measures (ICJ Rep. 313 1973), para. 58.

¹¹⁵ See also the *North Sea Continental Shelf Cases*, which established: “With respect to other elements usually regarded as necessary before a conventional rule can be considered to have become a general rule of international law, it might be that... a very widespread and representative participation in the convention might suffice of itself”. *North Sea Continental Shelf, Germany v. Denmark, Merits, Judgment*, (1969) ICJ Rep. 3, Para. 73.

¹¹⁶ *Ibid.* Para. 73.

very widespread and representative participation in the convention might suffice of itself.”¹¹⁷ In this way, the ICJ has stated that there is no duration requirement involved in the establishment of customary law, and that it is sufficient that the practice is “very widespread.”

Having established that State practice must be based on “an increasing and widespread acceptance,”¹¹⁸ without requirements of completely uniform practice or duration,¹¹⁹ it is time to look at the second element of customary law.

Opinio juris represents the subjective element of customary law, where the State practice must be “accepted as law.”¹²⁰ Crawford emphasizes that in determining whether a rule reflects *opinio juris*, the ICJ “will often infer the existence of *opinio juris* from a general practice, from scholarly consensus, or from its own or other tribunals’ previous determinations.”¹²¹ In relation to the “proof” that will have to be presented to establish *opinio juris*, Crawford emphasizes that the character of the issue at stake and whether the state practice is “largely treaty-based (in which case *opinio juris* is sufficient to expand application of the treaty norms as custom), or whether the law on the question is still developing” is of vital significance.¹²²

What is evident, however, is that establishing which State practices that represent *opinio juris* is a difficult task. When faced with the question of whether a rule represents customary law in accordance with Article 38(1)(b) of the ICJ Statutes, due consideration will be given to the character of the issue at stake and the present legal status of State practice, in combination with scholarly consensus or established practice by the ICJ or other tribunals.

¹¹⁷ *Ibid.*

¹¹⁸ *Fisheries Jurisdiction Case*, para. 58.

¹¹⁹ *North Sea Continental Shelf cases*, para. 73.

¹²⁰ Statute of the International Court of Justice, Article 38(1)(b).

¹²¹ James Crawford, “2. The Sources of International Law,” in *Brownlie’s Principles of Public International Law*, eds. Ian Brownlie and James Crawford, 9th ed. (Oxford University Press, 2019), <https://doi.org/10.1093/he/9780198737445.001.0001>. Page 24. Crawford nevertheless recognizes that the ICJ in a minority of cases displays greater rigor, requiring a “high standard of proof of *opinio juris*” exemplified by, e.g., the S.S. *Lotus*, *France v. Turkey*, Judgment, Judgment No. 9, PCIJ Series A No. 10.

¹²² James Crawford, “2. The Sources of International Law.” Page 25.

2.2.3 General Principles of Law

The third primary source of international law is “general principles of law recognized by civilized nations” in accordance with Article 38(1)(c) of the ICJ Statutes. As described by Pellet and Müller, the inclusion of “general principles” as a source of international law represents a “response to the need for completeness of the law” and to avoid scenarios of a “*non liquet*,”¹²³ where the Court ultimately may be forced to reject claims on the basis of a lack of applicable rules of law. The actual application of general principles as a primary source of international law has proven to be limited in practice, with explicit reference made to them only four times by the ICJ from 1922 to 2019.¹²⁴

However, general principles as a source of law may serve as guiding tools when interpreting the scope and content of treaties or customary law by virtue of VCLT Article 31(3)(c).¹²⁵ As emphasized by Pardell-Trius, “another and very important role of principles is their role in providing guidance for courts and tribunals in the process of interpreting international rules and obligations, environmental or other, and in filling in the gaps.”¹²⁶

Of particular interest in this study is the ecosystem approach to fisheries, which shares similar historical developments to other environmental principles and approaches. The study of the ecosystem approach in this thesis will primarily be based on its formal recognition in legal treaties and non-binding instruments, but as will be illustrated in Chapter 4, the question of whether the approach is encompassed in the Law of the Sea Convention will partly be based on interpretation, following Article 31(3)(c) of the VCLT.

¹²³ Pellet and Müller, “Statute of the International Court of Justice, Competence of the Court, Article 38.” Para. 251 on page 923.

¹²⁴ Ibid. Para. 254 on page 924.

¹²⁵ See, e.g., M. Fitzmaurice, Olufemi A. Elias, and Panos Merkouris, *Treaty Interpretation and the Vienna Convention on the Law of Treaties: 30 Years On* (BRILL, 2010). Page 57.

¹²⁶ Lluís Paradell-Trius, “Principles of International Environmental Law: An Overview”, *Review of European Community & International Environmental Law* 9, No. 2 (2000): 93–99, <https://doi.org/10.1111/1467-9388.00240>. Page 96.

2.2.4 Judicial Decisions and Teachings of the Most Qualified Publicists

Article 38(1)(d) refers to “judicial decisions” and “teachings of the most highly qualified publicists” as “subsidiary means for the determination of rules of law.”

The fact that judicial decisions are considered as subsidiary sources of international law may be explained by the cross-reference to Article 59 of the ICJ Statutes, which emphasizes that “the decision of the Court has no binding force except between the parties and in respect of that particular case.”¹²⁷ However, as emphasized by Thirlway, “the established jurisprudence of the Court has, of course, considerable weight, and is regularly relied on in argument before it.” Despite this, “no decision can simply be applied automatically to another case.”¹²⁸ This study will use judicial decisions to support some of the arguments presented, particularly in relation to the interpretation of Article 192 of the Law of the Sea Convention made in the *South China Sea Arbitration*, which is relevant to the analysis of Chapters 3 and 4 of this thesis. However, due consideration will be given to the fact that judicial decisions only have binding force on the parties in the relevant case in accordance with Article 59 of the ICJ Statutes.

Another subsidiary source of law is “teachings by the most qualified publicists.” As illustrated by Crawford, the use of teachings of publicists as a subsidiary source of law to establish *lex lata* is most evident in cases of “dissenting and separate opinions” of judges.¹²⁹ Torp Helmersen nevertheless illustrates that while Article 38(1)(d) “may be said to authorise the Court to apply teachings, that... [are]...superfluous,” as nothing impedes judges from citing teachings in their judgments in the first place.¹³⁰ However, teachings are frequently utilized as sources in this study to examine existing doctrine, to support arguments and to assist in establishing the normative scope of, e.g., the ecosystem approach to fisheries.

¹²⁷ Statute of the International Court of Justice, Article 59.

¹²⁸ Thirlway, *The Sources of International Law*. Page 134.

¹²⁹ James Crawford, “2. The Sources of International Law.” Page 40.

¹³⁰ Helmersen, *The Application of Teachings by the International Court of Justice*. Page 22.

2.2.5 Soft Law

Several of the main sources in this thesis are soft law instruments, which are not recognized as sources of law pursuant to Article 38(1) of the ICJ Statute.

“Soft law” is voluntary and non-binding in nature but may nevertheless carry substantive normative weight and play an important role in international law.¹³¹ Boyle describes soft law as “a variety of non-legally binding but normatively worded instruments used in contemporary international relations by states and international organizations.”¹³²

The advantage of developing soft law obligations, as opposed to legally binding obligations, is that they “may be seen as more effective than hard law and formal legal sanctions which come with it.”¹³³ Further, soft law instruments represent an “intrinsic part of regulation and governance at all levels of governance.”¹³⁴ As described by Boyle and Redgewell, a key point in international environmental law is that “custom, treaties and soft law cannot be viewed in isolation: they interact to form a complex regulatory system” capable of responding to rapid changes in scientific evidence, policies, and political priorities.¹³⁵

The most prominent non-binding source in this thesis is the 1995 FAO Code of Conduct and its supplementary guidelines for implementation, which form part of the normative framework relevant for the implementation of the ecosystem approach to fisheries, also regulating catch by lost, abandoned, or otherwise discarded fishing gear. However, their status as soft law instruments

¹³¹ See, e.g., Mariolina Eliantonio, Emilia Korkea-aho, and Ulrika Mörth, “Introduction to Research Handbook on Soft Law,” in *Research Handbook on Soft Law*, 1st ed., Research Handbooks in Law and Politics (Cheltenham: Edward Elgar Publishing Limited, 2023), <https://doi.org/10.4337/9781839101939>. Page 1.

¹³² See Alan Boyle, “Soft Law,” in *The Oxford Handbook of International Environmental Law*, eds. Lavanya Rajamani and Jacqueline Peel (Oxford University Press, 2021), <https://doi.org/10.1093/law/9780198849155.003.0025>. Page 421.

¹³³ Mariolina Eliantonio, Emilia Korkea-aho, and Ulrika Mörth, “Introduction to Research Handbook on Soft Law.” Page 1.

¹³⁴ *Ibid.*

¹³⁵ Alan E. Boyle and Catherine Redgewell, *Birnie, Boyle & Redgewell’s International Law and the Environment*. Page 36.

do not mean that they do not have normative implications, and they have “played an important role in implementing the fisheries provisions in the... [Law of the Sea Convention] ...by the FAO.”¹³⁶

As emphasized by Boyle and Redgewell, soft law “are usually negotiated and drafted with care, sometimes in great detail, and are intended in many cases to have normative significance despite their non-binding, non-treaty form.”¹³⁷ Developing soft law obligations may be regarded as a way of enhancing adaptive governance through the mechanisms that facilitate reaching final agreement and, as non-binding instruments, they are easier to “supplement, amend or replace than treaties” as they only require the “adoption of a new resolution by the relevant international institution.”¹³⁸

The non-binding nature of soft law obligations nevertheless questions the matter of their enforcement. Consequently, this study will elaborate in detail on the normative status of relevant soft law obligations in Chapter 4, which will examine the normative framework relevant to implementing the ecosystem approach to fisheries and minimizing catch by abandoned, lost, or otherwise discarded fishing gear.¹³⁹

¹³⁶ Ibid. Page 38.

¹³⁷ Ibid. Pages 35-36.

¹³⁸ Ibid. Pages 36-37.

The term “adaptive” may be used in various ways. See, e.g., Lyndal Hasselman, “Adaptive Management; Adaptive Co-Management; Adaptive Governance: What’s the Difference?,” *Australasian Journal of Environmental Management* 24, no. 1 (January 2, 2017): 31–46, <https://doi.org/10.1080/14486563.2016.1251857> for more information on this topic.

¹³⁹ This is particularly the case in the analysis in Chapter 4.3 exploring the legal status of the ecosystem approach to fisheries.

2.3 Designing the Case Study

2.3.1 Introduction

The case study and its findings are based on the methodology of multiple case studies. These case studies typically involve the examination of more than one unit or object of analysis, and the methodology is considered well-suited for research where an overarching case is studied based on an analysis of the different sub-units.¹⁴⁰ In this study, the methodology of multiple case studies serves to comprehensively explore how the normative framework regulating the ecosystem approach to fisheries is implemented and operationalized in and by the five tuna RFMOs.¹⁴¹ The five tuna RFMOs function as the multiple cases in the study, representing legal entities within a structured system of regional fisheries management organizations, as defined by their management mandates.¹⁴² Assessing these multiple cases in conjunction facilitates the identification of shared patterns, differences, and distinctive elements in their established regulatory frameworks. The chosen approach will also provide a nuanced understanding of the diverse factors influencing the operationalization of the ecosystem approach to fisheries at a broad level within the given context.

However, the choice to assess the implementation and operationalization of the ecosystem approach to fisheries by using a multiple case study involves some disadvantages. While the methodology designates the five tuna RFMOs as distinct cases, the selection hinders broad generalization from the findings of the study. Consequently, the outcome and findings of the study are limited to an analysis of how the tuna RFMOs have implemented the ecosystem approach to fisheries. The insights provided by the study will not be applicable to assess how

¹⁴⁰ Roland W. Scholz and Olaf Tietje, *Embedded Case Study Methods: Integrating Quantitative and Qualitative Knowledge*. Page 9.

¹⁴¹ The selection of tuna RFMOs as the organizations subject to closer assessment in this thesis was explored and explained in Section 1.2.

¹⁴² The application of multiple cases may be suitable where “every case serves a specific purpose within the overall scope of inquiry”. See Yin in Scholz and Tietje. Page 11. See also Scholz and Tietje. *Embedded Case Study Methods: Integrating Quantitative and Qualitative Knowledge*. Page 22.

the ecosystem approach is implemented and operationalized by other fisheries management bodies or other categories of RFMOs, but similar studies may be undertaken to yield comparative findings.

As will be explained in Section 2.3.4, representatives from three of the five tuna RFMOs have participated in interviews in this study.

The case study conducted in Part II of this thesis expands the scope of the methods applied beyond traditional doctrinal research. It uses a combination of doctrinal analysis with empirical legal research to answer the second research question in this research project (*“How have different tuna RFMOs implemented the ecosystem approach to fisheries, and what constraints and possibilities can be identified in the operationalization of the ecosystem approach to fisheries in Tuna RFMOs?”*).

2.3.2 Empirical Legal Research

Empirical Legal Research comprises two elements: “empirical research” and “legal research”. The empirical component typically “refers to the process of assembling factual information or data,”¹⁴³ where the defining feature “is that the collection of information is carried out in a systemic way.”¹⁴⁴ The legal element defines the “scope of the phenomenon under study,” capturing the central notion that empirical legal research is not limited to a study “of law itself but extends to actors, institutions, and processes relating to or interacting with the law.”¹⁴⁵ The term “legal” reflects the scope of assessments conducted in this study in two ways. The subjects of the analysis are the tuna RFMOs, organizations with legally binding decision-making competence for their member states.¹⁴⁶ Studying these organizations’ implementation and operationalization of the ecosystem approach to fisheries encompasses

¹⁴³ Herbert M. Kritzer, *Advanced Introduction to Empirical Legal Research* (Edward Elgar Publishing, 2021). Section 1.1.

¹⁴⁴ *Ibid.*

¹⁴⁵ *Ibid.*

¹⁴⁶ James Harrison, “Key Challenges Relating to the Governance of Regional Fisheries,” page 84.

more elements than establishing the *lex lata*. This project thus combines an analysis of the *lex lata* with an examination of the institutional drivers that are vital for the implementation and operationalization of the ecosystem approach to fisheries and how both external and internal drivers and processes may influence these efforts.

Combining the legal and empirical elements in the concept of empirical legal research “refers to research that employs systematic methods of collecting information to examine, in some way, legal phenomena.”¹⁴⁷ Empirical legal research is used in this thesis to examine whether and how the ecosystem approach to fisheries has been implemented in and by the tuna RFMOs, the potential constraints that affect such implementation and the future possibilities for the implementation of the approach. Although this study adopts an empirical approach to addressing these elements, it nevertheless frequently returns to the methodology of doctrinal research to assess the *lex lata* of the legally binding conservation and management measures adopted by the tuna RFMOs to determine whether they align with the normative framework identified in Part I of this thesis.

To assess the implementation of the ecosystem approach to fisheries and the obligation to minimize catch by abandoned, lost, or otherwise discarded fishing gear in the five tuna RFMOs, the case study starts with an assessment of the founding instruments of the tuna RFMOs to establish whether and how their management mandates and institutional features facilitate the implementation and operationalization of the approach (Chapter 6). Further, an analysis of all adopted conservation and management measures will be conducted (Chapter 7). Once the conservation and management measures regulating catch by abandoned, lost, or otherwise discarded fishing gear have been identified, a legal doctrinal analysis of these primary non-legal sources of law will be carried out to establish the *lex lata* between the contracting parties of the tuna RFMOs. Further, the analysis will be complemented with an assessment of whether and how the adopted conservation and management measures are in conformity with the obligations in the normative framework explored in Part I. The analysis consequently bridges the findings of Part I and Part II and will offer comprehensive insights into how the tuna RFMOs are implementing and operationalizing the objective of minimizing

¹⁴⁷ Ibid.

catch by abandoned, lost, or otherwise discarded fishing gear established pursuant to the ecosystem approach to fisheries.

Finally, interviews with key informants will be conducted to relate the findings of the analysis of the tuna RFMOs' conservation and management measures and their potential gaps to an assessment of present constraints on the implementation and operationalization of the ecosystem approach to fisheries in these organizations (Chapter 8). The data from these interviews will provide valuable insights into the possibilities for future conservation and management of ecosystems in the tuna RFMOs.

The different steps introduced in this section will be presented and discussed in more detail in the following.

2.3.3 Identifying and Analyzing the Conservation and Management Measures Adopted by the Tuna RFMOs

As briefly introduced in Section 1.3, all five tuna RFMOs adopt binding resolutions, recommendations, and conservation and management measures for their member states and cooperating non-contracting parties.¹⁴⁸ The normative status of these decisions may vary. The IOTC adopts resolutions that are binding for its member states, whereas recommendations are non-binding and rely on voluntary implementation. The ICCAT adopts binding recommendations and non-binding resolutions for its parties. Further, the IAATC adopts binding resolutions for its member states. The WCPFC's resolutions refer to non-binding statements and voluntary recommendations addressed to its contracting parties and cooperating non-contracting parties. The conservation and management measures of the relevant organization represent binding decisions. Finally, the CCSBT adopts binding resolutions for its contracting parties.

The sources relevant for the analysis are all written management resolutions, recommendations and conservation and management measures (hereinafter referred to

¹⁴⁸ The IATTC commonly refers to its cooperating non-contracting parties as cooperating non-members.

collectively as conservation and management measures) adopted by the five tuna RFMOs in 2000-2023. The relevant data includes both binding and non-binding measures. The relevant measures are identified by thoroughly reading and assessing all conservation and management measures adopted from 2000 to 2023, currently in force, and identifying all measures that regulate catch by abandoned, lost, or otherwise discarded fishing gear. All measures have been collected from the publicly available databases of the organizations, and the normative status of the measures will be subject to closer analysis when non-binding measures are identified. The approach of including all measures regulating catch by abandoned, lost, or otherwise discarded fishing gear has some disadvantages, the most pertinent being that the conservation and management measures identified in this process may have been adopted with a different aim than to implement and operationalize the management objective established under the ecosystem approach to fisheries in the tuna RFMOs. However, such conservation and management measures are nevertheless automatically included in the data. To avoid presenting these measures as part of the practice adopted by the tuna RFMOs, the analysis will subjectively categorize all the identified conservation and management measures after their identification. Those adopted with a different intention will consequently be recognized in the analysis in Chapter 7, and it will be explained why they are not regarded as measures applicable to the case study to ensure transparency of the research.

After identifying the conservation and management measures, an analysis of the tuna RFMOs' measures will be undertaken in Chapter 7 of this thesis. This analysis consists of three steps. The first step comprises a presentation of the total number of adopted conservation and management measures that address the objective of minimizing catch by abandoned, lost, or otherwise discarded fishing gear.

The second step comprises a doctrinal analysis of the scope and content of the active conservation and management measures of the five tuna RFMOs to establish the *lex lata*. All measures in force by 31 December 2023 are included in the study. The rationale for conducting an in-depth study of those measures currently in force is to enable an exploration of how the normative framework is implemented and operationalized in and by these

organizations. The assessment then identifies potential gaps between what is required as a matter of international law, and what is currently done in and by the tuna RFMOs. The findings of the latter assessment are further explored in detail in Chapter 8, which attempts to identify some of the key causes of potential non-implementation of the ecosystem approach to fisheries.

The third step involves comparing how the different tuna RFMOs have implemented and operationalized the objective of minimizing catch by abandoned, lost, or otherwise discarded fishing gear. The comparative approach helps to identify consistent practices, commonalities, and variations in the tuna RFMOs, and may lead to insights about shared challenges and possibilities for future management of non-target species.

2.3.4 Interviews with Key Informants

The last method used in this thesis is qualitative interviews with key informants. These interviews were conducted to complement the identification and analysis of constraints on the tuna RFMOs' implementation and operationalization of the ecosystem approach to fisheries and future possibilities for conservation of non-target species. The value of empirical legal research has recently been reinforced by Vaughan in 2024, who states: "There is so much that empirical environmental law scholarship can offer to our understanding of environmental problems" and encourages "law scholars to do more empirical work."¹⁴⁹ The following sections will explain the rationale for engaging in empirical research in this study, the sampling techniques used and how the data were coded.

¹⁴⁹ Steven Vaughan, "We Need To Talk About Method: A Call for More and Better Empirical Environmental Law Scholarship." Pages 13 and 17.

2.3.4.1 Added Value of Engaging in Qualitative Research in this Study

The added value of conducting interviews in this study is considerable. In this thesis, interviews with key informants provide new knowledge and reflections in relation to both existing literature on the topic and constraints on the implementation and operationalization of the approach that cannot be identified through desk-based research only.

The following section will explore relevant questions in relation to the interviews, including the design of the interview guide and research sample.

2.3.4.2 Semi-Structured Interviews and the Interview Guide

This project utilized semi-structured interviews where a list of questions to be covered during the interview was prepared beforehand in an interview guide. The interview guide addresses the potential constraints for the implementation and operationalization of the ecosystem approach to fisheries in the context of tuna RFMOs, which were identified through a literature review.¹⁵⁰ To provide transparency in this study, the interview guide and research ethics application are annexed to this thesis.¹⁵¹

Semi-structured interviews are defined as flexible, where “questions that are not included in the guide may be asked as the interviewer picks up on things said by the interviewees.”¹⁵² This type of interviewing thus allows for the “flexibility to investigate important topics more thoroughly when answers by your interviewees indicate that this would be appropriate.”¹⁵³ As emphasized by Bryman, semi-structured interviews enable the interviewer to pick up on reflections made by the informants and ask follow-up questions about these.¹⁵⁴ Although flexible in nature, semi-structured interviews still imply that all interviewees are asked the same questions and that similar language is used in all interviews.

¹⁵⁰ See Section 5.3 of this thesis for more information.

¹⁵¹ See Annexes I-III of this thesis.

¹⁵² Alan Bryman, *Social Research Methods*, 4th ed. (Oxford University Press, 2012). Page 471.

¹⁵³ Kees van den Bos, *Empirical Legal Research: A Primer* (Edward Elgar Publishing, 2020). Page 34.

¹⁵⁴ Alan Bryman, *Social Research Methods*. Page 471.

The rationale for selecting semi-structured interviews as the approach of qualitative interviewing in this study is based on the aims of conducting interviews, which were explained in Section 2.3.2., namely to verify whether the identified variables align with the constraints experienced by the tuna RFMOs, to offer new insights into how the different variables affect their ability to implement and operationalize the ecosystem approach to fisheries, and to identify new variables not covered by existing literature. To fulfill these aims, the chosen interview approach facilitates reflections on recognized constraints while also encouraging the discovery of new variables. The use of semi-structured interviews addresses all these objectives, making it the natural choice when the study was designed.

The following section will explore the sampling technique used to identify the key informants participating in the study.

2.3.4.3 Sample and Sampling Technique

A feature of qualitative research is that it usually focuses on a small number of data sources that are considered rich in information and on in-depth assessments of these sources.¹⁵⁵ Sampling techniques refer to the process of identifying whom to interview and the number of participants “necessary to elicit findings in which one may have confidence,”¹⁵⁶ and various techniques may be applied to identify the sources. One of these techniques is the snowball sampling technique, which was used in this study.

Snowball sampling is a technique where the researcher will begin “with a group of research participants known to her (or otherwise identified in advance in some way), and then ask each to provide details of someone else whom they consider to be a good research subject for the purposes of the study.”¹⁵⁷ In simpler terms, the group first identified is used to establish contact with other people of interest for the research study.¹⁵⁸ The technique is typically

¹⁵⁵ Lisa Webley, “Qualitative Approaches to Empirical Legal Research,” in *The Oxford Handbook of Empirical Legal Research*, Oxford Handbooks in Law (Oxford University Press, 2010), <https://doi.org/10.1093/oxfordhb/9780199542475.013.0039>. Page 934.

¹⁵⁶ *Ibid.* Page 933.

¹⁵⁷ *Ibid.* Page 943.

¹⁵⁸ Alan Bryman, *Social Research Methods*. Page 202.

utilized in qualitative research and in studies with qualitative research designs.¹⁵⁹ The following presentation will explore how snowball sampling was used in this thesis.

The identification of the key informants that participated in this study was a process consisting of two steps. The first step was to establish contact with the executive directors of the five tuna RFMOs and present the research project and the interview guide. After establishing contact with the five executive directors, three of the organizations agreed to participate in the study, while two declined the request due to their internal capacity in the period of the interviews. The second step of identifying key informants was that the executive directors subsequently identified the research subjects that participated in the study.

The main strength of applying snowball sampling to this research project was consequently that the stepwise process allowed the executive directors of the tuna RFMOs to select the key informants they considered most suitable for addressing the questions in the interview guide. In other words, they chose their own experts to represent the organizations in the study. Some shortcomings of this sampling technique relevant to the study should nevertheless be recognized. The first is that the technique allows for bias, as the key informants are not randomly identified, and the selection is dependent on the subjective evaluation of the initial persons contacted.¹⁶⁰ This may lead to biased responses from the interviewees, which may also hinder generalization of the findings.¹⁶¹

I would nevertheless argue that the strengths of applying snowball sampling to this study are significant, as the main goal of conducting empirical legal research is not to find a definite answer to questions such as how different challenges may influence the implementation and operationalization of the ecosystem approach to fisheries by tuna RFMOs, but rather to identify the relevant constraints. In this way, the purpose of the research is not to provide a clear answer as to “why” challenges exist, but to identify the existence of such challenges to

¹⁵⁹ Ibid. Page 203.

¹⁶⁰ Rowland Atkinson and John Flint, “Accessing Hidden and Hard-to-Reach Populations: Snowball Research Strategies,” *Social Research Update*, No. 33 (2001).

¹⁶¹ See, e.g., the arguments made by Maslak in Mary Ann Maslak, *Education and Female Entrepreneurship in Asia: Public Policies and Private Practices* (Springer, 2017), Page 77.

add to existing knowledge and literature on this specific topic. In this context, conducting interviews with key informants selected based on their expertise in the tuna RFMOs fits the purpose of the study. This by no means eliminates the potential shortcomings of this sampling technique but reveals how they have been recognized in this study and the reflections made in this regard.

Another element relevant for the sampling is that the key informants in this study may be considered as elites in the organizations they represent, making the interviews resemble “elite interviews.” A potential participant in an elite interview is typically described as a person “who occupies a senior or middle management position, often a long tenure with the company or institution in focus, with developed personal networks and ‘considerable internal exposure’.”¹⁶² Although this generalization of who “elites” are in an organization will not apply in all cases, some key points from the description fit all the informants who participated in this study. Based on their status in the tuna RFMOs, the informants were very knowledgeable on the subject matter relevant to the study, and their internal positions in the tuna RFMOs may thus have led to scenarios where they may not have been entirely free to respond to the interview questions as they would have preferred. Conducting elite interviews may thus lead to scenarios where other data might have been included in the coding and analysis if the informants had not represented the elites of their organizations. However, certain techniques may be applied to mitigate some of the identified risks of conducting elite interviews.¹⁶³ To encourage honest opinions and answers to interview questions, beginning the interview “on the right note” is important.¹⁶⁴ This may be achieved if the researcher is “open and straightforward about his or her personal involvement and must make the goals and conditions for the research clear at the very beginning.”¹⁶⁵ Further, the interviews should begin “with an open question before the other content can influence the response.”¹⁶⁶ Both

¹⁶² Uwe Flick, *Doing Interview Research - The Essential How to Guide* (SAGE Publications, 2021). Page 210.

¹⁶³ Robert Mikecz, “Interviewing Elites: Addressing Methodological Issues”, *Qualitative Inquiry* 18, No. 6 (2012): 482–93, <https://doi.org/10.1177/1077800412442818>.

¹⁶⁴ Robert Mikecz, “Interviewing Elites,” page 484 and Michael J. Healey and Michael B. Rawlinson, “Interviewing business owners and managers: a review of methods and techniques”, *Geoforum* 24, No. 3 (1. August 1993): 339–55, [https://doi.org/10.1016/0016-7185\(93\)90026-E](https://doi.org/10.1016/0016-7185(93)90026-E). Page 349.

¹⁶⁵ Mikecz, “Interviewing Elites: Addressing Methodological Issues.” Page 484.

¹⁶⁶ Healey and Rawlinson, “Interviewing business owners and managers.” Page 349.

these techniques were enhanced in the process of preparing the interviews, where the interview guide was designed with open-ended questions in the beginning and the interviews were initiated with an introduction to the research project.

A final point to be made in this chapter relates to the size of the sample. During the project period, all five tuna RFMOs were invited to participate in the study, but only three accepted the invitation. Consequently, this study has three key informants, each representing their respective organizations. As emphasized by Bryman, “the size of a sample that is able to support convincing conclusions is likely to vary somewhat from situation to situation.”¹⁶⁷ Generally, a sample is considered representative when it is constituted by a sub-group which accurately reflects the views of the larger group. However, what is considered a satisfactory sample will vary based on the context. As the purpose of this study is not to find definite answers to the questions at hand, but rather identify and shed light on the constraints that may affect the ability of the tuna RFMOs to implement and operationalize the ecosystem approach to fisheries, I would argue that the interview data are supplementary information on gaps negatively affecting the implementation and operationalization of the approach. As the aim has been to conduct elite interviews, the size of the overall sample still serves the purpose of providing additional expert knowledge on the topic. It is also relevant to state that the participating organizations and informants represent diversity, without disclosing their identities.

2.3.4.4 Categorization of Findings and Coding of Data

Once the three interviews with the key informants had been conducted, the process of transcribing the material and identifying themes for analysis was initiated. As “with other forms of qualitative data analysis, data must be coded or categorized so as to reveal meanings

¹⁶⁷ Alan Bryman, *Social Research Methods*. Page 425.

contained within the data.”¹⁶⁸ Through this process, the “researcher will seek to develop labels that capture different phenomena present in the transcript.”¹⁶⁹

The coding process in this study consists of a categorization of the findings from the interview transcripts. These findings represent statements made by the interviewees in relation to different constraints negatively affecting the tuna RFMOs’ implementation and operationalization of the ecosystem approach to fisheries. The categorization of the variables is based on the literature review to be presented in Section 5.3 but has also been supplemented by new variables that have been identified through the analysis of the interview transcripts.

The categories identified in this study are divided into three main categories: external factors (encompassing the normative framework and legal processes), internal factors (encompassing institutional aspects and processes) and contextual issues. These categories will be subject to closer analysis in Chapter 8, where the key findings from the interviews are presented and elaborated upon.

Within each category, several potential constraints on the tuna RFMOs’ implementation and operationalization of the ecosystem approach to fisheries are identified based on the coding of the interview transcripts and the existing body of literature. The following presentation aims to explore how the coding process of the interviews has informed the categories and, in some cases, led to the development of new variables.

The category comprising external factors covers the following potential constraints: the definition of the ecosystem approach to fisheries and the role of the FAO in developing guidelines for the implementation of the approach. These categories have been identified in the literature review in Chapter 5, but as will be illustrated in Chapter 8, the representatives from the RFMOs provide new insights into how these two variables actually affect their work of implementing and operationalizing the ecosystem approach to fisheries.

¹⁶⁸ Webley, “Qualitative Approaches to Empirical Legal Research.” Page 943.

¹⁶⁹ Ibid.

The category comprising the internal factors includes the following sub-categories: the management mandates of the tuna RFMOs, their geographical areas of competence, organizational structures, internal processes and scientific processes. All these categories are based on identification in the existing body of literature, but as will be illustrated in Chapter 8, some of the data from this thesis contradict the findings in the literature. The representatives of the RFMOs also provide new insights into how the different categories may be understood.

The third category comprising contextual issues is divided into two sub-categories: 1) diverse stakeholders, political priorities, and capacity and time constraints and 2) economic drivers and capacity. Some of the issues covered in these categories have been primarily developed based on statements given by the key informants. Although some issues are also identified in the literature, potential time constraints on the operationalization of the ecosystem approach to fisheries have thus far not been revealed in the context of tuna RFMOs.

As demonstrated, coding of the interview transcripts helps to achieve the threefold objective of engaging in empirical legal research in this study: to verify whether the identified variables align with the constraints experienced by the tuna RFMOs, to offer new insights into how the different variables influence the ability of the tuna RFMOs to implement and operationalize the ecosystem approach to fisheries, and to identify new variables not covered by the existing body of literature. The findings from the interviews and an analysis and discussion of the findings will be presented in Chapter 8.

2.4 Concluding Remarks

This chapter has provided an overview of the methodologies and methods used to answer the research questions presented in Section 1.3. It has been established that the thesis adopts a mixed method approach, comprising both doctrinal research and legal empirical research.

Part I of this thesis will apply doctrinal research to establish the *lex lata* of obligations relevant to the study. The sources of law will be identified in accordance with Article 38(1) of the ICJ Statute and the normative framework will be assessed in accordance with the principles for

treaty interpretation of the VCLT. However, soft law represents an important source of the normative framework relevant to this thesis. Such sources are not recognized as sources of international law under Article 38(1) of the ICJ Statutes, and the normative status and scope of soft law will be carefully considered. This will primarily be illustrated in Sections 4.3 and 4.4, where the normative scope of the FAO Code of Conduct is subject to closer examination.

Part II of this thesis will apply a mixed method approach, where both doctrinal research and empirical research are used to assess how the *lex lata* identified in Part I is implemented and operationalized in practice, including identification of potential gaps between what is required as a matter of international law and what is currently being done in and by the tuna RFMOs. The analysis moves one step further and seeks to establish the potential causes of the gaps once they have been identified.

The analysis in Part II begins by assessing the founding instruments of the tuna RFMOs to establish whether their management mandates encompass the ecosystem approach to fisheries and whether their institutional structures facilitate the implementation and operationalization of the approach. The next step of the analysis is the identification of the conservation and management measures adopted to regulate catch by abandoned, lost, or otherwise discarded fishing gear. After identifying the relevant measures, a doctrinal analysis is conducted to establish the *lex lata* of the adopted measures and assess how the normative framework is implemented and operationalized in practice. The analysis of the measures has the potential of revealing existing gaps between the normative framework and the practice of the tuna RFMOs. As such gaps are identified in Chapter 7, this thesis also strives to identify some of the key causes of their existence by conducting a literature review of the issue and elite interviews with key informants representing the tuna RFMOs.

The empirical component of this thesis is thus these elite interviews. The interviews are semi-structured, and the key informants were identified using the snowball sampling technique. The value of conducting these interviews is elaborated and new knowledge on challenges for the implementation and operationalization of the ecosystem approach to fisheries is identified in the existing literature, in addition to the identification of constraints that cannot

be identified through desk-based research only. In this way, this thesis responds to Vaughan's call for more empirical work in legal research.¹⁷⁰

The following chapters of the thesis comprise Part I of this thesis: Chapter 3 – Highly Migratory Fish Stocks, Chapter 4 – The Ecosystem Approach to Fisheries, and Chapter 5 – Regional Fisheries Management Organizations. These chapters form a necessary basis for the case study to be explored in Part II of this thesis, and examine the different topics presented in Section 1.3 on a detailed level.

The methodology used in the above chapters is doctrinal research, where the goal is to establish the *lex lata* and identify the normative framework relevant for the implementation and operationalization of the ecosystem approach to fisheries in the context of tuna RFMOs.

¹⁷⁰ Steven Vaughan, "We Need To Talk About Method: A Call for More and Better Empirical Environmental Law Scholarship." Page 17.

3. Chapter III: Highly Migratory Fish Stocks

3.1 Introduction

The objective of this chapter is to set the stage for this research project. An introduction to core concepts and legal obligations applicable to high seas fisheries is considered necessary to address research question 1.¹⁷¹

The aim of this chapter is to introduce the legal framework relevant to high seas fishing operations and analyze the scope and content of the applicable law. As the legal framework encompasses both general obligations applicable to all high seas fishing operations and additional specific obligations applicable to the conservation and management of highly migratory fish stocks, this chapter will analyze both to enable an assessment of the scope and content of the obligations. The assessment will begin with an introduction to the core concepts of high seas fisheries, the relevant legal regime for the exploration of resources and protection and conservation of marine living resources in areas beyond national jurisdiction, before the specific obligations for the conservation and management of highly migratory fish stocks are explored.

3.2 Core Concepts for High Seas Fisheries

The present regime applicable to high seas fisheries is comprehensive. The purpose of this chapter is therefore to provide an overview of the core concepts relevant to this study, with the primary focus on flag state jurisdiction in Section 3.2.1, freedom of fishing in Section 3.2.2, the general obligation to conserve, protect, and preserve the marine environment in Section 3.2.3, the duty of “due regard” in Section 3.2.4 and the duty to cooperate in Section 3.2.5. The following analyses will primarily focus on the Law of the Sea Convention but will be

¹⁷¹ The research questions were presented in Section 1.3 of this thesis.

supplemented by an analysis of the 1995 UN Fish Stocks Agreement when necessary to establish the law *lex lata*.¹⁷²

3.2.1 Flag State Jurisdiction

This PhD study focuses on how the tuna RFMOs have implemented and operationalized the ecosystem approach to fisheries. In this respect, the concept of flag state jurisdiction is of great significance as it covers the jurisdictional framework for high seas fisheries, under which the member states of the RFMOs must comply with the adopted conservation and management measures of these organizations by exercising their jurisdiction over the fishing vessels operating in the RFMOs' geographical areas of competence. The following presentation will offer introductory insights into the regime of flag State jurisdiction as a basis for an analysis of the obligations applicable to the member states of the tuna RFMOs in Chapter 7 of this thesis.

The concept of flag State jurisdiction was originally rooted in the idea that a vessel is an extension of the land territory and thus naturally under the authority of the coastal state.¹⁷³ A more technical view supports the idea that when a state has the power to grant a vessel the right to fly its flag, that state is also empowered to regulate its internal matters and rules. There are several definitions of the term "flag state". Article 91(1) of the Law of the Sea Convention defines the term flag state as the "State in whose territory a ship is registered." Churchill and Lowe define the term as "the State whose nationality a ship possesses and whose flag it is therefore entitled to fly,"¹⁷⁴ and in the Convention on the Conditions for the

¹⁷² See also Section 3.3.2, which provides a separate analysis of the 1995 UN Fish Stocks Agreement.

¹⁷³ S.S. "Lotus," France v. Turkey, Judgment, Judgment No. 9, PCIJ Series A No. 10. Page 25.

¹⁷⁴ Robin Churchill, Vaughan Lowe, and Amy Sander, *The Law of the Sea*, 4th ed., Melland Schill Studies in International Law (Manchester: University Press, 2022). Page 463. Akerhurst also described a "flag State" as "the State whose nationality the ship possesses" in Michael Akerhurst, *A Modern Introduction to International Law*, 6th ed. (Routledge, 1987). Page 182.

Registration of ships, the term is defined as “a State whose flag a ship flies and is entitled to fly” in Article 2.¹⁷⁵¹⁷⁶

Flag state jurisdiction over the ship is exclusive under Article 92(1) of the Law of the Sea Convention, which states that “ships shall sail under the flag of one State only and, save in exceptional cases expressly provided for in international treaties or in this Convention, shall be subject to its exclusive jurisdiction on the high seas.”¹⁷⁷ The exclusive jurisdiction of the flag state plays a dual role, where the state is granted both rights and obligations.¹⁷⁸ The concept of flag state jurisdiction prevents any interference by other states with the vessel flying its flag on the high seas and consequently ensures the freedom to undertake activities on the high seas in accordance with Article 87 of the Law of the Sea Convention.¹⁷⁹ Flag state jurisdiction, however, also imposes obligations on the state concerned, including the “responsibility to ensure compliance with national and international laws and standards concerning activities of ships flying its flag on the high seas,”¹⁸⁰ including binding conservation and management measures adopted by the RFMOs to which the flag states are parties.¹⁸¹

The specific duties of flag states are found in Article 94 of the Law of the Sea Convention, which states that a flag State is required to “effectively exercise its jurisdiction and control in administrative, technical and social matters.” The responsibilities imposed on flag states under Article 94 represent a significant expansion of Article 10 of the preceding 1958 Geneva Convention on the High Seas (HSC).¹⁸² To fulfill the obligations of Article 94, it is implicitly

¹⁷⁵ 1972 Convention on the International Regulations for Preventing Collisions at Sea, 1050 UNTS 16 (1972).

¹⁷⁶ Several issues in relation to the term flag State exist, consequently giving rise to, e.g., the problem of flags of convenience. See, e.g., Churchill, Lowe, and Sander, *The Law of the Sea*. Page 466.

¹⁷⁷ The exclusivity is however limited to “the right to visit” in Article 110 of the Law of the Sea Convention and the right of “hot pursuit” in Article 111.

¹⁷⁸ Yoshifumi Tanaka, *The International Law of the Sea*, 3rd ed. (Cambridge, United Kingdom: Cambridge University Press, 2019). Page 152.

¹⁷⁹ The freedom of fishing is examined in Section 3.2.2 of this thesis, and the content of Article 87 will be subject to closer examination in this chapter.

¹⁸⁰ Yoshifumi Tanaka, *The International Law of the Sea*. Page 153.

¹⁸¹ The legal status of RFMOs’ conservation and management measures is subject to closer examination in Section 5.2.4.

¹⁸² 1958 Convention on the High Seas, 450 UNTS 11 (1958). In accordance with Article 10 of the Convention on the High Seas, the flag state “shall take such measures for ships under its flag as are necessary to ensure safety

required that the flag State maintains “a register of all shipping flying its flag, and also assuming jurisdiction under its national law for both the ship and its crew in relation to administrative, technical and social matters.”¹⁸³ Furthermore, these obligations require the flag State to “apply particular shipping and maritime laws to its flagged ships, and also relevant criminal and civil law to the crew.”¹⁸⁴ In the *M/V Saiga (No. 2)* case, the International Tribunal for the Law of the Sea (ITLOS) emphasized that the flag State jurisdiction covers all the people on the ship, with the wording “the ship, everything on it, and every person involved or interested in its operations are treated as an entity linked to the flag State.”¹⁸⁵ In addition to the obligations stipulated in Article 94 of the Law of the Sea Convention, flag states are required to fulfill a range of other obligations regarding activities on the high seas not directly relevant to this particular study.^{186, 187, 188} Further, the flag State must ensure that the

at sea.” The expansion of the wording “effectively exercise its jurisdiction and control” in the Law of the Sea Convention thus constitutes a development of the obligations imposed on the flag State.

¹⁸³ Donald R. Rothwell and Tim Stephens, *The International Law of the Sea*, 2nd ed. (Oxford: Hart, 2016). Page 169.

¹⁸⁴ *Ibid.*

¹⁸⁵ Thus, it must be emphasized that the flag state is obliged to apply its jurisdiction and control over all people on board the ship, regardless of their nationalities. See the *M/V Saiga (No. 2)* case (St. Vincent and the Grenadines v. Guinea) (1999), 38 ILM 1323, para. 106.

¹⁸⁶ See, e.g., Donald R. Rothwell and Tim Stephens, *The International Law of the Sea*. Page 169. One of the relevant obligations is to safeguard life at sea for its flagged ships. Hence, the flag state is obliged to fulfill certain measures of generally accepted international rules and standards regarding the seaworthiness of ships, the staffing of the ships and the use of signals to prevent collisions. These obligations are derived from relevant instruments adopted by the International Maritime Organization. See, for instance, the International Convention for the Safety of Life at Sea, 1 November 1974, 1184 UNTS 3 (1974), the International Convention on Standards of Training, Certification and Watchkeeping for Seafarers, 1 December 1978, 1361 UNTS 190 (1978) and the Convention on the International Regulations for Preventing Collisions at Sea, 20 October 1972, 1050 UNTS 16 (1972).

¹⁸⁷ The International Maritime Organization was established by the adoption of the IMO Convention by the United Nations in 1948, see Convention on the International Maritime Organization, 289 UNTS 48, 1948. Chircop describes the IMO as the “competent international organization with regards to the regulation of international shipping and navigation for safety, vessel-source pollution, and maritime security purposes” in the Law of the Sea Convention in Aldo Chircop, “The International Maritime Organization,” in *The Oxford Handbook of the Law of the Sea*, eds. Alex Oude Elferink et al., Oxford Handbooks in Law (United Kingdom: Oxford University Press, 2015), <https://doi.org/10.1093/law/9780198715481.003.0019>. Page 416.

¹⁸⁸ The “IMO is only explicitly mentioned once” in the Law of the Sea Convention, but Molenaar emphasizes; “it is generally accepted that the IMO is the primary competent international organization for the regulation of international merchant shipping” in Erik J. Molenaar, “Options for Regional Regulation of Merchant Shipping Outside IMO, with Particular Reference to the Arctic Region,” *Ocean Development & International Law*, 45 (2014): 272–298. Page 279. See also Chircop, “The International Maritime Organization.” Page 416.

parameters of effective control in the context of pollution of the marine environment are complied with in accordance with Article 217 of the Law of the Sea Convention.¹⁸⁹ However, the focal point in this thesis is high seas fisheries. Having established that the flag State directly exercises control over the activities conducted by its ships on the high seas, this chapter now analyzes the relevant rights and duties regarding fisheries in areas beyond national jurisdiction.

3.2.2 The Freedom of Fishing

One of the core features of this study is high seas fisheries, which necessitates an assessment of the legal framework applicable to these activities on the high seas. The principle of freedom is reflected in part VII of the Law of the Sea Convention and was briefly introduced in Section 1.3. Article 89 of the Law of the Sea Convention emphasizes that “no State may validly purport to subject any part of the high seas to its sovereignty.” This provision underscores that these areas are located beyond national jurisdiction, and that all states in turn have equal rights to access and use these areas and their resources in conformity with international law.¹⁹⁰

The freedoms that may be enjoyed in the areas beyond national jurisdiction are provided in Article 87 of the Law of the Sea Convention, which states:

“The high seas are open to all States, whether coastal or land-locked. The freedom of the high seas is exercised under the conditions laid down by this Convention and by other rules of international law. It comprises, inter alia, both for coastal and land-locked States.... freedom of fishing, subject to the conditions laid down in section 2.”

¹⁸⁹ Article 217 of the Law of the Sea Convention emphasizes that “States shall ensure compliance by vessels flying their flag or of their registry with applicable international rules and standards... for the prevention, reduction and control of pollution of the marine environment from vessels and shall accordingly adopt laws and regulations and take other measures necessary for their implementation.”

¹⁹⁰ See e.g., Yoshifumi Tanaka, *The International Law of the Sea*. Page 151.

The provision then lists and recognizes a variety of activities, including the freedom of fishing in *litra e*.¹⁹¹

Some preliminary observations regarding the scope and content of Article 87 can be made. The first one is that the wording “*inter alia*” suggests that the list of activities that may be enjoyed is non-exhaustive. However, it is uncertain which other activities may be initiated and undertaken. Henriksen argues that the freedoms of the high seas can be viewed from two perspectives: “as having a non-exhaustive/residual character and as having a restricted character.”¹⁹² The first perspective reflects that all states have freedom of action, which entitles them to make use of the high seas for other purposes than those specified in Article 87 of the Law of the Sea Convention. The latter perspective reflects the restrictions on the freedom of action. The fact that such restrictions exist is evident from the term “conditions” used in Article 87. Thus, a state can only exercise activities on the high seas if the relevant conditions are fulfilled. Regarding the freedom of fishing, the restrictions are specified in Part VII of the Law of the Sea Convention (including Articles 116-119).¹⁹³ Assessing the different provisions in conjunction, the perspective of a non-exhaustive character and the perspective of a restricted character create a legal sphere where all activities (both those listed and those not listed in Article 87 of the Law of the Sea Convention) must be undertaken in accordance with the obligations of international law or specific treaties regulating, e.g., marine living resources or pollution.¹⁹⁴ Thus, one may ask whether the freedom of fishing is a freedom as

¹⁹¹ Article 87(1), *litra a-f* of the Law of the Sea Convention reads “It comprises, *inter alia*, both for coastal and land-locked States: Freedom of navigation, freedom of overflight, freedom to lay submarine cables and pipelines, freedom to construct artificial islands and other installations, freedom of fishing and freedom of scientific research.”

¹⁹² Tore Henriksen, “Revisiting the Freedom of Fishing and Legal Obligations on States Not Party to Regional Fisheries Management Organizations,” *Ocean Development & International Law* 40, No. 1 (17 February 2009): 80–96, <https://doi.org/10.1080/00908320802459169>. Page 83.

¹⁹³ Section II of Part VII of the Law of the Sea Convention comprises Articles 116-120 regulating Conservation and Management of the Living Resources of the High Seas.

¹⁹⁴ Tanaka raises the question of the sensitive issue of the legality of military activities on the high seas in this regard. See Yoshifumi Tanaka, *The International Law of the Sea*, on page 151.

such or a mere right of access and action, given that the freedom is of a restrictive character and seems to be negatively defined.¹⁹⁵

The International Law Commission (ILC) has emphasized that the restrictions of the right of action on the high seas are designed to secure the common interests of all states. The ILC has explicitly stated that “any freedom that is to be exercised in the interest of all entitled to enjoy it, must be regulated. Hence the law of the high seas contains certain rules...designed not to limit or restrict the freedom of the high seas, but to safeguard its exercise in the interests of the entire international community.”¹⁹⁶ This statement imply that the high seas are regarded as a global common.¹⁹⁷ However, the high seas, and their resources, presently do not have the status of common heritage of humankind under the Law of the Sea Convention, thus differing from the regime governing the area controlled by the International Seabed Authority.¹⁹⁸

Article 87 grants all states the right to conduct activities, both conventional and unconventional, on the high seas. However, the exercising of these activities is presently restricted by various obligations to safeguard the interests of the international community, including conservation of marine species, which is of relevance to this study.¹⁹⁹ An analysis of

¹⁹⁵ Henriksen discusses this matter thoroughly on pages 84-85 in Tore Henriksen, “Revisiting the Freedom of Fishing and Legal Obligations on States Not Party to Regional Fisheries Management Organizations.”

¹⁹⁶ Arthur Watts, *The International Law Commission 1949-1998 – Volume I: The Treaties* (Clarendon Press, 1999). Page 59.

¹⁹⁷ On this issue, see, e.g., De Lucia, Vito, “The Concept of Commons and Marine Genetic Resources in Areas beyond National Jurisdiction,” *Maritime Safety and Security Law Journal*, Issue 5 (November 27, 2018), <https://doi.org/hdl.handle.net/10037/14410>. Page 5.

¹⁹⁸ All parties to the Law of the Sea Convention are ipso facto members of the International Seabed Authority. See Article 156 (2) of the Convention. The obligations and control of the Authority are specified in Article 157 of the Law of the Sea Convention. Henriksen emphasizes that “a state’s right to fish on the high seas is not derived from the collective of states...It is the individual states that are right holders and subjects of the obligations under the LOS Convention,” when discussing how the high seas “do not have the status of common heritage of humankind,” in Tore Henriksen, “Revisiting the Freedom of Fishing and Legal Obligations on States Not Party to Regional Fisheries Management Organizations,” page 85.

¹⁹⁹ It may be pointed out that the era of “mare liberum” came to an end with the adoption of the Law of the Sea Convention. The idea that the high seas are open to all states on equal terms was rooted in Grotius’ work *Mare Liberum* from the seventeenth century, where he stated: “the sea is common to all, because it is so limitless it cannot become a possession of any one, and because it is adapted for the use of all, whether we consider from

the present conditions and obligations applicable to high seas fisheries will be provided in the following.

3.2.3 Conservation and Management in the Law of the Sea Convention

The preamble of the Law of the Sea Convention states that one of the main objectives of the convention is to create a legal order for the seas and oceans which will promote “the equitable and efficient utilization of their resources, the conservation of their living resources, and the study, protection and preservation of the marine environment.”²⁰⁰ However, at first glance, the Convention does not comprise an extensive regime for the conservation of marine living resources in the high seas with seemingly only a few obligations regulating the conservation and management of these resources. Although there are few provisions, the Law of the Sea Convention does include some that govern the protection and preservation of the marine environment applicable to areas beyond national jurisdiction in Part XII, and some for the conservation and management of marine living resources in Articles 116-119.

Article 192 imposes a general obligation on the state parties to the Law of the Sea Convention to protect and preserve the marine environment. The negotiations at UNCLOS III regarding the protection and preservation of the marine environment were heavily influenced by the Stockholm Conference and the preceding and parallel negotiations taking place for the MARPOL 73/78 Convention.²⁰¹ As Warner shows, “the obligation in Article 192 can be traced back to the principles for the preservation of the marine environment adopted by the Intergovernmental Working Group on Marine Pollution...at its second session in...1971 and incorporated in Recommendation 92 of the Stockholm Conference Action Plan as guiding concepts for the Third United Nations Conference on the Law of the Sea.”²⁰² The Law of the Sea Convention is silent on the geographical scope of application of the obligation in Article

the point of view of navigation or fisheries.” See Grotius, *The freedom of the seas or the right which belongs to the Dutch to take part in the East Indian trade*.

²⁰⁰ Law of the Sea Convention, Preamble.

²⁰¹ Robin Warner, “D. Protection and Preservation of the Marine Environment,” in *Protecting the Oceans Beyond National Jurisdiction*, Vol. 3 (United States: BRILL, 2009). Page 47.

²⁰² *Ibid.*

192, but in view of its drafting process, it is clear that the obligation is applicable to all ocean space, including areas beyond national jurisdiction, which was also emphasized by the tribunal in the *South China Sea Arbitration*.²⁰³

Despite obliging the parties ratifying the Law of the Sea Convention to protect and preserve the marine environment, the potential positive actions that should be undertaken to fulfill the obligation, or negative actions that should be refrained from, are not further specified in the provision. Part XII of the Law of the Sea Convention encompasses obligations regulating pollution in various forms, the use of technologies and introduction of alien or new species.²⁰⁴ As a starting point, it is thus natural to read the positive obligation in Article 192 together with the more specific obligations listed in Articles 194 and 195, which shows that these obligations ought to be fulfilled in a manner that protects and preserves the marine environment. Article 194(5) states that the measures undertaken in conformity with Part XII “shall include those necessary to protect and preserve rare or fragile ecosystems as well as the habitat of depleted, threatened or endangered species and other forms of marine life.” It is thus evident that states have a positive obligation to take action to protect and preserve such species and their habitats in relation to the control and prevention of pollution of the marine environment. A question that arises is whether the identified obligation extends to other activities and/or impacts than polluting activities and pollution.

In the *Southern Bluefin Tuna Case*, the ITLOS stated that “the conservation of the living resources at sea is an element in the protection and preservation of the marine environment.”²⁰⁵ This was reinforced in the *South China Sea Arbitration*, where the ITLOS stated that Article 192 of the Law of the Sea Convention includes an obligation to prevent the harvesting of endangered species and states that the conservation of living marine resources must be regarded as an element in the protection and preservation of the marine

²⁰³ *South China Sea Arbitration*, para. 940.

²⁰⁴ Law of the Sea Convention, Articles 194 and 195.

²⁰⁵ *Southern Bluefin Tuna case* (New Zealand v. Japan; Australia v. Japan), Provisional Measures (ITLOS Reports 1999 p. 280 August 27, 1999) on p. 295, para. 70.

environment.²⁰⁶ Further, the tribunal of the arbitration stated that Article 192 imposes a positive obligation to take the necessary actions to “protect and preserve rare and fragile ecosystems as well as the habitat of depleted, threatened or endangered species and other forms of marine life.”²⁰⁷ The tribunal then stated: “therefore, in addition to preventing the direct harvesting of species recognized internationally as being threatened with extinction, Article 192 extends to the prevention of harms that would affect depleted, threatened, or endangered species indirectly through the destruction of their habitat.”²⁰⁸ One can thus conclude that Article 192 encompasses substantive obligations for potential activities on the high seas, including fisheries, that may threaten endangered species and their habitats.²⁰⁹ How this interpretation of Article 192 relates to the ecosystem approach to fisheries will be more closely assessed in Chapter 4.

Turning to the specific provisions regulating high seas fisheries, Part VII Section 2 of the Law of the Sea Convention is titled “Conservation and Management of the Living Resources of the High Seas,” comprising Articles 116-119.²¹⁰ These provisions are informed by the obligation encompassed in Article 192, as conservation of marine living resources is an integral part of the obligation to protect and preserve the marine environment. The primary determinant of Section 2 of the Law of the Sea Convention is the underlying fact that fish stocks are exhaustible resources if not managed and conserved in a sustainable manner.²¹¹ The content and scope of Articles 116-119 will be analyzed in greater detail in Sections 3.2.5 and 3.3.1, but

²⁰⁶ *South China Sea Arbitration*, para. 956. The tribunal reinforced the notion that “the conservation of the living resources at sea is an element in the protection and preservation of the marine environment,” which was first made in the Southern Bluefin Tuna case.

²⁰⁷ *South China Sea Arbitration*, para. 959.

²⁰⁸ *Ibid.*

²⁰⁹ See, e.g., Pandey and Subedi, who argue that there is a “connection between the general obligation of the States to protect and preserve the marine environment and the conduct of activities for the exploitation of the marine resources” by virtue of the award in the *South China Sea Arbitration*. Pandey and Subedi further state that harm caused by unsustainable fishing practices should be regarded as a concern for humankind but also emphasize that this is a bold claim. See Amrisha Pandey and Surya P. Subedi, “Enhancing State Responsibility from Environmental Implications of the South China Sea Dispute,” in *Frontiers in International Environmental Law: Oceans and Climate Challenges: Essays in Honour of David Freestone*, eds. Richard Barnes and Ronán Long (Brill Nijhoff, 2021), 339–67, https://doi.org/10.1163/9789004372887_014, page 356.

²¹⁰ Part VII Section 2 also encompasses Article 120 regarding the conservation of marine mammals.

²¹¹ Rosemary Rayfuse, “Art 116,” in *United Nations Convention on the Law of the Sea: A Commentary*, eds. Alexander Proelss et al. (München: Beck, 2017). Page 802.

a short presentation of the relevant key features will be provided in the following to shed light on the numerous existing obligations relevant to the conservation and management of marine living resources.

Article 116 of the Law of the Sea Convention “elaborates on the freedom to fish on the high seas which is codified in Art. 87 (1),” and “aims at concretising the scope of the ‘conditional freedom’.”²¹² Article 117 covers the duty to adopt measures for the conservation of the living resources in the high seas, with a primary objective of ensuring conservation “through the imposition of a duty on all states to control the activities of their nationals.”²¹³ As emphasized by Rayfuse, this “duty can be seen as a *quid pro quo* for the right to fish on the high seas which is guaranteed to all States by Art 87 (1) (e) and concretised in Art 116.”²¹⁴ Article 118 encompasses the duty to cooperate in the conservation and management of living resources and establishes that if more than two states are fishing for identical living resources or different living resources in the same area, the relevant states shall cooperate to establish subregional or regional fisheries organizations. Article 118 thus “mandates the ‘institutional’ framework through which States are to cooperate to ensure the conservation and management of high seas living resources.”²¹⁵ Finally, Article 119 provides the technical formula for how management of the living resources in the high seas shall be implemented.

There exist then several specific obligations imposed on states that are flag states for their vessels utilizing marine living resources in areas beyond national jurisdiction. The following section will examine how the duty of “due regard,” encompassed in Article 87(2) of the Law of the Sea Convention, also plays a key role in conservation and management efforts in high seas fisheries.

²¹² Ibid. Page 792.

²¹³ Rosemary Rayfuse, “Art 117,” in *United Nations Convention on the Law of the Sea: A Commentary*, eds. Alexander Proelss et al. (München: Beck, 2017). Page 805.

²¹⁴ Ibid.

²¹⁵ Rosemary Rayfuse, “Art 118,” in *United Nations Convention on the Law of the Sea: A Commentary*, eds. Alexander Proelss et al. (München: Beck, 2017). Page 819.

3.2.4 The Duty of “Due Regard”

Article 87(2) establishes that the freedom of fishing “shall be exercised by all States with ‘due regard’ for the interests of other States in their exercise of the freedom of the high seas.”²¹⁶

The concept of due regard is broadly formulated but must be interpreted to encompass an obligation of vigilance and consideration of the interests of other states when engaging in activities on the high seas. The concept equally requires states to refrain from activities that may impede or interfere with other states exercising their freedoms in the same high seas areas.²¹⁷ In this way, the requirement of due regard in Article 87(2) encompasses both a positive obligation to actively take action to safeguard the activities conducted by other States, and a negative obligation to refrain from activities which may interfere with the interests of other states. The requirement of due regard, as stated in Article 87(2) of the Law of the Sea Convention, thus refers to a balancing of interests among states who exercise their freedoms in areas beyond national jurisdiction.²¹⁸ Forteau describes the duty of due regard as being “aimed at ensuring conciliation between conflicting concurrent, or overlapping elements; that is to say that they do not purport to introduce any hierarchy between them but, instead, are based on the assumption that these elements all need to be respected and that as a result, there is a need to balance them in order to find the best possible protection of each interest involved.”²¹⁹

²¹⁶ The term “due regard” is also found in Article 27(4) with regard to navigation in the territorial sea, Article 39(3), *litra a* with regard to straits used for international navigation, Articles 56(2), 58(3), 60(3) *litra a* and 66(3) *litra a* with regard to the regime of the Exclusive Economic Zone, Article 79(5) regarding laying of submarine cables or pipelines under the regime governing the continental shelf, Articles 142(1), 148, 161(4), 162(2) *litra d*, 163(2) and 167(2) with regard to the International Seabed Area, Article 234 with regard to the protection and preservation of the marine environment and finally Article 267 considering development and transfer of marine technology.

²¹⁷ Yoshinobu Takei, *Filling Regulatory Gaps in High Seas Fisheries: Discrete High Seas Fish Stocks, Deep-Sea Fisheries, and Vulnerable Marine Ecosystems*, Vol. 75, Publications on Ocean Development (Leiden; Boston: Martinus Nijhoff Publishers, 2013). Page 35.

²¹⁸ *Ibid.*

²¹⁹ Mathias Forteau, “The Legal Nature and Content of ‘Due Regard’ Obligations in Recent International Case Law,” *International Journal of Marine and Coastal Law* 34, No. 1 (2019): 25–42, <https://doi.org/10.1163/15718085-23341040>. Page 29.

As pointed out by Scovazzi, a difficult question arises when considering the balancing of rights between states: “if ‘due regard’ must be given to a right granted to another state, does this mean that the right in question must always be satisfied or at least that some forms of balancing of conflicting rights must always be found?”²²⁰ The answer seems to be found in the *Chagos Marine Protected Area Case*, where the tribunal held that the ordinary meaning of due regard calls for the states to have such regard for the rights as is called for by the circumstances and the nature of the rights.²²¹ Thus, “the Convention does not impose a uniform obligation to avoid any impairment of...rights; nor does it uniformly permit the... [other state] ... to proceed as it wishes, merely noting such rights.”²²² The tribunal further stated that “the extent of the regard required by the Convention will depend upon the nature of the rights...the nature and importance of the activities contemplated...and the availability of alternative approaches.”²²³ Considering the judicial ruling in that case, it seems evident that the scope and content of the obligation of due regard will vary according to the circumstances and the nature of the rights, and that it represents an exercise of balancing of different and competing rights. The statement of the tribunal in the *Chagos Marine Protected Area Case* was also reinforced in the *South China Sea Arbitration*, where the tribunal referred to the interpretation of the duty of due regard as presented in the previous case.²²⁴ In this way, the outcome of the application of the concept cannot be predetermined and must be decided on a case-by-case basis.²²⁵

But how should the obligation of due regard be applied on the high seas when the right-holder might not be a single State, but the entire international community, in questions of the conservation of marine living resources? This important question was addressed in the

²²⁰ Tullio Scovazzi, “‘Due Regard’ Obligations, with Particular Emphasis on Fisheries in the Exclusive Economic Zone,” *International Journal of Marine and Coastal Law* 34, No. 1 (2019): 56–72, <https://doi.org/10.1163/15718085-23341041>. Page 62.

²²¹ *Chagos Marine Protected Area Arbitration* (Mauritius v. United Kingdom), Final Award, ICGJ 486 (PCA 2015), 2015, para 519. Scovazzi also provides an analysis of the ruling and its significance. See Tullio Scovazzi, “‘Due Regard’ Obligations, with Particular Emphasis on Fisheries in the Exclusive Economic Zone.” Pages 62-63.

²²² *Chagos Marine Protected Area Arbitration*. Para. 519.

²²³ *Ibid.*

²²⁴ *South China Sea Arbitration*. Para. 742.

²²⁵ Tullio Scovazzi, “‘Due Regard’ Obligations, with Particular Emphasis on Fisheries in the Exclusive Economic Zone.” Page 63.

Fisheries Jurisdiction Case adjudicated prior to the *Chagos Marine Protected Area Case* and the *South China Sea Arbitration*.²²⁶

In the *Fisheries Jurisdiction Case*, the ICJ stated that “all States have an obligation to take full account of each other’s rights” and “that the former laissez-faire treatment of the living resources of the sea in the high seas has been replaced by a recognition of a duty to have ‘due regard’ to the rights of other States and the needs of conservation for the benefit of all.”²²⁷ Thus, the ICJ emphasized that states need to pay attention to the interests of the international community when conducting fisheries on the high seas.²²⁸ How this obligation should be actively undertaken to ensure compliance with Article 87(2) is presently not clear, but it at least entails the fulfillment of the duties found in Articles 116-119 of the Law of the Sea Convention.²²⁹

At the time of the adjudication in the *Fisheries Jurisdiction Case*, neither of the disputing parties were contracting parties to the 1958 Convention on the High Seas, which was the relevant legal instrument at the time, but the ICJ nevertheless stated that Iceland’s actions constituted an infringement of the principle of reasonable regard to the interests of other states in the exercising of their freedom of fishing encompassed in Article 2 of the 1958 HSC.²³⁰ This may imply that the ICJ considered the principle of due regard as a rule of customary international law, applicable to all states conducting high seas fisheries. Nevertheless, the

²²⁶ *Fisheries Jurisdiction Case*.

²²⁷ *Fisheries Jurisdiction Case*. Para. 72.

²²⁸ Gaunce also emphasizes that “the duty of due regard encompasses not only a mutual duty bilaterally between competing States to balance their activities but also a duty to the interests of the international community” in Gaunce, Julia, “On the Interpretation of the General Duty of ‘Due Regard,’” *Ocean Yearbook Online* 32, no. 1 (January 1, 2018): 27–59, <https://doi.org/10.1163/22116001-03201003>. Page 59.

²²⁹ The conservation and management regime was subject to closer examination in Section 3.2.3, the content of the duty to cooperate is examined in Section 3.2.5 and the determination of management measures is explored in Section 3.3.4. The content and obligations encompassed in Articles 116-119 of the Law of the Sea Convention will be clarified and discussed in these sections.

²³⁰ *Fisheries Jurisdiction Case*. Para. 67.

duty of due regard has been elevated to a cornerstone of the law of the sea by its explicit inclusion in the Law of the Sea Convention.²³¹

As Takei emphasizes, the concept of due regard might function as a threshold for exploitation of fish stocks, which may be invoked when a new issue emerges.²³² This line of reasoning would make the Law of the Sea Convention a ‘living instrument’ capable of adjusting to changing scenarios for high seas fisheries and for the safeguarding of common interests of all states. A central question in this regard is whether the duty of due regard may function as a safety mechanism when there is a conflict regarding incompatible rights and duties. Can a State be held accountable for its actions or its potential failure to act when this is required on the sole basis of the duty of due regard? Or should the threshold of the duty of due regard always be assessed in conjunction with other provisions in the Law of the Sea Convention to establish whether an act is legitimate?

In the *Chagos Marine Protected Area Arbitration*, the tribunal found that the United Kingdom had breached its obligations to Mauritius under Articles 2(3), 56(2), and 194(4) of the Law of the Sea Convention by establishing a marine protected area that extended 200 nm from the baselines around the Chagos Archipelago. The assessment of the duty of due regard was used to evaluate whether the UK had breached the relevant provisions of the Law of the Sea Convention.²³³ In the *South China Sea Arbitration*, the tribunal found that China was in breach of its obligation to have due regard under Article 58(3) of the Law of the Sea Convention on a sole basis.²³⁴

²³¹ See e.g., Douglas Guilfoyle, “Art 87,” in *United Nations Convention on the Law of the Sea: A Commentary*, eds. Alexander Proells et al. (München: Beck, 2017). Guilfoyle states that the “ILC appeared to consider the rule at customary international law to be that: ‘States are bound to refrain from acts which might adversely affect the use of the high seas by nationals of other States.’” Page 681. See also Zhang Guobin, “A Discussion on Due Regard in the United Nations Convention on the Law of the Sea,” *China Oceans Law Review* 2014, No. 20 (2014): 70–93. Guobin discusses the nature of the obligation of ‘due regard’ on page 76. It should be emphasized that the question of the customary nature of the duty of due regard will not be subject to further discussion in this thesis due to the scope of the research project.

²³² Yoshinobu Takei, *Filling Regulatory Gaps in High Seas Fisheries – Discrete High Seas Fish Stocks, Deep-sea Fisheries and Vulnerable Marine Ecosystems*. Page 37.

²³³ *Chagos Marine Protected Area Arbitration*.

²³⁴ *South China Sea Arbitration*. Para. 757.

These two judicial decisions illustrate that the duty of due regard may be applied as an interpretive element in the assessment of the obligations in the provisions of the Law of the Sea Convention and on a sole basis for constituting a breach of international law. Consequently, the duty of due regard has a dual application, which is used to secure the interests of all states by balancing the various interests to find the best solution for the competing interests involved.²³⁵

The duty of due regard will be assessed when relevant in the following examination of obligations applicable to high seas fisheries. It will not be the primary focus of the following presentation and analysis, but where appropriate, it will be assessed both to clarify the extent and limits of the provisions of Part VII Section 2 of the Law of the Sea Convention and on a sole basis where this is relevant.

3.2.5 The Duty to Cooperate

The duty to cooperate serves as one of the foundations of this study, and a closer examination of the applicable provisions forms a necessary basis to establish the law *lex lata* for cooperation in high seas fisheries.

Articles 117 and 118 of the Law of the Sea Convention oblige state parties to cooperate to conserve and manage living resources in the high seas. Article 117 emphasizes that “all States have the duty to take, or to cooperate with other States in taking, such measures for their respective nationals as may be necessary for the conservation of the living resources of the high seas.” Article 118 elucidates: “States shall cooperate with each other in the conservation and management of living resources in the areas of the high seas. States whose nationals

²³⁵ In the context of flag state jurisdiction, it should be emphasized that issues regarding the utilization of fishery resources and conservation of marine ecosystems may represent competing interests which may invoke the balancing act of the principle of due regard in accordance with Article 87 (2) of the Law of the Sea Convention. This interesting scenario will nevertheless not occur in the context of RFMOs, as the conservation and management measures adopted by these organizations are subject to their decision-making mechanisms, where each member state has the right to vote, and the scenario will thus not be subject to closer analysis in this thesis. How RFMOs make their decisions is explored in a general manner in Section 5.2.5, and the decision-making mechanisms of the tuna RFMOs are considered in more detail in Chapter 6.

exploit identical living resources, or different living resources in the same area, shall enter into negotiations with a view to taking the measures necessary for the conservation of the living resources concerned.”

What the requirement of cooperation entails is not clarified in the Law of the Sea Convention, leading to uncertainty of how the cooperation ought to be implemented to fulfill the obligation. First, it must be emphasized that the purpose of the cooperation shall be conservation and management of living resources. This seems to imply that relevant scientific knowledge about the resources utilized in the respective fisheries must be one of the main foundations for the cooperation. This understanding is accounted for in Article 119, where the states are provided with a technical guideline for how management should be commenced.²³⁶ Second, Article 118 above points out that states “shall enter into negotiations with a view to taking the measures necessary.” A natural interpretation of the paragraph suggests that the provision is merely an obligation to enter into negotiations, and not one to achieve results. Consequently, there exists “no express obligation to negotiate until agreement is reached, nor are the consequences of a failure to reach agreement stipulated.”²³⁷ However, the negotiations must be conducted in good faith in accordance with Article 300 of the Law of the Sea Convention.

In the *Fisheries Jurisdiction Case*, the ICJ stated that the task of the disputing parties was “to conduct their negotiations on the basis that each must in good faith pay reasonable regard to the legal rights of the other in the waters around Iceland...thus bringing about an equitable apportionment of the fishing resources based on the facts of the particular situation, and having regard to the interests of other States which have established fishing rights in the area.”²³⁸ Following the same line of reasoning when negotiating for cooperation in relation to high seas fisheries will at least require the parties to pay reasonable regard during the

²³⁶ Article 119 will be subject to closer examination in section 3.3.4.

²³⁷ Peter G. G. Davies and Catherine Redgwell, “The International Legal Regulation of Straddling Fish Stocks,” *The British Year Book of International Law* 67, nr. 1 (1997): 199–274, <https://doi.org/10.1093/bybil/67.1.199>. Page 229.

²³⁸ *Fisheries Jurisdiction Case*. Para. 78.

negotiations to the legal rights of the other states with an interest in the living resources in the area and to try to reach a final agreement.

Furthermore, it should be emphasized that if an agreement is not reached, the states exploiting the resources are under no obligation to negotiate indefinitely. No state can force such obligations upon other States in accordance with the prohibition of abuse of rights in Article 300 of the Law of the Sea Convention.²³⁹ If negotiations in good faith fail, all parties to the Convention are still required to adopt necessary conservation and management measures for their nationals in accordance with Article 117 of the Law of the Sea Convention and have due regard of the interests of other States exercising the freedoms of the high seas in accordance with Article 87(2). This understanding reinforces the underlying condition of exhaustibility of living marine resources and can potentially safeguard competing interests in the respective fisheries.

In the last sentence of Article 118, the parties to the Convention “shall, as appropriate, cooperate to establish subregional or regional fisheries organizations.” Yet again, the provision may be characterized as vague due to the wording “as appropriate”. It does not clarify what actions must be undertaken to meet the threshold for compliance with Article 118, and when such organizations must be established. A key question that arises is whether states fishing for the same stocks or different living resources in the same geographical area must enter the relevant RFMO operating in the area to fulfill the obligation to cooperate in accordance with Article 118. If the answer to this question is no, then a second question arises: Is the fishing State nevertheless obliged to comply with the conservation and management measures adopted by the relevant RFMO?

Based on the *pacta tertiis* principle, briefly introduced in Section 2.2.1, decisions and conservation and management measures adopted by a RFMO will not be binding on a third State.²⁴⁰ This approach is also reflected in the present body of legal literature. Takei argues

²³⁹ See, Kilian O’Brien, “Art 300,” in *United Nations Convention on the Law of the Sea: A Commentary*, eds. Alexander Proelss et al. (München: Beck, 2017), pages 1937-1943 for a general analysis of the scope and content of Article 300 of the Law of the Sea Convention.

²⁴⁰ United Nations, *Vienna Convention on the Law of Treaties*, Article 33.

that it is not impossible for a State to continue fishing without joining the relevant RFMO.²⁴¹ His argument is based on the fact that RFMOs do not have to be granted a management mandate; they may sometimes function as an advisory bodies.²⁴² Henriksen comes to the same conclusion after reviewing the content of the duty to cooperate and emphasizes: “States can comply with their obligation to cooperate through or within the framework of an RFMO without being or becoming a member.”²⁴³ This viewpoint seems favorable, as becoming a member of an RFMO might impose a range of additional duties on the flag State (such as additional costs, internal organizational and administrative matters, the duty to participate in meetings, and other practical obligations).

One can thus conclude that there does not exist an obligation to become a party to a RFMO to fulfill the obligation of cooperation in Articles 117 and 118 of the Law of the Sea Convention, based on the *pacta tertiis* principle. Nevertheless, are fishing nations obliged to comply with the conservation and management measures of the RFMOs to fulfill the duty to cooperate as laid down in the Convention?

There is no doubt that an RFMO is the appropriate organ for cooperation between states fishing for the same resources on the high seas. This is clearly articulated in Article 118, which states: “They shall...cooperate to establish subregional or regional fisheries organizations to this end.” Article 118 also includes an obligation for fishing states to negotiate collectively with all relevant states exploiting the identical or different resources in the same geographical area. This seems to imply that participation in the relevant RFMO is necessary to fulfil the obligation of cooperation in accordance with the Law of the Sea Convention, as RFMOs are considered as the appropriate organs for collective action. RFMOs are responsible for “determining the allowable catch and establishing other conservation measures for the living resources in the high seas” according to Article 119. Failure to comply with such measures adopted may arguably constitute a failure to comply with the duty to cooperate. Rayfuse states: “State

²⁴¹ Yoshinobu Takei, *Filling Regulatory Gaps in High Seas Fisheries – Discrete High Seas Fish Stocks, Deep-sea Fisheries and Vulnerable Marine Ecosystems*. Page 58.

²⁴² *Ibid.*

²⁴³ Henriksen, “Revisiting the Freedom of Fishing and Legal Obligations on States Not Party to Regional Fisheries Management Organizations.” Page 88.

practice indicates both the assertion and the acceptance of a customary duty to cooperate through the medium of RFOs either by compliance or through restraint from fishing.”²⁴⁴ Furthermore, “failure by a State either to ensure compliance with RFO measures by vessels flying its flag or, in the absence of compliance, to restrain its vessels from fishing in contravention of those measures” will constitute a breach of international law.²⁴⁵ Tahindro states that it “may be agreed that participation in the work of subregional or regional fisheries management organizations and arrangements and compliance with their conservation and management measures may be considered as among the implementing actions of the ‘duty to cooperate’ provided in the Convention.”²⁴⁶ As Tahindro points out, the “effectiveness of fisheries management will be reduced significantly if some high seas fishing States do not participate in the determination of management decisions and in turn are not bound by those decisions, because, despite efforts to manage high seas fisheries, attempts to achieve sustainable use of these resources may be jeopardized by unregulated fishing by noncontracting parties.”²⁴⁷ Following this line of argument, Articles 117 and 118 will lack substantive content if only some states were to cooperate through subregional or regional organizations to conserve and manage the marine living resources of the high seas, while other states do not comply with the conservation measures adopted. Such scenarios will certainly represent actions contrary to the expressed purpose of Section 2 of Part VII of the Law of the Sea Convention in general, as unregulated fishing will alter the goal of resource management.²⁴⁸

However, Henriksen emphasizes that forcing obligations upon third states may imply “a limitation on the freedom of fishing that would require a more explicit manifestation in the

²⁴⁴ Rosemary Rayfuse, “Countermeasures and High Seas Fisheries Enforcement,” *Netherlands International Law Review* 51, No. 1 (2004): 41–76, <https://doi.org/10.1017/S0165070X04000415>. Page 59. The acronym “RFO” refers to the term “RFMO” in the paper. See page 42 for more information on this issue.

²⁴⁵ *Ibid.* Page 59.

²⁴⁶ André Tahindro, “Conservation and Management of Transboundary Fish Stocks: Comments in Light of the Adoption of the 1995 Agreement for the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks,” *Ocean Development & International Law* 28, No. 1 (January 1997): 1–58, <https://doi.org/10.1080/00908329709546094>. Page 27.

²⁴⁷ *Ibid.* Page 25.

²⁴⁸ Section 2 of Part VIII of the Law of the Sea Convention encompasses Articles 116-120 for the Conservation and Management of the Living Resources of the High Seas.

LOS Convention to be legitimate.”²⁴⁹ Henriksen then states that a possible solution to such issues is to maintain the legal autonomy of the third state by formulating “a duty regarding RFMO measures on a third state to respect (or take into account) the conservation and management measures of a RFMO to ensure that vessels flying its flag are not involved in activities that undermine the effectiveness of these measures.”²⁵⁰ This approach is more nuanced and takes into account the *pacta tertiis* principle. Nevertheless, there seems to be a collective understanding that fishing states at least need to take into consideration and respect the relevant measures adopted by an RFMO where such an organization exists, even though the relevant states are not formal members of the RFMO.²⁵¹

It is important to recognize that the duty to cooperate through regional bodies was strengthened by the adoption of the UN Fish Stocks Agreement in 1995, which will be analyzed in detail in Section 3.3.2. The Agreement was concluded on August 4, 1995, after five sessions and negotiations stretching over a two-year period.²⁵² The negotiations were prompted by the collapse and depletion of several fish stocks in the Northwest Atlantic and initiated by Canada, which had been forced to discontinue its domestic cod fishing for a full year due to severe overfishing of these stocks.²⁵³

The objective of the 1995 UN Fish Stocks Agreement is stated to be “long-term conservation and suitable use of...highly migratory fish stocks through effective implementation of the

²⁴⁹ Henriksen, “Revisiting the Freedom of Fishing and Legal Obligations on States Not Party to Regional Fisheries Management Organizations.” Page 91. See also Section 3.2.2, which discussed and analyzed the freedom of high seas fisheries.

²⁵⁰ Henriksen, “Revisiting the Freedom of Fishing and Legal Obligations on States Not Party to Regional Fisheries Management Organizations.” Page 91.

²⁵¹ Henriksen, “Revisiting the Freedom of Fishing and Legal Obligations on States Not Party to Regional Fisheries Management Organizations,” Tahindro, “Conservation and Management of Transboundary Fish Stocks: Comments in Light of the Adoption of the 1995 Agreement for the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks” and Rosemary Rayfuse, “Countermeasures and Fisheries Enforcement.”

²⁵² Yoshifumi Tanaka, “Ch. 25A Law of the Sea”, in *The Oxford Handbook of United Nations Treaties*, eds. Simon Chesterman, David M. Malone, and Santiago Villalpando, Oxford Handbooks, 2019, <https://opil.ouplaw.com/display/10.1093/law/9780190947842.001.0001/law-9780190947842-chapter-31>. Tanaka discusses the negotiations and their background in the chapter.

²⁵³ *Ibid.* Page 533.

relevant provisions” of the Law of the Sea Convention.²⁵⁴ Further, the Agreement is to be interpreted and applied “in the context of and in a manner consistent with the Convention” and “without prejudice to the rights, jurisdiction and duties” of the parties to the Law of the Sea Convention.²⁵⁵ Despite the wording of Article 4 regarding the relationship between the Agreement and the Law of the Sea Convention, the 1995 UN Fish Stocks Agreement should “be interpreted in the context of the background of the Agreement.”²⁵⁶ In this way, the 1995 UN Fish Stocks Agreement “may have an effect on the interpretation and application of the relevant provisions of the LOSC” and “the close links between them suggest the Agreement may be viewed as a subsequent agreement on the interpretation and application of the LOSC.”²⁵⁷

In Article 8(3) of the 1995 UN Fish Stocks Agreement, it is expressly stated: “Where a subregional or regional fisheries management organization or arrangement has the competence to establish conservation and management measures for particular...highly migratory fish stocks, States fishing for the stocks on the high seas and relevant coastal States shall give effect to their duty to cooperate by becoming members of such organization or participants in such arrangement, or by agreeing to apply the conservation and management measures established by such organization or arrangement.” The adoption of the 1995 UN Fish Stocks Agreement codifies that all states fishing for highly migratory fish stocks under the conservation and management mandate of RFMOs need to implement the relevant conservation and management measures in force to comply with their duty to cooperate under Articles 117-118 of the Law of the Sea Convention.

One can thus conclude that the duty to cooperate in high seas fisheries, in accordance with Articles 117-119 of the Law of the Sea Convention, at present requires the flag states fishing in the geographical areas of competence of RFMOs to respect the conservation and

²⁵⁴ 1995 UN Fish Stocks Agreement, Article 4.

²⁵⁵ *Ibid.*

²⁵⁶ Tore Henriksen, Geir Hønneland, and Are Sydnæs, *Law and Politics in Ocean Governance: The UN Fish Stocks Agreement and Regional Fisheries Management Regimes* (Brill | Nijhoff, 2006), <https://doi.org/10.1163/ej.9789004149687.i-223>. Page 14.

²⁵⁷ *Ibid.* Page 15.

management measures adopted by these organizations. Such states are nevertheless not obliged to formally become members of the relevant RFMOs. As will be illustrated in Section 3.3.2, this finding may have some unexpected consequences, due to the development of international fisheries law and the adoption of the ecosystem approach to fisheries, which is expanding the scope of RFMOs' potential conservation and management measures to also encompass, e.g., conservation of non-target species.

As emphasized in Section 3.1, the Law of the Sea Convention covers both general obligations applicable to all high seas' fisheries and a specific framework applicable to the management of highly migratory fish stocks. As this study focuses on tuna RFMOs, it is natural to present the key concepts applicable to tuna fisheries in this thesis. The following section will therefore discuss the regime for the exploitation of highly migratory fish stocks, where the relevant legal obligations of the Law of the Sea Convention and the subsequently adopted 1995 UN Fish Stocks Agreement will be subject to closer analysis.

3.3 The Legal Regime for Management of Highly Migratory Species

This PhD focuses on how the tuna RFMOs are conserving non-target species in their geographical areas of competence. The various tuna species, typically representing the targeted species subject to the adopted conservation and management measures of these organizations, will receive particular attention in the legal framework applicable to high seas fisheries. The following sections will explore the specific obligations for the conservation and management of highly migratory fish stocks, and how the law also takes into consideration the impact of such fisheries on non-target species.

3.3.1 Highly Migratory Fish Stocks and the Law of the Sea Convention

Article 64 of the Law of the Sea Convention encompasses the specific legal framework for the conservation and management of highly migratory fish. Article 64 states that coastal states and other states that fish in a region for highly migratory species "shall cooperate directly or through appropriate international organizations with a view to ensuring conservation and

promoting the objective of optimum utilization of such species throughout the region, both within and beyond the exclusive economic zone.”²⁵⁸

As emphasized by Harrison and Morgera, Article 64 reflects a dual goal, framing the management of these species as an economic resource by including both the objectives of conservation and optimum utilization of the resources.²⁵⁹ But how should the conservation and optimum utilization of the highly migratory species be implemented to achieve the dual goal of the Convention? In its advisory opinion, the ITLOS held that “fisheries conservation and management measures, to be effective, should concern the whole stock unit over the entire area of distribution or migration routes.”²⁶⁰ It is thus evident that the conservation and management measures must be applied over vast areas to ensure that the threshold of Article 64 is met. A question in this regard is whether the requirement of conservation and management may be expanded to encompass the conservation of marine ecosystems through the application of Article 192 of the Law of the Sea Convention.²⁶¹ It is nevertheless clear that cooperation is necessary to secure conformity of measures if several states are fishing for highly migratory species within these geographical areas. The obligation requires “*inter alia* the coordinated or joint determination and allocation of the total allowable catch for such species, inclusive the catch taken in areas located under national jurisdiction.”²⁶²

Article 64 of the Law of the Sea Convention clearly states that cooperation is necessary to achieve the dual goal of conservation and optimum utilization. The states shall “cooperate

²⁵⁸ In Article 55 of the Law of the Sea Convention, it is stated that the exclusive economic zone is an “area beyond and adjacent to the territorial sea “subject to the provisions of Part V of the Convention. The exclusive economic zone shall not exceed “200 nautical miles from the baselines from which the breadth of the territorial sea is measured,” in accordance with Article 57 of the Law of the Sea Convention. The exclusive economic zone thus has a “*sui generis*” character, situated between the territorial sea and the high seas. For more information on this, see, e.g., Churchill, Lowe, and Sander, *The Law of the Sea*. Pages 262-263.

²⁵⁹ James Harrison and Elisa Morgera, “Art 64,” in *United Nations Convention on the Law of the Sea: A Commentary*, eds. Alexander Proells et al. (München: Beck, 2017). Page 516.

²⁶⁰ Request for Advisory Opinion submitted by the Sub-Regional Fisheries Commission, Advisory Opinion, 2 April 2015, ITLOS Reports 2015, p. 4 (2015). Para. 214.

²⁶¹ The scope of Article 192 will be analyzed further in Chapter 4.

²⁶² Marion Markowski, *The International Law of EEZ Fisheries: Principles and Implementation* (Groningen: Europa Law Publishing, 2010). Page 51. The setting of the Total Allowable Catch (TAC) is analyzed in Section 3.3.4 of this thesis.

directly” through bilateral actions or “through appropriate international organizations.” It is a collective understanding that such organizations are (but not limited to) RFMOs. The legal role and mandate of RFMOs was briefly introduced in Section 1.3 and will be analyzed in more detail in Chapter 5, but a short presentation will be given in this section to provide the necessary context to analyze the scope and content of Article 64 of the Law of the Sea Convention.

RFMOs are intergovernmental organizations or arrangements that have the competence to establish legally binding fisheries conservation and management measures.²⁶³ These organizations are generally acknowledged to play a vital role in the global coordination of fisheries governance, as they are a primary mechanism for achieving cooperation between and among fishing nations.²⁶⁴ The essential purpose of these organizations is “to provide an effective forum for international cooperation in order to enable States to agree on conservation and management measures” for the stocks of interest.²⁶⁵ RFMOs differ from other regional fisheries bodies by virtue of their ability to adopt binding management measures for their member states.²⁶⁶ Article 64 of the Law of the Sea Convention underpins the importance of establishing RFMOs in fisheries targeting highly migratory fish stocks. This is further underlined by the wording of the second sentence of Article 64, which states: “In regions for which no appropriate international organization exists, the coastal State and other States whose nationals harvest these species in the region shall cooperate to establish such

²⁶³ Løbach et al., “Regional Fisheries Management Organizations and Advisory Bodies.” Page 1.

²⁶⁴ Michael Lodge et al., *Recommended Best Practices for Regional Fisheries Management Organizations: Report of an Independent Panel to Develop a Model for Improved Governance by Regional Fisheries Management Organizations* (London: Chatham House, 2007). Page 1.

²⁶⁵ Ibid.

²⁶⁶ Elise Anne Clark, “Strengthening Regional Fisheries Management - An Analysis of the Duty to Cooperate”, *New Zealand Journal of Public and International Law*, 9, No. 2 (2010): 223–46. Page 224. For a full list of regional fisheries bodies, see United Nations Division for Ocean Affairs and the Law of the Sea, “Intergovernmental Organisations: Regional Fisheries Bodies,” <https://www.un.org/depts/los/Links/IGO-links-fish.htm>. It is also worth noting that there exist 53 different regional fisheries bodies which participate in the FAO Regional Fisheries Bodies Secretariats’ Network. This network aims to facilitate exchange of information between the secretariats of the different fisheries bodies worldwide. Further, the network supports the regional fisheries bodies in their management and sustainable use of fish stocks and promotes cooperation and coordination between the various bodies in order to strengthen regional fisheries governance. FAO, *Regional Fishery Body Secretariat’s Network. Membership* (FAO; 2018), <https://openknowledge.fao.org/handle/20.500.14283/ca0183en>. Pages 1-2.

an organization and participate in its work.” It has consequently been held that the obligations laid down in Article 64 are considered a shared responsibility among fishing states and may even be considered a part of “the general principles of international law, if not international custom” due to the widespread acceptance of the scope of the provision in states’ practices.²⁶⁷

What is clear is that Article 64 of the Law of the Sea Convention is complemented by the subsequently adopted 1995 UN Fish Stocks Agreement.²⁶⁸ The Fish Stocks Agreement was adopted to meet the pressing need for an appropriate conservation regime in fisheries and thus the need to regulate it. The overarching objective of the Agreement can be characterized as a means to operationalize the obligations of the Law of the Sea Convention, by implementing a more elaborate and modern framework for the regulation of fisheries.²⁶⁹ Article 7(1), litra b of the 1995 UN Fish Stocks Agreement stated that “with respect to highly migratory fish stocks, the relevant coastal States and other States whose nationals fish for such stocks in the region shall cooperate, either directly or through the appropriate mechanisms for cooperation provided for in Part III, with a view to ensuring conservation and promoting the objective of optimum utilization of such stocks throughout the region, both within and beyond the areas under national jurisdiction.”

As emphasized by Markowski, “Article 7 of the Agreement goes beyond the express obligations under UNCLOS by requiring states to cooperate to ensure compatibility between national and high seas measures for straddling and highly migratory fish stocks.”²⁷⁰ Further, Article 7(2) lists several factors relevant to the determination of conservation and management measures “such as existing national and high seas measures, the biological unity of the stocks, and the impact of such measures on the living marine resources as a whole.”²⁷¹

²⁶⁷ James Harrison and Elisa Morgera, “Art 64.” Page 516.

²⁶⁸ James Harrison and Elisa Morgera, “Art 64.” Page 516 and Marion Markowski, *The International Law of EEZ Fisheries: Principles and Implementation*. Page 52.

²⁶⁹ E. J. Molenaar, “Status and Reform of International Arctic Fisheries Law,” in *Arctic Marine Governance*, eds. Elizabeth Tedsen, Sandra Cavalieri and R. Andreas Kraemer (Springer International Publishing, 2013), 103–125. Page 109.

²⁷⁰ Marion Markowski, *The International Law of EEZ Fisheries: Principles and Implementation*. Page 52.

²⁷¹ *Ibid.*

Article 7(1), litra b refers to Part III covering the mechanisms for how cooperation shall be performed. In Article 8 of the 1995 UN Fish Stocks Agreement, it is stated: “Coastal States and States fishing on the high seas shall, in accordance with the Convention, pursue cooperation in relation to...highly migratory fish stocks either directly or through appropriate subregional or regional fisheries management organizations or arrangements, taking into account the specific characteristics of the subregion or region, to ensure effective conservation and management of such stocks.” Thus, RFMOs are recognized as international institutions competent to regulate fishing on the high seas “as vehicles for good fishery governance.”²⁷²

This section has established that the 1995 UN Fish Stocks Agreement reinforces the obligation to cooperate through RFMOs, as stated in Article 64 of the Law of the Sea Convention. The states are to cooperate through these organizations to “agree on measures to ensure the long-term sustainability of the fish stocks of common interest.”²⁷³ However, the adoption of the 1995 UN Fish Stocks Agreement also marks a formal transition toward the adoption of “ecosystem-based and precautionary approaches to management, science-based and transparent decision making, and regionally-agreed measures to strengthen and supplement flag State enforcement”.²⁷⁴ The next section will explore how the 1995 UN Fish Stocks Agreement extends conventional fisheries management to encompass impacts of fisheries on marine ecosystems and non-target species.

3.3.2 The Adoption of the 1995 UN Fish Stocks Agreement

Some preliminary remarks about the adoption of the 1995 UN Fish Stocks Agreement have been provided where considered relevant in the previous analyses, but the purpose of this section is to shed light on the legal developments that have taken place since the adoption of the Agreement. The following presentation will provide some preliminary remarks on the

²⁷² FAO, *Report of the Meeting of FAO and Non-FAO Regional Fishery Bodies or Arrangement*, 1999. FAO Fisheries Report No. 597 (Rome), Accessed 3. June 2024, <https://www.fao.org/4/X1840E/X1840E00.htm>.

²⁷³ Kristina M. Gjerde, “High Seas Fisheries Management under the Convention on the Law of the Sea,” in *The Law of the Sea: Progress and Prospects*, eds. David Freestone, Richard Barnes and David Ong (Oxford University Press, 2006), 281–307. Page 292.

²⁷⁴ *Ibid.* Page 293.

central question of how the 1995 UN Fish Stocks Agreement has expanded the legal framework applicable to high seas fisheries.

A closer look at the provisions of the 1995 UN Fish Stocks Agreement reveals that it appears to be covering several goals: the facilitation of the implementation of the provisions of the Law of the Sea Convention, the strengthening of the provisions in the Convention and finally the development of relevant rules and principles applicable to fisheries management.²⁷⁵ The first goal is evident in the wording of Article 2, where it is expressly stated that the objective of the Agreement is to ensure conservation “through effective implementation of the relevant provisions of the Convention.”²⁷⁶ As emphasized by Hayashi, “several provisions of the Agreement are aimed at facilitating the implementation by States of relevant provisions of the Convention by setting forth specific measures to be taken.”²⁷⁷ One relevant example is the relationship between Article 118 of the Law of the Sea Convention and Article 5 of the 1995 UN Fish Stocks Agreement.²⁷⁸ The Convention obliges the state parties to “cooperate with each other in the conservation and management of living resources in the areas of the high seas.” Further, states shall jointly take measures necessary for the conservation of the species subject to exploitation.²⁷⁹

The Convention is silent on the relevant measures that may be adopted to ensure the conservation and management of the species and “gives no guidance on how to proceed to fulfill these obligations.”²⁸⁰ Article 5 of the 1995 UN Fish Stocks Agreement codifies how cooperation under the Law of the Sea Convention should be performed by exemplifying several specific ways to put Article 118 into practice by listing a dozen types of relevant

²⁷⁵ Hayashi reviews the three goals extensively in Moritaka Hayashi, “The 1995 Agreement on the Conservation and Management of Straddling and Highly Migratory Fish Stocks: Significance for the Law of the Sea Convention,” *Ocean & Coastal Management* 29, No. 1 (1995): 51–69, [https://doi.org/10.1016/0964-5691\(96\)00007-5](https://doi.org/10.1016/0964-5691(96)00007-5).

²⁷⁶ 1995 UN Fish Stocks Agreement. Article 2.

²⁷⁷ Moritaka Hayashi, “The 1995 Agreement on the Conservation and Management of Straddling and Highly Migratory Fish Stocks: Significance for the Law of the Sea Convention.” Page 53.

²⁷⁸ Another relevant example is Article 8 of the 1995 UN Fish Stocks Agreement which specifies the measures to be taken under the obligation to cooperate in accordance with the Law of the Sea Convention.

²⁷⁹ Law of the Sea Convention. Article 118.

²⁸⁰ Moritaka Hayashi, “The 1995 Agreement on the Conservation and Management of Straddling and Highly Migratory Fish Stocks: Significance for the Law of the Sea,” page 54.

measures.²⁸¹ These include, e.g., the adoption of “measures to ensure long-term sustainability of...highly migratory fish stocks and promote their optimum utilization,”²⁸² to ensure that “such measures are based on the best scientific evidence available and are designed to maintain or restore stocks at levels capable of producing the maximum sustainable yield” subject to a balancing act where several different factors are of relevance,²⁸³ to “apply the precautionary approach,”²⁸⁴ to “assess the impacts of fishing, other human activities and environmental factors on target stocks and species belonging to the same ecosystem or associated with or dependent upon the target stocks,”²⁸⁵ to “adopt...conservation and management measures for species belonging to the same ecosystem or associated with or dependent upon the target stocks,”²⁸⁶ to “minimize pollution, waste, discards, catch by lost or abandoned gear, catch of non-target species,”²⁸⁷ to “protect biodiversity,”²⁸⁸ to “take measures to prevent or eliminate overfishing and excess fishing capacity,”²⁸⁹ to “collect and share complete and accurate data concerning fishing activities,”²⁹⁰ to “promote and conduct scientific research and develop appropriate technologies,”²⁹¹ and finally, to “implement and

²⁸¹ *Ibid.*

²⁸² 1995 UN Fish Stocks Agreement. Article 5(a).

²⁸³ 1995 UN Fish Stocks Agreement. Article 5(b). The relevant environmental and economic factors include “the special requirements of developing States, and taking into account fishing patterns, the interdependence of stocks and any generally recommended international minimum standards, whether subregional, regional or global.”

²⁸⁴ 1995 UN Fish Stocks Agreement. Article 5(c). The application shall be conducted in accordance with Article 6 of the Agreement.

²⁸⁵ 1995 UN Fish Stocks Agreement. Article 5(d).

²⁸⁶ 1995 UN Fish Stocks Agreement. Article 5(e). The obligation shall be carried out “with a view to maintaining or restoring populations of such species above levels at which their reproduction may become seriously threatened.”

²⁸⁷ 1995 UN Fish Stocks Agreement. Article 5(f). The paragraph lists the following measures applicable to achieve the management goals: “including, to the extent practicable, the development and use of selective, environmentally safe and cost-effective fishing gear and techniques.”

²⁸⁸ 1995 UN Fish Stocks Agreement. Article 5(g).

²⁸⁹ 1995 UN Fish Stocks Agreement. Article 5(h). The States shall “ensure that levels of fishing effort do not exceed those commensurate with the sustainable use of fishery resources.”

²⁹⁰ 1995 UN Fish Stocks Agreement. Article 5(j). The data shall include, “inter alia, vessel position, catch of target and non-target species and fishing effort, as set out in Annex I, as well as information from national and international research programmes.”

²⁹¹ 1995 UN Fish Stocks Agreement. Article 5(k). The technologies shall be aimed at supporting fishery conservation and management.

enforce conservation and management measures through active monitoring, control and surveillance.”²⁹²

It is beyond doubt that the extensive list of obligations in Article 5 of the Agreement expands the scope of the mere obligation to manage and conserve highly migratory fish stocks through cooperation in accordance with the Law of the Sea Convention. The list includes both management objectives and measures relevant to achieving the listed objectives. In this way, the 1995 UN Fish Stocks Agreement facilitates effective implementation of Article 118 of the Law of the Sea Convention, and consequently testifies to the objective stated in Article 2 of the Agreement.

Further, multiple provisions of the 1995 UN Fish Stocks Agreement “have the effect of strengthening those of the convention.”²⁹³ One relevant example is Article 14 on collection and provision of information and cooperation in scientific research. Article 119 of the Law of the Sea Convention obliges the state parties to contribute and exchange “available scientific information, catch and fishing effort statistics and other data relevant to the conservation of fish stocks” on a regular basis through competent international organizations. By adopting the 1995 UN Fish Stocks Agreement, the parties have “constructed an elaborate scheme for implementing” the obligations of Article 119 of the Convention.²⁹⁴ The Agreement obliges the state parties to ensure that their vessels “collect and exchange scientific, technical and statistical data with respect to fisheries for highly migratory fish stocks in compliance with the extensive” Standard Requirements for Collection and Sharing of Data Agreement.²⁹⁵

Finally, the 1995 UN Fish Stocks Agreement introduces explicit concepts and principles for conservation and management of highly migratory species not specified in the Law of the Sea Convention. One concrete example is the application of the precautionary principle, which is not explicitly recognized in the Law of the Sea Convention, but which may be regarded as

²⁹² 1995 UN Fish Stocks Agreement, Article 5(l).

²⁹³ Moritaka Hayashi, “The 1995 Agreement on the Conservation and Management of Straddling and Highly Migratory Fish Stocks: Significance for the Law of the Sea.” Page 55.

²⁹⁴ *Ibid.*

²⁹⁵ 1995 UN Fish Stocks Agreement, Article 14.

having a pivotal role for future regulation of fishing operations under the Agreement.²⁹⁶ In accordance with Article 6 of the 1995 UN Fish Stocks Agreement, state parties “shall apply the precautionary approach widely to conservation, management and exploitation of...highly migratory fish stocks in order to protect the living marine resources and preserve the marine environment.” In Article 6(3), an implementation guide is provided, and the states will have to adopt the relevant measures listed to comply with the obligation to apply the precautionary approach in accordance with the Agreement. Another example of how the 1995 UN Fish Stocks Agreement has developed the regime of fisheries management and conservation is the inclusion of the explicit obligation to “protect species within the same ecosystems.”²⁹⁷ The ecosystem approach to fisheries will be analyzed in more detail in Chapter 4 of this thesis, but the approach is nevertheless explored in the following to shed light on the legal developments relevant for high seas fisheries.

In accordance with Article 5 of the 1995 UN Fish Stocks Agreement, “ecosystem considerations require State parties to...minimize pollution, waste, discards, catch by lost or abandoned gear, catch of non-target species – in particular endangered species – and more generally to protect biodiversity in the marine environment.”²⁹⁸ Furthermore, Article 5 obliges the state parties to adopt, where necessary, conservation measures for species belonging to the same ecosystem. By the formal implementation of ecosystem considerations in the Agreement, the state parties are obliged to consider the interdependence of marine living resources in a more holistic manner than under the legal framework established by the Law of the Sea Convention. As emphasized in Section 1.3, the ecosystem approach to fisheries strives to “balance diverse societal objectives, by taking into account the knowledge and uncertainties about biotic, abiotic and human components of ecosystems and their interactions and applying an integrated approach to fisheries within ecologically meaningful

²⁹⁶ Richard Barnes, “The Convention on the Law of the Sea: An Effective Framework for Domestic Fisheries Conservation?” in *The Law and the Sea: Progress and Prospects*, eds. David Freestone, Richard Barnes, and David Ong (Oxford University Press, 2006), 233–260. Page 247.

²⁹⁷ 1995 UN Fish Stocks Agreement, Article 5(h).

²⁹⁸ Erik J. Molenaar, “Status and Reform of International Arctic Fisheries Law.” Page 109.

boundaries.”²⁹⁹ Further analysis of how the ecosystem approach to fisheries is included in the framework of the law of the sea will be provided in Chapter 4.

Despite the threefold goal of the 1995 UN Fish Stocks Agreement, it should be recognized that the Agreement is only applicable to “conservation and management of straddling fish stocks and highly migratory fish stocks beyond areas under national jurisdiction.”³⁰⁰ Consequently, the Agreement may be regarded as having limited scope of application both regarding the species that are governed by the instrument and in terms of its geographical application. For the sake of clarification, the highly migratory fish stocks governed by the Agreement are the species listed in Annex I of the Law of the Sea Convention.³⁰¹ Another vital limitation for the application of the Agreement is its number of signatories.

The obligations applicable to the conservation of highly migratory species and marine living resources established pursuant to the Law of the Sea Convention have been ratified by 169 parties as of May 8, 2024.³⁰² In comparison, the 1995 UN Fish Stocks Agreement had only been ratified by 93 States by the same date.³⁰³ For instance, “although the vast majority of the present State parties to the Fish Stocks Agreement are coastal States and states fishing on the high seas...several major fishing States...are not parties, as well as some important coastal States.”³⁰⁴ As noted by Boyle, this creates a question regarding the application of the

²⁹⁹ S. M. Garcia et al., “FAO Fisheries Technical Paper No. 443. The Ecosystem Approach to Fisheries: Issues, Terminology, Principles, Institutional Foundations, Implementation and Outlook,” page 6.

³⁰⁰ 1995 UN Fish Stocks Agreement, Article 3 (1). Nevertheless, as specified in Article 2 (1), Articles 6 and 7 of the Agreement also apply for the management and conservation of straddling fish stocks and highly migratory fish stocks within areas under national jurisdiction, subject to the different legal regimes encompassed in the Law of the Sea Convention.

³⁰¹ See e.g., Tore Henriksen, Geir Hønneland and Are Sydnes, *Law and Politics in Ocean Governance: The UN Fish Stocks Agreement and Regional Fisheries Management Regimes*, page 13. States not parties to the Agreement include, e.g., South Korea.

³⁰² United Nations Treaty Collection, “6. United Nations Convention on the Law of the Sea,” Last accessed 08.05.2024, https://treaties.un.org/pages/ViewDetailsIII.aspx?src=TREATY&mtdsg_no=XXI-6&chapter=21&Temp=mtdsg3&clang=en.

³⁰³ United Nations Treaty Collection, “7. Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea of 10 December 1982 Relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks,” Last accessed 08.05.2024, https://treaties.un.org/pages/ViewDetails.aspx?src=TREATY&mtdsg_no=XXI-7&chapter=21&clang=en.

³⁰⁴ Tore Henriksen, Geir Hønneland and Are K. Sydnes, *Law and Politics in Ocean Governance: The UN Fish Stocks Agreement and Regional Fisheries Management Regimes*. Page 13. An example of a fishing state not

obligations of the 1995 UN Fish Stocks Agreement: “Is it possible...that an implementing agreement, such as the UNFSA, might have a wider impact on the LOSC itself and in respect to non-parties to the agreement?”³⁰⁵

Bearing in mind its constraints, the 1995 UN Fish Stocks Agreement at first sight seems to be a limited instrument. But the Agreement brings several clarifications regarding how conservation and management of highly migratory species should be implemented, which are not explicitly provided for in the Law of the Sea Convention. As illustrated by this brief analysis, the Agreement facilitates the implementation of the provisions of the Law of the Sea Convention, it strengthens the provisions, and it brings explicit rules and management and conservation principles to the table. In the words of Tanaka, the 1995 UN Fish Stocks Agreement contains at least three crucial elements: the concept of sustainable use, the use of the precautionary approach and the ecosystem approach.³⁰⁶

Another instrument relevant to high seas fisheries and to this study is the 1995 FAO Code of Conduct for Responsible Fisheries (the 1995 FAO Code of Conduct or the Code), which will be presented in the following.³⁰⁷

party to the Agreement is South Korea and a relevant example of a coastal state is Peru. It should be emphasized that several major fishing states such as Japan and Thailand have ratified the 1995 UN Fish Stocks Agreement since the conclusion of the work by Henriksen, Hønneland and Sydnes in 2006, and that the argument has been weakened after the adherence to the Agreement by these vital states. For an updated list of ratifications, see “United Nations Treaty Collection,” last accessed 08.05.2024, https://treaties.un.org/Pages/ViewDetails.aspx?src=IND&mtdsg_no=XXI-7&chapter=21&clang=en.

³⁰⁵ Alan Boyle, “Further Development Of The Law Of The Sea Convention: Mechanisms For Change,” *The International and Comparative Law Quarterly* 54, No. 3 (2005): 563–84, <https://doi.org/10.1093/iclq/lei018>. Page 570.

³⁰⁶ Yoshifumi Tanaka, “Ch. 25A Law of the Sea.” Pages 534-535.

³⁰⁷ FAO Code of Conduct for Responsible Fisheries, 1995.

3.3.3 The Adoption of the FAO Code of Conduct

The FAO Code of Conduct was adopted by consensus by the Food and Agriculture Organization of the United Nations (FAO) in 1995, aiming to “promote the rational and sustainable development and exploitation of world fisheries through responsible management and conservation.”³⁰⁸ The Code is a voluntary and non-binding instrument, partly because it is “wide-ranging in its scope, dealing not only with fisheries management (both within and beyond national jurisdiction), but also with aquaculture development, post-harvest practices and trade, and fisheries research.”³⁰⁹ Due to the voluntary status of the Code, the implementation and operationalization of its provisions are subject to the discretion of the member states of the FAO.³¹⁰

However, the Code integrates binding principles inherent to the Law of the Sea Convention and the 1995 UN Fish Stocks Agreement, and was designed to operate in conformity with existing international law and legal instruments.³¹¹ As a consequence, some scholars even argue that the Code “can probably be described as *de lege ferenda*” and in time may result in “crystallized custom.”³¹² The legal status of the Code will be explored in Chapter 4, but it should be emphasized that the FAO Code of Conduct in itself is a substantial instrument encompassing 12 separate articles, including many guiding provisions for the management of

³⁰⁸ Gilles Hosch, Gianluca Ferraro, and Pierre Failler, “The 1995 FAO Code of Conduct for Responsible Fisheries: Adopting, Implementing or Scoring Results?”, *Marine Policy* 35, No. 2 (2011): 189–200, <https://doi.org/10.1016/j.marpol.2010.09.005>. Page 189.

³⁰⁹ Churchill, Lowe, and Sander, *The Law of the Sea*. Page 585.

³¹⁰ In Article 1.1 of the 1995 FAO Code of Conduct, it is expressly stated that “this code is voluntary,” but as will be illustrated in Section 4.2.3, some of its provisions may nevertheless be regarded as binding through their potential status as customary law and obligations of due diligence.

³¹¹ See Article 3(1) of the 1995 FAO Code of Conduct, where it is stated that the Code is without prejudice to the “rights, jurisdiction and duties of States under international law as reflected in the Convention.” See also Stuart M. Kaye, *International Fisheries Management*, Vol. 58, International Environmental Law and Policy Series (The Hague: Kluwer Law International, 2000). Page 221.

³¹² Stuart M. Kaye, “International Fisheries Management.” Page 222. The normative status of the Code and its provisions will be analyzed in more detail in Chapter 4 of this thesis.

transboundary fish stocks and the operationalization of the work of RFMOs.³¹³ As emphasized by Hosch et al., the Code “is the first and only international instrument of its type developed for fisheries” as it “provides principles and standards applicable to the conservation, management and development of all fisheries.”³¹⁴ Consequently, the FAO Code of Conduct has a much wider scope of application than the 1995 UN Fish Stocks Agreement, which is restricted both in terms of the stocks covered by its provisions and its geographical scope of application.³¹⁵

In terms of how conservation and management should be initiated, the 1995 FAO Code of Conduct recognizes, e.g., the precautionary approach and suggests various measures to facilitate its implementation.³¹⁶ In Article 6.5 it is emphasized that States and RFMOs “should apply a precautionary approach widely to conservation, management and exploitation of living aquatic resources in order to protect them and preserve the aquatic environment, taking account of the best scientific evidence available.” Further, the Code moves beyond the provisions of the Law of the Sea Convention and the 1995 UN Fish Stocks Agreement by declaring: “The absence of adequate scientific information should not be used as a reason for postponing or failing to take measures to conserve target species, associated or dependent species and non-target species and their environment.”³¹⁷ The provision reflects Article 6 (2) of the Fish Stocks Agreement, but expands the scope to also encompass “associated or dependent species and non-target species and their environment,” thereby expanding the obligation encompassed in the Fish Stocks Agreement, which applies only to “straddling fish stocks and highly migratory fish stocks.”³¹⁸ Another interesting observation in terms of the

³¹³ David L. VanderZwaag and Dawn A. Russell, *Recasting Transboundary Fisheries Management Arrangements in Light of Sustainability Principles: Canadian and International Perspectives*, eds. Dawn A. Russell and David L. VanderZwaag, Vol. 8, *Legal Aspects of Sustainable Development* (Leiden: Nijhoff, 2010). Page 17.

³¹⁴ Gilles Hosch, Gianluca Ferraro and Pierre Failler, “The 1995 FAO Code of Conduct for Responsible Fisheries: Adopting, Implementing or Scoring Results?” Page 189.

³¹⁵ Section 3.3.2 established that the 1995 UN Fish Stocks Agreement as a starting point is only applicable to “conservation and management of straddling fish stocks and highly migratory fish stocks beyond areas of national jurisdiction,” in accordance with Article 3(1) of the Agreement.

³¹⁶ Dawn A. Russell and David L. VanderZwaag, *Recasting Transboundary Fisheries Management Arrangements in Light of Sustainability Principles: Canadian and International Perspectives*. Page 17.

³¹⁷ 1995 FAO Code of Conduct, Article 6.5.

³¹⁸ See, 1995 UN Fish Stocks Agreement, Articles 6(1) and 6(2).

scope of the obligation is that it also seems to equate conservation and management of targeted species with that of associated or dependent species, non-target species and the environment of these categories of species. This recognition of the conservation need of associated, dependent, and non-target species is not recognized in a similarly explicit manner in the 1995 UN Fish Stocks Agreement. This highlights how the 1995 FAO Code of Conduct represents an expansion of the obligations encompassed in the Fish Stocks Agreement, at least in terms of the above-mentioned explicit recognition. How the precautionary approach should be applied is further specified in Article 7.5 of the Code, which lists key implementation measures, “including the setting of precautionary stock specific target and limit reference points and adopting cautious catch and effort limits for new or exploratory fisheries.”³¹⁹

Further, of great relevance for this study is the fact that the FAO is the international body that has formally developed and adopted the sectoral based ecosystem approach to fisheries. The FAO can thus be considered as a pioneer in the work of making this approach functional by the adoption of the integrated framework for fisheries in the FAO Code of Conduct.³²⁰ The Code functions as a reference framework for sustainable fisheries as it addresses all ecosystem considerations, principles and conceptual goals necessary for applying an ecosystem approach to fisheries.³²¹ The FAO has also developed several technical guidelines,

³¹⁹ Dawn A. Russell and David L. VanderZwaag, *Recasting Transboundary Fisheries Management Arrangements in Light of Sustainability Principles: Canadian and International Perspectives*. Page 17.

³²⁰ This is also recognized by several scholars. See, e.g., W. J. Fletcher and G. Bianchi, «The FAO – EAF toolbox: Making the ecosystem approach accessible to all fisheries», *Ocean & Coastal Management* 90 (1. March 2014): 20–26, <https://doi.org/10.1016/j.ocecoaman.2013.12.014>, which describes the work of the FAO in making the 'ecosystem approach to fisheries' accessible for all fisheries. Fletcher et.al., also describes how the FAO has developed technical guidelines to support the implementation of the FAO Code of Conduct in W. J. Fletcher et.al «A flexible and practical framework for reporting on ecologically sustainable development for wild capture fisheries», *Fisheries Research* 71, nr. 2 (1. February 2005): 175–83, <https://doi.org/10.1016/j.fishres.2004.08.030> page 176.

See also D. G. Webster, *Beyond the Tragedy in Global Fisheries*, Politics, Science, and the Environment (Cambridge, Massachusetts: The MIT Press, 2015), page 327 which also describes the work of the FAO in adopting technical reference frameworks and Alf Håkon Hoel, «The Importance of Marine Science in Sustainable Fisheries: The Role of the 1995 Un Fish Stocks Agreement», in *Legal Order in the World's Oceans*, bd. 21, Center for Oceans Law and Policy, 2018, 379–95, https://doi.org/10.1163/9789004352544_020. Pages 388-389.

³²¹ Serge M. Garcia and Kevern L. Cochrane, “Ecosystem approach to fisheries: a review of implementation guidelines.” Page 311.

monitoring systems and forums to operationalize the approach.³²² The actual definition of the ecosystem approach to fisheries was first adopted during the FAO Technical Consultation on Ecosystem-based Fisheries Management held in Reykjavik from 16 to 19 September 2002, with the aim of creating a concept which also “delineates a way of taking ecosystem considerations into more conventional fisheries management,” and to make the goals of the Code functional.³²³ The key objective of an ecosystem approach to fisheries is “the sustainable use of the whole system and not just target species” and it represents “the marriage of two different perspectives, namely ecosystem management and fisheries management.”³²⁴

It has been established that the 1995 UN Fish Stocks Agreement and the 1995 FAO Code of Conduct have expanded the understanding of how fisheries should be managed in a holistic and integrated manner in the post Law of the Sea Convention era in several ways. Some concrete examples of the changes to the regime for the management and conservation of highly migratory species will be provided in the following section.

3.3.4 Determining the Management and Conservation Measures for Highly Migratory Fish Stocks

Article 119 of the Law of the Sea Convention provides for how management of marine living resources on the high seas shall be performed. The provision includes a technical guideline and states that, in determining the allowable catch of each species and in establishing other conservation measures for the living resources in the high seas, “States shall take measures which are designed...to maintain and restore populations of harvested species at levels that

³²² One example is the development of the “EAF Toolbox,” which can be used as a guideline when the ecosystem approach to fisheries is implemented in, e.g., international cooperation, national and local fisheries, science and management. See Food and Agriculture Organization of the United Nations, “Fisheries and Aquaculture - Fisheries and Aquaculture - EAF Toolbox,” accessed 9 May 2024, <https://www.fao.org/fishery/en/eaf-net/toolbox/en>

³²³ S.M Garcia et al., “FAO Fisheries Technical Paper No. 443. The Ecosystem Approach to Fisheries: Issues, Terminology, Principles, Institutional Foundations, Implementation and Outlook.” Page 6.

³²⁴ Attwood, Cochrane, and Hanks, *Putting into Practice the Ecosystem Approach to Fisheries*. Page 4.

can produce the maximum sustainable yield, as qualified by relevant environmental and economic factors.”^{325,326}

These factors include the “special requirements of developing States, and taking into account fishing patterns, the interdependence of stocks and any generally recommended international minimum standards.”³²⁷ There are two points to note here. First, the Law of the Sea Convention does not establish a hierarchy among the factors to be considered when states determine the relevant conservation and management measures. Second, the reference to economic factors in the provision emphasizes that fishing nations exploiting resources on the high seas are allowed to set the catch limits on the basis of economic factors, “such as protecting employment in the fishing industry, at a level that would delay or prevent the restoration or maintenance of stocks to the level of MSY [maximum sustainable yield].”³²⁸ However, the economic factors will have to be balanced against the relevant environmental factors in decisions regarding the MSY. This balancing of various aspects ensures that states cannot discard conservation measures of relevance despite preferring other potential outcomes based solely on economic factors.

In accordance with Article 119(1)(a) of the Law of the Sea Convention, the measures shall be designed “on the best scientific evidence available to the States.” This provision may be viewed as vague with its use of the word “available,” and it is not clear how the best scientific evidence should be obtained and what evidence will be considered sufficient to design and adopt conservation and management measures. The provision may consequently be regarded as an obligation of means, not an obligation of result, as the purpose is to control unregulated fishing behavior on the high seas. Thus, “the requirement that the evidence should be the best

³²⁵ Law of the Sea Convention, Article 119(1)(a).

³²⁶ The wording of the provision is similar to Article 61(3) with regard to the Exclusive Economic Zones (EEZs) of Coastal States.

³²⁷ Law of the Sea Convention, Article 119(1)(a).

³²⁸ Robin Churchill presents this argument regarding coastal state management of fish stocks. The argument is, however, also applicable to high seas fisheries. See Robin Churchill, “The LOSC Regime for Protection of the Marine Environment – Fit for the Twenty-First Century?”, in *Research Handbook on International Marine Environmental Law*, ed. Rosemary Rayfuse, Research Handbooks in Environmental Law Series (United Kingdom: Edward Elgar Publishing, 2015), 3–30, <https://doi.org/10.4337/9781781004777.00008>. Page 15.

available implies that even poor evidence can be used...provided that it is recognized as the best available.”³²⁹ Article 119(2) of the Law of the Sea Convention seeks to remedy this situation as far as possible by stating: “Available scientific information, catch and fishing effort statistics, and other data relevant to the conservation of fish stocks shall be contributed and exchanged on a regular basis through competent international organizations.” Collective sharing of relevant data among all states fishing in the same area through RFMOs is considered vital to achieve appropriate management measures for the relevant stocks and species in accordance with the provision.

The technical formula for fisheries management measures is specified in Article 119(1) and refers to the MSY. The MSY “is generally considered by experts to be the highest point of the curve traced between the annual standard fishing effort applied by all fleets and the yield that should result if that effort level were maintained until equilibrium is reached.”³³⁰ Tanaka states that the MSY “seeks to maintain the productivity of the oceans by permitting the taking of only that number of fish from the stock that is replaced by the annual rate of new recruits entering the stock.”³³¹ In order to maintain the MSY, the total allowable catch (TAC) must be set. When states decide on the TAC, they must base this decision on the best scientific evidence available to them in accordance with Article 119. Furthermore, they shall “take into consideration the effects on species associated with or dependent upon harvested species” by adopting measures aimed at “maintaining or restoring populations of such associated or dependent species above levels where their reproduction may become seriously threatened.”³³² Article 119(2)(b) may be regarded as a manifestation of the ecosystem considerations in the Law of the Sea Convention, which focus on the interdependence of species. However, the obligation upon the state parties to abide by the Law of the Sea Convention in this regard are weak, as they are only obliged to take “into consideration” the

³²⁹ André Tahindro, “Conservation and Management of Transboundary Fish Stocks: Comments in Light of the Adoption of the 1995 Agreement for the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks.” Page 5.

³³⁰ *Ibid.*

³³¹ Yoshifumi Tanaka, *The International Law of the Sea*. Page 223.

³³² Law of the Sea Convention, Article 119(1)(b).

effect on associated and dependent species, “not to ensure that their measures maintain or restore populations of associated or dependent species at or to a sustainable level.”³³³

By focusing on the MSY of different fish stocks, the Law of the Sea Convention has been characterized as a resource-oriented convention,³³⁴ where the single species approach has been heavily emphasized in Article 119. However, an observation can be made regarding the second sentence of Article 118, which emphasizes that states shall consider different resources living in the same area. This implies that the parties are required to consider the interdependence of species and the ecosystems when fishing in areas beyond national jurisdiction. Nevertheless, the Law of the Sea Convention is silent on the question of how fishing should be conducted in an integrated manner with the MSY as the only technical reference point. The focus on economic factors in accordance with Article 119 and the access to fisheries for all states in accordance with Article 87(2) of the Law of the Sea Convention, as a starting point, creates a legal regime encompassing implicit references to ecosystem considerations in the Convention. Rothwell and Stevens consequently conclude that “the regime for managing high seas fisheries remains relatively weak, as the freedom of fishing and the exclusivity of flag state jurisdiction preserved by the LOSC constitute major impediments to sustainable management.”³³⁵ Against this background, a thorough analysis of whether the Law of the Sea Convention mandates an ecosystem approach to fisheries will be provided in Chapter 4, illustrating that it may be possible to implicitly identify the approach in the Convention and that several scholars take this position.

Turning to the two instruments adopted after the conclusion of the Law of the Sea Convention, Article 5 of the 1995 UN Fish Stocks Agreement specifies that coastal states and states fishing for highly migratory fish stocks shall “adopt measures to ensure long-term sustainability...and promote the objective of optimum utilization.” This obligation should be

³³³ Robin Churchill, “The LOSC Regime for Protection of the Marine Environment – Fit for the Twentyfirst Century?” Page 16.

³³⁴ Rüdiger Wolfrum and Nele Matz, “The Interplay of the United Nations Convention on the Law of the Sea and the Convention on Biological Diversity,” *Max Planck Yearbook of United Nations Law* 4, No. 1 (2000): 445–80, <https://doi.org/10.1163/187574100X00142>. Page 464.

³³⁵ Rothwell and Stephens, *The International Law of the Sea*. Page 331.

fulfilled to “ensure that such measures...are designed to maintain or restore stocks at levels capable of producing maximum sustainable yield” as qualified by several relevant factors.³³⁶ By virtue of Article 5 of the Agreement, it is evident that the concept of MSY is still the prevailing management goal, as reflected in Article 119(1)(a) of the Law of the Sea Convention. Nevertheless, “although the UN Fish Stocks Agreement thus continues to refer to the concept of qualified MSY, it goes beyond UNCLOS in requiring the application of the precautionary approach in Articles 5(c) and 6.”³³⁷ As the concept of MSY serves as a minimum standard for limit reference points under the Agreement, management objectives will have to be set below MSY and thus at lower levels than previously required under UNCLOS.³³⁸ In Article 7.2.1 of the 1995 Code of Conduct, it is emphasized that the “long-term sustainable use of fisheries resources is the overriding objective of conservation and management.”³³⁹ However, this overriding objective is not a rejection of the concept of MSY as reflected in the Law of the Sea Convention.³⁴⁰ It should be pointed out that even though the MSY is still the prevailing concept for the management of target fish stocks under the 1995 UN Fish Stocks Agreement and the 1995 Code of Conduct, the two subsequent instruments bring new elements for consideration into the puzzle of conservation and management. This is done through clarification of how management should be performed in an integrated manner and by introducing the precautionary approach and the ecosystem approach.

By including the ecosystem approach to fisheries, the FAO has introduced “the concept of social-ecological systems into fisheries policy.”³⁴¹ Further, the FAO “relates this approach to

³³⁶ 1995 UN Fish Stocks Agreement, Article 5(b). The relevant environmental and economic factors include “the special requirements of developing States, and taking into account fishing patterns, the interdependence of stocks and any generally recommended international minimum standards, whether subregional, regional or global.”

³³⁷ Marion Markowski, “The International Legal Standard for Sustainable EEZ Fisheries Management,” in *Towards Sustainable Fisheries Law. A Comparative Analysis*, ed. Gerd Winter (IUCN, Gland, Switzerland, 2009). Page 9.

³³⁸ *Ibid.*

³³⁹ Stuart M. Kaye, *International Fisheries Management*. Page 225.

³⁴⁰ *Ibid.*

³⁴¹ Ellen Hey, “The Persistence of a Concept: Maximum Sustainable Yield,” *The International Journal of Marine and Coastal Law* 27, No. 4 (1 January 2012): 763–71, <https://doi.org/10.1163/15718085-12341245>. Page 770. Hey refers to the “Resilience Dictionary”, which defines the concept as emphasizing “that humans must be seen as a part of, not apart from, nature - that the delineation between social and ecological systems is artificial and arbitrary.” See Stockholm Resilience Center, “Resilience Dictionary,” 26 December 2007,

the resilience perspective, albeit cautiously.”³⁴² This demonstrates that the ecosystem approach introduces a new philosophy of conservation and management based on “a shift in mental models toward human-in-the-environment perspectives, acceptance of the limitation of policies based on steady-state thinking and design of incentives that stimulate the emergence of adaptive governance for social-ecological resilience of landscapes and seascapes.”³⁴³ In this way, the ecosystem approach might represent a potential foundation for re-thinking and re-evaluating the current fisheries management framework established by the Law of the Sea Convention.

3.4 Concluding Remarks

This chapter has illustrated how the Law of the Sea Convention establishes a regulatory framework for the conservation and management of living marine resources in areas beyond national jurisdiction, with a particular emphasis on the utilization of highly migratory fish stocks. The obligations applicable to high seas fisheries are diverse and must be implemented through cooperation in RFMOs in accordance with the Convention. However, the provisions aimed at conserving living marine resources may be characterized as weak and imprecise. Consequently, the 1995 UN Fish Stocks Agreement and the 1995 FAO Code of Conduct have expanded and refined the principles of resource management in a more holistic manner through their explicit references to these principles. A key component of these two instruments relevant to this study is the explicit recognition of ecosystem considerations in fisheries management. The following chapter will therefore elaborate on the content, scope, implementation, and application of the ecosystem approach in fisheries management.

<https://www.stockholmresilience.org/research/resilience-dictionary.html>. in Hey, “The Persistence of a Concept: Maximum Sustainable Yield,” Page 770.

³⁴² Hey, “The Persistence of a Concept: Maximum Sustainable Yield.” Page 770.

³⁴³ Ibid.

4. Chapter IV: The Ecosystem Approach to Fisheries

4.1 Introduction

The ecosystem approach to fisheries was briefly introduced as one of the key elements of this study in Section 1.2. As the core of this PhD is to study the implementation and operationalization of the ecosystem approach to fisheries, a more detailed presentation of its history, rationale and features forms a necessary basis for the analyses to be conducted in the subsequent chapters.

This chapter will present the legal obligations relevant for the implementation and operationalization of the ecosystem approach to fisheries. The chapter will begin with a brief introduction to the development of the ecosystem approach as a legal concept before the focus shifts to the sectoral development of the approach, including its rationale, scope, and application in fisheries management. Finally, this chapter will explore how the implementation of management objectives should be conducted, focusing on the case study of minimizing catch by lost, abandoned, or otherwise discarded fishing gear.

4.2 The Development of the Ecosystem Approach

The following presentation will encompass some remarks about the rationale for the development of the ecosystem approach in general and the sectoral ecosystem approach to fisheries to contextualize the foundation for this study. It will also offer insights into the different operational levels of the ecosystem approach to fisheries and the normative obligations of each of these levels.

4.2.1 The Concept of Ecosystems

To define the scope of the term “ecosystem” is a scientific task. However, understanding what this natural phenomenon entails is of vital importance for the development of policy and legal obligations.³⁴⁴ The term ecosystem was first conceptualized in 1935, when Sir Arthur Tansley perceived the world as a system, including the “whole complex of physical factors forming what we call the environment of the biome – the habitat factors in the widest sense.”³⁴⁵ As emphasized by Tansley, “though the organisms may claim our primary interest, when we are trying to think fundamentally we cannot separate them from their special environment, with which they form one physical system.”³⁴⁶ Tansley’s work of conceptualizing ecosystems lead to the rapid development of ecosystem theories in scientific work,³⁴⁷ but the first attempts to develop approaches taking ecological processes into consideration in management of natural resources actually dates back over a century ago.³⁴⁸ Following Tansley’s work, numerous successors have attempted to define the scope of the term, but the basic concept of the definition is at present unchanged.³⁴⁹

The first legal instrument that specifically introduced the concept of ecosystems in international law was the 1972 Stockholm Declaration on the Human Environment, which explicitly recognized how the conservation of “ecosystems must be safeguarded for the

³⁴⁴ As will be illustrated in Section 4.3.1, the inclusion of the term ecosystem in legal instruments may represent a way of interpreting the ecosystem approach into policy and legal instruments.

³⁴⁵ A. G. Tansley, “The Use and Abuse of Vegetational Concepts and Terms,” *Ecology (Durham)* 16, No. 3 (1935): 284–307, <https://doi.org/10.2307/1930070>. Page 299.

³⁴⁶ *Ibid.*

³⁴⁷ See, e.g., Frank B. Golley, “The Ecosystem Concept: A Search for Order,” *Ecological Research* 6, No. 2 (1 August 1991): 129–38, <https://doi.org/10.1007/BF02347157>. Pinto also summarizes the scientific work undertaken on ecosystem theory in Daniela Diz Pereira Pinto, *Fisheries Management in Areas Beyond National Jurisdiction: The Impact of Ecosystem Based Law-Making* (Boston, United States: BRILL, 2012), <http://ebookcentral.proquest.com/lib/tromsoub-ebooks/detail.action?docID=1081566>, pages 2-3.

³⁴⁸ Harry N. Scheiber, “From Science to Law to Politics: An Historical View of the Ecosystem Idea and Its Effect on Resource Management,” *Ecology Law Quarterly* 24, No. 4 (1997): 631–51 in Vito De Lucia, *The ‘Ecosystem Approach’ in International Environmental Law: Genealogy and Biopolitics*, 1st ed., Law, Justice and Ecology (Milton: Routledge, 2019), <https://doi.org/10.4324/9781315150772>. Page 41.

³⁴⁹ Alexandre Kiss and Dinah Shelton, *Guide to International Environmental Law*, 1st ed. (Leiden, Boston: Martinus Nijhoff Publishers, 2007), <https://doi.org/10.1163/ej.9781571053442.1-329>. Page 42.

benefit of present and future generations.”³⁵⁰ The recognition of the need to preserve ecosystems was considered a significant milestone at the time of negotiations, and led to subsequent inclusion of the concept in several legal instruments.³⁵¹ The first legal instrument that specifically utilized ecosystem considerations as a legal concept was the 1973 Polar Bear Agreement,³⁵² which in Article II emphasizes that “each contracting party shall take appropriate action to protect the ecosystems of which polar bears are a part.”³⁵³

The rapid increase in recognition of the importance of conserving and protecting ecosystems is evident from the number of legal instruments adopted that recognized and addressed the issue after the adoption of the 1972 Stockholm Declaration, including, e.g., the 1979 Convention on Migratory Species, which recognizes the need to consider migratory species in their ecosystem contexts,³⁵⁴ and the CCAMLR Convention, which explicitly referred to the ecosystem approach in its provisions.³⁵⁵ However, the adoption of the 1992 Convention on Biological Diversity (CBD) can be regarded as a landmark in the historical development of the legal concept of the ecosystem approach. The adoption of the CBD has been recognized as filling “a ‘biodiversity gap,’ regulating the interaction of species and of habitat, and ecosystems, in a holistic manner.”³⁵⁶ The first legal definition of the term ecosystem was adopted in Article 2 of the Convention,³⁵⁷ defining an ecosystem as “a dynamic complex of plant, animal and micro-organism communities and their non-living environment interacting as a functional unit.” The 2005 Millenium Ecosystem Assessment subsequently adopted an

³⁵⁰ United Nations Environment Programme (UNEP), Stockholm Declaration: Declaration on the Human Environment, 1972, UNGA Resolutions 2994/XXVII, 2995/XXII, and 2996/XXII, <https://wedocs.unep.org/20.500.11822/29567>. Principle 2.

³⁵¹ Alan E. Boyle and Catherine Redgwell, *Birnie, Boyle & Rodwell’s International Law and the Environment*. Page 51.

³⁵² Vito De Lucia, *The ‘Ecosystem Approach’ in International Environmental Law: Genealogy and Biopolitics*. Pages 42-43.

³⁵³ Agreement on the Conservation of Polar Bears of 1973, 13 ILM 12 (1974).

³⁵⁴ 1979 Convention on the Conservation of Migratory Species of Wild animals, 1651 UNTS 333.

³⁵⁵ Convention on the Conservation of Antarctic Marine Living Resources, UNTS 1329 p. 47.

³⁵⁶ Boyle and Redgwell, *Birnie, Boyle & Rodwell’s International Law and the Environment*. Page 622.

³⁵⁷ It should nevertheless be emphasized that the term first made its appearance in Principle 2 of the 1972 Stockholm Declaration, even though it was not defined as such in the instrument.

identical definition but emphasized that “humans are an integral part of ecosystems,”³⁵⁸ and that “ecosystems vary enormously in size; a temporary pond in a tree hollow and an ocean basin can both be ecosystems.³⁵⁹” An ecosystem must thus be regarded as a dynamic and complex network of living and non-living organisms depending on and affecting each other within its ecological boundaries.

The rationale for protecting and conserving ecosystems is based on different positions, where the anthropocentric position is strongly reflected in the development of legal instruments. De Lucia illustrates how a myriad of legal instruments takes the position of conserving ecosystems to safeguard human interests, both the present and future needs of humankind.³⁶⁰ Although not the focus of the current study, it may be useful to bear in mind the existence of other positions, such as the ecocentric and biocentric positions, where the primary objective is to maintain ecological integrity.³⁶¹ As described by Stanley, the relationship between the two positions may be perceived in the following manner: “In the anthropocentric view protecting ecosystem integrity does not take priority over human use.”³⁶² This PhD study focuses on one of the primary anthropogenic stressors affecting marine ecosystems, aiming to identify necessary adjustments to existing practices to enhance conservation of marine ecosystems. In doing so, it aligns with an anthropocentric position based on the research questions chosen.

³⁵⁸ However, the anthropocentric focus in the 2005 Millenium Ecosystem Assessment is recognized in most of the legal instruments adopted from the 1970s onwards. See De Lucia, *The ‘Ecosystem Approach’ in International Environmental Law: Genealogy and Biopolitics*, for a thorough analysis of how the legal framework centers on the human interests of maintaining ecosystem functions and services for human welfare on pages 41-46.

³⁵⁹ Rashid Hassan, Robert Scholes, and Neville Ash (eds.), “Chapter 1 - MA Conceptual Framework”, in *2005 Millennium Ecosystem Assessment: Ecosystems and Human Well-being: A Framework for Assessment*, 2003. Page 27.

³⁶⁰ See, e.g., De Lucia, *The ‘Ecosystem Approach’ in International Environmental Law: Genealogy and Biopolitics*, which assesses how anthropocentrism permeates several key instruments adopted under international environmental law on pages 41-46.

³⁶¹ See, e.g. De Lucia, *The ‘Ecosystem Approach’ in International Environmental Law: Genealogy and Biopolitics*, pages 100-103 and Thomas R. Stanley, “Ecosystem Management and the Arrogance of Humanism,” *Conservation Biology* 9, No. 2 (1995): 255–62, <https://doi.org/10.1046/j.1523-1739.1995.9020255.x>

³⁶² Thomas R. Stanley, “Ecosystem Management and the Arrogance of Humanism.” Page 256.

It is beyond doubt that ecosystems are essential for human needs, as they are “life-support systems and essential for the survival and welfare of human beings.”³⁶³ The conservation of ecosystems is not only vital for the environment, but also for the existence of humanity and human societies.³⁶⁴ The term “ecosystem functions” describes the “capacity of natural processes and components to provide goods and services that satisfy human needs directly or indirectly.”³⁶⁵ The outcome of the ecosystem functions are thus described as ecosystem services, which provide a variety of goods and services vital and beneficial for humankind.³⁶⁶

The different kinds of ecosystems services were described and categorized into four main types in the 2005 Millenium Ecosystem Assessment: provisional services (such as food, fiber, fresh water, fuel, and genetic resources); regulating services (including climate regulation, disease regulation, water purification, and pollination); cultural services (e.g., education, recreation, esthetic and spiritual services); and supporting services (such as soil formation, oxygen production, and nutrient cycling).³⁶⁷ It should nonetheless be recognized that the distinctions between ecosystem functions and ecosystem services are still controversial, and it may even be difficult to distinguish between functions and services in general.³⁶⁸ Despite establishing a paradigm for environmental research and policy-making, the concept of ecosystem services also “risks converting nature into a tradable commodity, crowding-out non utilitarian motivations for nature conservation.”³⁶⁹ The concept of “nature commodification” is based on the valuation of ecosystem services, and during the past decades, ecosystem

³⁶³ Hanling Wang, “Ecosystem Management and Its Application to Large Marine Ecosystems: Science, Law, and Politics,” *Ocean Development and International Law* 35, No. 1 (2004): 41–74, <https://doi.org/10.1080/00908320490264382>. Page 42.

³⁶⁴ *Ibid.*

³⁶⁵ Rudolf S. de Groot, Matthew A. Wilson, and Roelof MJ Boumans, “A Typology for the Classification, Description and Valuation of Ecosystem Functions, Goods and Services”, *Ecological Economics* 41, No. 3 (2002): 393–408, [https://doi.org/10.1016/S0921-8009\(02\)00089-7](https://doi.org/10.1016/S0921-8009(02)00089-7). Page 394.

³⁶⁶ The Millennium Ecosystem Assessment is a comprehensive report regarding the status of the world’s ecosystems. See Millennium Ecosystem Assessment, “Ecosystems and Human Well-Being: A Framework for Assessment,” 2005. Pages 39-45.

³⁶⁷ *Ibid.* Page 40.

³⁶⁸ Froukje Maria Platjouw, *Environmental Law and the Ecosystem Approach: Maintaining Ecological Integrity through Consistency in Law*. Page 8.

³⁶⁹ Julia Martin-Ortega et al., “Nature commodification: ‘a necessary evil’? An analysis of the views of environmental professionals on ecosystem services-based approaches”, *Ecosystem Services* 37 (1 June 2019): 100926, <https://doi.org/10.1016/j.ecoser.2019.100926>. Page 9.

functions have gradually become regarded as ecosystem services, subject to valuation in monetary terms.³⁷⁰ The valuation of ecosystem services raises concerns about the lack of “predictive capacity to identify the sustainable use of any particular ecosystem service,” and is subject to academic debate.³⁷¹

The 2005 Millenium Ecosystem Assessment describes the concept of ecosystems as providing “a valuable framework for analyzing and acting on the linkages between people and the environment.”³⁷² Despite the increased recognition of the need to conserve ecosystems and the development of several legal instruments encompassing the concept during the past 40 years, the existing legal framework has “not been adequate” as ecosystems worldwide continue to decline.³⁷³ The development of the ecosystem approach may consequently be perceived as a “tool to halt the degradation of our ecosystems.”³⁷⁴ The ecosystem approach as a legal concept was formally endorsed by the Convention on Biological Diversity,³⁷⁵ and the following section will assess the scope of the approach.

³⁷⁰ Erik Gómez-Baggethun et al., “The history of ecosystem services in economic theory and practice: From early notions to markets and payment schemes,” *Ecological Economics*, Special Section - Payments for Environmental Services: Reconciling Theory and Practice, 69, No. 6 (1 April 2010): 1209–18, <https://doi.org/10.1016/j.ecolecon.2009.11.007>, page 1209 and Julia Martin-Ortega et al., “Nature commodification: ‘a necessary evil’? An analysis of the views of environmental professionals on ecosystem services-based approaches,” page 1.

³⁷¹ See Richard B. Norgaard, “Ecosystem services: From eye-opening metaphor to complexity blinder,” *Ecological Economics*, Special Section - Payments for Environmental Services: Reconciling Theory and Practice, 69, No. 6 (1 April 2010): 1219–27, <https://doi.org/10.1016/j.ecolecon.2009.11.009>, page 1220 and Kent H. Redford and William M. Adams, “Payment for Ecosystem Services and the Challenge of Saving Nature,” *Conservation Biology* 23, No. 4 (2009): 785–87, <https://doi.org/10.1111/j.1523-1739.2009.01271.x>. Redford and Adams identify seven problems related to the valuation of ecosystem services, including impacts of market changes on pages 785-786.

³⁷² Rashid Hassan, Robert Scholes, and Neville Ash, “Chapter 1 - MA Conceptual Framework.” Page 29.

³⁷³ Froukje Maria Platjouw, *Environmental Law and the Ecosystem Approach: Maintaining Ecological Integrity through Consistency in Law*. Page 13.

³⁷⁴ *Ibid.*

³⁷⁵ Rashid Hassan, Robert Scholes, and Neville Ash, “Chapter 1 - MA Conceptual Framework.” Page 29.

4.2.2 Discovering the Ecosystem Approach

What is the ecosystem approach and what does it entail?

These two questions are difficult to answer from either a scientific or a legal perspective.³⁷⁶ As a starting point, defining abstract linkages beyond human knowledge and control is a challenging task. It complicates matters that there is no universal definition of the ecosystem approach or uniform agreement regarding the core features of the concept.³⁷⁷ Despite a wealth of literature attempting to define the content and scope of the approach, the controversy and confusion regarding its definition hardly seem to have diminished in recent decades.³⁷⁸ As emphasized by Jakobsen, several different terms are also applicable to similar comprehensive and integrated approaches for the conservation of living resources, such as a “holistic approach, ocean management and integrated marine environment.”³⁷⁹

It is evident that defining the scope of the ecosystem approach is a demanding task. This is explicitly recognized by Henriksen, who argues that the lack of clarity might lead to “potential consequences for its content and status.”³⁸⁰ Nevertheless, De Lucia states that “lack of a clear and precise definition is [...] often not considered to constitute an important hindrance in

³⁷⁶ Ronán Long, “Legal Aspects of Ecosystem-Based Marine Management in Europe,” *Ocean Yearbook Online* 26, No. 1 (1 January 2012): 417–84, <https://doi.org/10.1163/22116001-92600083>. Page 420.

³⁷⁷ “Report of the Work of the UN Open-ended Informal Consultative Process on Oceans and the Law of the Sea at its Seventh Meeting (17 July 2006) UN Doc A/61/156”, para. 42. See also Wang, “Ecosystem Management and Its Application to Large Marine Ecosystems: Science, Law, and Politics.” Page 44.

³⁷⁸ See e.g., Arie Trouwborst, “The Precautionary Principle and the Ecosystem Approach in International Law: Differences, Similarities and Linkages,” *Review of European Community & International Environmental Law* 18, No. 1 (2009): 26–37, <https://doi.org/10.1111/j.1467-9388.2009.00622.x>, page 28, Froukje Maria Platjouw, *Environmental Law and the Ecosystem Approach: Maintaining Ecological Integrity through Consistency in Law*, page 20, and Vito De Lucia, *The ‘Ecosystem Approach’ in International Environmental Law: Genealogy and Biopolitics*, Chapter 4.

³⁷⁹ Ingvild Ulrikke Jakobsen, *Marine Protected Areas in International Law: An Arctic Perspective*, 1st ed., Vol. 25, Queen Mary Studies in International Law (Boston: BRILL, 2016), <https://doi.org/10.1163/9789004324084>. Page 108.

³⁸⁰ Tore Henriksen, “Conservation and Sustainable Use of Arctic Marine Biodiversity: Challenges and Opportunities,” *Arctic Review on Law and Politics* 1, No. 2 (2010): 249–78. Page 265.

relation to the ability to operationalize the concept” after reviewing a substantial amount of the relevant literature on the topic.³⁸¹

The lack of clarity on what the approach entails creates a cluster where the concept can be defined based on preconceptions of what the approach entails. De Lucia has categorized the scientific and scholarly definitions into three groups after conducting a substantial literature review: the ecological dimension, the socio-ecological linkages and the policy and legal dimension.³⁸² The ecological dimension is based on a focus close to purely ecological interests, and places “socio-economic ‘deliverables’...outside of the ‘ecosystem approach.’”³⁸³ On the other hand, the socio-ecological dimension includes humans, human behavior, and human needs. Grumbine is one of the authors who has defined an ecosystem approach within this dimension, stating that the ecosystem approach is a management framework that integrates “scientific knowledge of ecological relationships within a complex sociopolitical and values framework,” and that “human values play a dominant role in ecosystem management goals.”³⁸⁴ The policy and legal definitions are derived from legal instruments and institutions.³⁸⁵ As emphasized by De Lucia, the CBD is a natural starting point.³⁸⁶ In the report of the Malawi Workshop, subsequently included in decision V/6 by the Conference of the Parties (COP) to the CBD, the ecosystem approach is described as “a strategy for the

³⁸¹ Vito De Lucia, *The ‘Ecosystem Approach’ in International Environmental Law: Genealogy and Biopolitics*. Page 45.

³⁸² *Ibid.* Pages 47-50. Another categorization is made by Arkema, Abramson and Dewsbury, which reviewed 18 definitions of the concept of “ecosystem-based management” and identified 14 specific criteria that can be categorized into three dimensions: ecological, human dimension and management criteria. For more information, see Katie K. Arkema, Sarah C. Abramson, and Bryan M. Dewsbury, “Marine Ecosystem-Based Management: From Characterization to Implementation,” *Frontiers in Ecology and the Environment* 4, No. 10 (2006): 525–32, [https://doi.org/10.1890/1540-9295\(2006\)4\[525:MEMFCT\]2.0.CO;2](https://doi.org/10.1890/1540-9295(2006)4[525:MEMFCT]2.0.CO;2).

³⁸³ De Lucia, *The ‘Ecosystem Approach’ in International Environmental Law: Genealogy and Biopolitics*. Page 47. De Lucia refers to several definitions within this dimension, including Clark and Zaunbrecher's understanding that the ecosystem approach in management uses “systemwide concepts to ensure that all plants and animals in ecosystems are maintained at viable levels in native habitats and natural ecosystems processes are perpetuated indefinitely.” See Tim W. Clark and Dusty Zaunbrecher, “The Greater Yellowstone Ecosystem: The Ecosystem Concept in Natural Resources Policy and Management,” *Renewable Resources Journal*, 1987, pages 11 and 14, for more information.

³⁸⁴ R. Edward Grumbine, “What Is Ecosystem Management?” *Conservation Biology* 8, No. 1 (1994): 27–38, <https://doi.org/10.1046/j.1523-1739.1994.08010027.x>. Page 31

³⁸⁵ De Lucia, *The ‘Ecosystem Approach’ in International Environmental Law: Genealogy and Biopolitics*. Page 49.

³⁸⁶ *Ibid.*

integrated management of land, water and living resources that promotes conservation and sustainable use in an equitable way.”³⁸⁷ It is thus evident that the overarching goals of an ecosystem approach are to ensure conservation, sustainability and equity, and to create a management regime focusing on integration.³⁸⁸ Furthermore, the ecosystem approach is to be “based on the application of appropriate scientific methodologies focused on levels of biological organization, which encompass the essential structure, processes, functions and interactions among organisms and their environment.”³⁸⁹ Subsequent instruments of relevance include the Environment of the North-East Atlantic (OSPAR Convention), which defines the ecosystem approach as “a comprehensive integrated management of human activities based on the best available scientific knowledge about the ecosystem and its dynamics, in order to identify and take action on influences which are critical to the health of the marine ecosystems, thereby achieving sustainable use of ecosystems, goods and services and maintenance of ecosystem integrity.”³⁹⁰ This definition clearly combines the ecological dimension and the understanding of socio-ecological linkages, as it describes the ecosystem approach as aiming to ensure sustainable use of the various components of the ecosystems, to conserve their deliverables for humans, and to conserve the ecosystem integrity. The definition adopted by the OSPAR Commission was subsequently adopted by the International Council for the Exploration of the Sea (ICES),³⁹¹ and further reiterated in a joint statement by the OSPAR Commission and the Baltic Marine Environment Protection Commission (HELCOM).³⁹²

³⁸⁷ CBD, COP, Decision V/6, 2000, Annex A, para. 1.

³⁸⁸ De Lucia, *The ‘Ecosystem Approach’ in International Environmental Law: Genealogy and Biopolitics*. Page 49.

³⁸⁹ Report of the workshop on the ecosystem approach, Malawi, 26-28 January 1998 (UNEP/CBD/COP/4/Inf.9), para. 8.

³⁹⁰ 1992 Convention for the Protection of the Marine Environment of the North-East Atlantic, 2354 UNTS 67, Annex 13, para. 6.

³⁹¹ International Council for the Exploration of the Sea (ICES), 2005, “Guidance on the Application of the Ecosystem Approach to Management of Human Activities in the European Marine Environment.” ICES Cooperative Research Report No. 274, 4, para. 4(1).

³⁹² HELCOM, Statement on the Ecosystem Approach to the Management of Human Activities, 2003, Annex 5, para. 5. See also Lucia, *The ‘Ecosystem Approach’ in International Environmental Law: Genealogy and Biopolitics*, page 50 for more information about the process.

The ecosystem approach is thus a concept that can be defined based on diverse notions of what the concept entails. This is illustrated by how different scholars in various disciplines have defined the approach based on purely ecological interests or socio-ecological linkages. The legal and policy definitions cover both these interests, but primarily focus on regulating human behavior and ensuring that ecosystems can sustain human needs. As this study aims to produce a legal dissertation, the legal and policy dimension will be subject to closer examination in the following sections with a focus on legal and policy instruments.

The United Nations defined the content and scope of the ecosystem approach in the sixty-first session of the General Assembly in 2006 and recognized that a contextual approach can be used to make the ecosystem approach functional, meaning that the interpretation of the concept should take into account the different contexts where it is applied.³⁹³ In this regard, the lack of consensus on its definition over the past decades might actually be one of the key elements for the operationalization of the ecosystem approach, albeit in a sectoral context. As a broadly defined concept, the ecosystem approach might be flexible enough to provide solutions to the environmental challenges emerging from different human activities that need to be regulated, including fisheries, navigation, laying of submarine cables and pipelines, etc. One of the contexts relevant to the application of the ecosystem approach is the sector-based ecosystem approach to fisheries, which is the primary focus of this study.

Developing sectoral approaches may provide functional frameworks for the implementation of the ecosystem approach.³⁹⁴ However, the development of sectoral frameworks also raises the fundamental question of whether the respective approaches may defy the holistic foundation and idea of the ecosystem approach. Sector-specific implementation of the approach may lead to fragmented management of marine ecosystems, where cumulative impacts are not sufficiently addressed. Different sectors typically have different interests and incentives for engaging in sector-based activities, and their diverse priorities may ultimately create a conservation gap when the impacts of the activities are not assessed in conjunction.

³⁹³ Report on the work of the United Nations Open-ended Informal Consultative Process on Oceans and the Law of the Sea at its seventh meeting, 17 July 2006, UN DOC A/61/156 (IPC-7 Report), Part A, Section 1, para. 6.

³⁹⁴ *Ibid.*

Platjouw argues that sectoral approaches will prevent the ecosystems from being considered holistically as one system, and that “instead, various parts and elements of and problems within the ecosystem will be governed and regulated separately,” ultimately leading to fragmentation and counterproductive regulatory frameworks.³⁹⁵

As emphasized by Lloyd et al., a sectoral approach may be perceived as “insufficient to deal with the complex interrelationships and diverse stakeholder priorities.”³⁹⁶ Platjouw follows the same line of reasoning and describes how traditional sector-based management approaches have proven to be inadequate to deal with “challenges ahead,”³⁹⁷ and Charles describes traditional management on a sector by sector basis as creating a “silo problem,” where “a lack of attention to cumulative environmental impacts” is evident.³⁹⁸

There is no doubt that developing sector-based frameworks for the ecosystem approach may jeopardize cross-sectoral conservation efforts and undermine the central foundation of the ecosystem approach. However, a key question is whether, e.g., impacts from fisheries on marine ecosystems would be sufficiently addressed “in combination with impacts from shipping, tourism, and other marine sectors.”³⁹⁹ Different activities affecting marine ecosystems have some overlapping interfaces, “such as operating at sea, which justifies coordination to the extent operations overlap in time and space,”⁴⁰⁰ but it should also be recognized that the impacts of each of these activities are different. As will be illustrated in Section 4.4, the development of a sector-based ecosystem approach to fisheries may be used

³⁹⁵ Froukje Maria Platjouw, *Environmental Law and the Ecosystem Approach: Maintaining Ecological Integrity through Consistency in Law*. Page 115.

³⁹⁶ Greg Lloyd et al., “EU Maritime Policy and Economic Development of the European Seas,” in *The Ecosystem Approach to Marine Planning and Management*, eds. Sue Kidd, Andy Plater, and Chris Frid (London: Earthscan, 2011). Page 79.

³⁹⁷ Froukje Maria Platjouw, *Environmental Law and the Ecosystem Approach: Maintaining Ecological Integrity through Consistency in Law*. Page 19.

³⁹⁸ Anthony Charles, “People, Oceans and Scale: Governance, Livelihoods and Climate Change Adaptation in Marine Social–Ecological Systems”, *Current Opinion in Environmental Sustainability* 4, No. 3 (2012): 351–57, <https://doi.org/10.1016/j.cosust.2012.05.011>. Page 352.

³⁹⁹ Lena Schønning, “A Critical Assessment of the Contribution of Integrated Ocean Management to Protection of the Marine Environment” (UiT-The Arctic University of Norway, 2021), <http://hdl.handle.net/10037/28071>. Page 20.

⁴⁰⁰ *Ibid.*

as an illustration of how complex and detail-oriented the sector-specific management objectives and associated mitigation measures are. A pertinent question is thus whether such detailed obligations would be developed in a cross-sectoral management framework.

The issue of developing sufficient mitigation tools to halt the degradation of marine ecosystems in a cross-sectoral manner has proven to be relatively successful in some domestic contexts,⁴⁰¹ but another layer of complexity relevant in this study is that its geographical scope primarily focuses on areas beyond national jurisdiction. How should the cross-sectoral endeavor of operationalizing the ecosystem approach be coordinated on the high seas where each state has the right to conduct activities under the auspices of flag state jurisdiction?⁴⁰² To date, marine activities have mainly been regulated at the sectoral level, with different international legal frameworks and bodies regulating and developing the legal obligations for these diverse activities. As emphasized by Henriksen, “The prevailing approach to the regulation of human activities in international environmental law has been and still is sectoral.”⁴⁰³ The role of global international bodies such as the IMO in developing universal environmental standards for maritime activities and the FAO in developing universal standards for the fisheries sector is even more prominent on the high seas where no single state has jurisdiction to regulate the diverse activities. Indeed, the sectoral development of environmental standards may be perceived as creating a silo problem, as recognized by Charles, but it should simultaneously be emphasized that sectoral variants of, e.g., the ecosystem approach may be needed “for sectorial participative implementation,” and that their formal adoption as such “should be encouraged.”⁴⁰⁴

Sectoral variants of the ecosystem approach may provide valuable insights and effective tools for conservation through sector-specific lenses. The development of concrete management

⁴⁰¹ Gunnar Sander, “Against All Odds? Implementing a Policy for Ecosystem-Based Management of the Barents Sea”, *Ocean & Coastal Management* 157 (2018): 111–23, <https://doi.org/10.1016/j.ocecoaman.2018.01.020>.

⁴⁰² The concept of flag state jurisdiction was presented and explored in chapter 3.2.1 of this research project.

⁴⁰³ Tore Henriksen, “Conservation and Sustainable Use of Arctic Marine Biodiversity : Challenges and Opportunities”, page 250.

⁴⁰⁴ B. Kuemlangan et al., “Integrative Policy and Legal Instruments, Approaches and Tools”, in *Governance of Marine Fisheries and Biodiversity Conservation* (John Wiley & Sons, Ltd, 2014), 166–80, <https://doi.org/10.1002/9781118392607.ch12>, Page 169.

objectives and associated measures to mitigate impacts on marine ecosystems in sector-specific contexts may serve as valuable tools which may be utilized and implemented at the cross-sectoral level once they have been implemented in the sector-specific context. Clearly, sectoral approaches should be complemented by cross-sectoral management strategies to halt the degradation of marine ecosystems. The different levels of implementation of the approach may nevertheless provide different insights into the challenges of each sector in their endeavor of implementing the ecosystem approach, which may overall strengthen subsequent cross-sectoral implementation. This study aims to assess how the ecosystem approach to fisheries is implemented at the sectoral level, which must be regarded as providing valuable insights relevant to implementation at the level of cross-sectoral ecosystem-based management. In this perspective, the sectoral ecosystem approach to fisheries does not run contrary to the central foundation of the ecosystem approach, but rather serves as a mechanism to enable subsequent full implementation at the cross-sectoral level.

4.2.3 The History of the Ecosystem Approach to Fisheries

The recognition of the overarching ecosystem approach in international law and policy frameworks has been vital for the development of the sector-based ecosystem approach to fisheries. This approach can be considered as a product of “two historical institutional processes directly related to the emergence of the concept of sustainable development.”⁴⁰⁵ At the 1972 United Nations Conference on the Human Environment, it was highlighted that concepts relevant to the ecosystem approach to fisheries are “people’s participation, resource limitation, environmental degradation, demography, planning and management institutions, the role of science and technology, international collaboration and equity.”⁴⁰⁶ On the other hand, the Law of the Sea Convention presents the basis for a regime governing fisheries,

⁴⁰⁵ FAO Fisheries Department, *The Ecosystem Approach to Fisheries*, FAO Technical Guidelines for Responsible Fisheries 4. Suppl. 2. (Rome, Italy, 2003). Annex I. Page 73.

⁴⁰⁶ Ibid.

management, conservation, and development relevant for this industry.⁴⁰⁷ The ecosystem approach to fisheries may thus be regarded as having emerged based on two main pillars: “the elimination of overcapacity and overfishing, rebuilding of depleted stocks and protection of associated and dependent species” and “the maintenance of ecosystem habitats, functional relations between components and productivity.”⁴⁰⁸ The approach thus creates a combined framework involving principles and conceptual goals of the basis for sustainable development aimed at promoting both human and ecosystem well-being.⁴⁰⁹

As presented in Section 1.2, the ecosystem approach to fisheries can be defined as “an extension of conventional fisheries management recognizing more explicitly the interdependence between human well-being and ecosystem health and the need to maintain ecosystems productivity for present and future generations, e.g., conserving critical habitats, reducing pollution and degradation, minimizing waste and protecting endangered species.”⁴¹⁰ The FAO can be considered a pioneer in the work of making the approach functional by adopting the integrated framework for fisheries in the 1995 FAO Code of Conduct for Responsible Fisheries. This instrument functions as a reference framework for sustainable

⁴⁰⁷ Ibid. See also Chapter 3 of this thesis for a more detailed analysis of the regulatory regime governing fisheries in the Law of the Sea Convention.

⁴⁰⁸ FAO Fisheries Department, *The Ecosystem Approach to Fisheries*. Annex I, page 74.

⁴⁰⁹ Garcia and Cochrane point out that several binding instruments have been of great relevance for the development of the approach. These instruments are the 1971 Convention on Wetlands of International Importance Especially as Waterfowl Habitat, UNTS 996 (p.245), the 1973 Convention on International Trade in Endangered Species of Wild Fauna and Flora, 993 UNTS 243, the 1979 Convention on the Conservation of Migratory Species of Wild Animals, 1651 UNTS 333, the 1982 Convention for the Law of the Sea, the 1992 Convention on Biological Diversity, and the 1995 Fish Stocks Agreement. Further, the development of the approach has been furthered by the outcomes of Report of the United Nations Conference on the Human Environment, Stockholm, 5-16 June 1972, UN Doc. A/CONF.48/14/Rev1 (1972 Stockholm Conference on Human Development), WCED, *Our Common Future: Report of the World Commission on Environment and Development*, 4 August 1987, A/42/427, 1987, the Rio Declaration on Environment and Development, 3-14 June 1992, A/CONF.151/26.Rev 1 (Vol I), the CBD COP Decision II/10, ‘Conservation and Sustainable Use of Marine and Coastal Biological Diversity,’ 6-17 November 1995. UNEP/CBD/COP/2/19 (UNEP/CBD/COP/DEC/II/2), the Plan of Implementation of the World Summit on Sustainable Development, 4 September 2002, A/CONF.199/20 (2002 World Summit on Sustainable Development) and the FAO Reykjavik Conference on Responsible Fisheries in the Marine Ecosystem, 2001. See Garcia, S. M., and Cochrane, K. L. 2005. “Ecosystem approach to fisheries: a review of implementation guidelines.” Page 311.

⁴¹⁰ Ward, T., Tarte, D., Hegerl, E. and Short, K, “Ecosystem-based management of marine fisheries”, in *The ecosystem approach to fisheries*, FAO Fisheries Technical Paper 443 (Rome: FAO, 2003). Page 6.

fisheries as it addresses all the ecosystem considerations, principles, and conceptual goals necessary for applying an ecosystem approach to fisheries.⁴¹¹ The sector-based approach was first formally adopted during the FAO Technical Consultation on Ecosystem-based Fisheries Management held in Reykjavik from 16 to 19 September 2002, with the aim of creating a concept which also “delineates a way of taking ecosystem considerations into more conventional fisheries management,” and to make the goals of the Code of Conduct functional.⁴¹² The overall objective of an ecosystem approach to fisheries is thus the creation and adoption of a management framework that “strives to balance diverse societal objectives, by taking account of the knowledge and uncertainties about biotic, abiotic and human components of ecosystems and their interactions and applying an integrated approach to fisheries within ecologically meaningful boundaries.”⁴¹³

Nevertheless, despite the clear-cut definition and clearly articulated principles, arriving at an operational framework for the ecosystem approach to fisheries has always been fraught with difficulty,⁴¹⁴ underpinning the importance of developing the approach in a sectoral context.⁴¹⁵ One of the main problems has been the lack of simple measurement indicators for an ecosystem approach to fisheries, especially in data-poor fisheries.⁴¹⁶ As emphasized by Funtowicz et al., “most problems in practice have more than one plausible answer; and many have no answer at all.”⁴¹⁷ In this context, a pivotal question debated frequently in the 2000s was whether “conventional approaches to fisheries management can be adapted to take

⁴¹¹ Serge M. Garcia and Keven L. Cochrane, “Ecosystem Approach to Fisheries: A Review of Implementation Guidelines.” Page 311.

⁴¹² Ward, T., Tarte, D., Hegerl, E. and Short, K, “Ecosystem-based management of marine fisheries.” Page 6.

⁴¹³ Ibid.

⁴¹⁴ Stephen Hall and B Mainprize, “Towards Ecosystem-based Fisheries Management,” *Fish and Fisheries* 5 (March 1, 2004): 1–20, <https://doi.org/10.1111/j.1467-2960.2004.00133.x>. Page 2.

⁴¹⁵ See Section 4.2.2, where the relationship between sectoral and cross-sectoral implementation of the ecosystem approach to fisheries was discussed.

⁴¹⁶ Tony J. Pitcher et al., “An Evaluation of Progress in Implementing Ecosystem-Based Management of Fisheries in 33 Countries,” *Marine Policy*, *Marine Policy*, 33, No. 2 (2009): 223–232, <https://doi.org/10.1016/j.marpol.2008.06.002>. Page 223.

⁴¹⁷ S.O. Funtowicz et al., “Information tools for environmental policy under conditions of complexity” (European Communities, 1999). Page 8.

account for wider ecosystem perspectives or whether more radical changes are needed.”⁴¹⁸ Hall and Mainprize argued that expanding “current single-species reference point approaches to a wider range of important and conspicuous species will have an immediate impact,” while society awaited indicators to measure the impacts of fisheries on marine ecosystems.⁴¹⁹ Other scholars such as Murawski envisaged that “existing programmes will need to be expanded to allow monitoring of catches and abundances of a wider array of species, to complement research and modelling on trophic interactions.”⁴²⁰ Pikitch et al. argued that ecosystem considerations are “a new direction for fishery management, essentially revisiting the order of management priorities to start with the ecosystem rather than the target species,” and emphasized that the transition from the traditional management system should not be delayed.⁴²¹ Finally, Pauly et al. went one step further in 2004 and emphasized that the best way to prevent the collapse of fish stocks and to assure sustainability was the establishment of marine protected areas (MPAs) to protect habitats of both target and non-target species.⁴²²

The problems related to how the approach should be implemented and operationalized have also been recognized by the FAO. Following the Technical Consultation in 2002 where the approach was formally adopted, the organization has developed several technical guidelines, monitoring systems and forums to operationalize the approach.⁴²³ Further, the FAO initiated a process of making the Code operational by translating conceptual goals and founding principles into management objectives,⁴²⁴ some of which already reflect customary

⁴¹⁸ See e.g., Hall and Mainprize, “Towards Ecosystem-based Fisheries Management,” page 2 and Ray Hilborn, André E. Punt, and José Orensanz, “Beyond Band-Aids in Fisheries Management: Fixing World Fisheries,” *Bulletin of Marine Science* 74, No. 3 (May 1, 2004): 493–507, Page 493.

⁴¹⁹ Stephen Hall and B Mainprize, “Towards Ecosystem-based Fisheries Management.” Page 15.

⁴²⁰ Steven A. Murawski, “Definitions of Overfishing from an Ecosystem Perspective,” *ICES Journal of Marine Science* 57, No. 3 (June 2000): 649–58, <https://doi.org/10.1006/jmsc.2000.0738>. Page 655. Murawski also emphasized that this did not represent a viewpoint where traditional programmes should be abandoned.

⁴²¹ Pikitch, E. K. et al., “Ecosystem-Based Fishery Management,” *Science* 305 (2004): 346–47, <https://doi.org/doi:10.1126/science.1098222>. Page 346.

⁴²² Daniel Pauly et al., “Towards Sustainability in World Fisheries,” *Nature (London)* 418, No. 6898 (2002): 689–695, <https://doi.org/10.1038/nature01017>. Page 694.

⁴²³ See, e.g., “Fisheries and Aquaculture - Fisheries and Aquaculture - EAF Toolbox,” last accessed 13.05.2024, <https://www.fao.org/fishery/en/eaf-net/toolbox>.

⁴²⁴ Garcia S.M. et al., “The ecosystem approach to fisheries. Issues, terminology, principles, institutional foundations, implementation and outlook.” Page 27.

international law.⁴²⁵ These management objectives have in turn been split into different concrete management measures to be applied by the fisheries industry to achieve the objectives. The ecosystem approach to fisheries may consequently be regarded as an approach embracing several management objectives, such as prevention of bycatch, discarding and catch by lost or abandoned gear, with the latter being the primary focus of Section 4.4 and the case study in this thesis.⁴²⁶ To give substance to the overarching goals, a practical management framework with specific management measures directed at achieving the objectives must be adopted by states and RFMOs.

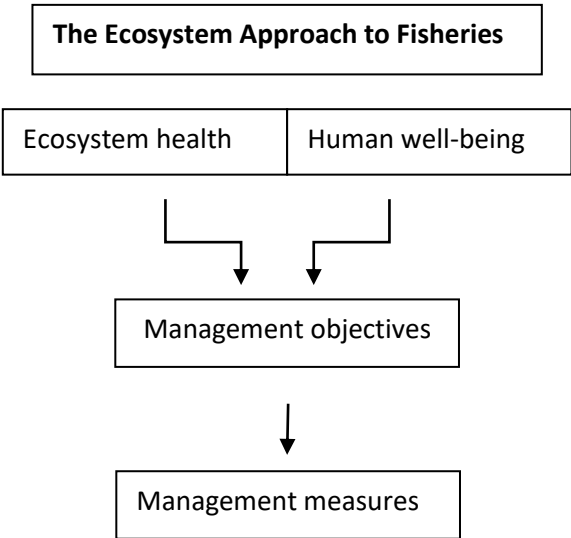


Figure 2: An illustration of how the goals is connected to management objectives and management measures in this study. To achieve the dual goal of ecosystem health and human well-being, management objectives must be implemented in the fisheries management framework. Operational measures must be adopted to meet the objectives.

⁴²⁵ See Article 1.1 of the Code of Conduct, which states that certain parts of the instrument “are based on relevant rules of international law, including those reflected in the United Nations Convention on the Law of the Sea.” An assessment of whether the ecosystem approach is encompassed in the Law of the Sea Convention will be provided in Section 4.3.1.

⁴²⁶ The rationale for designing a case study focusing on minimizing catch by lost, abandoned, or otherwise discarded fishing gear was presented in Section 1.2.

4.2.4 Various Levels of Operationalization

The ecosystem approach to fisheries is a concept that has been developed with a primary focus on the effects of fishing operations on marine ecosystems and the marine environment. Similar concepts have emerged in parallel processes directed at regulating various activities in relation to such fishing operations, and there are many examples of vague terminology in the specific context of fisheries.⁴²⁷

The terms “ecosystem-based management,” “ecosystem-based fisheries management,” “ecosystem approach to fisheries management” and “ecosystem approach to fisheries” are often used interchangeably and are poorly distinguished.⁴²⁸ In practice, these terms may be regarded as representing multiple levels for the operationalization of the ecosystem approach in the fisheries sector, encompassing different normative obligations. The FAO recognizes that the different terms are intertwined,⁴²⁹ but that a common denominator is that “all ecosystem-based approaches to management of economic activities” rely on some common precepts: “The need for sound advice, adaptation to changing conditions, partnerships with diverse stakeholders and organizations, and a long-term commitment to the welfare of both the ecosystem and human societies.”⁴³⁰ As emphasized by Link and Browman, clarification of the scope of the different terms is nevertheless considered necessary for the implementation of the approaches,⁴³¹ and the following analysis will explore the normative scope of each of the recognized concepts.

As a starting point, the various levels for the operationalization of the ecosystem approach in the context of fisheries range from a perspective focusing solely on targeted fish stocks,

⁴²⁷ Tara E. Dolan, Wesley S. Patrick, and Jason S. Link, “Delineating the Continuum of Marine Ecosystem-Based Management: A US Fisheries Reference Point Perspective,” *ICES Journal of Marine Science* 73, No. 4 (2016): 1042–1050, <https://doi.org/10.1093/icesjms/fsv242>. Page 1042.

⁴²⁸ *Ibid.*

⁴²⁹ Garcia S.M. et al., *The ecosystem approach to fisheries. Issues, terminology, principles, institutional foundations, implementation and outlook*.

⁴³⁰ *Ibid.* Section 1.5.

⁴³¹ Jason S. Link and Howard I. Browman, “Integrating what? Levels of marine ecosystem-based assessment and management,” *ICES Journal of Marine Science* 71, No. 5 (1 August 2014): 1170–73, <https://doi.org/10.1093/icesjms/fsu026>. Page 1170.

perspectives focusing on targeted fish stocks and incorporating ecosystem considerations, an ecosystem level with a sectoral focus on fisheries and finally a cross-sectoral focus including all impacts on ecosystems from the fisheries sector and other activities affecting the fisheries sector.⁴³²

Starting at one end of the scale, single-species management represents the traditional fisheries management regime, solely focusing on the targeted species and measures to conserve and manage these fish stocks. The main criticism of this management approach is that it is obviously not holistic in nature, as it “does not consider species interactions, changes in ecosystem structure or function, biodiversity, nonharvest ecosystem services, the need of protected or rare species, other non-target species, the ecosystem effects of discarding large quantities of unwanted bycatch...or gear impacts on habitats.”⁴³³ However, it should be emphasized that single-species approaches may still be adopted with the purpose of conserving marine ecosystems. If marine species are subjected to tailored management and conservation measures due to their status as, e.g., endangered or particularly vital for ecosystems, single species approaches may actually represent an effective tool to conserve ecosystems.⁴³⁴ However, the rationale for adopting single-species approaches in traditional fisheries management rests on other premises than conserving, e.g., endangered species, as traditional fisheries management focuses on the optimum utilization of targeted fish stocks.⁴³⁵

The ecosystem approach to fisheries, sometimes referred to as “the ecosystem approach to fisheries management,” still focuses on the targeted stocks but incorporates ecosystem considerations such as the importance of habitats and predator-prey relationships.⁴³⁶ As

⁴³² Ibid.

⁴³³ Mace, “A New Role for MSY in Single-Species and Ecosystem Approaches to Fisheries Stock Assessment and Management”, *Fish and Fisheries* 2, No. 1 (2001): 2–32, <https://doi.org/10.1046/j.1467-2979.2001.00033.x>. Page 18.

⁴³⁴ See, e.g., Daniel J. Bardey, “Critically Evaluating the Consequences of a Single Species Conservation Approach,” *JOJ Wildlife & Biodiversity* 2, No. 1 (10 February 2020): 001–004, <https://doi.org/10.19080/JOJWB.2020.01.555579>. Page 001. Bardey also argues that single species approaches to management have led to rebuilding of stocks of several threatened mammals in the presented research.

⁴³⁵ The concepts of MSY and TAC in fisheries management were introduced in Section 3.3.

⁴³⁶ As will be illustrated in subsequent analyses in Section 4.2, some of the obligations of the Law of the Sea Convention may be regarded as encompassing the core elements of the ecosystem approach to fisheries.

introduced in Section 3.1.3, the ecosystem approach to fisheries is described as “an extension of conventional fisheries management recognizing more explicitly the interdependence between human well-being and ecosystem health and the need to maintain ecosystems productivity for present and future generations, e.g. conserving critical habitats, reducing pollution and degradation, minimizing waste, protecting endangered species.” By incorporating ecosystem considerations into stock assessments, the ecosystem approach to fisheries “aims to enhance the understanding of fisheries dynamics” and the approach may include “multispecies models that attempt to capture the dynamics and interactions of several (but not all) stocks within the ecosystem.”⁴³⁷ The FAO has described the approach as not being limited to management, but also including “development, planning, food safety etc., better matching the breadth of the FAO Code of Conduct.”⁴³⁸

“Ecosystem-based fisheries management” shifts the focus from the target stocks to the ecosystem, including a management framework for non-target species, habitats and predator-prey relationships. In this way, ecosystem-based management takes “a system-level perspective on fisheries in an ecosystem” and differs from the ecosystem approach to fisheries by focusing on “multiple or all fisheries within an ecosystem and takes a coordinated and strategic approach to providing the greatest benefit” for states.⁴³⁹ Nevertheless, “work to establish more formal decision criteria for multiple objectives is ongoing, but is used informally in most regions.”⁴⁴⁰ The FAO has adopted the definition of the concept provided by the US National Research Council and emphasizes that ecosystem-based fisheries management is:

“an approach that takes major ecosystem components and services – both structural and functional – into account of managing fisheries...It values habitat, embraces a multispecies perspective, and is committed to understanding ecosystem processes...”

⁴³⁷ Dolan, Patrick, and Link, “Delineating the Continuum of Marine Ecosystem-Based Management: A US Fisheries Reference Point Perspective.” Page 1044.

⁴³⁸ Garcia S.M. et al., *The ecosystem approach to fisheries. Issues, terminology, principles, institutional foundations, implementation and outlook.* Page 6.

⁴³⁹ Dolan, Patrick, and Link, “Delineating the Continuum of Marine Ecosystem-Based Management: A US Fisheries Reference Point Perspective.” Page 1045.

⁴⁴⁰ Ibid.

Its goal is to rebuild and sustain populations, species, biological communities and marine ecosystems at high levels of productivity and biological diversity so as not to jeopardize a wide range of goods and services from marine ecosystems while providing food, revenues and recreation for humans.”⁴⁴¹

However, the concept did not receive sufficient support at the technical consultation in Reykjavik in 2002, as the scope of its normative obligations would potentially give “environmental considerations pre-eminence over socio-economic and cultural ones” and because the ecosystem “would become the new ‘foundation’ of fisheries management.”⁴⁴²

Finally, ecosystem-based management considers all pressures on marine ecosystems cumulatively within a fisheries context, including pressures caused by fisheries, shipping, oil and gas exploitation, aquaculture, etc. This level represents the “management paradigm of the idealized future” as it “addresses cumulative impacts; seeks to ascertain the best mix of ecosystem goods and services produced by different ecosystem sectors and processes...provides systemic reference points; and quantifies risks across sectors with the ultimate purpose of maintaining core functionality” of marine ecosystems.⁴⁴³ This level of implementation of the ecosystem approach represents the cross-sectoral level presented in Section 3.1.3. The concept of ecosystem-based management moves beyond the normative framework of the FAO’s ecosystem approach to fisheries and the scope of this PhD study.

This study focuses on tuna RFMOs and their operationalization of the ecosystem approach to fisheries. The suitable level to be addressed in this project is thus the ‘ecosystem approach to fisheries’ focusing on targeted fish stocks, but with incorporated ecosystem considerations and ecological factors, including predator removals or multispecies interactions.⁴⁴⁴ This level of operationalization will be referred to as the ecosystem approach to fisheries in the

⁴⁴¹ Garcia S.M. et al., *The ecosystem approach to fisheries. Issues, terminology, principles, institutional foundations, implementation and outlook*. Page 6.

⁴⁴² Ibid.

⁴⁴³ Dolan, Patrick, and Link, “Delineating the Continuum of Marine Ecosystem-Based Management: A US Fisheries Reference Point Perspective.” Pages 1045-1046.

⁴⁴⁴ Link and Browman, “Integrating What? Levels of marine ecosystem-based assessment and management.” Page 1170.

following chapters. The rationale for selecting this operational level is the management mandate of the tuna RFMOs, which is primarily to manage the various species of tuna and tuna-like species within their areas of competence.⁴⁴⁵ A relevant part of this study is consequently to analyze how ecosystem considerations and ecological factors have been implemented and operationalized in the tuna RFMOs in light of the emergence of the ecosystem approach to fisheries.

4.3 The Legal Status of the Ecosystem Approach to Fisheries and the Relevant Sources

Having established that the sectoral ecosystem approach in the fisheries context encompasses a myriad of operational levels, and that this study will focus on the ecosystem approach to fisheries, the following analysis will focus on identifying the normative framework relevant for the implementation of this approach. What are the legal instruments regulating this specific sector and what obligations can be explicitly identified or implicitly derived from the existing normative framework?

The ecosystem approach to fisheries is a concept at the intersection of a wide range of disciplines. Scientific knowledge is of vital importance for fisheries governance as a primary wheel to adopt policy and legal obligations, and for the creation of a practical management framework for the fisheries industry. However, since this is a legal dissertation, the primary focus will be on relevant legal sources.

The following section will present an analysis of the relevant legal instruments encompassing the ecosystem approach to fisheries, starting with the Law of the Sea Convention, after which an analysis of the sector-specific instruments directly aimed at regulating fisheries will be provided.⁴⁴⁶ The primary aims of the following analyses are to locate the objectives and

⁴⁴⁵ The mandates and geographical areas of competence of the tuna RFMOs are explored in Chapter 6 of this thesis.

⁴⁴⁶ These sector-specific instruments include the 1995 UN Fish Stocks Agreement and the 1995 FAO Code of Conduct. See Sections 3.3.2 and 3.3.3 for general information about the development and status of these two instruments. It should nevertheless be emphasized that the delimitation of the scope only to include instruments directly regulating fishing activities is deliberate. One consequence of the delimitation is that other relevant instruments embracing the overarching ecosystem approach, such as the CBD, will not be subject to detailed

management measures that are vital for the implementation of the approach, and to identify the potential constraints that may impede the operationalization of the approach in a theoretical perspective.

4.3.1 The Law of the Sea Convention

The legal regime applicable to high seas fisheries was explored in Chapter 3. The following analysis will focus on whether the ecosystem approach is implicitly encompassed in the provisions of the Law of the Sea Convention. The analysis begins with a summary of some central findings of Section 3.2.3, as these findings are relevant for the issue to be examined in more detail in the following.

Section 3.2.3 explored how the scope of Articles 192 and 194 (5) of the Law of the Sea Convention encompasses legal obligations to protect and preserve the marine environment, and how the *South China Sea Arbitration* established that Article 192 imposes a positive obligation to take necessary actions to “protect and preserve rare and fragile ecosystems as well as the habitat of depleted, threatened or endangered species and other forms of marine life.”⁴⁴⁷ The *South China Sea Arbitration* also established that “in addition to preventing the direct harvesting of species recognized internationally as being threatened with extinction, Article 192 extends to the prevention of harms that would affect depleted, threatened, or endangered species indirectly through the destruction of their habitat.”⁴⁴⁸ It was thus concluded in Section 3.2.3 that Article 192 encompasses substantive obligations for all activities that may threaten endangered species and their habitats, including fisheries.⁴⁴⁹ A

examination. This will constrain the opportunity to study how these instruments function in parallel and interact with the 1995 UN Fish Stocks Agreement and the 1995 FAO Code of Conduct on a general level. Nevertheless, the focus on the legal instruments relevant in the fisheries context will enable analysis of their content and status as reference frameworks for the fisheries industry and reveal what types of management objectives and associated measures are relevant in this specific sector.

⁴⁴⁷ *South China Sea Arbitration*, para. 959.

⁴⁴⁸ *Ibid.*

⁴⁴⁹ See also Amrisha Pandey and Surya P. Subedi, “Enhancing State Responsibility from Environmental Implications of the South China Sea Dispute”. Page 356.

further key question is whether the ecosystem approach can be considered as part of the Law of the Sea Convention through an interpretation of its provisions.

De Lucia has conducted an extensive literature review and identified several legal scholars who argue that the ecosystem approach may indeed be inferred in the Law of the Sea Convention.⁴⁵⁰ The following presentation is consequently based on many of the sources first identified by De Lucia. Belsky states that the “evolution of the marine ecosystem approach from preferred policy to binding custom” is demonstrated by the Law of the Sea Convention by virtue of, e.g., Articles 192 and 194, and the legal obligation to manage marine resources based on their interdependence as stated in, e.g., Articles 117-120 of the Convention.⁴⁵¹ Belsky further argues that the obligation to act collectively to manage marine resources based on their interdependence should be regarded as an element mandating an ecosystem approach.⁴⁵² Morishita follows the same line of reasoning and emphasizes that Article 119 of the Law of the Sea Convention “represents the concept of the ecosystem approach at the time of the conclusion of the negotiations for UNCLOS.”⁴⁵³ Fabra and Gascón take a slightly different perspective, stating that the Law of the Sea Convention “implicitly endorsed this approach,” by requiring managers to “assess the impacts of fishing on the different components of the ecosystem, particularly on species dependent on or associated with the targeted stocks.”⁴⁵⁴ Wang follows the same line as Fabra and Gascón, and emphasizes that although the Law of the Sea Convention “does not explicitly set forth an ecosystem approach to marine environmental resource management, its objectives and relevant provisions can be interpreted as being supportive of such an approach.”⁴⁵⁵ Pinto argues that widely accepted

⁴⁵⁰ Vito De Lucia, “The Ecosystem Approach and the Negotiations towards a New Agreement on Marine Biodiversity in Areas beyond National Jurisdiction,” *Nordisk Miljörettslig Tidskrift*, 2019.

⁴⁵¹ Martin H. Belsky, “Using Legal Principles to Promote the ‘Health’ of an Ecosystem”, *Tulsa Journal of Comparative & International Law* 3, No. 2 (1996): 183–204. Pages 194-196.

⁴⁵² *Ibid.*

⁴⁵³ Joji Morishita, “What Is the Ecosystem Approach for Fisheries Management?”, *Marine Policy* 32, No. 1 (2008): 19–26, <https://doi.org/10.1016/j.marpol.2007.04.004>. Page 20.

⁴⁵⁴ Adriana Fabra and Virginia Gascón, “The Convention on the Conservation of Antarctic Marine Living Resources (CCAMLR) and the Ecosystem Approach,” *The International Journal of Marine and Coastal Law* 23, No. 3 (2008): 567–98, <https://doi.org/10.1163/092735208X331854>. Page 571.

⁴⁵⁵ Handling Wang, “Ecosystem Management and Its Application to Large Marine Ecosystems: Science, Law, and Politics,” Page 50.

policy and soft law instruments may inform the interpretation of treaties, and that it is reasonable to argue that the concept of ecosystem-based management informs the interpretation of Article 119 of the Law of the Sea Convention through the inclusion of the wording “other conservation measures” in Article 119(1)(a).⁴⁵⁶ Finally, De Lucia argues that there are two possible ways to assess the relationship between the ecosystem approach and the Law of the Sea Convention: the ecosystem route and the essential equivalence route.⁴⁵⁷ These two routes encapsulate and categorize the two perspectives taken in the legal literature addressing the central question of whether the ecosystem approach is encompassed in the Law of the Sea Convention. The ecosystem route is founded on the idea that “the ecosystem approach is fundamentally linked to the concept of ecosystem,” creating a perspective where “any environmental regime that deploys the concept of ecosystem from which specific legal consequences can be drawn, can be characterized as taking an ecosystem approach” either directly and explicitly or indirectly and implicitly.⁴⁵⁸ The obligation to protect the marine environment encompasses “rare and fragile ecosystems as well as habitat of depleted, threatened or endangered species and other forms of marine life,” making some scholars take the position that the ecosystem approach is imbedded in the Law of the Sea Convention by virtue of Article 194(5).⁴⁵⁹ The essential equivalence route represents a substantive approach, “as it reads the ecosystem approach into legal regimes based on whether a particular regime essentially or effectively incorporates an ecosystem approach, even if there is no formal deployment of the concept or language of ecosystem.”⁴⁶⁰ The FAO follows this substantive line when emphasizing that the underlying principles and conceptual objectives of the ecosystem approach to fisheries appear in the Law of the Sea Convention, despite its lack of references to explicit terms, such as the “ecosystem approach to fisheries.”⁴⁶¹

⁴⁵⁶ Daniela Diz Pereira Pinto, *Fisheries Management in Areas Beyond National Jurisdiction: The Impact of Ecosystem Based Law-Making*. Pages 17-19.

⁴⁵⁷ De Lucia, “The Ecosystem Approach and the Negotiations towards a New Agreement on Marine Biodiversity in Areas beyond National Jurisdiction”. Page 15.

⁴⁵⁸ *Ibid.* Pages 16-17.

⁴⁵⁹ *Ibid.* Page 16.

⁴⁶⁰ *Ibid.*

⁴⁶¹ Garcia S.M. et al., *The ecosystem approach to fisheries. Issues, terminology, principles, institutional foundations, implementation and outlook*. Pages 16-17. The reasoning of Garcia et al. is that the recognition of

De Lucia concludes that “there are ways to infer an ecosystem orientation, if not a full-fledge ecosystem approach” in the Law of the Sea Convention but emphasizes that “it is also important to underline that the ecosystem approach remains at best implicit in the UNCLOS, and at worst entirely alien to it.”⁴⁶²

I would argue that the question of whether the ecosystem approach is inferred in the Law of the Sea Convention will vary based on the operational level of the approach applied. As illustrated in Section 4.2.4, the sectoral ecosystem approach to fisheries has different operational levels, encompassing different normative obligations. Whereas the core concept of the ecosystem approach to fisheries, covering obligations to consider the interdependence of species, predator-prey relationships, and habitats, may be read as obligations already existing in the Law of the Sea Convention through, e.g., Articles 119 and 192, it seems more controversial to argue that the normative scope of cross-sectoral ecosystem-based management is implicitly inferred in the instrument. A central question in this regard is the “flexibility” of the obligation to protect and preserve the marine environment in Article 192, and whether one can implicitly read into the provision an obligation to address all cumulative sectoral impacts on marine ecosystems into, e.g., fisheries management. I will not address this question any further, as it has been established that it seems reasonable to argue that the central elements of the ecosystem approach to fisheries may be perceived as being inferred in the Law of the Sea Convention.⁴⁶³ This finding will potentially have implications for subsequent analysis regarding the legal status of the approach, particularly in the case study, which will assess whether the tuna RFMOs are operating in line with their legal obligations to conserve marine ecosystems in Chapter 7.

associated and dependent species in Articles 61 and 119, the recognition of the interdependence of stocks in Article 61 and the obligation to protect and preserve the environment in, e.g., Article 192 all reflect the ecosystem approach.

⁴⁶² De Lucia, “The Ecosystem Approach and the Negotiations towards a New Agreement on Marine Biodiversity in Areas beyond National Jurisdiction.” Pages 19-20.

⁴⁶³ It should be recognized that The ITLOS confirmed that Article 119 of the Law of the Sea Convention entails the “application of the precautionary approach and the ecosystem approach” in its Advisory Opinion given in May 2023. See ITLOS, Request for an Advisory Opinion submitted by the Commission of Small Island States on Climate Change and International Law, Advisory Opinion, 21 May 2024, ITLOS, no. 31. Para. 418.

Having established that it is possible to infer an ecosystem approach to fisheries in some of the provisions of the Law of the Sea Convention, the following analysis will focus on the normative requirements of the approach in the 1995 UN Fish Stocks Agreement.

The Tribunal held that the reference in Article 119 of the Law of the Sea Convention to “relevant economic and environmental factors” entails “the application of the precautionary approach and an ecosystem approach.”⁴⁶⁴ Consequently, states need to apply the ecosystem approach to fisheries, thus giving effect to their duty to cooperate in high seas fisheries.

4.3.2 The 1995 UN Fish Stocks Agreement

As briefly introduced in Section 3.3.2, the 1995 UN Fish Stocks Agreement encompasses several clear examples of the ecosystem approach to fisheries, albeit there is no explicit use of this term or related terms in the Agreement.⁴⁶⁵ Despite not explicitly referring to these specific terms, the 1995 UN Fish Stocks Agreement “provides for States to adopt conservation measures that take into consideration the interdependence of stocks, as well as habitat and biodiversity protection, to maintain ecosystems integrity.”⁴⁶⁶ As outlined in Section 4.3.1, some of these elements may be regarded as implicitly inferred in the preceding Law of the Sea Convention. The 1995 UN Fish Stocks Agreement is an implementation Agreement adopted under the Law of The Sea Convention and “shall be interpreted and applied in the context of and in a manner consistent with the Convention.”⁴⁶⁷⁴⁶⁸ Molenaar states that the status of the 1995 UN Fish Stocks Agreement as an implementation Agreement “must not be presumed to have the intention to change the jurisdictional framework” of the Law of the Sea Convention, but that its provisions broaden and specify many of the obligations of the Law of the Sea Convention, including the obligation to take account of ecosystem considerations in

⁴⁶⁴ Ibid. para. 418

⁴⁶⁵ Pinto lists the terms ecosystem-based approach, ecosystem-based fisheries management and ecosystem-based management when she assesses this topic in Pinto, *Fisheries Management in Areas beyond National Jurisdiction: The Impact of Ecosystem Based Law-Making*. Page 26.

⁴⁶⁶ Ibid. Page 26.

⁴⁶⁷ See Article 4 of the 1995 UN Fish Stocks Agreement.

⁴⁶⁸ See Section 3.3.2 for an analysis of the relationship between the Law of the Sea Convention and the 1995 UN Fish Stocks Agreement.

fisheries management.⁴⁶⁹ Following the same line of argumentation, the 1995 UN Fish Stocks Agreement may be characterized as a key foundation for the further evolution of the ecosystem approach in the fisheries context. The following sections will assess the scope of actions necessary for the implementation of the approach.

As emphasized in Chapter 3, the 1995 UN Fish Stocks Agreement does not diminish the concepts of TAC and MSY.⁴⁷⁰ The Agreement nevertheless facilitates a novel approach to traditional fisheries management by the adoption of the precautionary approach and precautionary reference points as a guideline for fisheries.⁴⁷¹ Another vital difference is that the MSY limit is to be avoided under the 1995 UN Fish Stocks Agreement, whereas this limit under the regime created by the Law of the Sea Convention is to be qualified by various factors, including economic incentives.⁴⁷² It is arguably possible to restore populations of target fish stocks by including the precautionary reference points annexed to the Agreement.⁴⁷³ As emphasized by Pinto, this raises the question of whether the 1995 UN Fish Stocks Agreement also solves the problem of protecting and rebuilding the marine ecosystems as a whole.⁴⁷⁴

The 1995 UN Fish Stocks Agreement encompasses many key elements of ecosystem considerations, with Article 5 representing the “ecological heart” of the instrument. Some of its paragraphs were briefly introduced in Section 3.3.2, but the following analysis of the various provisions will offer an in-depth assessment of the legal requirements of Article 5 of the Agreement. Critical remarks regarding their scope and application will be provided when considered feasible.

⁴⁶⁹ E. J. Molenaar, “Current Legal and Institutional Issues Relating to the Conservation and Management of High-Seas Deep-Sea Fisheries” (FAO, 2007). Page 119.

⁴⁷⁰ Information on the content of these two management concepts was presented in Section 3.3.4 of this thesis.

⁴⁷¹ 1995 UN Fish Stocks Agreement, Annex II, Para. 1.

⁴⁷² See, e.g., Article 6(4) of the 1995 UN Fish Stocks Agreement and Pinto, *Fisheries Management in Areas beyond National Jurisdiction*. Page 27.

⁴⁷³ Pinto argues that it is “certainly possible to rebuild fish stocks by applying UNFSA’s precautionary reference points.” See Pinto, *Fisheries Management in Areas beyond National Jurisdiction*. Page 27.

⁴⁷⁴ *Ibid.* Page 27.

To conserve target species, states fishing on the high seas shall “assess the impacts of fishing, other human activities and environmental factors on target stocks and species belonging to the same ecosystem or associated with or dependent upon the target stocks,” in accordance with Article 5(d) of the 1995 UN Fish Stocks Agreement.⁴⁷⁵ The state parties to the Agreement are thus obliged to consider the cumulative effects on ecosystems arising from human activities, with a particular emphasis on fisheries and other environmental factors. The inclusion of the wording “other human activities” and “environmental factors” in Article 5(d) demonstrates an integrated approach where it is not considered sufficient only to conserve the target stocks and other species belonging to the same ecosystem from the potential negative effects of fisheries. Article 5(d) may thus be perceived as echoing the need for implementation of ecosystem-based fisheries management.⁴⁷⁶ The normative scope of the obligation in Article 5(d) consequently moves beyond the scope of the operational level of the ecosystem approach to fisheries presented in Section 4.2.4. However, for the sake of clarity, it should be noted that the ecosystem approach to fisheries does not contradict the obligations of Article 5(d) of the 1995 UN Fish Stocks Agreement, and that the various operational levels may serve as valuable tools for effective cumulative management of such impacts at the cross-sectoral level.⁴⁷⁷

Further, in accordance with Article 5(e), states shall “adopt, where necessary, conservation and management measures for species belonging to the same ecosystem...with a view to maintaining or restoring populations of such species above levels at which their reproduction may become seriously threatened.”⁴⁷⁸ At first glance, the inclusion of an explicit obligation to maintain or restore the reproductive ability of species belonging to the same ecosystem as the target stocks seems to represent a novelty. Although it has been established that ecosystem considerations may be inferred in the Law of the Sea Convention in relation to fisheries management, the obligation represents an explicit expansion of the legal regime established by the Convention through the recognition of all “species belonging to the same

⁴⁷⁵ 1995 UN Fish Stocks Agreement, Article 5(d).

⁴⁷⁶ See Section 4.1.4 regarding the various levels of implementation of the ecosystem approach to fisheries.

⁴⁷⁷ As was explored in Section 4.2.3.

⁴⁷⁸ 1995 UN Fish Stocks Agreement, Article 5(e).

ecosystem.” Article 5(e) of the 1995 UN Fish Stocks Agreement consequently expands the scope of Article 119 of the Law of the Sea Convention, which only refers to species “associated with or dependent upon harvested species.” However, it should be emphasized that the positive obligation to adopt management measures for “species belonging to the same ecosystem,” in accordance with Article 5(e) of the 1995 UN Fish Stocks Agreement may be seen as rather weak, since states are only obliged to ensure that the species’ reproductive ability does not become “seriously threatened.”⁴⁷⁹ The obligation is identical to the wording of Article 119 of the Law of the Sea Convention, and consequently only makes the obligation merely more ecosystem- oriented than the normative framework established by the Convention. What is evident is that the status of all the relevant species in these ecosystems is difficult to monitor, and it might even be impossible to establish when the threshold of a species being “seriously threatened” is reached. It should also be emphasized that Article 5(e), similarly to the Law of the Sea Convention, does not clarify the types of positive measures to be applied in such circumstances and the obligation is thus somewhat vague.

Article 5(f) covers an obligation to “minimize pollution, waste, discards, catch by lost or abandoned gear, catch of non-target species, both fish and non-fish species...and impacts on associated or dependent species, in particular endangered species.” This Article thus addresses indirect effects on non-target species and the ecosystems caused by fishing operations. Contrary to Article 5(e), the provision lists some practical measures and positive actions, including “the development and use of selective, environmentally safe and cost-effective fishing gear and techniques.” However, a shortcoming of the obligation is that the measures shall be adopted “to the extent practicable,” with no further reference to the relevant factors that need to be considered. It is natural to expect the development of new fishing gear to be a costly and time-consuming exercise, which may thus represent factors which may impede the implementation of the management measures listed in Article 5(f). An immediate question that arises is how economic factors should be balanced against environmental factors, and the scope and content of Article 5(f) will be further analyzed in

⁴⁷⁹ Ibid.

Section 4.3.2 due to its application to the case study focusing on catch by lost, abandoned, or otherwise discarded fishing gear.

A general obligation to protect biodiversity in the marine environment is endorsed by Article 5(g), placing an obligation to assess fisheries in a wider ecosystem context upon the contracting parties.⁴⁸⁰ However, the term “biodiversity” is not defined in the 1995 UN Fish Stocks Agreement or the Law of the Sea Convention. Henriksen et al. argue that the term must be understood in accordance with Article 2 of the CBD, giving this definition effect in international fisheries law.⁴⁸¹ As emphasized in Section 4.2.1, Article 2 of the CBD defines biological diversity as “the variability among living organisms from all sources...this includes diversity within species, between species and of ecosystems.”⁴⁸² The obligation to protect biodiversity in the marine environment includes all these three components, and the obligation is defined as one of results.⁴⁸³ Kuemlangan uses the provision to emphasize that the 1995 UN Fish Stocks Agreement “combines sustainable management of target fish stocks with the protection of biodiversity in the marine environment by requiring States to cooperate to this end.”^{484,485} However, Article 5(g) is silent on how the result of protection of biodiversity ought to be achieved, granting discretion to the state parties in the central question of what measures to take and how to conserve the three identified components.⁴⁸⁶

What is evident is that Article 5 of the 1995 UN Fish Stocks Agreement encompasses obligations that will facilitate the implementation of several key elements of the ecosystem

⁴⁸⁰ See, e.g., Jake Rice, “Evolution of international commitments for fisheries sustainability”, *ICES Journal of Marine Science* 71, No. 2 (1 January 2014): 157–65, <https://doi.org/10.1093/icesjms/fst078>, which argues that Article 5(g) may be regarded in this manner on page 159.

⁴⁸¹ Tore Henriksen, Geir Hønneland, and Are Sydnes, *Law and Politics in Ocean Governance: The UN Fish Stocks Agreement and Regional Fisheries Management Regimes*. Page 28.

⁴⁸² The United Nations, Convention on Biological Diversity. Article 2.

⁴⁸³ Tore Henriksen, Geir Hønneland, and Are Sydnes, *Law and Politics in Ocean Governance: The UN Fish Stocks Agreement and Regional Fisheries Management Regimes*. Page 28.

⁴⁸⁴ B. Kuemlangan et al., “Integrative Policy and Legal Instruments, Approaches and Tools.” Page 171.

⁴⁸⁵ The interesting question regarding the relationship between the CBD and the Law of the Sea Convention has been subject to closer examination in Vito De Lucia, “Regime Interaction through Concepts: The BBNJ Process as a Critical Juncture in the Relation between the Convention on Biological Diversity and the Convention on the Law of the Sea,” in *The Law of the Sea*, eds. Nele Matz-Lück, Elise Johansen, and Øystein Jensen, 1st ed. (United Kingdom: Routledge, 2023), 44–67, <https://doi.org/10.4324/9781003091196-3>.

⁴⁸⁶ *Ibid.* Page 28.

approach to fisheries. However, the lack of clarity regarding operational management measures might impede the implementation of the approach. To mitigate potential issues with compatibility across jurisdictional zones, Article 7 of the Fish Stocks Agreement clearly emphasizes that states are obliged to ensure that conservation and management measures “do not result in harmful impact on the living marine resources as a whole.” The term “as a whole” implies that the natural interlinkages in the marine environment must nevertheless be integrated into the conservation and management measures adopted.

It seems reasonable to argue that Article 5 of the Agreement sets out management objectives for the regulation of fisheries, but the question of how these objectives should be implemented is largely left to the discretion of the state parties to the Agreement.⁴⁸⁷ An immediate question that arises is whether the 1995 UN Fish Stocks Agreement in reality expands the provisions of the Law of the Sea Convention, in terms of recognizing the ecosystem approach, as it may be regarded as being only marginally more “ecosystem-oriented” than the provisions of the Law of the Sea Convention. Despite the Agreement not providing substantive guidance on the central question of how to achieve the different objectives, I would argue that the explicit inclusion of conservation and management principles applicable to high seas fisheries in Article 5 of the Agreement represents a development in the regulatory framework based on its explicit recognition of the approach.

Further, the ecosystem approach to fisheries co-exists with other environmental principles and approaches. One example of the pivotal interweaving of concepts is the relationship between the ecosystem approach and the precautionary approach, where the latter is considered an integral part of the former.⁴⁸⁸ Thouwborst describes the relationship between the two concepts in the context of international law in the following way: “The ecosystem approach should be taken into account in the application of the precautionary principle,

⁴⁸⁷ See Figure 2 in Section 4.2.3 for an illustration of how management objectives and management measures relate to each other in this study.

⁴⁸⁸ See, e.g., Kuemlangan et al., “Integrative Policy and Legal Instruments, Approaches and Tools,” page 169, Erik Jaap Molenaar, “Ecosystem-Based Fisheries Management, Commercial Fisheries, Marine Mammals and the 2001 Reykjavik Declaration in the Context of International Law,” *International Journal of Marine and Coastal Law* 17, No. 4 (2002): 561–96, Page 573 and Arie Trouwborst, “The Precautionary Principle and the Ecosystem Approach in International Law: Differences, Similarities and Linkages,” page 36.

whereas the latter is regarded an integral component of applying the ecosystem approach.”⁴⁸⁹ The interweaving of the two concepts is also reflected in Article 6 of the 1995 UN Fish Stocks Agreement. Article 6(1) obliges the state parties to “apply the precautionary approach widely to conservation, management and exploitation of straddling fish stocks and highly migratory fish stocks in order to protect the living marine resources and preserve the marine environment.” The obligation can be characterized as goal oriented, as the precautionary approach shall be applied to protect living marine resources and to preserve the marine environment. Contrary to the management objectives listed in Article 5, the application of the precautionary approach under the 1995 UN Fish Stocks Agreement involves numerous concrete management measures that may operationalize the approach. Article 6(3)c and d demonstrates the aim of creating a functional framework, stating that states shall “take into account, inter alia...the impact of fishing activities on non-target and associated or dependent species”⁴⁹⁰ and “adopt plans which are necessary to ensure the conservation of such species and to protect habitats of special concern.”⁴⁹¹ Further, “where the status of target stocks or non-target or associated or dependent species is of concern, States shall subject such stocks and species to enhanced monitoring” to review the status and efficiency of the management and conservation measures in place.⁴⁹² These measures shall regularly be revised in light of new knowledge and information.⁴⁹³ The obligation applies equally to target and non-target species belonging to the same ecosystem, consequently representing novelty through demonstrating how ecosystem considerations should be applied in fisheries management.

This brief analysis of some of the relevant provisions of the 1995 UN Fish Stocks Agreement reveals that the Agreement encompasses several management objectives which may facilitate the implementation of the ecosystem approach to fisheries. These provisions are primarily obligations of results, and the pathways towards fulfillment are not clarified by references to specific management measures that may be adopted to achieve the objectives. A pertinent

⁴⁸⁹ Trouwborst, “The Precautionary Principle and the Ecosystem Approach in International Law.” Page 36.

⁴⁹⁰ 1995 UN Fish Stocks Agreement. Article 6 (3) litra c.

⁴⁹¹ 1995 UN Fish Stocks Agreement. Article 6 (3) litra d.

⁴⁹² 1995 UN Fish Stocks Agreement. Article 6 (5).

⁴⁹³ 1995 UN Fish Stocks Agreement. Article 6 (5).

question is therefore: Can the 1995 UN Fish Stocks Agreement solve the problem of conserving and rebuilding ecosystems?

Most of the management objectives in Article 5 of the Agreement are directed at conserving target fish stocks, their primary goals being conservation of other species and ecosystems when this is necessary or beneficial for these stocks.⁴⁹⁴ This may have influenced the development of the sectoral ecosystem approach to fisheries, which solely regulates fisheries management.⁴⁹⁵ The level of discretion granted to the state parties in accordance with Article 5 of the 1995 UN Fish Stocks Agreement may be perceived as a shortcoming which arguably will have to be accepted to enable the creation of an operational framework for the ecosystem approach to fisheries in the industry.

Another shortcoming of the 1995 UN Fish Stocks Agreement, which may impede the implementation of the approach, is the fact that its provisions are to be fulfilled through regional cooperation in RFMOs.⁴⁹⁶ A precondition for the implementation of the ecosystem approach is that an RFMO is competent to adopt conservation and management measures tailored towards implementation of the approach, and ultimately that there exists an RFMO in the geographical areas of relevance.⁴⁹⁷ Nevertheless, Pinto argues that a full implementation of the provisions of the 1995 UN Fish Stocks Agreement would entail the application of the ecosystem approach to fisheries by virtue of the inclusion of the precautionary approach, and the dual geographical application of Article 5 of the Agreement.⁴⁹⁸ However, putting the ecosystem approach into practice is still regarded as

⁴⁹⁴ Article 5(1) emphasizes that the general principles listed in the provision shall be adopted “in order to conserve and manage straddling fish stocks and highly migratory fish stocks.”

⁴⁹⁵ Chapter 4.2.4 explored how the concept of ecosystem-based fisheries management did not receive sufficient support at the technical consultation in Reykjavik in 2002 as it would give “environmental considerations pre-eminence over socio-economic and cultural ones” and because the ecosystem “would become the new ‘foundation’ of fisheries management.” See Garcia S.M. et al., *The ecosystem approach to fisheries. Issues, terminology, principles, institutional foundations, implementation and outlook*. Page 6.

⁴⁹⁶ 1995 UN Fish Stocks Agreement. Article 10.

⁴⁹⁷ This topic is examined in detail in Chapter 5 and will thus not be further explored in this section.

⁴⁹⁸ Pinto, *Fisheries Management in Areas beyond National Jurisdiction*. Page 27. See also Section 1.2.6 of this thesis, which states that Articles 2(1), 5, 6 and 7 of the 1995 UN Fish Stocks Agreement also apply to the management and conservation of straddling and highly migratory fish stocks in areas under national jurisdiction, subject to the different legal regimes in the Law of the Sea Convention.

being “a complex task,”⁴⁹⁹ indicating that transitioning from conventional management approaches is a crucial prerequisite to give substance to, e.g., Article 5 of the 1995 UN Fish Stocks Agreement. If such operational practices are not developed and implemented within existing management frameworks, one may reasonably ask whether the ecosystem approach has a novel impact in fisheries management or whether it only serves as a new label on existing practices.

The following section will explore the role of the FAO in developing the approach through the adoption of the 1995 FAO Code of Conduct.

4.3.4 The 1995 FAO Code of Conduct

The 1995 FAO Code of Conduct stresses the need for operationalization of the ecosystem approach to fisheries. Its provisions have the scope to provide effective protection of marine ecosystems “by protecting target and non-target species and the ecosystems associated with these species.”⁵⁰⁰ As with the 1995 UN Fish Stocks Agreement, the FAO Code of Conduct is considered one of the “cornerstones in the evolution of the ecosystem approach” in the fisheries context.⁵⁰¹ The general management objectives embodied in the instrument include “the need for habitat and biodiversity protection, ecosystems integrity and multi-species management.”⁵⁰² The Code of Conduct is a comprehensive instrument that includes general and more specific obligations clarifying its general principles. The following sections will present analyses of the general management objectives vital to the implementation of the ecosystem approach to fisheries, aiming to provide some general insight into the obligations of the Code. The specific obligations clarifying the content of the general principles will be

⁴⁹⁹ Boyle and Redgwell, *Birnie, Boyle & Redgwell’s International Law and the Environment*. Page 752.

⁵⁰⁰ Froukje Maria Platjouw, *Environmental Law and the Ecosystem Approach: Maintaining Ecological Integrity through Consistency in Law*. Page 31.

⁵⁰¹ *Ibid.*

⁵⁰² Pinto, *Fisheries Management in Areas beyond National Jurisdiction*. Page 30.

subject to closer analysis in Section 4.4, in relation to the management measures selected for the case study.⁵⁰³

Just as in the 1995 UN Fish Stocks Agreement, there is no reference to the term ecosystem approach or related terms in the FAO Code of Conduct. Traces of ecosystem considerations are nevertheless strongly emphasized in several of its provisions.

Article 6 of the Code encompasses general environmental principles for fisheries management. In Article 6.1 it is stated that “States and users of living aquatic resources should conserve aquatic ecosystems” and “the right to fish carries with it the obligation to do so in a responsible manner so as to ensure effective conservation and management” of the resources.⁵⁰⁴ Further, Article 6.2 emphasizes: “Fisheries management should promote the maintenance of the quality, diversity and availability of fishery resources in sufficient quantities,”⁵⁰⁵ and “Management measures should not only ensure the conservation of target species but also of species belonging to the same ecosystem or associated or dependent upon the target species.”⁵⁰⁶

Article 6.3 covers an obligation to prevent overfishing and excess fishing capacity, which will also naturally reduce the by-catch of non-target species and interference with ecological processes and habitats. Article 6.4 states: “Conservation and management decisions for fisheries should be based on the best scientific evidence available,” while also taking account of “traditional knowledge of the resources and their habitat, as well as relevant environmental, economic and social factors.”⁵⁰⁷ The specific reference to habitats implies that fisheries should be conducted in a manner which does not cause harm to these ecological areas to the extent possible. The reference to relevant environmental, economic, and social factors refers to a balancing act where these factors should all be considered. The FAO Code

⁵⁰³ The 1995 FAO Code of Conduct is a comprehensive “soft law instrument.” It would therefore not be feasible to list and analyze all relevant provisions reflecting elements of the ecosystem approach to fisheries, given the specific scope of this thesis.

⁵⁰⁴ 1995 FAO Code of Conduct. Article 6.1.

⁵⁰⁵ The aim of maintenance is “food security, poverty alleviation and sustainable development” for present and future generations. See FAO Code of Conduct, Article 6.2 for more information.

⁵⁰⁶ 1995 FAO Code of Conduct. Article 6.2.

⁵⁰⁷ 1995 FAO Code of Conduct. Article 6.4.

of Conduct does not clarify how to balance these factors, but it seems reasonable to assume that the factors should be assessed both individually and together, taking all aspects into consideration, before a decision is made. Further, Article 6.4 establishes that “States should assign priority to undertake research and data collection in order to improve scientific and technical knowledge of fisheries including their interaction with the ecosystem.” The fact that scientific knowledge about how fisheries affect ecosystems is to be sought through scientific research seems to be vital for the implementation of the ecosystem approach to fisheries, as some of the major impediments in the past have proven to be data-poor fisheries and little knowledge of the ecological interactions in aquatic ecosystems.⁵⁰⁸

Article 6.4 of the Code of Conduct obliges States and RFMOs to apply a precautionary approach broadly to conservation, management, and exploitation of living resources.⁵⁰⁹ It is also specifically stated: “The absence of adequate scientific information should not be used as a reason for postponing or failing to take measures to conserve target species, associated or dependent species and non-target species and their environment.”⁵¹⁰ The Code of Conduct obliges the state parties to equally protect target and non-target species, and their environment, which yet again represents a departure from the legal regime in the 1995 UN Fish Stocks Agreement.⁵¹¹

Article 6.6 of the Code encompasses the legal regime for the use of selective and environmentally safe fishing gear and practices. It states that such gear and practices “should be further developed and applied, to the extent practicable, in order to maintain biodiversity and to conserve the population structure and aquatic ecosystems and protect fish quality.” Similarly to the 1995 UN Fish Stocks Agreement, the wording “to the extent practicable” in

⁵⁰⁸ See, e.g., Tony J. Pitcher et al., “An Evaluation of Progress in Implementing Ecosystem-Based Management of Fisheries in 33 Countries,” *Marine Policy* 33, No. 2 (2009): 223–32, <https://doi.org/10.1016/j.marpol.2008.06.002>. See also the analysis in Section 4.3.2, where it was established that the 1995 UN Fish Stocks Agreement gives precedence to targeted stocks when conservation and management measures are considered.

⁵⁰⁹ Article 7.5 of the Code of Conduct deals solely with the precautionary approach and how this should be implemented.

⁵¹⁰ 1995 UN Code of Conduct. Article 6.5.

⁵¹¹ See the discussion in Section 4.2.2.

Article 6.6 creates vagueness regarding the scope of the obligation. However, the obligation in the Code recognizes that the listed measures are also to be adopted to protect biodiversity and marine ecosystems. This places a clearer obligation upon the state parties than Article 5(f) of the 1995 UN Fish Stocks Agreement, which does not explicitly refer to biodiversity and marine ecosystems in the context of fishing gear and fishing practices. Further, Article 6.6 of the Code states “Where proper selective and environmentally safe fishing gear and practices exist, they should be recognized and accorded a priority” for the establishment of conservation and management measures for fisheries. The Code thus provides some insights into the question of how the management objective of minimizing catch by lost, abandoned, or otherwise discarded fishing gear may be operationalized through specific management measures. Article 6.6 also includes an obligation to “minimize waste, catch of non-target species, both fish and non-fish species, and impacts on associated or dependent species” for states and other users of marine ecosystems. This obligation shares several similarities with Article 5(f) of the 1995 UN Fish Stocks Agreement but departs from the latter by emphasizing that also ecosystem considerations should be a guiding aim for the actors in the fisheries industry.

Article 6.8 of the Code of Conduct recognizes the vital importance of habitats for the protection of marine ecosystems, stating: “All critical fisheries habitats in marine...ecosystems, such as...reefs, lagoons, nursery and spawning areas, should be protected and rehabilitated as far as possible and where necessary.”⁵¹² It then states: “Particular effort should be made to protect such habitats from destruction, degradation, pollution and other significant impacts resulting from human activities that threaten the health and viability of the fishery resources.”⁵¹³ The obligation is broadly formulated but place a clear obligation upon the states by the inclusion of the wording “where necessary.” However, it is challenging to establish when the threshold of necessity is reached. Operationalizing a management regime in accordance with Article 6.8 would require

⁵¹² FAO Code of Conduct. Article 6.8.

⁵¹³ Ibid.

substantial scientific research, both to locate ecological hotspots and to monitor the state of those areas.

This brief assessment of Article 6 of the FAO Code of Conduct illustrates that the instrument encompasses several explicit manifestations of ecosystem considerations by referring to both specific management objectives and some concrete management measures that may be operationalized to achieve these objectives. Another interesting finding is that the Code flips the management regime of the 1995 UN Fish Stocks Agreement by acknowledging that protection and conservation of non-target species, habitats, and the environment are of vital importance both on an individual basis and when such measures are indirectly necessary to conserve the targeted species. The Code thus represents an integrated framework that acknowledges the importance of conservation of the ecosystem as a whole and emphasize that marine ecosystems and their different components should be protected independently regardless of the status of the targeted species. As emphasized by Fontaubert et al., the fact that “the Code goes much further than other international instruments in terms of adopting measures likely to enhance sustainability” may be a result of its status as a soft law instrument.⁵¹⁴

Two interesting questions arise regarding the normative status of the FAO Code of Conduct as a soft law instrument. The first is whether the obligations of this voluntary instrument may be regarded as binding through customary law. The second is whether the soft law obligations in the FAO Code of Conduct capture the essence of due diligence obligations that may inform the interpretation of the provisions of the binding 1995 UN Fish Stocks Agreement.

As emphasized in Section 4.2.3, some of the provisions of the FAO Code of Conduct are indeed considered to represent customary international law.⁵¹⁵ An illustrative example is the obligation to cooperate in the conservation and management of marine living resources, which was addressed in the *Fisheries Jurisdiction Case*, and subsequently included in Article

⁵¹⁴ Charlotte De Fontaubert et al., “Achieving Sustainable Fisheries: Implementing the New International Legal Regime,” Resource (IUCN, 2003), <https://www.iucn.org/resources/publication/achieving-sustainable-fisheries-implementing-new-international-legal-regime>. Page 13.

⁵¹⁵ This is even recognized in Article 1.1 of the FAO Code of Conduct.

118 of the Law of the Sea Convention.⁵¹⁶ However, the high threshold for establishing customary law in accordance with Article 38(1)(b) of the ICJ Statutes, encompassing the two elements of widespread state practice and *opino juris*,⁵¹⁷ suggests that it is not possible to establish that, e.g., the obligations relevant to minimizing catch by lost or abandoned gear in Article 6.6 of the 1995 FAO Code of Conduct reflect customary law. As described by Ryan and Boetler, the normative content of the ecosystem approach presently “remains weak and unclear in terms of its practical implementation and obligations on States,”⁵¹⁸ indicating that it seems to be controversial to argue that a sector-based management objective identified in the fisheries context represents customary law. However, Lugten argues that some specific soft law instruments developed by the FAO may have “hidden teeth”, as they encompass obligations which may evolve into customary international law when states give effect to and implement the relevant measures.⁵¹⁹ Thus, it might be possible to argue that the obligations relevant to the implementation of the ecosystem approach, as encompassed in the FAO Code of Conduct, may develop into customary law. However, the necessary assessment of *opino juris* and state practice relevant to establish customary law in this context falls outside the scope of this thesis. This study will therefore not consider the non-binding obligations of the FAO Code of Conduct as representing customary law.⁵²⁰

Regarding the potential due diligence obligations that may be identified in the FAO Code of Conduct, Cabus explores how the interpretation of legally binding instruments, such as the Law of the Sea Convention and the 1995 UN Fish Stocks Agreement may be informed by due

⁵¹⁶ *Fisheries Jurisdiction Case*. Para. 72. See also, e.g., Howard S. Schiffman, “Marine Conservation Agreements: The Law and Policy of Reservations and Vetoes,” Publications on Ocean Development (Leiden: Martinus Nijhoff, 2008). Page 190.

⁵¹⁷ See Section 2.2.2 for more information about the necessary requirements for establishing customary law.

⁵¹⁸ Sarah Ryan Enright and Ben Boteler, “The Ecosystem Approach in International Marine Environmental Law and Governance.” Page 334.

⁵¹⁹ G. L. Lugten, “Soft Law with Hidden Teeth: The Case for a FAO International Plan of Action on Sea Turtles,” *Journal of International Wildlife Law & Policy* 9, No. 2 (July 2006): 155–73, <https://doi.org/10.1080/13880290600728179>. Section 4.

⁵²⁰ To establish that, e.g., Article 6.6 of the Code of Conduct reflects customary international law requires a comprehensive study of how the relevant provisions are implemented through state practice.

diligence standards.⁵²¹ Cabus identifies three objective criteria which must be met before such due diligence standards may be applied in the interpretation of legal instruments: there must be a compatibility of object, a compatibility of scope and the binding instrument must not take precedence over the due diligence standards as *lex specialis* obligations.⁵²² The relationship between the Law of the Sea Convention and the 1995 UN Fish Stocks Agreement on the one hand and the FAO Code of Conduct on the other will be assessed against these objective criteria in the following to establish whether and how the FAO Code of Conduct potentially encompasses due diligence standards applicable to high seas fisheries.

The voluntary provisions in the FAO Code of Conduct may represent due diligence standards to be given effect by states. A prerequisite is that there exists a compatibility of object between, e.g., the substantial obligations of the Law of the Sea Convention and the procedural measures in other external instruments.⁵²³ An interesting example, also highlighted by Cabus, is how the tribunal in the *South China Sea Arbitration* made references to the non-binding FAO Code of Conduct to examine the legality of contested fishing practices in the context of interpreting the scope of Article 192 of the Law of the Sea Convention.⁵²⁴ In the words of Cabus, the approach taken by the tribunal must be considered valid as there exists a connection between Article 192 of the Law of the Sea Convention and objectives of the FAO Code of Conduct.⁵²⁵

The second criterion that must be met is that there needs to be a compatibility of scopes between the two instruments.⁵²⁶ As highlighted by Cabus, this is particularly important for legal instruments with limited scope of application such as the 1995 UN Fish Stocks Agreement, where some of the provisions are only applicable to highly migratory and

⁵²¹ Tony Cabus, *Due Diligence and the High Seas* (Routledge, 2021). Section 2.1. Cabus focuses on the Law of the Sea Convention through his analysis but recognizes that a similar approach may be applied for, e.g., the 1995 UN Fish Stocks Agreement.

⁵²² *Ibid.*

⁵²³ *Ibid.* Section 2.1.1.1.

⁵²⁴ *South China Sea Arbitration*, Para. 970.

⁵²⁵ Cabus, *Due Diligence and the High Seas*. Section 2.1.1.1.

⁵²⁶ *Ibid.* Section 2.1.1.2.

straddling fish stocks,⁵²⁷ meaning that the provisions will not automatically have an overlapping scope with other instruments regulating other groups of species. However, there is an important point to be made in this regard, namely that the FAO Code of Conduct is applicable to all fisheries, which leads to the finding that its provisions are compatible with the scope of both the Law of the Sea Convention and the 1995 UN Fish Stocks Agreement.

The third criterion is that the legally binding instrument(s) do not encompass *lex specialis* obligations regulating the issue at stake, which always will take precedence over potential general due diligence standards.⁵²⁸ This point is clearly fulfilled when considering the relationship between the Law of the Sea Convention or the 1995 UN Fish Stocks Agreement and the FAO Code of Conduct, as the Code is to be interpreted and applied in a manner consistent with these two instruments.⁵²⁹

Following the line of reasoning of Cabus, it is clear that the FAO Code of Conduct includes due diligence standards, which should be applied by states in order to comply with their due diligence obligations. However, such obligations are not to be found in the FAO Code of Conduct, but in primary binding norms, such as Part XII of the Law of the Sea Convention or the 1995 UN Fish Stocks Agreement. A relevant illustration is how the tribunal in the *South China Sea Arbitration* relied on other legal instruments to define the scope of Article 192, and emphasized that the general obligation “to protect and preserve the marine environment” covered a due diligence obligation, allowing the tribunal to “have recourse to rules beyond the Convention in order to shed light on States’ obligations under Articles 192 and 194 (5).”⁵³⁰ As described by Nguyen, the case represents “the first case in which the obligation of due diligence played a key role in laying the ground for the tribunal to rely on external sources to

⁵²⁷ The scope of application of the 1995 UN Fish Stocks Agreement was assessed in Section 3.3.2, where it was established that the Agreement is only applicable to straddling and highly migratory fish stocks, subject to some specific exceptions.

⁵²⁸ Cabus, *Due Diligence and the High Seas*. Section 2.1.1.3.

⁵²⁹ See FAO Code of Conduct, Articles 3.1 and 3.2(a).

⁵³⁰ Lan Ngoc Nguyen, “Jurisdiction and Applicable Law in the Settlement of Marine Environmental Disputes under UNCLOS,” *The Korean Journal of International and Comparative Law* 9, No. 2 (7 December 2021): 337–53, <https://doi.org/10.1163/22134484-12340161>. Page 342.

elucidate” the provisions of the Law of the Sea Convention.⁵³¹ The instruments that the tribunal resorted to in this dispute were both binding and non-binding instruments to which both China and the Philippines were contracting parties.⁵³²

Assessing the overlapping participation between the 1995 UN Fish Stocks Agreement and the FAO Code of Conduct yields some interesting findings. The FAO Code of Conduct was unanimously adopted by the FAO Ministerial Conference on Fisheries in 1995, where 192 countries and territories comprised the voting delegations.⁵³³ When comparing the member states of the FAO that participated in the adoption of the 1995 FAO Code of Conduct with the contracting parties to the 1995 UN Fish Stocks Agreement,⁵³⁴ all the latter unanimously voted for the adoption of the FAO Code of Conduct at the Ministerial Meeting of the FAO. Consequently, it seems reasonable to argue that the voluntary obligations of the FAO Code of Conduct could inform the interpretation of the 1995 UN Fish Stocks Agreement. Boyle and Smith argue that “where law is made through a long-established process that gives effect to State Consent there is less likelihood of it being deemed illegitimate.”⁵³⁵ Nakamura follows the same line of reasoning and emphasizes that the consensus-based adoption of FAO instruments “carry substantial weight from international support given through FAO Members,” and that the normative outcomes of such processes and the legitimacy of the adopted instruments increases when they are adopted by consensus.⁵³⁶ These arguments

⁵³¹ Ibid.

⁵³² The tribunal made references to the CITES to inform the standard of due diligence obligations in the Law of the Sea Convention. See *South China Sea Arbitration*, paras. 956 and 959.

⁵³³ A full list of delegates and observers are found on this webpage:

<https://www.fao.org/3/x5585E/x5585e0c.htm#b.%20list%20of%20delegates%20and%20observers> Puerto Rico was an associate member at the time and is not included in the assessment. Similarly, the Holy See (Vatican City) is not included.

⁵³⁴ A full list is available at: https://treaties.un.org/pages/ViewDetails.aspx?src=TREATY&mtdsg_no=XXI-7&chapter=21&clang=en

⁵³⁵ A. Boyle and K. McCall-Smith, “Transparency in International Law-Making,” in *Transparency in International Law*, eds. Andrea Bianchi and Anne Peters (Cambridge: Cambridge University Press, 2013), 419–35. Page 25.

⁵³⁶ Julia N. Nakamura, “Legal Reflections on the Small-Scale Fisheries Guidelines: Building a Global Safety Net for Small-Scale Fisheries,” *The International Journal of Marine and Coastal Law* 37, No. 1 (16 February 2022): 31–72, <https://doi.org/10.1163/15718085-bja10081>. Page 46.

support the finding that the 1995 FAO Code of Conduct may inform the obligations of the 1995 UN Fish Stocks Agreement.

Following the same line of reasoning, the Rome Declaration on the Implementation of the Code of Conduct for Responsible Fisheries was unanimously adopted in 1999.⁵³⁷ The Declaration encompasses several statements of relevance, including that the states “accord highest priority to achieving sustainability of...capture fisheries...within the framework of the ecosystem approach” and that states “will work together, through FAO and in collaboration with all other organizations concerned with fisheries...to reduce wastage and destructive fishing practices by promoting responsible fishing practices... [and] an ecosystem approach to fisheries management.”⁵³⁸ The Declaration was adopted unanimously by 126 states present at the ministerial meeting, including 98 of the 105 signatories to the 1995 UN Fish Stocks Agreement.⁵³⁹ The overlapping participation between the state parties to the FAO Code of Conduct and the 1995 UN Fish Stocks Agreement in this particular context implies that interpreting the provisions of the binding 1995 UN Fish Stocks Agreement to include the due diligence obligations in the Code of Conduct may be a legitimate step towards establishing the scope of the binding obligations.

Having established that the due diligence obligations of the voluntary FAO Code of Conduct may inform the interpretation of the legally binding 1995 UN Fish Stocks Agreement, it should be recognized that the actual scope of these due diligence obligations is difficult to assess and must be decided on a case-by-case basis as a “legal standard of conduct.”⁵⁴⁰ At the very least, the due diligence obligations cover an obligation “to not act or adopt regulations with the opposite effect” of the voluntary obligations of the FAO Code of Conduct in the context of this study.⁵⁴¹ However, as will be demonstrated in Chapter 7, intentional discarding of fishing gear

⁵³⁷ FAO Ministerial Meeting on Fisheries, “The Rome Declaration on the Implementation of the Code of Conduct for Responsible Fisheries” (Rome, 1999), available at: <https://www.fao.org/3/X2220E/X2220E00.htm>.

⁵³⁸ Ibid. Para. 12(d) and 12(n).

⁵³⁹ The seven States that are signatories to the 1995 UN Fish Stocks Agreement but did not adopt the Declaration are Cook Islands, Marshall Islands, Federated States of Micronesia, Niue, Palau, Solomon Islands and Tuvalu.

⁵⁴⁰ Neil McDonald, “The Role of Due Diligence in International Law,” *The International and Comparative Law Quarterly* 68, No. 4 (2019): 1041–54, <https://doi.org/10.1017/S0020589319000344>. Page 1044.

⁵⁴¹ Cabus, *Due Diligence and the High Seas*. Section 2.1.1.3

at sea may represent acts with the opposite effect of the voluntary obligations encompassed in the FAO Code of Conduct.

To return to the voluntary and non-binding nature of the FAO Code of Conduct, the starting point is that states are not legally bound by the obligations in the instrument. However, they are nevertheless still “expected to pursue good faith efforts to implement it.”⁵⁴² The widespread recognition of its scope supports the argument that its obligations may inform the interpretation of the 1995 UN Fish Stocks Agreement.

The application of Articles 5 and 6 of the Fish Stocks Agreement imposes legally binding obligations limited to straddling and highly migratory fish stocks, whereas the Code of Conduct expands the application to all fish stocks worldwide but has the status of a voluntary soft law instrument. Fontaubert et al. argue that “the coexistence of the Agreement and the Code is a perfect example of the desirable flexibility of international law,” as the “measures from these two instruments are tools from the same toolbox.”⁵⁴³ In this way, the objectives for the implementation of the ecosystem approach to fisheries are clearly laid down in these coexisting instruments.

As introduced in Section 1.2, this thesis studies how the ecosystem approach to fisheries is implemented and operationalized in the context of tuna RFMOs and will focus on the objective to minimize catch by lost, abandoned, or otherwise discarded fishing gear in this regard.

⁵⁴² De Fontaubert et al., “Achieving Sustainable Fisheries: Implementing the New International Legal Regime.” Page 14.

⁵⁴³ Ibid. Page 16.

4.4 What Types of Management Measures Need to be Adopted to Comply with the Ecosystem Approach to Fisheries?

As emphasized in Section 1.2, the ecosystem approach to fisheries includes various management objectives relevant to an assessment of the implementation and operationalization of the approach. However, this study concentrates on how the objective of minimizing catch by lost, abandoned, or otherwise discarded fishing gear is implemented and operationalized in and by the tuna RFMOs. The following presentation will explore why there is a need to focus on ghost fishing in high seas tuna fisheries, the legal requirements applicable to mitigate catch by lost, abandoned, or otherwise discarded fishing gear, and the management measures subject to closer examination in the case study in Chapter 7.

4.4.1 Catch by Lost, Abandoned, or Otherwise Discarded Fishing Gear

Catch by lost, abandoned, or otherwise discarded gear is a phenomenon that occurs when fishing gear is left in the water and catches marine organisms without human control.⁵⁴⁴ This phenomenon is also described as ghost fishing, as the gear continues to fish without fishers,⁵⁴⁵ and may damage benthic habitats, pose problems for birds and mammals as a source of litter or entanglement, and pose safety risks for fishers if the gear becomes entangled with active fishing gear and vessel propulsion systems.⁵⁴⁶ Lost, abandoned, or otherwise discarded fishing gear is estimated to constitute less than 10% of today's marine debris by volume, but the impacts of such gear have substantially increased in recent decades due to “the rapid expansion of fishing efforts and fishing grounds” in combination with “the transition to

⁵⁴⁴ T. Matsuoka, T. Nakashima, and N. Nagasawa, “A Review of Ghost Fishing: Scientific Approaches to Evaluation and Solutions,” *Fisheries Science* 71, No. 4 (2005): 691–702, <https://doi.org/10.1111/j.1444-2906.2005.01019.x>. Page 691. Parts of the following presentation will also be included in Ingrid Solstad Andreassen, “The Role of Tuna RFMOs in Combating ‘Ghost Fishing’: Where Is the Catch?” *Marine Policy*, Forthcoming.

⁵⁴⁵ The following presentation will also be included in the introduction of Ingrid Solstad Andreassen, “The Role of Tuna RFMOs in Combating ‘Ghost Fishing’: Where Is the Catch?” *Marine Policy*, Forthcoming.

⁵⁴⁶ James Brown and Graeme Mcfadyen, “Ghost Fishing in European Waters: Impacts and Management Responses,” *Marine Policy*, 31, No. 4 (2007): 488–504, <https://doi.org/10.1016/j.marpol.2006.10.007>. Page 488. See also Ingrid Solstad Andreassen, “The Role of Tuna RFMOs in Combating ‘Ghost Fishing’: Where Is the Catch?”

synthetic, more durable and more buoyant materials used for fishing gears.”⁵⁴⁷ Numerous intentional and unintentional causes of loss, abandonment and discard of fishing gear can be identified.

Fishers may lose their gear when there is contact with passing vessels or active gear, it may be lost due to system malfunction, when it becomes entangled with submerged features, when marine organisms cause damage to it, when unsuitable gear design and materials are used, when improper fishing methods are used, and due to strong currents or severe weather.⁵⁴⁸ Further, fishers may choose to intentionally abandon their gear if fishing operations are illegal and there is a risk of detection or if there is insufficient time or great difficulty in retrieving gear accidentally lost at sea. Further, unwanted gear or its components may be discarded for practical or economic reasons.⁵⁴⁹ Finally, setting of excessive gear may lead to intentional discarding of parts of the gear, as “there may be insufficient room onboard for all of the gear, such as when the space used to store nets when starting a trip are (sic) subsequently used as the fish hold.”⁵⁵⁰ As highlighted by the FAO, the numerous causes of fishing gear ending up at sea “are important both in terms of affecting lost gear evolution and for developing appropriate prevention and mitigation measures that fit with and address the principal causes.”⁵⁵¹ Against this backdrop, Poseidon Aquatic Resource Management has developed a flowchart illustrating the interlinkages between the causes of derelict fishing gear and whether the “ghost gear” is a result of deliberate discarding of the gear at sea.

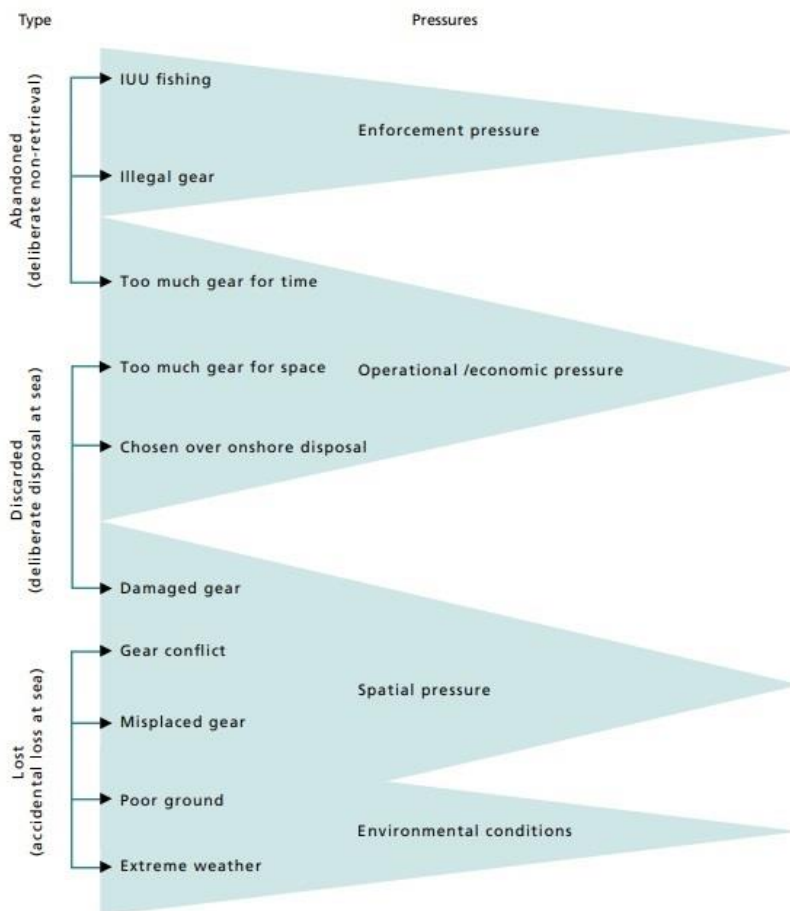
⁵⁴⁷ Eric Gilman, “Status of International Monitoring and Management of Abandoned, Lost and Discarded Fishing Gear and Ghost Fishing.” Page 225. See also Ingrid Solstad Andreassen, “The Role of Tuna RFMOs in Combating ‘Ghost Fishing’: Where Is the Catch?”

⁵⁴⁸ See Gilman, “Status of International Monitoring and Management of Abandoned, Lost and Discarded Fishing Gear and Ghost Fishing,” for a more detailed list of causes of intentional or unintentional gear loss in relation to fishing operations on page 225. See also Ingrid Solstad Andreassen, “The Role of Tuna RFMOs in Combating ‘Ghost Fishing’: Where Is the Catch?”

⁵⁴⁹ Ibid. Gilman states that discarding of unwanted gear may occur when port reception facilities are unavailable, and thus create a situation where it would be beneficial to not dispose of the gear onshore.

⁵⁵⁰ Ibid. Page 225.

⁵⁵¹ Graeme Mcfadyen/Tim Huntington and Rod Cappel and Fisheries and Aquaculture Management Division, *Abandoned, Lost or Otherwise Discarded Fishing Gear*, FAO Fisheries and Aquaculture Technical Paper 2070–7010 (Rome, Italy: FAO, 2009), <https://www.fao.org/documents/card/en?details=b1c2166f-78d5-5c21-b678-fe30cd51b154>. Page 47.



Source: Poseidon, 2008 and FAO, 2009.⁵⁵²

The issue of ghost fishing first gained recognition at the 16th Session of the FAO Committee on Fisheries, held in 1985.⁵⁵³ It has been assumed that ghost fishing represents one of the most serious negative impacts in the present capture fisheries industry, equal to impacts posed by bycatch and discards, and destruction of habitats.⁵⁵⁴ In 2023, the United Nations General Assembly expressed concern about the various impacts of lost, abandoned, or otherwise discarded fishing gear, calling on states and regional bodies to develop effective mitigation

⁵⁵² The illustration is included in Graeme Mcfadyen/Tim Huntington and Rod Cappel and Fisheries and Aquaculture Management Division, *Abandoned, Lost or Otherwise Discarded Fishing Gear*.

⁵⁵³ Brown and Mcfadyen, "Ghost Fishing in European Waters: Impacts and Management Responses." Page 488.

⁵⁵⁴ Matsuoka, Nakashima, and Nagasawa, "A Review of Ghost Fishing." Page 691.

measures to address the various impacts of derelict gear on the marine environment.⁵⁵⁵ Modern fishing gear is primarily made of non-biodegradable synthetic fibers, and they can persist and function in the ocean for lengthy periods if they are intentionally abandoned or lost.⁵⁵⁶ Impacts of lost, abandoned, or otherwise discarded fishing gear are thus increasingly being recognized as also an issue of plastic pollution. Both regional and global approaches to deal with fishing gear as a source of marine litter are currently being developed.⁵⁵⁷ The EU considered fishing gear as one of the major problems in the context of marine litter, accounting for 27% of the total litter in the Union, when developing its directive on the reduction of the impact of certain plastic products on the environment.⁵⁵⁸

The United Nations Environment Programme (UNEP) is currently developing an international legally binding instrument on plastic pollution, including in the marine environment. A zero draft recognizing the need to take effective measures to prevent, reduce, and eliminate abandoned, lost or otherwise discarded fishing gear was presented in 2023.⁵⁵⁹ These legal developments demonstrate a growing interest by the international community to also address impacts of ghost gear in the context of marine litter.⁵⁶⁰

As will be presented in the following, the diverse sources and impacts of ghost gear has led to the creation of different legal instruments to regulate the issues at hand. While the legal framework established under the ecosystem approach to fisheries is the core focus of this

⁵⁵⁵ United Nations General Assembly, United Nations Resolution A/78/L.13. Oceans and the Law of the Sea: Sustainable fisheries, including through the 1995 Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea of 10 December 1982 relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks, and related instruments, A/78/L.13. (2023). See also Ingrid Solstad Andreassen, “The Role of Tuna RFMOs in Combating ‘Ghost Fishing’: Where Is the Catch?” on this topic.

⁵⁵⁶ Brown and McFadyen, “Ghost Fishing in European Waters: Impacts and Management Responses.” Page 488.

⁵⁵⁷ Ingrid Solstad Andreassen, “The Role of Tuna RFMOs in Combating ‘Ghost Fishing’: Where Is the Catch?”

⁵⁵⁸ See Directive (EU) 2019/904 of the European Parliament and of the Council on the Reduction of the Impact of Certain Plastic Products on the Environment, 5 June 2019, <https://eur-lex.europa.eu/eli/dir/2019/904/oj>. See also Ingrid Solstad Andreassen, “The Role of Tuna RFMOs in Combating ‘Ghost Fishing’: Where Is the Catch?”

⁵⁵⁹ UNEP, UNEP/PP/INC.3/1., Zero draft text of the international legally binding instrument on plastic pollution, including in the marine environment (Nairobi, 4 September 2023), available at: <https://wedocs.unep.org/bitstream/handle/20.500.11822/43239/ZERODRAFT.pdf>.

⁵⁶⁰ See also Ingrid Solstad Andreassen, “The Role of Tuna RFMOs in Combating ‘Ghost Fishing’: Where Is the Catch?”

study, the applicable normative framework of other legal instruments informs the implementation and operationalization of the obligation to minimize catch by lost, abandoned, or otherwise discarded gear. The normative framework to minimize ghost fishing is presented in the following section.

4.4.2 Normative Framework

The three elements; lost fishing gear, abandoned fishing gear and discarded fishing gear are typically assessed in conjunction in the literature on ghost fishing. However, it is important to bear in mind that the normative basis for these three elements is found in different normative frameworks. As will be illustrated in this section, the obligation to minimize catch by lost or abandoned gear is explicitly encompassed in the 1995 UN Fish Stocks Agreement and the FAO Code of Conduct, whereas the obligation to minimize discard of fishing gear is found in regulatory frameworks regulating pollution and dumping of waste. The development of the different normative frameworks relevant to minimize catch by lost, abandoned, or otherwise discarded fishing gear may be traced back to the diverse possible causes of fishing gear ending up at sea, as introduced in Section 4.4.1. However, focusing on the impacts of lost, abandoned, or otherwise discarded fishing gear on the marine environment is a suitable approach to assess the three elements in conjunction.⁵⁶¹ This is also implicitly reflected in the term ghost fishing, since the impacts of the fishing gear are the key focus, not the reasons for the gear ending up at sea. As the obligations to minimize catch by lost, abandoned, or otherwise discarded fishing gear all regulate the same potential impacts on the marine environment and marine ecosystems, this thesis focuses on the impacts of lost, abandoned, or otherwise discarded fishing gear, thus merging the different normative frameworks regulating ghost fishing. The normative framework can be set out as follows.⁵⁶²

⁵⁶¹ See also similar arguments made by Graeme Mcfadyen/Tim Huntington, and Rod Cappell, *Abandoned, lost or otherwise discarded fishing gear*, which focuses on the impacts of lost, abandoned and/or discarded fishing gear on Page 1.

⁵⁶² The following presentation will partly be included in the findings and analysis encompassed in Ingrid Solstad Andreassen, "The Role of Tuna RFMOs in Combating 'Ghost Fishing': Where Is the Catch?" Forthcoming.

The Law of the Sea Convention does not explicitly refer to catch by lost, abandoned, or otherwise discarded fishing gear. However, it imposes a general obligation to protect and preserve the marine environment in Article 192. In the *South China Sea Arbitration*, the ITLOS held that Article 192 of the Law of the Sea Convention has broad scope, as it is also given substance by Article 194 (5). It covers a positive obligation to “protect and preserve rare and fragile ecosystems, as well as habitats of depleted, threatened, or endangered species and other forms of marine life.”⁵⁶³ Thus, Article 192 imposes substantive obligations regulating activities that may endanger species and their habitats, including fisheries.⁵⁶⁴ Further, the introduction of waste stemming from intentional discarding of fishing gear may represent marine pollution in accordance with Article 1(4) of the Law of the Sea Convention, as it represents the introduction of substances into the marine environment.⁵⁶⁵ Thus, the obligation of Article 194(1) also applies to fishing gear, which obliges states to “take, individually or jointly as appropriate, all measures consistent with this Convention that are necessary to prevent, reduce and control pollution of the marine environment from any source.”

An “explicit legal obligation to minimize catch by lost or abandoned fishing gear is found in the legally binding 1995 UN Fish Stocks Agreement.”⁵⁶⁶ Article 5(f) of the Agreement obliges the parties to minimize “catch by lost or abandoned gear,” and lists some practical measures and positive obligations that may be applied to fulfill this objective, including “the development and use of selective, environmentally safe and cost-effective fishing gear and techniques.” The “provision is goal-oriented and sets out a clear objective for the parties of the Agreement to minimize catch by lost or abandoned fishing gear.”⁵⁶⁷ However, the provision does not provide any further guidelines on “the central question of how the

⁵⁶³ *South China Sea Arbitration*, para. 959.

⁵⁶⁴ See Section 3.2.3 and Amrisha Pandey and Surya P. Subedi, “Enhancing State Responsibility from Environmental Implications of the South China Sea Dispute.” page 356.

⁵⁶⁵ See, e.g., Linda Finska et al., “Waste Management on Fishing Vessels and in Fishing Harbors in the Barents Sea: Gaps in Law, Implementation and Practice,” *Ocean Development & International Law* 53, No. 4 (2 October 2022): 289–317, <https://doi.org/10.1080/00908320.2022.2147306>. Page 296.

⁵⁶⁶ Ingrid Solstad Andreassen, “The Role of Tuna RFMOs in Combating ‘Ghost Fishing’: Where Is the Catch?” Article 5(f) was also briefly presented in Section 4.3.2 of this thesis.

⁵⁶⁷ Ingrid Solstad Andreassen, “The Role of Tuna RFMOs in Combating ‘Ghost Fishing’: Where Is the Catch?”

obligation ought to be fulfilled, creating vagueness in terms of the measures to be adopted to comply with the obligation.”⁵⁶⁸

The voluntary FAO Code of Conduct is more explicit in terms of providing operational obligations, and in Article 7.6.9 it is expressly stated that states should respond appropriately to minimize catch by lost and abandoned gear, and that “where appropriate, such measures may include technical measures related to [...] gear [...] closed seasons and areas and zones reserved for selected fisheries.” Article 7.2.2 (g) reflects Article 5(f) of the 1995 UN Fish Stocks Agreement and “emphasizes that catch by lost or abandoned gear should be minimized to the extent practicable, and that the “development and use of selective, environmentally safe and cost-effective fishing gear and techniques” should be promoted. Despite “providing more substance to the obligation of minimizing catch by lost or abandoned gear than the 1995 UN Fish Stocks Agreement, vagueness also permeates the Code of Conduct,”⁵⁶⁹ as ghost fishing should be minimized “to the extent practicable.”⁵⁷⁰

Other legally binding instruments relevant to minimizing ghost fishing include the International Convention for the Prevention of the Pollution from Ships and MARPOL Annex V, which expressly prohibit the abandonment and intentional discarding of fishing gear in the oceans.⁵⁷¹ To return to the legal framework established by the Law of the Sea Convention, Article 1(4) states that intentional discarding of fishing gear at sea will represent plastic pollution.⁵⁷² Consequently, Annex V of MARPOL 73/78 is described as “the most important international regulatory framework to prevent and minimize the discharge of marine litter from vessels,”⁵⁷³ including fishing gear.

The legally binding London Convention and London Protocol, regulating dumping at sea, are also relevant, in so far that discarded fishing gear may constitute dumping under Article 1(5)(a)

⁵⁶⁸ Ibid.

⁵⁶⁹ Ingrid Solstad Andreassen, “The Role of Tuna RFMOs in Combating ‘Ghost Fishing’: Where Is the Catch?”

⁵⁷⁰ See Article 5 (f) of the 1995 UN Fish Stocks Agreement and Article 7.6.9 of the FAO Code of Conduct.

⁵⁷¹ See the International Maritime Organization, 1978 Protocol Relating to the 1973 International Convention for the Prevention of Pollution from Ships (including Annexes, Final Act and 1973 International Convention), 1340 UNTS 61 (MARPOL 73/78), Annex V, Regulation 3.2.

⁵⁷² Ingrid Solstad Andreassen, “The Role of Tuna RFMOs in Combating ‘Ghost Fishing’: Where Is the Catch?”

⁵⁷³ Finska et.al., “Waste Management on Fishing Vessels and in Fishing Harbors in the Barents Sea.” Page 297.

of the Law of the Sea Convention. Dumping is defined as “any deliberate disposal of wastes or other matter from vessels” in the provision. Thus, the dumping regime “also applies to fishing gear that is deliberately disposed of at sea.”⁵⁷⁴ Article 1(4) of the London Protocol expressly “prohibit the dumping of any wastes or other matter.” If gear is dumped during fishing operations, such actions will represent a breach of the London Protocol.⁵⁷⁵

intentional discarding of fishing gear can be considered as “dumping” of wastes in accordance with Article 1(4) of the Protocol.⁵⁷⁶ If fishing gear is dumped overboard during fishing operations, such actions will represent a breach of the obligation to “prohibit the dumping of any wastes or other matter” in accordance with Article 4(1) of the legally binding instrument.⁵⁷⁷

Three specific United Nations General Assembly Resolutions also contribute to the global legal framework, and the resolutions adopted in 1989, 1991 and 1998 regarding large-scale pelagic driftnets are of vital importance, as pelagic nets are frequently used in tuna fisheries.⁵⁷⁸ Although the UNGA does not intend to establish legally binding moratoriums, the adoption of its resolutions have “nevertheless spurred legal action on the part of the international

⁵⁷⁴ Ingrid Solstad Andreassen, “The Role of Tuna RFMOs in Combating ‘Ghost Fishing’: Where Is the Catch?”

⁵⁷⁵ Annex I of the London Protocol make exceptions to the prohibition for certain circumstances, such as in the case where a fishing vessel dumps fish waste in accordance with Para 1 (3) of Annex I. Fishing gear or components from such devices are nevertheless not listed in annex I. See also Ingrid Solstad Andreassen, “The Role of Tuna RFMOs in Combating ‘Ghost Fishing’: Where Is the Catch?” on this topic.

⁵⁷⁶ International Maritime Organization, 1996 Protocol to the 1972 Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter, 36 ILM 7, (London Protocol). For an interesting discussion about how certain types of fishing gear may be regarded in the context of dumping, see e.g., Robin Churchill, “Just a Harmless Fishing Fad-or Does the Use of FADs Contravene International Marine Pollution Law?” *Ocean Development and International Law* 52, No. 2 (2021): 169–92, <https://doi.org/10.1080/00908320.2021.1901342>.

⁵⁷⁷ Annex I of the London Protocol nevertheless makes exceptions to the prohibition for certain circumstances, such as e.g. in the cases where fishing vessel dumps fish waste in accordance with Para 1 (3) of Annex I. Fishing gear or components from such devices are nevertheless not listed in annex I.

⁵⁷⁸ UN General Assembly, “United Nations Resolution 44/225 On Large-Scale Pelagic Driftnet Fishing and Its Impacts On The Living Resources Of the World’s Oceans And Seas”, A/RES/44/225, December 22, 1989, UN General Assembly, “United Nations Resolution 46/215 on Large-Scale Pelagic Driftnet Fishing and Its Impacts On The Living Resources Of the World’s Oceans And Seas”, A/RES/46/215, December 20, 1991, and UN General Assembly, “United Nations Resolution 53/33 on Large-Scale Pelagic Drift-Net Fishing, Unauthorized Fishing in Zones of National Jurisdiction and on the High Seas, Fisheries By-Catch and Discards, and Other Developments”, A/RES/53/33, January 6, 1999. See also Ingrid Solstad Andreassen, “The Role of Tuna RFMOs in Combating ‘Ghost Fishing’: Where Is the Catch?” on this topic.

community.”⁵⁷⁹ The Resolutions have subsequently paved the way for the adoption of binding measures prohibiting and restricting the use of driftnets in several regions of the world, including in the South Pacific.⁵⁸⁰ General concerns about the impacts of lost, abandoned, or otherwise discarded fishing gear are frequently recognized in the annually adopted resolutions on the Oceans and Law of the Sea by the UNGA, underscoring that addressing the impacts of ghost fishing is a global concern in relation to all types of gear.⁵⁸¹ Despite not creating legally binding obligations, UNGA Resolutions may be perceived as “means of drawing attention to the current threats to fish stocks and encouraging international efforts taking place in other institutions to address them.”⁵⁸²

Despite several legal instruments addressing the issue of ghost fishing directly or indirectly, there seem to be few specific guidelines on the key question of how to implement the obligation. In this regard, relevant FAO implementation guidelines may serve as valuable tools to identify specific management measures which may be adopted and implemented by states to fulfill their obligation of minimizing catch by lost, abandoned, or otherwise discarded fishing gear. These guidelines include the FAO International Guidelines on Bycatch Management and Reduction of Discards and the FAO Voluntary Guidelines on the Marking of Fishing Gear.⁵⁸³

⁵⁷⁹ James Harrison, “The Contribution of the Food and Agriculture Organization to International Fisheries Law,” in *Making the Law of the Sea*, Series Number 80 (United Kingdom: Cambridge University Press, 2011), 200–236, <https://doi.org/10.1017/CBO9780511974908.007>. Pages 202-203.

⁵⁸⁰ Convention for the Prohibition of Fishing with Long Driftnets in the South Pacific, 24 November 1989, 1899, UNTS 3. Scott addresses the development more thoroughly in Karen N Scott, “Bycatch Mitigation and the Protection of Associated Species,” in *Strengthening International Fisheries Law in an Era of Changing Oceans*, eds. Richard Caddell and Erik J. Molenaar, 1st ed. (London: Hart Publishing, 2019), 165–87, <https://doi.org/10.5040/9781509923373>. Page 173.

⁵⁸¹ See, e.g., United Nations General Assembly, “United Nations Resolution Oceans and the Law of the Sea: sustainable fisheries, including through the 1995 Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea of 10 December 1982 relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks, and related instruments”, A/78/L.13, November 22, 2023.

⁵⁸² Harrison, “The Contribution of the Food and Agriculture Organization to International Fisheries Law.” Page 204.

⁵⁸³ FAO, International Guidelines on Bycatch Management and Reduction of Discards, Responsible Fishing Practices for Sustainable Fisheries, Food and Agriculture Organization of the United Nations (Rome, Italy 2011), available at: <https://www.fao.org/responsible-fishing/resources/detail/en/c/1316864/> and FAO, Voluntary Guidelines on the Marking of Fishing Gear (Rome, Italy, 2018).

Section 4.3.4 explored how the FAO Code of Conduct comprise due diligence standards which may inform the scope of, e.g., Article 5(f) of the 1995 UN Fish Stocks Agreement. Yet there is doubt as to the normative status of the operational guidelines presented in the Code of Conduct. The non-binding status of the operational guidelines adopted by the FAO may be questioned, but the measures recommended in these guidelines may be regarded as means to operationalize the non-binding FAO Code of Conduct.⁵⁸⁴ Having established that states are “expected to pursue good faith efforts to implement” the instrument,⁵⁸⁵ a different question is whether the non-binding guidelines adopted to facilitate its implementation may inform and codify the actions required to fulfill the obligation of minimizing catch by lost or abandoned fishing gear in accordance with Article 5(f) of the 1995 UN Fish Stocks Agreement and the general obligations under the Law of the Sea Convention.

Article 119(a) of the Law of the Sea Convention states that its contracting parties must consider “any recommended international minimum standards” when adopting “conservation measures for the living resources in the high seas.” Article 10(c) of the 1995 UN Fish Stocks Agreement further obliges states to “adopt and apply generally recommended international minimum standards for the responsible conduct of fishing operations” to fulfill their duty to cooperate through RFMOs. Given the wording of the obligation and the parallel negotiations of the two instruments, “Article 10(c) may be regarded as referring to norms encompassed in the Code of Conduct and its implementation guidelines.”⁵⁸⁶

Article 10(c) reflects the core of Article 119(a) of the Law of the Sea Convention, which establishes that states must consider “any generally recommended international minimum

⁵⁸⁴ See, e.g., Scanlon’s argumentation in Zoe Scanlon, “The Significance of Informal Lawmaking in International Fisheries Law,” in *Unconventional Lawmaking in the Law of the Sea*, ed. Natalie Klein (Oxford: University Press, 2022). Page 225. See also Ingrid Solstad Andreassen, “The Role of Tuna RFMOs in Combating ‘Ghost Fishing’: Where Is the Catch?” and Stephen Hodgson, *Legal Aspects of Abandoned, Lost or Otherwise Discarded Fishing Gear* (Rome: FAO, 2022). Page 12

⁵⁸⁵ De Fontaubert et al., “Achieving Sustainable Fisheries: Implementing the New International Legal Regime.” Page 14.

⁵⁸⁶ Ingrid Solstad Andreassen, “The Role of Tuna RFMOs in Combating ‘Ghost Fishing’: Where Is the Catch?” See also Jürgen Friedrich, “Legal Challenges of Non-Binding Instruments: The Case of the FAO Code of Conduct for Responsible Fisheries,” in *The Exercise of Public Authority by International Institutions*, eds. Armin Von Bogdandy et al., Vol. 210, (Berlin, Heidelberg: Springer Berlin Heidelberg, 2010), 511–40, https://doi.org/10.1007/978-3-642-04531-8_18.

standards” when designing conservation and management measures. However, it is evident that Article 10(c) strengthens the obligation by the inclusion of the wording “adopt and apply,” whereas Article 119(a) of the Law of the Sea Convention simply requires the standards to be considered.⁵⁸⁷ This raises the question of what the requirement of adoption and application of “generally recommended minimum standards” entails. What ought to be considered as generally recommended minimum standards for fishing operations is not clarified in the Law of the Sea Convention or the 1995 UN Fish Stocks Agreement. However, it seems reasonable to conclude that such standards at least encompass the procedural and material obligations in the Agreement itself. Pinto argues that the standards introduced in the 1995 FAO Code of Conduct would qualify as generally recommended minimum standards, and that guidelines adopted by the FAO Committee on Fisheries (COFI) will fall within the scope of this formulation.⁵⁸⁸ The role of the FAO in developing standards for global fisheries was formally recognized by the United Nations General Assembly in Resolution 61/105, which invited the FAO to further develop “standards and criteria for use by States and regional fisheries management organizations...in identifying vulnerable marine ecosystems and the impacts of fishing on such ecosystems, and establishing standards for the management of deep sea fisheries.”⁵⁸⁹ Article 10(c) of the Fish Stocks Agreement consequently encompasses the guidelines adopted by the FAO, underscoring the importance of the FAO in protecting and conserving the marine environment.

However, Article 10(c) of the Fish Stocks Agreement only concerns the adoption and application of the relevant standards when necessary for the “responsible conduct of fishing

⁵⁸⁷ See also Diz Pereira Pinto, *Fisheries Management in Areas Beyond National Jurisdiction: The Impact of Ecosystem Based Law-Making*. Pages 24-25.

⁵⁸⁸ *Ibid.* Pages 23-24. Pinto makes this argument regarding the scope of Article 119(a) of the Law of the Sea Convention.

⁵⁸⁹ UN General Assembly, “Sustainable Fisheries, including through the 1995 Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea of 10 December 1982 Relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks, and Related Instruments,” A/RES/61/105, December 8, 2006. Para 89.

operations,” meaning that the RFMOs are only obliged to adopt and apply the standards that are relevant to the specific fisheries they are managing.⁵⁹⁰

The implementation guidelines developed in the FAO Code of Conduct may thus inform the potential actions to be taken by the states involved to fulfill their binding obligations under Article 5(f) of the 1995 UN Fish Stocks Agreement, and simultaneously create an operational framework which may be implemented to comply with the obligation. Immediate questions that arise are whether “the measures in the FAO Code of Conduct and in subsequently developed guidelines are cumulative” and whether “all management measures encompassed in these instruments must be adopted to ensure compliance with the Fish Stocks Agreement.”⁵⁹¹ The wording “to the extent practicable” found in both the Fish Stocks Agreement and the Code of Conduct nevertheless implies that the state parties have some level of discretion regarding their capacity to implement the relevant measures, and that the assessment of which measures they should be expected to adopt and implement will vary on a case-by-case basis.⁵⁹² Thus, it seems reasonable to conclude that the various management measures that may be adopted to achieve the objective of minimizing catch by lost or abandoned fishing gear constitute guidelines, and that they are not cumulative.⁵⁹³

Another interesting observation can be made when the binding obligation to minimize catch by lost and abandoned gear in Article 5(f) of the 1995 UN Fish Stocks Agreement is potentially operationalized through the implementation of measures found in the non-binding FAO Code of Conduct and its subsequent guidelines in the context of RFMOs.⁵⁹⁴ In such a scenario, the RFMOs are making the voluntary obligations binding upon their member states.⁵⁹⁵ As emphasized in Section 1.2, RFMOs represent distinct legal personalities,⁵⁹⁶ characterized by

⁵⁹⁰ See, e.g., the Food and Agriculture Organization of the United Nations, “International Plan of Action for Conservation and Management of Sharks” (1999), <https://openknowledge.fao.org/server/api/core/bitstreams/2142757f-a36e-41ef-b8db-bd4ac7533fb2/content>, which is an example of a “generally recommended international minimum standard” adopted by the FAO.

⁵⁹¹ Ingrid Solstad Andreassen, “The Role of Tuna RFMOs in Combating ‘Ghost Fishing’: Where Is the Catch?.”

⁵⁹² *Ibid.*

⁵⁹³ *Ibid.*

⁵⁹⁴ *Ibid.*

⁵⁹⁵ *Ibid.*

⁵⁹⁶ James Harrison, “Key Challenges Relating to the Governance of Regional Fisheries.” Page 84.

their legal mandates empowering them to adopt legally binding decisions for their member states.⁵⁹⁷ If states give effect to their duty to cooperate through RFMOs by adopting binding regulations based on such voluntary obligations, the RFMOs may consequently be regarded as developing binding obligations for their member states, consequently “hardening” soft law obligations and “creating an interplay between the 1995 UN Fish Stocks Agreement and the FAO Code of Conduct.”⁵⁹⁸

Having established that the FAO implementation guidelines may be regarded as generally recommended minimum standards for the implementation of, e.g., management objectives identified in the ecosystem approach to fisheries, the following section will explore the specific measures that may be adopted to minimize ghost fishing.

⁵⁹⁷ See, e.g., Terje Løbach, T., Petersson, M., Haberkon, E. & Mannini, P. 2020. “Regional fisheries management organizations and advisory bodies. Activities and developments, 2000–2017.” Page 7.

⁵⁹⁸ Ingrid Solstad Andreassen, “The Role of Tuna RFMOs in Combating ‘Ghost Fishing’: Where Is the Catch?”

4.4.3 Conservation and Management Measures Applicable to Minimize Catch by Lost, Abandoned, or Otherwise Discarded Fishing Gear

Specific management measures dealing with the prevention of catch by lost, abandoned, or otherwise discarded gear are the implementation of a prohibition of gear dumping at sea, the establishment of gear disposal systems in landing places and procedures to systematically recuperate lost gear.⁵⁹⁹ Further, identification of gear ownership and reduction and elimination of the fishing power of lost gear using degradable material are recognized as management measures that may be used to prevent ghost fishing. In 2019 the FAO adopted Guidelines on the Marking of Fishing Gear with the overarching aim to assist states and RFMOs in “the development of gear-marking systems to facilitate the location and identification of ownership of gear, a framework for risk assessment, and regulations designed to minimize the abandonment and loss of gear and encourage its recovery.”⁶⁰⁰ The Guideline is voluntary in nature but provides practical guidance and a reference framework for the question of how to implement the general obligation to minimize catch by lost and abandoned gear in the 1995 UN Fish Stocks Agreement and the FAO Code of Conduct, and it functions as a generally recommended international standard.⁶⁰¹ In this way, the FAO demonstrates some of the relevant management measures applicable to minimize ghost fishing through its adopted guidelines, which are illustrated in Figure three below.

The management measures stemming from the normative framework are identified both in binding legal instruments and in voluntary guidelines, but as illustrated in Section 4.4.2, the FAO Guidelines may provide practical guidance and a reference framework for the question of how implementation of the general obligation to minimize catch by lost and abandoned

⁵⁹⁹ Garcia S.M et al., “The ecosystem approach to fisheries. Issues, terminology, principles, institutional foundations, implementation and outlook.” Page 36. The measures are also included in the subsequently adopted guidelines in FAO, International Guidelines on Bycatch Management and Reduction of Discards. Page 17.

⁶⁰⁰ Food and Agriculture Organization of the United Nations, *Voluntary Guidelines on the Marking of Fishing Gear* (Rome, Italy, 2018). Article 2. See also Zoe Scanlon, “The Significance of Informal Lawmaking in International Fisheries Law,” which provides some insights into the process of the adoption on page 225.

⁶⁰¹Zoe Scanlon, “The Significance of Informal Lawmaking in International Fisheries Law.” Page 225. See also Section 4.4.2, which elaborates on the scope of Article 10(c) of the 1995 UN Fish Stocks Agreement.

gear in the Fish Stocks Agreement and the Code of Conduct may be achieved.⁶⁰² The measures identified in these guidelines may “be considered to represent best practice as they have been developed and adopted by bodies with expertise in fisheries management, such as the FAO.”⁶⁰³

Minimizing catch by lost, abandoned, or otherwise discarded fishing gear

<u>Minimizing catch by abandoned and/or discarded gear</u>	<u>Minimizing catch by lost gear</u>	<u>Minimizing catch by lost, abandoned and/or discarded gear</u>
<p>Adoption and enforcement of a prohibition of gear dumping</p> <p>Suitable gear disposal systems in landing places</p>	<p>Establishment of procedures to recuperate lost gear</p>	<p>Development of degradable fishing gear</p> <p>Mandatory marking of fishing gear</p> <p>Bans on certain types of gear</p> <p>Reporting of lost fishing gear</p>

Figure 3: An illustration of the relevant management measures in the FAO Guidelines on Bycatch Management and Reduction of Discards, the FAO Guidelines on the Marking of Fishing Gear, MARPOL V/5 and UNGA Resolutions 44/255, 26/215 and 53/33.

It is possible to distinguish and categorize the relevant measures in the legal instruments and documents based on whether the ghost fishing is a result of intentional gear dumping or unintentional gear loss, and the states, and hence RFMOs, should strive to mitigate both scenarios. However, it should be emphasized that the list of measures identified in Figure

⁶⁰² See, e.g., Zoe Scanlon, “The Significance of Informal Lawmaking in International Fisheries Law.” Page 225. See also Ingrid Solstad Andreassen, “The Role of Tuna RFMOs in Combating ‘Ghost Fishing’: Where Is the Catch?”

⁶⁰³ Ingrid Solstad Andreassen, “The Role of Tuna RFMOs in Combating ‘Ghost Fishing’: Where Is the Catch?”

three is not exhaustive, and they have been selected as the relevant management measures for the case study by virtue of their origin in legal sources.⁶⁰⁴

In commercial tuna fisheries, the main types of gear are longlines, trolling, purse seines (nets) and pelagic gillnets.⁶⁰⁵ Most scientific studies of lost, abandoned, or otherwise discarded fishing gear are based on experiments to replicate diverse types of nets, field studies of fishing nets, surveys answered by fishers and retrieval activities for nets.⁶⁰⁶ These studies have shown that fishing nets account for a substantial part of fishing debris, including 75% of the total fishing debris identified in the Northwest Territories of Australia and 83.6% in Hawaii,⁶⁰⁷ illustrating how fishing gear represents a substantive proportion of marine litter, and indicating the seriousness of the total amount of fishing gear presently ghost fishing at sea in these regions. Furthermore, ghost fishing may occur from two months to eight years after the gear has been lost.⁶⁰⁸ By contrast, the impact of ghost fishing caused by longlines has been little studied, but “ghost fishing rates are probably significantly lower than in nets and traps as mortality only occurs to organisms that are caught on the hooks.”⁶⁰⁹

Nevertheless, a study of gear loss in Gökova Bay in the eastern Mediterranean in 2007 estimated that almost 80% of longlines are lost and replaced by new fishing gear, leaving a substantial amount of gear in the sea.⁶¹⁰ These studies indicate that tuna RFMOs should make

⁶⁰⁴ Some other examples explored in the literature of relevant measures includes the utilization of GPS and seafloor mapping technologies to prevent snagging on the seafloor that might cause unintentional gear loss, installations of transponders and satellite tracking to enable recuperation of lost gear and education of fishers. See e.g., Julie A. Lively and Thomas P. Good, “Ghost Fishing”, in *World Seas: An Environmental Evaluation: Volume III: Ecological Issues and Environmental Impacts*, ed. C. Sheppard (London: Elsevier, 2019), 183–96, <https://doi.org/10.1016/B978-0-12-805052-1.00010-3>. Page 191.

⁶⁰⁵ Åsmund Bjordal, “The Use of Technical Measures in Responsible Fisheries: Regulation of Fishing Gear.” Pages 170-192. Bjordal also states that traps may be used to capture tuna, and the use of spears and harpoons are also recognized as fishing gear for targeted tuna species.

⁶⁰⁶ Lively and Good, “Ghost Fishing.” Page 188.

⁶⁰⁷ Ibid.

⁶⁰⁸ A. Ayaz et al., “Fishing Gear Losses in the Gökova Special Environmental Protection Area (SEPA), Eastern Mediterranean, Turkey: Fishing Gear Losses in Gökova Bay, Aegean Sea,” *Journal of Applied Ichthyology* 26, No. 3 (2010): 416–19, <https://doi.org/10.1111/j.1439-0426.2009.01386.x>. Page 416. The persistence of the net in the water will depend on its materials, the seafloor topography, depth, and hydrodynamics in the specific area.

⁶⁰⁹ Lively and Good, “Ghost Fishing.” Page 191.

⁶¹⁰ Ayaz et al., “Fishing Gear Losses in the Gökova Special Environmental Protection Area (SEPA), Eastern Mediterranean, Turkey.” Page 416.

particular efforts to adopt measures to prevent nets ending up in the sea, but also take measures to mitigate the frequency of longline losses in their geographical areas of competence.

After having identified and established the regulatory framework applicable to achieve the objective of minimizing catch by lost, abandoned, or otherwise discarded fishing gear, the following chapter will contextualize the present study by exploring the role, mandates, functions, and internal processes of the tuna RFMOs relevant for the implementation and operationalization of the ecosystem approach to fisheries. The following chapter represents the last step on the path towards the research study described in Part II of this thesis.

5. Chapter V: Regional Fisheries Management Organizations

5.1 Introduction

The duty to cooperate in high seas fisheries was presented in Chapter 3, which established that this duty does not require states to seek formal membership in RFMOs to comply with Articles 117 and 118 of the Law of the Sea Convention.⁶¹¹ Apart from the question of formal membership, there seems to be a collective understanding that states at least need to respect and comply with the relevant conservation and management measures adopted by RFMOs, underscoring the importance of these bodies in the conservation of marine living resources on the high seas. This chapter explores the role and legal mandates of the RFMOs and provides insights into the legal framework covering their functioning, comprising the last stage of Part I of this thesis.

5.2 What is a Regional Fisheries Management Organization?

The following sections will explore the key features of RFMOs, their shared characteristics, questions relating to how states may seek formal membership in these organizations and the functions they ought to fulfill in accordance with the legal framework.

5.2.1 What Characterizes RFMOs?

Prior to World War II, international fisheries agreements were characterized by their vague objectives,⁶¹² whereas fisheries commissions founded after the war typically encompass

⁶¹¹ See Chapter 3.2.5 for more information regarding the duty to cooperate in accordance with the Law of the Sea Convention.

⁶¹² Albert W. Koers, *International Regulation of Marine Fisheries: A Study of Regional Fisheries Organizations* (West Byfleet: Fishing News, 1973). Koers uses the International Pacific Halibut Convention and the International Pacific Salmon Fisheries Convention as examples, which both state that the objectives of the conservation functions were “the protection, preservation and extension” of the halibut and salmon fisheries in their respective regions.” See pages 80-85 for more information.

explicit management goals, ranging from economic proficiency, as illustrated by the International Whaling Commission (IWC) to the pursuit of the MSY of the targeted fish stocks, as illustrated by the predecessor of the Northwest Atlantic Fisheries Organization (NAFO).⁶¹³ The 1958 Convention on Fishing and Conservation of the Living Resources on the High Seas (1958 High Seas Fishing Convention) was the first global instrument introducing the idea that “a coastal state is entitled to take part...in any system of research and regulation for purposes of conservation of the living resources on the high seas.”⁶¹⁴ No further explanation of the broad formulation “system of research and regulation” was provided in the Convention, but it seems reasonable to conclude that the right of participation at least comprised the regional fisheries agreements and bodies existing at the time.⁶¹⁵

In view of the fact that the Law of the Sea Convention explicitly introduces the concept of regional cooperation in fisheries management through “subregional or regional fisheries organizations,” these organizations accordingly should strive to adopt “the measures necessary for the conservation of the living resources” affected by the relevant fisheries.⁶¹⁶ The wording of Article 118 of the Law of the Sea Convention codifies that regional cooperation should take place through subregional or regional fisheries organizations, giving RFMOs a more prominent role in resource management in areas beyond national jurisdiction than the 1958 High Seas Fishing Convention.⁶¹⁷ As emphasized in Section 3.3.2, the role and functioning of RFMOs was further strengthened by the adoption of the 1995 UN Fish Stocks Agreement. Article 8(3) of the Agreement “institutionalizes” the duty to cooperate in high seas fisheries

⁶¹³ Yoshinobu Takei, *Filling Regulatory Gaps in High Seas Fisheries: Discrete High Seas Fish Stocks, Deep-Sea Fisheries, and Vulnerable Marine Ecosystems*. Pages 24-25.

⁶¹⁴ The Convention on Fishing and Conservation of the Living Resources of the High Seas, 1958, UNTS 559 p. 285. Article 6(2).

⁶¹⁵ Erik J. Molenaar, “Regional Fisheries Management Organizations,” in *Global Challenges and the Law of the Sea*, eds. Marta Chantal Ribeiro, Fernando Loureiro Bastos, and Tore Henriksen (Cham: Springer International Publishing, 2020), 81–109, https://doi.org/10.1007/978-3-030-42671-2_5. Page 83. Examples of RFMOs established before the 1958 High Seas Fishing Convention entered into force include, e.g., the predecessor of the Northwest Atlantic Fisheries Commission (NAFO) and the predecessor of the North-East Atlantic Fisheries Commission (NEAFC), which were established in 1949 and 1959.

⁶¹⁶ Law of the Sea Convention, Article 118.

⁶¹⁷ Molenaar, “Regional Fisheries Management Organizations.” Page 83.

management of straddling and highly migratory fish stocks by expressly requiring its exercise through sub-regional or regional organizations or arrangements.⁶¹⁸

As emphasized by Molenaar, there are currently around 50 regional fishery bodies involved in the conservation and management of living marine resources worldwide.⁶¹⁹ The mandate of these bodies varies due to their origins, and whereas “some regional fisheries organizations have an advisory function only, the obligation to cooperate in respect of high seas fisheries has predominately manifested itself in the establishment of RFMOs.”⁶²⁰ A common feature of the RFMOs is that they “seek to regulate exploitation either of particular species throughout their area of distribution or of various species distributed throughout a particular geographic area.”⁶²¹ The 1995 UN Fish Stocks Agreement is a legal instrument which facilitates regional cooperation through RFMO/As by virtue of Articles 8-13 and 17 of the Agreement. The codification of the management mandate and obligations placed upon RFMO/As are “widely regarded as reflecting the international community’s recognition of RFMO/As as the preeminent vehicles for regional fisheries regulation.”⁶²² This leads to the question: Which features are typical of RFMO/As and distinguish them from other types of regional fisheries bodies?

As a starting point, the term “regional fisheries management organization” is not defined in any legal instruments, and there is no generally accepted definition of the term.⁶²³ The Law of the Sea Convention does not provide any clarity regarding the concept, other than that they

⁶¹⁸ Rosemary Rayfuse, “Regional Fisheries Management Organizations,” in *The Oxford Handbook of the Law of the Sea*, ed. Donald Rothwell et al., Oxford Handbooks in Law (United Kingdom: Oxford University Press, 2015), <https://doi.org/10.1093/law/9780198715481.003.0020>. Page 441.

⁶¹⁹ Erik Jaap Molenaar, “Addressing Regulatory Gaps in High Seas Fisheries,” *The International Journal of Marine and Coastal Law* 20, No. 3 (2005): 533–70, <https://doi.org/10.1163/157180805775098559>. Page 540.

⁶²⁰ Rosemary Rayfuse, “Regional Fisheries Management Organizations.” Page 442. The term “regional fishery bodies” (RFB) is commonly used by the United Nations Food and Agriculture Organization (FAO) to describe “Intergovernmental bodies through which States cooperate on the management of fisheries in specific regions.” Further, “some RFBs have a mandate to adopt measures that are binding on their members,” and “these bodies are referred to as regional fisheries management organisations or arrangements (RFMO/As) and are a subset of RFBs.” See FAO, “Regional Fishery Bodies | Vulnerable Marine Ecosystems” last accessed 14.05.2024 14, <https://www.fao.org/in-action/vulnerable-marine-ecosystems/background/regional-fishery-bodies/zh/>.

⁶²¹ Rosemary Rayfuse, “Regional Fisheries Management Organizations.” Page 442.

⁶²² Molenaar, “Regional Fisheries Management Organizations.” Page 83.

⁶²³ *Ibid.* Page 85.

are regional or sub-regional bodies by virtue of Article 118. The term “regional fisheries management arrangement” (RFMA) is expressly defined in Article 1(1) litra d of the 1995 UN Fish Stocks Agreement as “a cooperative mechanism established in accordance with the Convention and this Agreement by two or more States for the purpose, inter alia, of establishing conservation and management measures in a subregion or region for one or more straddling fish stocks or highly migratory fish stocks.” An RFMA may consist of only two member states, and have similarities with other types of bilateral cooperation,⁶²⁴ but may also represent a multilateral mechanism based on the wording “two or more States” in Article 1(1) litra d of the 1995 UN Fish Stocks Agreement. Cooperation between more than two states necessitates the establishment of some form of regional fisheries management organization or arrangement.⁶²⁵ The fact that an RFMA is a cooperative mechanism for the establishment of conservation and management measures in accordance with Article 1(1) litra d of the 1995 UN Fish Stocks Agreement, and that no similar definition is provided in the legal instruments for the concept of RFMOs, necessitates an analysis of the features of the latter form of cooperative mechanism and how they differ from RFMAs.

Following Harrison, an RFMO can be characterized based on three key features: The establishment of a distinct legal personality, the establishment of some form of permanent organ(s) with decision-making competence on behalf of the member states, and the establishment of a secretariat that arranges meetings and the daily operation of the RFMO on behalf of its members.⁶²⁶ Harrison arrives at these key features based on the fact that these “are at the core of any international organization.”⁶²⁷ The creation of a legal personality implies several possibilities and formal duties, and the organization is “subject to the rules of international law, including principles of international institutional law, which define the scope of powers that may be exercised,” including the powers necessary for achieving the

⁶²⁴ Article 8(1) of the 1995 UN Fish Stocks Agreement explicitly emphasizes that cooperation may take place “directly” through bilateral measures.

⁶²⁵ Rosemary Rayfuse, “Regional Fisheries Management Organizations.” Page 442.

⁶²⁶ James Harrison, “Key Challenges Relating to the Governance of Regional Fisheries.” Harrison describes the distinctive features in more detail on page 84.

⁶²⁷ *Ibid.* Page 84.

objectives of the RFMO.⁶²⁸ The legal personality also represents a vital difference between RFMOs and RFMAs, as an RFMA typically is not an intergovernmental organization and does not normally establish one.⁶²⁹ In this way, an “RFMA does not necessarily have to be established pursuant to a legally binding instrument,”⁶³⁰ and instead “commonly establishes a Conference of the Parties (COP) or a Meeting of the Parties (MOP) as their principal decision-making body.”⁶³¹ A relevant exception to be recognized in this regard is the Central Arctic Ocean Fisheries Agreement (CAOFA),⁶³² which is considered an RFMA,⁶³³ but is also a multilateral mechanism with a formal structure and bodies which may adopt binding measures. However, on a general level, one may argue that RFMOs and RFMAs pursue similar objectives and are subject to the same obligations established pursuant to the legal framework, but that RFMAs typically are less “institutionalized” than RFMOs.⁶³⁴ A common feature of RFMOs and RFMAs is that they are regarded as “entirely separate, autonomous or ‘stand-alone’ bodies that have been negotiated and established outside of an overarching intergovernmental body.”⁶³⁵ Another commonality is the legal mandate of these bodies, empowering them to adopt legally binding decisions for their member states.⁶³⁶

⁶²⁸ Ibid.

⁶²⁹ Molenaar, “Regional Fisheries Management Organizations.” Page 86.

⁶³⁰ Ibid. Page 85.

⁶³¹ Ibid. Page 86.

⁶³² Agreement to Prevent Unregulated High Seas Fisheries in the Central Arctic Ocean (2018), available at: <https://vlab.noaa.gov/documents/22926311/0/AGREEMENT+TO+PREVENT+UNREGULATED+HIGH+SEAS+FISHERIES+IN+THE+CENTRAL+ARCTIC+OCEAN.pdf/b33ec030-17f1-20d5-7c73-a50f84cf6712?t=1685588546248>

⁶³³ See, e.g., Valentin Schatz, Alexander Proells, and Nengye Liu, “The 2018 agreement to prevent unregulated high seas fisheries in the Central Arctic Ocean: A critical analysis”, *International Journal of Marine and Coastal Law* 34, No. 2 (1 April 2019): 195–244, <https://doi.org/10.1163/15718085-23342015> and Erik Molenaar, “Participation in Regional Fisheries Management Organizations,” in *Strengthening International Fisheries Law in an Era of Changing Oceans*, eds. Richard Caddell and Erik Molenaar (Hart Publishing, 2019), 103–30, <https://doi.org/10.5040/9781509923373.ch-006>. Page 106.

⁶³⁴ Harrison, “Key Challenges Relating to the Governance of Regional Fisheries.” Page 85.

⁶³⁵ Molenaar, “Regional Fisheries Management Organizations.” Page 87. Molenaar nevertheless emphasizes that this general rule has some recognizable exceptions, such as the establishment of CCMLR which is a part of the Antarctic Treaty System and RFMOs established under Article XIV of the FAO Constitution. The latter embodies RFMOs such as the General Fisheries Commission for the Mediterranean (GFCM) and the Indian Ocean Tuna Commission (IOTC).

⁶³⁶ See, e.g., Løbach et al., “Regional Fisheries Management Organizations and Advisory Bodies: Activities and developments, 2000-2017.” Page 7. An analysis of the mandate of the RFMOs will be presented in Section 5.2.5.

States participating in the relevant fisheries are under an obligation to “cooperate to establish such an organization or enter into other appropriate arrangements” where such bodies do not already exist.⁶³⁷ Harrison describes the obligation as one that “can only operate as an obligation of conduct, not an obligation of result.”⁶³⁸ The 1995 UN Fish Stocks Agreement nevertheless “sets a clear preference for more institutionalized forms of cooperation” by virtue of Article 8(5).⁶³⁹ Henriksen et al. state that the distinction between what qualifies as direct cooperation, an arrangement, or regional or subregional cooperation under Article 8 of the 1995 UN Fish Stocks Agreement, may obscure what qualifies as an organization. However, the absence of formal criteria “is given consent through State practice.”⁶⁴⁰ The decision on whether the negotiating states shall aim to establish an arrangement or an organization “reflects the fact that no single format of regional management can fit all geopolitical and biophysical conditions.”⁶⁴¹ Consequently, the establishment of relevant cooperative mechanisms should be tailored to achieve the objectives of conservation and management in a format that fits the relevant conditions and scenarios. As the main goal of this thesis is to study the implementation and operationalization of the ecosystem approach in and by the tuna RFMOs, the following sections will focus on the “institutionalized” RFMOs as cooperating mechanisms in high seas fisheries.

⁶³⁷ 1995 UN Fish Stocks Agreement. Article 8(5).

⁶³⁸ James Harrison, “Key Challenges Relating to the Governance of Regional Fisheries.” Page 84.

⁶³⁹ Ibid.

⁶⁴⁰ Tore Henriksen, Geir Hønneland, and Are Sydnæs, *Law and Politics in Ocean Governance: The UN Fish Stocks Agreement and Regional Fisheries Management Regimes*. Page 2.

⁶⁴¹ Ibid.

5.2.2 Different Types of RFMOs

The current total number of RFMOs worldwide is debatable, presumably caused by different perceptions of which types of regional management bodies that formally qualify as RFMOs. This is illustrated by several scholars operating with different numbers. Cullis-Suzuki and Pauly state that there are currently 18 global RFMOs,⁶⁴² while Haas et al. emphasize that there exist 13 RFMOs,⁶⁴³ Molenaar operates with a figure of 16,⁶⁴⁴ and Løbach mentions 22 RFMOs, which are subject to analysis in a recently published FAO paper.⁶⁴⁵ Despite operating with different numbers, there seems to be a consensus that there are currently five tuna RFMOs, and these will be subject to closer analysis in Chapter 6.⁶⁴⁶

The reason for the lack of agreement on the total number of RFMOs may be connected to the fact that there are numerous ways to categorize the existing RFMOs.⁶⁴⁷ A typical distinction is made between those seeking to regulate exploitation of specific species throughout their area(s) of distribution and those concerned with several species within a specific geographical area.⁶⁴⁸ Løbach et al. emphasizes that these two types of RFMOs can be regarded as “generic RFMOs” responsible for “conservation and management of living marine resources or fishery resources in general in the RFMOs’ area of competence” and “species-specific” RFMOs

⁶⁴² Sarika Cullis-Suzuki and Daniel Pauly, “Failing the high seas: A global evaluation of regional fisheries management organizations.” Page 1037.

⁶⁴³ Bianca Haas et al., “Factors influencing the performance of regional fisheries management organizations,” *Marine Policy* 113 (1 March 2020): 103787, <https://doi.org/10.1016/j.marpol.2019.103787>. Page 2.

⁶⁴⁴ Molenaar, “Regional Fisheries Management Organizations.” Page 88. Molenaar argues that four of the non-tuna RFMOs are RFMAs in Erik Molenaar, “Participation in Regional Fisheries Management Organizations.” Page 109.

⁶⁴⁵ See Terje Løbach et al., “*Regional Fisheries Management Organizations and Advisory Bodies: Activities and Developments, 2000–2017*.” Page 8. These 22 RFMOs are categorized in the following way: “12 are generic, 5 are tuna RFMOs, 3 manage anadromous stocks, 1 manages halibut and 1 manages cetaceans.”

⁶⁴⁶ See, e.g., Molenaar, “Regional Fisheries Management Organizations,” page 88, Haas et al., “Factors Influencing the Performance of Regional Fisheries Management Organizations,” page 2 and Rosemary Rayfuse, “Regional Fisheries Management Organizations,” page 442.

⁶⁴⁷ Dividing the relevant RFMOs into distinct categories has a pragmatic function as it enables a selection of only some of these organizations as “cases” in this study. See Section 2.3, where the case study was first presented.

⁶⁴⁸ Rosemary Rayfuse, “Regional Fisheries Management Organizations.” Page 442.

responsible for the conservation and management of the stock of a particular species.⁶⁴⁹ The five tuna RFMOs are species-specific, since they manage highly migratory species distributed over vast geographical distances.⁶⁵⁰ Molenaar emphasizes that a categorization of the different types of RFMOs may also be based on their regulatory areas, such as only or mainly the high seas, only coastal state maritime zones or a combination of high seas and coastal state maritime zones.⁶⁵¹ The latter category encompasses the five tuna RFMOs, which manage species which typically migrate through coastal states' maritime zones and the high seas. Finally, RFMOs may also be distinguished based on their species coverage and management mandate, e.g., a mandate to manage and conserve specific species, groups of species and/or residual species.⁶⁵² The Commission for the Conservation of Southern Bluefin Tuna (CCSBT) belongs to the first category, whereas the four other tuna RFMOs manage various tuna and tuna-like species, and are thus RFMOs managing "groups of species." Regardless of the various types of categorizations, it is evident that the tuna RFMOs stand out as RFMOs with a specific management mandate, and such organizations are often distinguished from other types of RFMOs.⁶⁵³

Common to all the global RFMOs is the fact that their management mandate and geographical area of competence are laid down and specified in their founding conventions. These conventions form the basis for establishing the category the RFMO belongs to and the extent to which they regulate fisheries and adopt conservation measures for, e.g., marine ecosystems. Further, it should be emphasized that a substantial number of global marine fisheries in areas beyond national jurisdiction are currently managed by one or more RFMOs,

⁶⁴⁹ Terje Løbach et al., *Regional Fisheries Management Organizations and Advisory Bodies: Activities and Developments, 2000–2017.* Page 8.

⁶⁵⁰ Ibid.

⁶⁵¹ Molenaar, "Regional Fisheries Management Organizations." Page 88.

⁶⁵² Ibid. Page 87.

⁶⁵³ See, e.g., Haas et al., "Factors Influencing the Performance of Regional Fisheries Management Organizations." Page 2.

and that most areas of the high seas are covered by the regulatory area of at least one organization.⁶⁵⁴

The following section will explore central questions relating to membership in RFMOs. As will be illustrated in the following, member states of RFMOs play a pivotal role in the conservation and management measures adopted by these organizations and form the basis for how the RFMOs carry out their functions pursuant to the legal framework.

5.2.3 Membership of Existing RFMOs

To examine the criteria for membership of RFMOs is of importance in this study as the member states determine the criteria for what the organizations can do in practice. Pons, Melnychuk and Hilborn emphasize that several factors affect the intensity of management in, e.g., tuna RFMOs, including the member states' "fleet diversity, economic diversity of member countries and economic dependency on tuna and tuna-related fisheries," which all affect the management of the stocks and species under their jurisdictions.⁶⁵⁵ McDorman refers to the political will of member states of RFMOs as "the essential ingredient" in their decision-making mechanisms in designing, adopting and efficiently implementing conservation and management measures.⁶⁵⁶ Barkin and DeSombre emphasize that "lack of political will on the

⁶⁵⁴ Eric Gilman, Kelvin Passfield, and Katrina Nakamura, "Performance of Regional Fisheries Management Organizations: Ecosystem-Based Governance of Bycatch and Discards." Page 328. UNGA Resolution 59/25 nevertheless acknowledges that there exist geographical gaps in high seas coverage by RFMOs. See United Nations General Assembly, "Sustainable fisheries, including through the 1995 Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea of 10 December 1982 relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks, and related instruments", A/RES/59/25, 17 January 2005, paras. 53-55 and 69. See also Erik Jaap Molenaar, "Addressing Regulatory Gaps in High Seas Fisheries," where this issue is discussed in more detail on page 540.

⁶⁵⁵ Maite Pons, Michael C Melnychuk, and Ray Hilborn, "Management Effectiveness of Large Pelagic Fisheries in the High Seas," *Fish and Fisheries* 19, No. 2 (2018): 260–70, <https://doi.org/10.1111/faf.12253>. Page 265.

⁶⁵⁶ McDorman, Ted. "Implementing Existing Tools: Turning Words Into Actions – Decision-Making Processes of Regional Fisheries Management Organisations (RFMOs)." *The International Journal of Marine and Coastal Law* 20, No. 3 (1 January 2005): 423–57. <https://doi.org/10.1163/157180805775098595>. Page 441.

See also Fischer, who states: "The functioning and success of RFMOs significantly depends on the political will of their members" in relation to the decision-making mechanisms of the RFMOs, in Fischer, Johanne. "How transparent are RFMOs? Achievements and challenges." *Marine Policy* 136 (1 February 2022): 104106. <https://doi.org/10.1016/j.marpol.2020.104106>. Page 2.

part of countries and their representatives to deal with the international fisheries crisis is indeed a real problem” when member states of RFMOs may impede the adoption of proposed conservation and management measures to safeguard their own interests.⁶⁵⁷ Haas et al. highlight that the way the RFMOs carry out their mandate to manage fisheries is heavily influenced by their member states, “often also by the lack of political will” by the different countries to implement the relevant changes.⁶⁵⁸ Furthermore, the fact that “some members are more led by their economic interests while other members apply a more conservationist approach...can lead to tensions during the meeting process” and the different interests “also play an important role in what members put forward during the Commission meetings and which topics get addressed or not.”⁶⁵⁹ Rosello sums it up elegantly by stating that “although RFMOs have a formal role *de jure* under the UNCLOS and the UNFSA as fora in which international obligations to cooperate in the conservation and management...are to be defined and implemented, they often function in practice as bargaining sites,” where the interests of the contracting parties “feature prominently in such negotiations.”⁶⁶⁰ The current body of literature presents a cohesive picture of how diverse priorities and capacity among member states of RFMOs may influence both the outcomes of decision-making processes and initial considerations about the issues brought to the negotiation table in these organizations.

There are several reasons for states to seek formal membership of RFMOs. The most obvious one is evident from the wording of Article 8(4) of the 1995 UN Fish Stocks Agreement, which states: “Only those States which are members of such an organization...or which agree to apply the conservation and management measures established by such organization...shall have access to the fishery resources to which those measures apply.”⁶⁶¹ The actual access to

⁶⁵⁷ Barkin, J. Samuel, and Elizabeth R. DeSombre. “Do We Need a Global Fisheries Management Organization?” *Journal of Environmental Studies and Sciences* 3, No. 2 (June 2013): 232–42. <https://doi.org/10.1007/s13412-013-0112-5>. Pages 237-238.

⁶⁵⁸ Haas et al., “Factors influencing the performance of regional fisheries management organizations.” Page 5.

⁶⁵⁹ *Ibid.*

⁶⁶⁰ Mercedes Rosello, “Regional fishery management organisation measures and the imposition of criminal and administrative sanctions in respect of high seas fishing,” *Marine Policy* 144 (1 October 2022): 105213, <https://doi.org/10.1016/j.marpol.2022.105213>. Page 6.

⁶⁶¹ Article 8(4) of the 1995 UN Fish Stocks Agreement creates an identical right for members of regional fisheries management arrangements.

fish for the targeted stocks is consequently conditioned by membership or cooperating status in the relevant RFMOs.⁶⁶² Molenaar emphasizes that states may also “be mainly concerned with strengthening an RFMO’s performance on conservation in general or minimizing the impacts of fishing on...non-target species or ecosystems,”⁶⁶³ underpinning a particularly interesting observation relevant to this thesis. As the implementation and operationalization of the ecosystem approach to fisheries relies on the member states’ collective prioritization in the RFMOs through their decision-making mechanisms, one may reasonably argue that states that advocate for its implementation may be an important key to its actual implementation. Other reasons for seeking membership of an RFMO may, e.g., be intricately connected with economic capacity and avoidance of potential access restrictions to certain markets.⁶⁶⁴ Finally, a participatory status in a particular RFMO may provide prestige for some states and open new doors to, e.g., trade markets.⁶⁶⁵

The right to become a member of an RFMO is explicitly stipulated in Article 8(3) of the 1995 UN Fish Stocks Agreement, which emphasizes that states “having a real interest in the fisheries concerned may become members of such organizations.”⁶⁶⁶ The wording “may become members” indicates that there is no formal obligation for the relevant states to seek membership of the RFMOs. This reflects the *pacta tertiis* principle which was introduced in Chapter 2, and the question of whether a state is obliged to become a formal member of an RFMO was discussed and analyzed in Section 3.2.5.⁶⁶⁷ The fact that a cooperative status of non-members is sufficient to gain access to the rights and resources in accordance with Article 8(4) of the 1995 UN Fish Stocks Agreement safeguards the right of access in situations where

⁶⁶² The cooperative status of non-member states will be subject to closer analysis in subsequent sections of this chapter.

⁶⁶³ Erik J. Molenaar, “Participation in Regional Fisheries Management Organizations.” Page 104.

⁶⁶⁴ *Ibid.*

⁶⁶⁵ *Ibid.*

⁶⁶⁶ 1995 UN Fish Stocks Agreement. Article 8(3).

⁶⁶⁷ However, states conducting fisheries in the regulatory area of RFMOs are obliged to comply with the active conservation and management measures adopted by these organizations regardless of their member status. See Section 3.2.5 of this thesis for more information.

states are uninterested in or incapable of becoming a formal member of the organizations.⁶⁶⁸ In this way, Article 8(3) ensures equality for all states fishing on the high seas.⁶⁶⁹

Closer examination of the wording of Article 8(4) reveals that access to the relevant resources, granted by formal membership or cooperative status, only concerns the marine living resources which are subject to the conservation and management measures in force. This basically implies that if a vessel is conducting fishing operations aiming to capture other types of species (not currently regulated by the relevant RFMOs), the state is not obliged to seek membership of or cooperate with the RFMO concerned. This line of reasoning reflects *de facto* the rights stipulated in Article 87 of the Law of the Sea Convention, and Article 116 which emphasizes that all States have a right to fish on the high seas.⁶⁷⁰ But what happens if an RFMO expands its mandate to regulate new species not originally covered by its mandate, or an entire ecosystem? This is an interesting question in light of the rapid development of scientific knowledge about species interactions and the interconnectedness of marine ecosystems, and the subsequent development of environmental approaches in legal instruments and policies, including, e.g., the ecosystem approach to fisheries.⁶⁷¹ The fact that RFMOs in theory may expand their original management mandates to safeguard, e.g., entire ecosystems in which the target species resides may ultimately be regarded as constraining the right to fish on the high seas of non-members operating in the RFMOs' regulatory areas. Such

⁶⁶⁸ Article 10 of the 1995 UN Fish Stocks Agreement lists a wide range of functions to be performed by RFMOs, and it is beyond doubt that some states might not be interested in participating in such organizational work or are restricted from taking part in the daily operations of the organization due to, e.g., economic factors and the potential expenses.

⁶⁶⁹ An interesting question, at least at a theoretical level, arises if there is a situation where several states only seek cooperative status in an RFMO to gain access to the relevant resources. It is obvious that each RFMO needs formal member states to "steer the wheel," but what happens if there are only a few formal members and a large number of cooperating non-contracting parties? Should the formal members then be compensated for their organizational work and for carrying the main burden? These questions are relevant to issues discussed in the literature regarding the desire to maintain as much power within the RFMOs as possible, e.g., through the founding member states (referred to as the "founding fathers" by Erik Molenaar) seeking to control the work of the RFMO, in view of their status as the first official members who negotiated its establishment. For further information on the issue of the "founding fathers," see e.g., Erik J. Molenaar, "Participation in Regional Fisheries Management Organizations." Page 110.

⁶⁷⁰ See Section 3.2.2 for more information regarding the freedom of fishing in areas beyond national jurisdiction.

⁶⁷¹ The content, status, and practical consequences of the adoption of the ecosystem approach to fisheries is discussed in more detail in Chapter 4 of this thesis.

a scenario clearly contradicts Article 4 of the 1995 UN Fish Stocks Agreement, which establishes that the Agreement shall not prejudice the rights pursuant to the Law of the Sea Convention.⁶⁷² However, increased scientific knowledge of, e.g., species interactions and habitats is vital for the conservation and management of the targeted species. It thus seems reasonable to argue that the operationalization of environmental approaches including the ecosystem approach to fisheries, through the adoption of conservation and management measures by RFMOs, may represent a key feature of the management of the targeted fish stocks. Despite limiting potential access to relevant non-target species, such conservation and management measures should not be regarded as a possible breach of Article 4 of the 1995 UN Fish Stocks Agreement. The non-members operating in the regulatory area of the relevant RFMO must abide by such measures or seek membership or cooperative status to exploit the resources in the given circumstances.⁶⁷³

The pursuit of formal membership of an RFMO is conditioned by the wording “having a real interest” in accordance with Article 8(3) of the 1995 UN Fish Stocks Agreement. It is consequently necessary to establish what this formal criterion entails and how it is put into practice by the existing RFMOs.

The substantive content of the requirement of “having a real interest” is not defined in the 1995 UN Fish Stocks Agreement, but it clearly represents a threshold for entrance into an RFMO. The requirement is preceded by an obligation for “States fishing for the stocks on the high seas and relevant coastal States” to become parties to the RFMOs or apply the conservation and management measures established by the RFMOs.⁶⁷⁴ States fishing for stocks that an RFMO has competence to regulate will naturally satisfy the requirement of “having a real interest.” The reference to “relevant coastal States” implies that states with

⁶⁷² Article 8(4) of the 1995 UN Fish Stocks Agreement states: “Only those States which are members of such an organization...or which agree to apply the conservation and management measures established by such organization...shall have access to the fishery resources to which those measures apply.”

⁶⁷³ The legal scope of adopted conservation and management measures by RFMOs is subject to closer analysis in Section 5.2.4. See also Chapter 4, where it was established that Article 192 of the Law of the Sea Convention covers protection of ecosystems, and that states are obliged to protect and preserve these systems in accordance with the Convention.

⁶⁷⁴ 1995 UN Fish Stocks Agreement. Article 8(3).

adjacent maritime zones bordering the relevant areas of the high seas would have a “real interest” in the work of the RFMOs, particularly in situations where straddling or highly migratory fish stocks occur both within the exclusive economic zones of the coastal state and on the high seas.⁶⁷⁵ Article 8(3) of the Fish Stocks Agreement thus seeks to ensure coherence in resource management and conservation through compatibility requirements,⁶⁷⁶ which is also naturally a vital part of protecting and conserving marine ecosystems. The literature on ecosystem management highlights how the zonal architecture of the Law of the Sea framework does not consider the natural borders of ecosystems and disregards how they are affected by the “artificial division” of the seas.⁶⁷⁷ In this way, giving effect to Article 8(3) of the Fish Stocks Agreement by adopting compatibility measures is an important step to conserve marine ecosystems.

One may reasonably assume that “the decision to include the requirement of a real interest must have been motivated by a desire to exclude States without it.”⁶⁷⁸ The requirement of a real interest may consequently be regarded as having a dual application: Article 8(3) of the 1995 UN Fish Stocks Agreement cannot be used by the present member states of an RFMO as a mechanism to exclude potential new participants with interest in the fisheries, and the requirement ensures that the RFMO is not open to all states unless they have a recognizable

⁶⁷⁵ A study of the relevant practice by RFMOs has been undertaken by Takei, which reveals that RFMOs generally “allow participation in the organization or the decision-making body by coastal States regardless of engagement in exploitation or research.” One exception is the 1978 North Atlantic Fisheries Organization (NAFO) which explicitly requires members to currently participate/or expect to participate in the fisheries. See Yoshinobu Takei, *Filling Regulatory Gaps in High Seas Fisheries: Discrete High Seas Fish Stocks, Deep-Sea Fisheries, and Vulnerable Marine Ecosystems*. Page 65.

⁶⁷⁶ See also Section 4.3.2, where it was established that Article 7 of the 1995 UN Fish Stocks Agreement clearly emphasizes that states are obliged to ensure that conservation and management measures “do not result in harmful impact on the living marine resources as a whole,” thereby reflecting a requirement of compatibility.

⁶⁷⁷ César Soares de Oliveira, “One jurisdiction away from a healthier ecosystem? The impacts of jurisdictional zones on the health of large marine ecosystems,” *Marine Policy* 155 (1 September 2023): 105698, <https://doi.org/10.1016/j.marpol.2023.105698>, page 1, Froukje Maria Platjouw, *Environmental Law and the Ecosystem Approach: Maintaining Ecological Integrity through Consistency in Law*, pages 114-116 and Elise Johansen et al., “A Marine-Biology-Centric Definition of Ocean Connectivity and the Law of the Sea,” *Arctic Review on Law and Politics* 12 (23 November 2021): 190–206, <https://doi.org/10.23865/arctic.v12.3292>, page 201.

⁶⁷⁸ Erik J. Molenaar, “Participation in Regional Fisheries Management Organizations.” Page 114.

interest in the fisheries governed by the organization.⁶⁷⁹ The origin of the concept is not clear but may “have been inspired by the lack of any substantive restrictions on membership of the International Whaling Commission...which has resulted in a situation where the whaling States are often outnumbered by non-user States” in the decision-making processes.⁶⁸⁰ As will be illustrated in Chapter 7, the interests of the member states of the tuna RFMOs heavily influence the outcome of decision-making processes and as illustrated by the existing literature, political priorities may be regarded as “the essential ingredient” when RFMOs adopt their conservation and management measures.⁶⁸¹ The dual application of Article 8(3) may consequently be regarded as safeguarding the diverse interests at stake by specifying which states ought to have a say in the internal negotiations in the RFMOs.

A relevant question is whether a common concern regarding resource conservation and management fulfills the condition of “having a real interest.”⁶⁸² Kim argues that this is not the case by establishing that the Court in the *Case Concerning Certain German Interests in Polish Upper Silesia* emphasized that there exists no *ipso facto* openness of multilateral instruments by stating that “it is, however...impossible to presume the existence of such a right [to adhere to treaties].”⁶⁸³ Further, Kim bases his argument on the fact that the International Law Commission did not declare a general right for states to become parties to treaties unless the treaty provisions permit this.⁶⁸⁴ In this way, “although all states have the obligation to protect the marine environment and conserve marine living resources, this does not automatically

⁶⁷⁹ Michael W. Lodge et al., *Recommended Best Practices for Regional Fisheries Management Organizations: Report of an Independent Panel to Develop a Model for Improved Governance by Regional Fisheries Management Organizations*. Page 5.

⁶⁸⁰ Erik J. Molenaar, “Participation in Regional Fisheries Management Organizations.” Page 114.

⁶⁸¹ See, e.g., McDorman, “Implementing Existing Tools: Turning Words Into Actions – Decision-Making Processes of Regional Fisheries Management Organisations (RFMOs).” Page 441.

⁶⁸² This question is discussed in more detail in Hyun Jung Kim, “The Return to a Mare Clausum Through Regional Fisheries Management Organizations?” *Ocean Development and International Law* 44, No. 3 (2013): 205–18, <https://doi.org/10.1080/00908320.2013.808931>. Page 208.

⁶⁸³ See *Case Concerning Certain German Interests in Polish Upper Silesia* (Germany v. Poland), P.C.I.J (Series A), No. 7 (1926), on pages 28-29 and Kim, “The Return to a Mare Clausum Through Regional Fisheries Management Organizations?” Page 208.

⁶⁸⁴ See United Nations, “Law of treaties (A/CN.4/144 and Add.1)” in *Yearbook of the International Law Commission: volume I* (1962), Pages 168-169 and Kim, “The Return to a Mare Clausum Through Regional Fisheries Management Organizations?” Page 208.

justify a general right to take part in international organizations engaged in fulfilling this obligation.”⁶⁸⁵ By contrast, several scholars argue that, e.g., an interest in conservation may be included in the scope of having a “real interest,”⁶⁸⁶ thereby broadening the scope of the qualification criterion. Balton argues that an RFMO should be open for “all States having a legitimate stake in a fishery,”⁶⁸⁷ and that this is evident as the 1995 UN Fish Stocks Agreement does not “necessarily require existing members of a regional fishery organization to allocate any fish to a new member” by virtue of Article 11 of the Agreement.⁶⁸⁸ Molenaar reinforces these arguments and emphasizes that participatory rights granted by Article 11 of the Agreement “would not only encompass the various ways of allocating fishing opportunities...but also the situation where no fishing opportunities are allocated at all.”⁶⁸⁹ This may imply that it is possible for states to seek participatory rights without desiring actual fishing opportunities.

Regardless of the scope of the condition of “having a real interest,” the practical consequence of Article 8(3) of the Fish Stocks Agreement is that only those states that are members of an RFMO, or agree to cooperate with it, have legitimate access to the relevant marine living resources in accordance with Article 8(4) of the Agreement. The fact that the exploitation of resources is *de facto* constrained by Article 8(3) creates several issues.

The first practical issue is how the regulatory powers of the RFMOs are intricately connected with the freedom of the seas-doctrine, which was presented in Section 3.2.2 of this thesis. The inclusion of the requirement of “having a real interest” may ultimately be regarded as imposing limitations on the freedom of fishing in accordance with Article 87 of the Law of the

⁶⁸⁵ Kim, “The Return to a Mare Clausum Through Regional Fisheries Management Organizations?” Page 208.

⁶⁸⁶ Takei has conducted a literature review presented on page 64 in Yoshinobu Takei, *Filling Regulatory Gaps in High Seas Fisheries: Discrete High Seas Fish Stocks, Deep-Sea Fisheries, and Vulnerable Marine Ecosystems*.

⁶⁸⁷ David A. Balton, “Strengthening the Law of the Sea: The New Agreement on Straddling Fish Stocks and Highly Migratory Fish Stocks,” *Ocean Development and International Law* 27, Nos. 1–2 (1996): 125–51, <https://doi.org/10.1080/00908329609546078>. Page 139.

⁶⁸⁸ *Ibid.* Page 139, Footnote. 97. Article 11 of the 1995 UN Fish Stocks Agreement lists several factors that should be considered when the “nature and extent” of the participatory rights for new members of an RFMO are to be decided by the organization.

⁶⁸⁹ E. J. Molenaar, “Regional Fisheries Management Organizations: Issues of Participation, Allocation and Unregulated Fishing,” in *Ocean Management in the 21st Century: Institutional Frameworks and Responses*, eds. A. G. Oude Elferink and D. R. Rothwell (Martinus Nijhoff Publishers, 2004), 69–89. Page 79.

Sea Convention, and the right for all states to conduct fisheries in areas beyond national jurisdiction in accordance with Article 116. Kim points out that “admission to an RFMO is important for maintaining the *mare liberum*.”⁶⁹⁰ A relevant question is thus whether the requirement of a real interest in Article 8(3) of the 1995 UN Fish Stocks Agreement is consistent with the Law of the Sea Convention if it is utilized to block access of new entrants into the RFMOs.⁶⁹¹

The main issue with the requirement of having a real interest is that its content and scope have not formally been defined in any legal instruments. This leads to a scenario where it is not possible to establish inter-regional uniformity between the existing RFMOs.⁶⁹² Will it be sufficient if a state merely expresses potential interest in the fisheries or must there be active actions underpinning the interest? The report produced by Chatham House on recommended best practices for RFMOs emphasizes that membership should be open to states with coastlines adjacent to the regulatory area of the relevant RFMO, to states that have conducted fisheries in this area in the recent past or at the time when the application for membership is submitted, and finally to any distant water state that has responsibility for autonomous territories within the regulatory area.⁶⁹³ Common to all these three scenarios is that the state has a present interest in the regulation of the relevant fisheries either by concrete activities undertaken in the regulatory area of the relevant RFMO or through territorial sovereignty or jurisdiction in areas bordering its regulatory area. An interesting question identified in the literature is how the issue of “new entrants,” not engaged in the fisheries at the present time but with an intent to do so in the future, should be treated when considering the requirement

⁶⁹⁰ Kim, “The Return to a Mare Clausum Through Regional Fisheries Management Organizations?” Page 206.

⁶⁹¹ Article 4 of the 1995 UN Fish Stocks Agreement states: “Nothing in this Agreement shall prejudice the rights, jurisdiction and duties of States under the Convention” and “the Agreement shall be interpreted and applied in the context of and in a manner consistent with the Convention.” The issue of the relationship between the freedom of the seas-doctrine and the requirement of real interest is also addressed by Molenaar on page 115 in Erik J. Molenaar, “Participation in Regional Fisheries Management Organizations.”

⁶⁹² Erik J. Molenaar, “Participation in Regional Fisheries Management Organizations.” Page 115.

⁶⁹³ Michael W. Lodge et al., *Recommended Best Practices for Regional Fisheries Management Organizations: Report of an Independent Panel to Develop a Model for Improved Governance by Regional Fisheries Management Organizations*. Page 72.

of having a real interest.⁶⁹⁴ Molenaar argues that the RFMOs may be inclined to refuse membership in such scenarios,⁶⁹⁵ reinforcing the argument that a State should have a direct interest based on either active fishing operations or geographical proximity to the regulatory area of the organization at the time of its establishment.

The member states of an RFMO have authority to block the entrance of new states into these organizations by applying the requirement of having a real interest, as laid down in Article 8(3) of the Fish Stocks Agreement. This action may be taken in situations where refusal of formal membership will benefit the present member states, such as in questions of allocation of quotas.⁶⁹⁶ If the total allowable catch (TAC) is to be divided between all member states, the proportion per state might decrease as the number of entrants into the RFMO increases. Theoretically, similar scenarios may occur if states are seeking formal membership in RFMOs based on their strong positions on environmental protection if the present member states do not share their position. Another relevant example is situations where there are political tensions between a current member state and a potential new entrant to the relevant RFMO.⁶⁹⁷ As will be illustrated in Section 6.6 of this thesis, the refusal to grant Taiwan membership of the IOTC may ultimately have influenced the RFMOs' ability to implement and operationalize the ecosystem approach to fisheries. As RFMOs have been confronted with their apparent reluctance to allow new entrants in the past, "many organizations have sought to compensate nonmember states by granting them the status of 'cooperating non-

⁶⁹⁴ See, e.g., Serdy on this topic. Andrew Serdy, *The New Entrants Problem in International Fisheries Law*, vol. 111, Cambridge Studies in International and Comparative Law (Cambridge University Press, 2016), <https://doi.org/10.1017/CBO9780511736148>

⁶⁹⁵ Molenaar, "Participation in Regional Fisheries Management Organizations," page 114. However, this intricate question will not be further elaborated upon in this PhD due to the scope of the study. For more information on this question, see, e.g., Serdy, *The New Entrants Problem in International Fisheries Law*.

⁶⁹⁶ The allocation of quotas is one of the key tasks of RFMOs in accordance with Article 10(b) of the 1995 UN Fish Stocks Agreement.

⁶⁹⁷ An illustrative example is how China's veto has blocked Taiwanese participation in the Indian Ocean Tuna Commission (IOTC), despite Taiwan's extensive fishing in the regulatory area of the RFMO. See, e.g., Peter S. C. Ho, "The Impact of the U.N. Fish Stocks Agreement on Taiwan's Participation in International Fisheries Fora," *Ocean Development & International Law* 37, No. 2 (August 2006): 133–48, <https://doi.org/10.1080/00908320600632108>.

contracting party.”⁶⁹⁸ This status normally grants non-members access to resources and participatory rights in meetings of the RFMO.⁶⁹⁹ However, the status as a “cooperating non-contracting party” does not empower the state concerned with decision-making powers, which means that their right to, e.g., allocations or regulatory powers to adopt conservation measures remains solely in the hands of the formal member states.

Another relevant aspect of this debate is the fact that the 2006 Review Conference on the 1995 UN Fish Stocks Agreement established that the parties to the Agreement clearly gave priority to states seeking formal membership in RFMOs. It was observed that the status of cooperating non-contracting party was frequently used as an interim step leading to formal membership,⁷⁰⁰ and it was clearly stated that “cooperating status should in general be temporary” and “those with a real interest in the fisheries in question should join RFMOs where this is possible.”⁷⁰¹ It was also recommended that RFMOs provide incentives to encourage non-members to seek to achieve full membership.⁷⁰² The enthusiasm to include new members expressed at the review conference was prompted by problems of non-compliance and unregulated fishing of non-members, consequently undermining the

⁶⁹⁸ Kim, “The Return to a Mare Clausum Through Regional Fisheries Management Organizations?” Page 209. Kim identifies that RFMOs established after the adoption of the 1995 UN Fish Stocks Agreement have included this “category” of “membership” in their founding instruments, including, e.g., the WCPFC and SEAFO. Other organizations have established this category for interested states by adopting binding decisions, including the IATTC, the ICCAT, the IOTC, and the CCSBT. See note 42 on page 215 for a more detailed description of the issue.

⁶⁹⁹ See Kim, “The Return to a Mare Clausum Through Regional Fisheries Management Organizations?” Page 209 for more information regarding the status of “Cooperating Non-Contracting Parties.”

⁷⁰⁰ Yoshinobu Takei, “UN Fish Stocks Agreement: 2006 Review Conference - Current Legal Developments.” *The International Journal of Marine and Coastal Law* 21, No. 4 (2006): 551–68. Page 559.

⁷⁰¹ Outcome of the Review Conference, New York, 26 May 2006, reproduced in Annex of the Conference Report, para. 24 as presented in footnote 51 in Yoshinobu Takei, “UN Fish Stocks Agreement: 2006 Review Conference - Current Legal Developments.” Page 559.

⁷⁰² See Section B (4) of Annex to UN General Assembly, “Report of the Resumed Review Conference on the Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea of 10 December 1982 Relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks,” A/CONF.210/2016/5, 2016. Takei also discusses this issue in Yoshinobu Takei, “UN Fish Stocks Agreement: 2006 Review Conference - Current Legal Developments,” on page 559 and illustrates how this has been carried out by providing an example from the South-East Atlantic Fisheries Organization. Japan’s application to become a cooperating non-contracting party was refused as the parties “considered that states fishing in the area should be involved in the decision-making process and that benefits should be matched by obligations such as budgetary contributions.”

effectiveness of the conservation and management measures adopted by the RFMOs.⁷⁰³ The integrity of RFMOs' conservation and management measures may thus be strengthened when all states fishing in the regulatory area of an RFMO are formal members of the organization. This will naturally also benefit the conservation of marine ecosystems and non-target species when RFMOs adopt measures to conserve them.

A relevant reference to be made in this regard is to the literature on environmental co-management, which is defined as “the collaborative and participatory process of regulatory decision-making among representatives of user groups, government agencies and research institutions.”⁷⁰⁴ Jentoft et al. describe how “participation by users enhances the legitimacy of the regulatory regime, and hence, compliance.”⁷⁰⁵ Although referring to domestic fisheries management, the concept of environmental co-management provides some valuable insights into how compliance may be achieved by participation in decision-making. By granting all states a “seat at the table” in the RFMOs, compliance with their adopted measures is also likely to increase.⁷⁰⁶

Having established the characteristic features of RFMOs, which states may pursue membership in these organizations and how RFMOs ought to treat such membership applications, it is now time to shift the focus towards the legal status of conservation and management measures adopted by RFMOs. It is important to explore the normative status of RFMOs' conservation and management measures in this thesis, as the case study will assess how the management objective of minimizing catch by lost, abandoned, or otherwise discarded fishing gear established in the context of the ecosystem approach to fisheries is implemented and operationalized in and by the tuna RFMOs. To enable an assessment of whether the member states of these organizations may be in breach of their international

⁷⁰³ Outcome of the Review Conference, New York, 26 May 2006, reproduced in Annex of the Conference Report, para. 25 as presented in footnote 51 in Yoshinobu Takei, “UN Fish Stocks Agreement: 2006 Review Conference - Current Legal Developments.” Page 559.

⁷⁰⁴ Svein Jentoft, Bonnie J. McCay, and Douglas C. Wilson, “Social theory and fisheries co-management,” *Marine Policy* 22, No. 4 (1 July 1998): 423–36, [https://doi.org/10.1016/S0308-597X\(97\)00040-7](https://doi.org/10.1016/S0308-597X(97)00040-7). Pages 423-424.

⁷⁰⁵ Ibid. Page 423.

⁷⁰⁶ As was emphasized in Outcome of the Review Conference, New York, 26 May 2006, reproduced in Annex of the Conference Report, para. 25.

obligations, it is necessary to clarify the normative status of RFMOs' conservation and management measures.

5.2.4 What is the Legal Status of Conservation and Management Measures Adopted by RFMOs?

Article 1(1)(b) of the 1995 UN Fish Stocks Agreement defines conservation and management measures as “measures to conserve and manage one or more species of living marine resources that are adopted and applied consistent with the relevant rules of international law as reflected in the Convention and this Agreement.” No further guidance regarding the normative status of such measures is provided in the provision.

However, Article 10(a) of the Fish Stocks Agreement emphasizes that the member states of an RFMO shall “agree on and comply with conservation and management measures.”⁷⁰⁷ It is thus evident that these organizations possess the ability to adopt conservation and management measures for their member states and cooperating non-contracting parties. The States are further obliged to “comply with” these measures, implying that measures established in accordance with Article 10(a) are legally binding in nature. This view is also supported by the relevant literature.⁷⁰⁸ Henriksen et al. argue that since non-members of an RFMO are required to comply with the measures in accordance with Article 8(3), “there is no reason why they should not be binding on the States adopting them.”⁷⁰⁹ Further, flag states are obliged to implement the relevant conservation and management measures in accordance with Articles 18 and 19 of the 1995 UN Fish Stocks Agreement,⁷¹⁰ which support “the interpretation that the conservation and management measures are intended to be legally

⁷⁰⁷ The scope of Article 10(a) will be further elaborated in Section 5.2.5.

⁷⁰⁸ See, e.g., Molenaar, “Regional Fisheries Management Organizations,” page 86, Sarika Cullis-Suzuki, and Daniel Pauly, “Failing the High Seas: A Global Evaluation of Regional Fisheries Management Organizations,” page 1036 and Bianca Haas et al., “Factors Influencing the Performance of Regional Fisheries Management Organizations,” page 2.

⁷⁰⁹ Tore Henriksen, Geir Hønneland, and Are Sydnæs, *Law and Politics in Ocean Governance: The UN Fish Stocks Agreement and Regional Fisheries Management Regimes*. Page 37.

⁷¹⁰ The concept of flag states was introduced in Section 3.2.1 of this thesis.

binding.”⁷¹¹ Consequently, it is clear that conservation and management measures adopted by RFMOs are legally binding for their member states and cooperating non-contracting parties. As established in Section 3.2.5, the ‘duty to cooperate’ encompassed in the Law of the Sea Convention also obliges non-members to comply with these measures.⁷¹² Løbach et al. consequently state that the “authority to adopt international legally binding conservation and management measures concerning fishing operations and associated activities” make RFMOs “the most important building blocks of fisheries management.”⁷¹³

Thus, it is beyond doubt that the adopted conservation and management measures are legally binding for the states concerned. But are they also considered as sources of international law? Recalling the presentation in Section 2.2 of this thesis, Article 38 of the ICJ Statutes recognizes international conventions, international custom and general principles of law recognized by civilized nations as sources of international law.⁷¹⁴ Consequently, conservation and management measures adopted by an RFMO do not fall under the categories in Article 38. However, they represent legal acts creating obligations for the states concerned, and Scott describes them as examples of unconventional law-making enabling a strengthening of the legal framework due to their legal nature and normative status.⁷¹⁵ On a general basis, the adopted conservation and management measures will have limited scope of application, only concerning the formal members, cooperating non-contracting parties, and other states fishing for the relevant stocks in the regulatory area of the RFMO. But as emphasized by Molenaar,

⁷¹¹ Tore Henriksen, Geir Hønneland, and Are Sydnæs, *Law and Politics in Ocean Governance: The UN Fish Stocks Agreement and Regional Fisheries Management Regimes*. Page 38. In accordance with Article 18 of the 1995 UN Fish Stocks Agreement, a flag state shall take measures to ensure that “vessels flying its flag comply with...regional conservation and management measures”, and Article 19 of the 1995 UN Fish Stocks Agreement states: “A State shall ensure compliance by vessels flying its flag with...regional conservation and management measures for straddling fish stocks and highly migratory species.”

⁷¹² See Section 3.2.5 which explored how Articles 117 and 118 of the Law of the Sea Convention impose an obligation to cooperate in high seas fisheries, including through complying with conservation and management measures established by RFMOs.

⁷¹³ Terje Løbach et al., “*Regional Fisheries Management Organizations and Advisory Bodies: Activities and Developments, 2000–2017*.” Page 7.

⁷¹⁴ Statute of the International Court of Justice. Article 38 (1).

⁷¹⁵ See Karen N. Scott, “Unconventional Lawmaking in the Law of the Sea and Area-Based Conservation Measures,” in *Unconventional Lawmaking in the Law of the Sea*, ed. Natalie Klein (Oxford University Press, 2022), 309–33.

pro-active and pioneering measures might subsequently be elevated to become global components of international law, illustrated by the progressive development of the “*de facto* ecosystem approach to fisheries (EAF) management that was pioneered in the CAMLR Convention – to be subsequently included in the 1995 UN Fish Stocks Agreement.”⁷¹⁶

Having established that the conservation and management measures adopted by RFMOs are legally binding for their member states, cooperating non-contracting parties and other states interested in exploiting the marine species in question, it is time to analyze the various functions of RFMOs. The following section will assess the functions that RFMOs are to fulfill, focusing on those relevant to the implementation and operationalization of the ecosystem approach to fisheries.

5.2.5 What are the Functions of RFMOs Relevant to Implementing and Operationalizing the Ecosystem Approach to Fisheries?

Section 3.2.5 established that the Law of the Sea Convention introduced the concept of regional cooperation in fisheries management through “subregional or regional fisheries organizations” in accordance with Article 118, with the aim to take “the measures necessary for the conservation of the living resources concerned.” How such measures are to be adopted and implemented is accounted for in Article 119 of the Convention.⁷¹⁷ The subregional or regional bodies are competent and responsible for “determining the allowable catch and establishing other conservation measures for the living resources in the high seas.”⁷¹⁸ The regional bodies are also to function as a forum where the states concerned can agree on relevant conservation measures for the stocks of interest, including the exchange of data and scientific information relevant to their conservation.⁷¹⁹ However, no further guidance on the

⁷¹⁶ Molenaar, “Regional Fisheries Management Organizations.” Page 84. Another example highlighted by Molenaar is the development of the concept of IUU fishing by the CCAMLR.

⁷¹⁷ See Section 3.3.4 for more information regarding the “technical formula” encompassed in Article 119.

⁷¹⁸ Law of the Sea Convention. Article 119(1).

⁷¹⁹ Law of the Sea Convention. Article 119(2).

central question of the scope of the functions of the RFMOs is provided in the Law of the Sea Convention.

This lack of clarity was remedied with the adoption of the 1995 UN Fish Stocks Agreement, which describes the two main functions of RFMOs, i.e., their scientific and management (regulatory) functions in more detail.⁷²⁰ The RFMOs are to perform a wide range of functions in accordance with the Agreement, which may be characterized as formal and material obligations and procedural obligations.⁷²¹ As this thesis aims to analyze how the tuna RFMOs are implementing the ecosystem approach to fisheries, primarily focusing on the conservation of non-target species, it is crucial to establish the existing material obligations relevant to their conservation and how the obligations may be fulfilled through procedural actions.

The material principles for cooperation stem from the overarching objectives of the Agreement, which are to “ensure the long-term conservation and sustainable use of straddling fish stocks or highly migratory fish stocks.”⁷²² The objectives are complemented by the general principles for conservation and management in Article 5 of the Agreement, and an obligation to ensure compatibility of the adopted management and conservation measures in Article 7.⁷²³ The scope of the material obligations stated in Article 5 were analyzed in detail in Section 4.3.2, where it was established that states ought to fulfill a range of obligations to conserve marine ecosystems and non-target species. Section 4.4.2 further explored the normative framework applicable to minimize catch by lost, abandoned, or otherwise discarded fishing gear, where it was also established that the framework encompasses “generally

⁷²⁰ DOALOS/UNITAR, “Briefing on Developments in Ocean Affairs and the Law of the Sea 20 Years after the Conclusion of the United Nations Convention on the Law of the Sea: Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea of 10 December 1982 Relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks (UN Fish Stocks Agreement)” (UN Headquarters, New York, 2002), https://www.un.org/depts/los/convention_agreements/convention_20years/1995FishStockAgreement_ATahindro.pdf. Page 11.

⁷²¹ Tore Henriksen, Geir Hønneland, and Are Sydnes, *Law and Politics in Ocean Governance: The UN Fish Stocks Agreement and Regional Fisheries Management Regimes*. Pages 22 onwards and 35 onwards.

⁷²² 1995 UN Fish Stocks Agreement. Article 2.

⁷²³ Some of the principles listed in Article 5 are given additional substance through clarification of the obligations in other provisions of the 1995 UN Fish Stocks Agreement. One example is the application of the precautionary approach as outlined in Article 5(c), which is further developed in Article 6 and Annex II to the Agreement.

recommended international minimum standards.” The following presentation will consequently focus on the procedural functions of the RFMOs, including decision-making processes and how the 1995 UN Fish Stocks Agreement facilitates cooperation between the states.

Article 10 of the Agreement provides a detailed list of the procedural functions of RFMOs relevant to the implementation of the ecosystem approach to fisheries. These functions include preparedness before decisions are made (such as sufficient scientific research), making decisions for, e.g., management measures and allocations, and the monitoring of the implementation of the various decisions.⁷²⁴

The obligation to “adopt and apply any generally recommended international minimum standards for the responsible conduct of fishing operations” in accordance with Article 10(c) of the 1995 UN Fish Stocks Agreement was introduced in Section 4.4.2, which established that the FAO Code of Conduct and its subsequent implementation guidelines may be regarded as such standards relevant to the operationalization of, e.g., the ecosystem approach to fisheries. However, as emphasized by Andreassen, Article 10(c) is also an important building block in relation to how the implementation of the ecosystem approach to fisheries should be commenced.⁷²⁵ The provision clearly calls for implementation of generally recommended minimum standards at the transnational level through cooperation in RFMOs.⁷²⁶ Thus, states ought to implement the measures identified in Section 4.4.3 to minimize catch by lost, abandoned, or otherwise discarded fishing gear to fulfill their duty to cooperate in accordance with Article 10 of the 1995 UN Fish Stocks Agreement.⁷²⁷

Article 10(d) of the Agreement obliges the member states to “obtain and evaluate scientific advice, review the status of stocks and assess the impact of fishing on non-target and associated or dependent species.” Article 10(d) expressly stipulates an obligation to assess the

⁷²⁴ Tore Henriksen, Geir Hønneland, and Are Sydnes, *Law and Politics in Ocean Governance: The UN Fish Stocks Agreement and Regional Fisheries Management Regimes*. Page 37.

⁷²⁵ Ingrid Solstad Andreassen, “The Role of Tuna RFMOs in Combating ‘Ghost Fishing’: Where is the Catch?”

⁷²⁶ *Ibid.*

⁷²⁷ *Ibid.* See also Boyle and Redgwell, *Birnie, Boyle & Redgwell’s International Law and the Environment*. Page 755.

impact of the relevant fisheries on non-target species. The provision may thus be regarded as encompassing multispecies management, thus aligning with the normative requirements of the ecosystem approach to fisheries.⁷²⁸ However, the obligation is limited to scientific assessments.⁷²⁹ This may be explained by the origins of the legal instrument, representing an implementation agreement to the Law of the Sea Convention aiming to ensure conservation and management of targeted straddling and highly migratory fish stocks.⁷³⁰ Despite a lack of other references to ecological linkages (and similar concepts) or non-target species in Article 10, this provision is complemented by the general material principles laid down in Article 5 of the Agreement.⁷³¹

Article 10(e) emphasizes that the member states shall “agree on standards for collection, reporting, verification and exchange of data on fisheries,” covering the obligation to share scientific information in Article 119(2) of the Law of the Sea Convention.⁷³² Arguably, the clear-cut reference to “fisheries” in the provision may imply that “collection, reporting, verification and exchange of data” also encompasses how fisheries impact, e.g., non-target species and the environment.

Further, Article 10(f) contains an obligation to “compile and disseminate accurate and complete statistical data...to ensure that the best scientific evidence is available.” This obligation shall be executed in accordance with the procedures for the collection and sharing of data described in Annex I to the Agreement.⁷³³ Article 10(g) makes an explicit reference to

⁷²⁸ See Section 4.2.4 for a presentation of the various operational levels of the ecosystem approach to fisheries in this study.

⁷²⁹ Olav Schram Stokke, *Governing High Seas Fisheries: The Interplay of Global and Regional Regimes* (Oxford University Press, 2001). Page 338.

⁷³⁰ See Article 4 of the 1995 UN Fish Stocks Agreement. An assessment of the relationship between the Law of the Sea Convention and the 1995 UN Fish Stocks Agreement was provided in Section 3.3.2 of this thesis.

⁷³¹ Article 5 of the 1995 UN Fish Stocks Agreement lists several general principles, including, e.g., the application of the precautionary approach, assessments of impacts of fishing on species belonging to the same ecosystem as the targeted stocks, protection of marine biodiversity, etc. See Section 4.3.2 for a comprehensive analysis of the scope and implications of Article 5 of the 1995 UN Fish Stocks Agreement relevant to this thesis.

⁷³² Article 119(2) of the Law of the Sea Convention spells out: “Available scientific information, catch and fishing effort statistics, and other data relevant to the conservation of fish stocks shall be contributed and exchanged on a regular basis through competent international organizations, whether subregional, regional or global.”

⁷³³ Annex I to the 1995 UN Fish Stocks Agreement comprises several articles regarding standards for the collection and sharing of data. Annex I describe a step-by-step basis for, e.g., the gathering, verification, and use

“relevant research,” but the scope and content of the term is not further specified in the provision. A relevant question is whether RFMOs are obliged to “promote and conduct” research regarding ecosystems in which the targeted species resides. As discussed in more detail in Chapter 4, there is no doubt that, e.g., the ecological linkages between target species, non-target species and their habitats are vital for the abundance of the targeted stocks. Thus, it is reasonable to assume that scientific research assessing the various features of ecosystems may be considered as “relevant research” for RFMOs in accordance with Article 10(g). Increased scientific knowledge about the interconnectedness of targeted stocks and the ecosystems they belong to implicitly indicates a need for holistic management approaches. This view is also emphasized in Article 3(c) of Annex I to the 1995 UN Fish Stocks Agreement, which makes explicit reference to “ecological studies” and “research on environmental factors affecting stock abundance” when examples of “other relevant research” are listed. Interestingly, scientific research regarding the various features of the ecosystems will naturally be commenced with the aim to conserve and manage the targeted fish stocks, not the relevant ecosystems, when the provision is assessed in conjunction with the overarching objectives of the 1995 UN Fish Stocks Agreement. However, such scenarios represent a manifestation of the core of the operational level of the ecosystem approach to fisheries in this thesis, which focuses on targeted fish stocks but incorporates ecosystem considerations, ecological factors, and multispecies interactions to conserve these stocks.⁷³⁴ Undoubtedly, the overall conservation of the relevant ecosystems will benefit from the scientific assessments listed in Article 3(c) of Annex I. Despite its rather narrow focus on conserving the targeted stocks, the actual conservation of these stocks will depend on the sustainability of the ecosystems that sustain them.

Article 10(h) reflects the implementation of the relevant conservation and management measures adopted by the RFMOs by stating that the member states shall “establish appropriate cooperative mechanisms for effective monitoring, control, surveillance and

of scientific data in high seas fisheries management. Article 10(f) also ensures that the allocation of quotas and/or fishing efforts for the targeted stocks are based on accurate scientific data before such allocations are granted, ensuring that the targeted stocks will not peak at their MSY reference points.

⁷³⁴ See Section 4.2.4, where the various levels of operationalization of the ecosystem approach in the fisheries sector were presented and discussed in more detail.

enforcement,” also encompassing an obligation to ensure compliance with measures adopted to conserve, e.g., features of the ecosystem once such measures are adopted by RFMOs. Further, Article 10(j) reflects procedural elements of the cooperation by emphasizing that states shall “agree on decision-making procedures which facilitate the adoption of conservation and management measures in a timely and effective manner.” The wording “agree on” implies that the provision is of relevance when states cooperate to establish new RFMOs.⁷³⁵ The question of what ought to be considered “timely and effective” is not clarified in the provision, but a natural understanding is that RFMOs (both newly established and existing ones) should at least make efforts to adopt relevant measures when scientific evidence indicates that this is necessary for the conservation and management of the targeted stocks. However, as will be illustrated in Chapter 6, the vagueness of the expression “timely and effective” may have led to the development of different approaches to decision-making in the existing RFMOs.⁷³⁶ At first glance, this seems to undermine the legislative powers of RFMOs, as several of them have mandatory consensus-based decision-making mechanisms, where rejection by a single member state is sufficient to prevent the adoption of relevant measures in a “timely and effective manner.”⁷³⁷ As stated by Nandan and Lodge, this approach might eventually defer the adoption of management measures until “a crisis is approaching.”⁷³⁸ It should nevertheless be emphasized that consensus-based decision-making procedures have some positive aspects, such as the fact that the decisions are likely to be respected and complied with by all the member states of the RFMO.

⁷³⁵ Tore Henriksen, “Allocation of Fishing Rights: Principles and Alternative Procedures,” in *Challenges of the Changing Arctic: Continental Shelf, Navigation, and Fisheries*, eds. Myron H. Nordquist, John Norton Moore, and Ronán Long, 1st ed., Vol. 19, Center for Oceans Law and Policy (Boston: BRILL, 2016), <https://doi.org/10.1163/9789004314252>. <https://doi.org/10.1163/9789004314252>. Page 549.

⁷³⁶ Unterweger discusses the different approaches adopted by the Tuna RFMOs on page 133 onwards. See Ingo Unterweger, *International Law on Tuna Fisheries Management: Is the Western and Central Pacific Fisheries Commission Ready for the Challenge?* (Nomos Verlag, 2015) for more information.

⁷³⁷ An illustrative example is the decision-making procedures of the CCSBT, where each member state present at the meeting has one vote and where decisions must be adopted unanimously by all its members. See Article 7 of the CCSBT Convention for more information. Another example is the IATTC, which requires a consensus on decisions on allocation of catch, capacity or fishing efforts. See the IATTC Antigua Convention, Article IX.1.

⁷³⁸ Satya Nandan and Michael Lodge, “Some Suggestions Towards Better Implementation of the United Nations Agreement on Straddling Fish Stocks and Highly Migratory Fish Stocks of 1995,” *The International Journal of Marine and Coastal Law* 20, No. 3 (2005): 345–79, <https://doi.org/10.1163/157180805775098540>. Page 376.

Another common approach to decision-making in RFMOs is the adoption of decisions based on majority voting. This approach may lead to the adoption of more progressive decisions than consensus-based decision mechanisms. However, the effects of the adopted measures may in these scenarios nevertheless be weakened by objections and non-compliance from objecting parties.⁷³⁹

Consequently, it is difficult to establish which decision-making procedures will ensure adoption of conservation and management measures in a timely and effective manner in accordance with Article 10(j) of the 1995 UN Fish Stocks Agreement. It seems evident that each RFMO has its own autonomy, and that the conditions for cooperation will vary and depend on numerous factors, including, e.g., the number of member states, the geographical areas of relevance and the species covered by the management mandate of the particular RFMO. Clearly, therefore, no single format will fit the diversity represented by the different RFMOs. However, it seems reasonable to call for each organization to make an effort to adopt necessary mechanisms to ensure that their decision-making procedures are timely and effective, in order to comply with Article 10(j).⁷⁴⁰ The decision-making mechanisms adopted by the tuna RFMOs will be discussed in Chapter 6 of this thesis, along with an assessment of how these mechanisms facilitate the implementation of the ecosystem approach to fisheries.

The fact that the interests of new member states of RFMOs should be given special consideration is evident from the wording of Article 10(i), which states that the member states shall “agree on means by which the fishing interests of new members of the organization...will be accommodated.” This obligation is strengthened by the requirements in Article 11 of the 1995 UN Fish Stocks Agreement, which lists several factors to be considered in determining the extent of the participatory rights of new entrants.⁷⁴¹

⁷³⁹ Unterweger, *International Law on Tuna Fisheries Management*. Page 133.

⁷⁴⁰ An analysis of the decision-making procedures for all the Tuna RFMOs will be provided in Chapter 6 of this thesis.

⁷⁴¹ Some examples of relevant factors for the decision are the status of the stocks and the existing level of fishing efforts in the relevant fishery (litra a), the respective interests, fishing patterns and fishing practices of new members (litra b), the contributions of new members for the conservation and management of the relevant stocks and the collection of accurate scientific data (litra c). It should be emphasized that these factors come into play when the new entrant is accepted as a formal member state, but that they to some extent may also be used

Article 10(k) states that the member states of RFMOs should give effect to their cooperation by promoting peaceful settlement of disputes,⁷⁴² while Article 10(l) obliges the member states to ensure full cooperation in their implementation of recommendations and decisions of the RFMO in their respective national agencies and relevant national industries. Article 10(m) obliges the states to “give due publicity to the conservation and management measures established by the organization.” The latter ensures transparency in the decision-making processes of RFMOs by providing public information on the conservation and management measures in force in the regulatory areas of the RFMOs.⁷⁴³ This is a vital aspect of ensuring that the targeted stocks are exploited at sustainable levels, that the RFMOs are adopting measures to conserve non-target species and ecosystems in accordance with the obligations in, e.g., Article 5 of the 1995 UN Fish Stocks Agreement, and that the freedom of the high seas doctrine is safeguarded for non-members. If the measures adopted are made publicly available, non-members will easily be able to access information on which stocks they are entitled to exploit in accordance with Articles 87 and 116 of the Law of the Sea Convention, and consequently which species require cooperation with the relevant RFMO in accordance with Articles 118 and 119 of the Convention.

Having established the core functions RFMOs ought to fulfill and how these relate to the implementation and operationalization of the ecosystem approach to fisheries, some reflections are pertinent regarding the current challenges RFMOs may be experiencing in their endeavor to fulfill these obligations. As the key focus of this study is to assess how the tuna RFMOs have implemented and operationalized the ecosystem approach and to identify existing gaps in their management practice, the following section will explore constraints identified in the academic literature which may negatively affect the implementation and operationalization of the approach.

to illustrate whether a state has a “real interest” in formal membership in accordance with Article 8(3) of the 1995 UN Fish Stocks Agreement, as guiding reference points for such an interest.

⁷⁴² Peaceful settlement of disputes is subject to Part VIII of the 1995 UN Fish Stocks Agreement, and Article 10(k) makes explicit reference to this part of the provision.

⁷⁴³ See also Article 12 of the 1995 UN Fish Stocks Agreement, which obliges RFMOs to ensure transparency in their decision-making processes and other activities.

5.3 Identifying Constraints on the Functioning of RFMOs

Although the 1995 UN Fish Stocks Agreement provides an extensive list of functions to be performed by RFMOs, a recent study by Juan-Jordá et al. suggests that there exist weak institutional governance structures internally in the tuna RFMOs, which affect their ability to implement and operationalize the ecosystem approach to fisheries.⁷⁴⁴ As will be explored in subsequent chapters, the tuna RFMOs operate with diverse organizational structures, which may ultimately affect their ability to effectively implement and operationalize the ecosystem approach.

Nakatsuka highlights another issue with the organizational structures of RFMOs, which may impede effective functioning, by illustrating that there is poor communication between fisheries managers and scientists in RFMOs due to the organizational structures of these international bodies, resulting in indirect communication via the exchange of reports once a year prior to the annual meetings of the Commission.⁷⁴⁵ Two issues are highlighted: the first is that the internal structures of the RFMOs may hinder effective communication and scientific cooperation between the different units of the tuna RFMOs, while the second is that the structure of the organizations may hinder effective communication between the scientific units and the commissioners making decisions and adopting the relevant conservation and management measures for the ecosystems and non-target species.

McDorman describes the role of science in the decision-making of the RFMOs as follows: “The relationship between RFMO decision-making and scientific information, evidence, advice and

⁷⁴⁴ Juan-Jordá et al., “Report Card on Ecosystem-Based Fisheries Management in Tuna Regional Fisheries Management Organizations.”

⁷⁴⁵ Nakatsuka, Shuya. “Management strategy evaluation in regional fisheries management organizations – How to promote robust fisheries management in international settings.” *Fisheries Research* 187(1 March 2017): 127–38. <https://doi.org/10.1016/j.fishres.2016.11.018>. Page 134. Nakatsuka assesses how the organizational structure of the RFMOs may impede the adoption of management strategy evaluations in the research paper, but the arguments made in the relevant section may be transferred to other issues, such as the implementation and operationalization of the ecosystem approach to fisheries, as these arguments refer to how the institutional structures of RFMOs may prevent effective communication between scientists and managers in these organizations.

recommendations demonstrates the central challenge for RFMO decision-making to respect state sovereignty while minimising the scope of states to hinder the adoption and implementation of management and conservation measures that science and the state of stocks require.” This statement reflects how the adoption of conservation and management measures is a political process involving the commissioners, which will always represent a balancing act between the scientific evidence and advice produced by the scientific units of the RFMOs and the willingness to fully implement and operationalize suitable conservation and management measures. McDorman also emphasizes: “However, equally important issues in the relationship between scientific information and RFMO management decisions include, among other issues: the procedures that exist for the gathering and evaluation of scientific information; the process for the reaching of agreement on scientific information; the timeliness of the scientific information; and the manner of conveying scientific information to RFMO decision-makers.”⁷⁴⁶ Several factors may thus influence the scientific processes and adoption of conservation and management measures, and the member states of the RFMOs play the key role in providing statistical data and adopting effective measures to conserve all features of marine ecosystems within the RFMOs’ geographical areas of competence.⁷⁴⁷

Another constraint identified in the literature is how economic drivers and the capacity of the member states of the RFMOs affect their functioning in relation to the implementation and operationalization of the ecosystem approach to fisheries.

De Bruyn, Murua and Aranda argue that it is crucial that the tuna RFMOs carefully consider and balance the trade-offs between the short-term economic benefits of maintaining existing fishing practices and the expenses associated with implementing and operationalizing stricter conservation and management measures which may lead to long-term conservation of the

⁷⁴⁶ McDorman, “Implementing Existing Tools: Turning Words Into Actions – Decision-Making Processes of Regional Fisheries Management Organisations (RFMOs).” Page 433.

⁷⁴⁷ Heidrich et al., emphasize that reporting of catches of “both mandatory target and non-targeted species is vital, as detailed fisheries catch data are needed for the effective assessment of the impacts of fishing on populations and ecosystems and thus the management of fisheries resources.” See Kristina N. Heidrich et al., “Assessing Progress in Data Reporting by Tuna Regional Fisheries Management Organizations,” *Fish and Fisheries* 23, nr. 6 (2022): 1264–81, <https://doi.org/10.1111/faf.12687>. Page 2.

relevant stocks and economic benefits for the member states.⁷⁴⁸ The argument made by de Bruyn, Murada and Aranda is intricately connected to the balancing act that must be made between competing interests internally in the RFMOs.⁷⁴⁹ Kroodsma et al. have conducted a study to assess how fuel prices affect fishing and surprisingly found that fishing vessels do not seem to be affected by changes in fuel prizes.⁷⁵⁰ Kroodsma et al. emphasize that “fishing vessels exhibit behaviour with little natural analog, including...low sensitivity to energy costs,” and that “modern fishing is like other forms of mass production that are partially insulated from natural cycles and are instead shaped by policy and culture.”⁷⁵¹ The research findings in the study of Kroodsma et al., suggest that external economic factors affecting the costs of fishing vessels and member states operating in the RFMOs’ convention areas may not be vital for their fisheries, but as opposed to external factors, research clearly indicates that internal factors which impose financial costs on the member states and their fisheries industries are significant. This may be explained by the potential influence the member states have in the internal decision-making processes in RFMOs. External market factors cannot be controlled, but the adoption of conservation and management measures which may increase costs certainly can. This assumption clearly demonstrates the importance of committing to conserving marine ecosystems and non-target species.⁷⁵² Further, the willingness of the member states of the tuna RFMOs to adopt conservation and management measures for long-

⁷⁴⁸ de Bruyn, Paul, Hilario Murua, and Martín Aranda. “The Precautionary approach to fisheries management: How this is taken into account by Tuna regional fisheries management organisations (RFMOs).” *Marine Policy* 38 (1 March 2013): 397–406. <https://doi.org/10.1016/j.marpol.2012.06.019>. Page 401. See also Derek Staples, *Ecosystem Approach to Fisheries and Aquaculture: Implementing the FAO Code of Conduct for Responsible Fisheries*, RAP Publication 2009/11 (Bangkok: Food and Agriculture Organization of the United States, Regional Office for Asia and the Pacific, 2009), which makes a similar argument about how the costs of operationalizing the ecosystem approach to fisheries will provide long-term benefits on page 11.

⁷⁴⁹ Some issues related to general priorities of the tuna RFMOs will be presented and assessed in Section 8.4.1 of this thesis.

⁷⁵⁰ Kroodsma, David A., Juan Mayorga, Timothy Hochberg, Nathan A. Miller, Kristina Boerder, Francesco Ferretti, Alex Wilson, et al. “Tracking the global footprint of fisheries.” *Science* 359, No. 6378 (23 February 2018): 904–8. <https://doi.org/10.1126/science.aao5646>. Kroodsma et al. emphasize that the fuel costs of fishing operations represent approximately 25% of the total expenses, making it a significant expense for the vessels to cover on page 908.

⁷⁵¹ Ibid.

⁷⁵² Staples makes a similar argument in Derek Staples, *Ecosystem Approach to Fisheries and Aquaculture*. Page 10.

term environmental and economic benefits rather than maintaining existing measures for short-term economic benefits plays a key role when scientific evidence calls for changes to existing fishing practices. Barkin et al. argue along the same lines, emphasizing that fisheries diplomats negotiating in RFMOs face a “two-level game” involving parallel negotiations in the regional body and at the domestic level with their governments, where the key interests of conservation are primarily challenged by the fisheries industry.⁷⁵³ In cases where there is reluctance to implement stringent conservation measures, “the domestic level of a two-level game means persuading the fishing industry to make short-term financial sacrifices for the rebuilding of the targeted fish stocks in the longer term, a rebuilding that would benefit users of the resource collectively.”⁷⁵⁴

Other constraints identified in the literature that may negatively affect RFMOs involve different political priorities, competing interests, and diverse stakeholders. As presented in Section 5.2.2, these factors may all significantly influence the adoption of progressive conservation and management measures necessary to conserve marine ecosystems.

The identified constraints introduced in this chapter will partly inform the categorization of current constraints on the implementation and operationalization of the ecosystem approach to fisheries in the analysis of Chapter 8, which will explore the present challenges affecting the ability of tuna RFMOs to operationalize the approach.

5.4. Concluding Remarks

This chapter has explored how RFMOs are “institutionalized” organizations and shown that the establishment of the first RFMOs pre-dates the adoption of the Law of the Sea Convention

⁷⁵³ Samuel Barkin, J., Elizabeth R. DeSombre, Atsushi Ishii, and Isao Sakaguchi. “Domestic sources of international fisheries diplomacy: A framework for analysis.” *Marine Policy* 94 (1 August 2018): 256–63. <https://doi.org/10.1016/j.marpol.2018.04.030>.

⁷⁵⁴ Ibid. Page 257. Although Barkin et al. make this argument in relation to conservation of targeted stocks, the same line of reasoning would apply to measures that may be adopted to safeguard ecosystems or other species residing in the same ecosystem as the targeted stocks, due to the intrinsic connections between all ecosystem components.

and the 1995 UN Fish Stocks Agreement. How these factors may affect the implementation of the ecosystem approach to fisheries will be discussed in the following chapter, which examines in detail the tuna RFMOs' founding conventions.

Further, it has been established that states may have different interests in seeking membership of existing RFMOs, including a conservationist approach. Access to RFMOs is conditioned by the requirement of having "a real interest", as stipulated in Article 8(3) of the 1995 UN Fish Stocks Agreement. This requirement may be regarded as having a dual application. It cannot be used by current member states of RFMOs to exclude new members with legitimate interests in the fisheries and it ensures that an RFMO is not open to all states unless they have a recognizable interest in the fisheries regulated by the organization. However, there is growing support for granting all states with a "real interest" a "seat at the table" as formal members to enhance compliance with the RFMO's measures. Such increased coherence between conservation and management measures may also benefit conservation efforts directed at marine ecosystems and non-target species.

This chapter has also explored the procedural functions of RFMOs that are explicitly and implicitly relevant to implementation and operationalization of the ecosystem approach to fisheries in accordance with the 1995 UN Fish Stocks Agreement. These functions include obtaining and evaluating scientific advice and assessing impacts on non-target species in accordance with Article 10(d) and agreeing on "standards for collection, reporting, verification and exchange of data" in accordance with Article 10(e). Further, RFMOs shall "promote and conduct scientific assessments of the stocks and relevant research and disseminate the results thereof" under Article 10(g). The reference to "relevant research" also covers an obligation to enhance "ecological studies" and "research on environmental factors affecting stock abundance" in Article 3(c) of Annex I to the Fish Stocks Agreement, thereby reflecting ecosystem considerations. Article 10(h) covers the implementation of conservation and management measures adopted, including those aimed at conserving features of ecosystems, and requires member states to "establish appropriate cooperative mechanisms for effective monitoring, control, surveillance and enforcement" of the measures. Furthermore, Article 10(j) requires states to "agree on decision-making procedures which facilitate the adoption of conservation and management measures in a timely and effective manner." As will be

illustrated in the following chapter, the decision-making procedures of the tuna RFMOs are diverse and may affect their ability to implement and operationalize the ecosystem approach to fisheries. States shall also promote peaceful settlement of disputes,⁷⁵⁵ ensure full cooperation by implementing recommendations and decisions adopted by RFMOs through domestic agencies and industries,⁷⁵⁶ and give “due publicity to the conservation and management measures” adopted by RFMOs.⁷⁵⁷

However, of particular interest in this thesis is the obligation in Article 10(c) to implement “generally recommended minimum standards” through RFMOs. Consequently, states ought to implement the measures identified in Section 4.4.3 to minimize catch by lost, abandoned, or otherwise discarded fishing gear to fulfill their duty to cooperate in high seas fisheries. This is a central finding of this chapter, as it may be possible to establish that potential gaps between what is required by the normative framework and what is currently done in and by the tuna RFMOs may represent a breach of international law. The assessment of the tuna RFMOs’ conservation and management measures will be conducted in Chapter 7 of this thesis, which seeks to explore how the normative scope of these measures overlaps with the normative framework established in Chapter 4.

Further, this chapter has assessed the normative status of the RFMOs’ conservation and management measures that are legally binding in nature. This assessment forms an important basis for the subsequent analysis, as the normative status of these measures will require all member states to implement them. However, as illustrated in Section 5.3, the binding nature of these measures may lead to “watered-down” decisions in the RFMOs, due to the political priorities of the member states.

Following the identification of potential constraints for the implementation of the ecosystem approach to fisheries, this chapter has also examined the existing literature to review the identification of such constraints. This revealed the existence of various constraints, including how the institutional governance structures of the RFMOs may negatively affect their ability

⁷⁵⁵ 1995 UN Fish Stocks Agreement. Article 10(k).

⁷⁵⁶ 1995 UN Fish Stocks Agreement. Article 10(l)

⁷⁵⁷ 1995 UN Fish Stocks Agreement. Article 10(m)

to implement the approach, the lack of scientific evidence to adequately conserve and manage marine ecosystems, and how political priorities, competing interests, and economic capacity among the member states are key drivers in the work of RFMOs. These findings contextualize the case study which will be the focus of the following chapters, which comprise Part II of this thesis.

6. Chapter VI: How is the Ecosystem Approach to Fisheries Implemented in the Legal Framework of the Tuna RFMOs?

6.1 Introduction

Chapter 6 will explore whether and how the ecosystem approach to fisheries has been implemented in the statutes and founding instruments of the tuna RFMOs. The purpose of the chapter is to enable a study of how the tuna RFMOs are facilitating the implementation and operationalization of the ecosystem approach to fisheries, and how the legal mandates of the RFMOs may influence these processes. The founding instruments of these organizations encompass both material and procedural obligations which may affect the operationalization of the approach, and all relevant provisions relating to such obligations will be assessed. Exploring the scope of the tuna RFMOs' founding instruments serves the purpose of assessing whether the ecosystem approach is explicitly recognized in the instruments, or whether such obligations may nevertheless be implicitly inferred in their founding statutes.

As demonstrated in Section 4.3.1, taking the essential equivalence route represents an approach where one “reads the ecosystem approach into legal regimes based on whether a particular regime essentially or effectively incorporates an ecosystem approach, even if there is no formal deployment of the concept or language of ecosystem.”⁷⁵⁸ Applying this approach as a tool in the assessment of the tuna RFMOs' statutory instruments has the potential of also interpreting the ecosystem approach to fisheries in provisions which do not explicitly use the terms “ecosystem approach” or “ecosystem approach to fisheries.”⁷⁵⁹

It should be strongly emphasized that assessing the formal management mandates in the legal instruments of the tuna RFMOs does not provide any information about the actual practices

⁷⁵⁸ De Lucia, “The Ecosystem Approach and the Negotiations towards a New Agreement on Marine Biodiversity in Areas beyond National Jurisdiction.” Page 16.

⁷⁵⁹ As a means of interpreting instruments in light of new concepts.

of these organizations.⁷⁶⁰ However, an assessment of their regulatory frameworks established pursuant to their statutory instruments will be provided in Chapter 7 of this thesis, which will assess their adopted measures to minimize catch by lost, abandoned, or otherwise discarded fishing gear.

Whether the member states of the tuna RFMOs have adopted management mandates to conserve ecosystems and non-target species may reveal whether the contracting parties have committed themselves, both politically and through adopting legal obligations, to implement the ecosystem approach to fisheries at the transnational level through the relevant RFMOs. The interrogation of the management mandates and procedural functions of the tuna RFMOs established pursuant to their founding instruments may also contextualize the overall findings of the case study of this thesis.⁷⁶¹ However, if the assessment reveals the existence of normative gaps between what is required as a matter of international law and the statutory instruments of the tuna RFMOs, the member states will nevertheless be bound by their obligations as laid down in the normative framework.⁷⁶² The connection between the functions RFMOs ought to fulfil in accordance with Article 10 of the 1995 UN Fish Stocks Agreement and their obligation to cooperate in high seas fisheries pursuant to Articles 116-119 of the Law of the Sea Convention may result in non-compliance with the two instruments if the member states of the RFMOs do not facilitate the implementation and operationalization of the ecosystem approach to fisheries.⁷⁶³ Assessing their founding instruments and investigating their formal recognition of the approach represents a significant step towards examining whether and how the member states of these organizations are complying with international law.

⁷⁶⁰ How the mandates affect the tuna RFMOs abilities to operationalize the ecosystem approach to fisheries is subject to closer assessment in Chapter 8.

⁷⁶¹ Chapter 9 will synthesize all findings of this thesis and offer insights into how the tuna RFMOs have put the ecosystem approach to fisheries into practice and the challenges that may be identified in the process of implementing and operationalizing the approach.

⁷⁶² The normative framework regulating the ecosystem approach to fisheries was presented in Section 4.3 of this thesis.

⁷⁶³ This will be further assessed in Chapter 9 of this thesis.

The conservation of non-target species based on the ecosystem approach to fisheries is the key focus in this study, and the implementation and operationalization of the objective of minimizing catch by lost, abandoned, or otherwise discarded fishing gear, and its associated management measures will receive particular attention in the examination of the tuna RFMOs' founding instruments.⁷⁶⁴

6.2 The Five Tuna RFMOs

The tuna RFMOs represent mechanisms for cooperation between states for the conservation and management of tuna and tuna-like species, and the full names, the year of establishment, and acronyms are presented in Figure 4 below.⁷⁶⁵

Year	Full name	Acronym
1949	Inter-American Tropical Tuna Commission	IATTC
1969	International Commission for the Conservation of Atlantic Tunas	ICCAT
1993	Indian Ocean Tuna Commission	IOTC
1994	Commission for the Conservation of Southern Bluefin Tuna	CCSBT
2004	Western and Central Pacific Fisheries Commission	WCPFC

Figure 4: A list of the five tuna regional fisheries management organizations (year of establishment, full names, and acronyms).

The following sections will study the original mandates of the tuna RFMOs. However, a preliminary assessment of their statutory instruments reveals that their primary aim has been to conserve tuna and tuna-like species in specific geographical areas of competence. Traditionally, these RFMOs have “focused most of their resources and capacities to manage the main target tuna and billfish species to maximize their yields,” resulting in “limited actions

⁷⁶⁴ See Section 1.2 for more information regarding the scope of the present study and Section 4.4 for further information on the chosen management objective of minimizing catch by lost, abandoned, or otherwise discarded fishing gear in this thesis.

⁷⁶⁵ Juan-Jordá et al., “Report Card on Ecosystem-Based Fisheries Management in Tuna Regional Fisheries Management Organizations.” Page 322.

to manage and mitigate the wider impacts of their fisheries on non-target species” and ecosystems.⁷⁶⁶ Maurey et al. emphasize that the very nature of the mandates of many RFMOs is outdated and does not facilitate the incorporation of recent multilateral agreements regarding, e.g., conservation of biodiversity, the implementation of the precautionary approach and the ecosystem management in the fisheries context.⁷⁶⁷

The 1995 UN Fish Stocks Agreement and the 1995 FAO Code of Conduct represent instruments which broaden the mandate of pre-existing RFMOs, such as the IATTC, the ICCAT, the CCSBT, and the IOTC.⁷⁶⁸ There has been increasing recognition and growing expectations of the need for the tuna RFMOs “to expand their mandate to ensure they manage their targeted fish species while accounting for ecosystem impacts and ensuring a balanced delivery of ecosystem services.”⁷⁶⁹ This recognition has specifically addressed the need for older RFMOs, pre-dating the adoption of these instruments, to expand their mandates from a single-species focus to cover the implementation of the ecosystem approach and the precautionary approach.⁷⁷⁰ Overall, it has been stated that there is a need for the establishment of “explicit limits of acceptable impacts on fish and non-fish bycatch species, including associated or dependent species and threatened species.”⁷⁷¹

⁷⁶⁶ Ibid.

⁷⁶⁷ O Maury et al., “A Global Science–Policy Partnership for Progress toward Sustainability of Oceanic Ecosystems and Fisheries,” *Current Opinion in Environmental Sustainability*, Open issue, 5, No. 3 (September 1, 2013): 314–19, <https://doi.org/10.1016/j.cosust.2013.05.008>. Page 315.

⁷⁶⁸ Gilman, Passfield, and Nakamura, “Performance of Regional Fisheries Management Organizations.” Page 328.

⁷⁶⁹ Juan-Jordá et al., “Report Card on Ecosystem-Based Fisheries Management in Tuna Regional Fisheries Management Organizations.” Page 322.

⁷⁷⁰ Gilman, Passfield, and Nakamura, “Performance of Regional Fisheries Management Organizations.” Page 328.

⁷⁷¹ Ibid.

6.2.1 Statutes and Founding Conventions

The first tuna RFMOs established were the Inter-American Tropical Tuna Commission (IATTC) in 1949 and the International Commission for the Conservation of Atlantic Tunas (ICCAT) in 1969. These RFMOs have founding instruments which pre-date the adoption of the 1995 UN Fish Stocks Agreement and the 1995 FAO Code of Conduct. The study of their founding instruments is particularly interesting as it also may enable an assessment of how regional bodies, primarily established to manage and conserve targeted species, have potentially expanded their management mandates to encompass conservation of non-target species after the recognition of the ecosystem approach to fisheries in legal instruments in the 1990s.⁷⁷²

The Commission for the Conservation of Southern Bluefin Tuna (CCSBT) was negotiated and established in parallel with the development of the legal instruments encompassing the ecosystem approach to fisheries, which were adopted in 1995. Consequently, a relevant hypothesis to be tested in this thesis is whether the timing of the establishment of the CCSBT may have influenced the drafting and adoption of its founding instrument.

The Indian Ocean Tuna Commission (IOTC) was formally established in 1993 and entered into force in 1996. The Western and Central Pacific Fisheries Commission (WCPFC) was founded in 2004. The IOTC is the only tuna RFMO that has been established under the auspices of the FAO, indicating that its founding agreement and management mandate ought to be in line with the obligations in the 1995 Code of Conduct.⁷⁷³ The WCPFC is the most recent RFMO, and its founding convention and regulatory frameworks may illustrate how ecological knowledge and conservation of the various parts of the ecosystem may be enhanced by tuna RFMOs if the organization has adopted an instrument reflecting the normative requirements of the 1995 UN Fish Stocks Agreement and the FAO Code of Conduct.

⁷⁷² The history of the ecosystem approach to fisheries was subject to closer examination in Section 4.2.3 of this thesis.

⁷⁷³ More information regarding the establishment of the IOTC, and the close relationship between IOTC and the FAO will be provided in Section 6.6.1 of this thesis.

Overall, this brief introduction demonstrates that the five tuna RFMOs were established in four different decades. This difference may arguably impact their ability to operationalize the ecosystem approach to fisheries based on their management mandates.

The following assessment of the founding instruments of the tuna RFMOs will consist of several steps and follow the chronological order of the establishment of the tuna RFMOs, starting with the IATTC, established in 1949. An exception is made in relation to the IOTC, which instrument did not enter into force until 1996.⁷⁷⁴ The first step will offer a brief introduction to historical circumstances which may have influenced the drafting of the organizations' founding instruments, including their management mandates. Of relevance is the time of their establishment, but also other elements may provide clarity regarding the question of whether and how ecosystem considerations, and particularly the conservation of non-target species, are present in their founding instruments.

The second step of the assessment examines whether and how the convention areas of the tuna RFMOs are facilitating the operationalization of the ecosystem approach to fisheries, and the scope of their adopted management mandates. These findings will shed light on the regulatory frameworks that may have been established pursuant to their founding instruments, and hence whether their management mandates facilitate the implementation and operationalization of the ecosystem approach to fisheries.

The third step will explore how the procedural decision-making mechanisms of the RFMOs may affect their ability to operationalize the ecosystem approach to fisheries. This step enables a study of how the decision-making mechanisms in the tuna RFMOs may influence how the management mandates of the organizations are put into practice by the adoption of conservation and management measures. Several recognized challenges for the conservation of marine ecosystems and non-target species are a lack of political will to mitigate the causes, poor enforcement mechanisms, problems of "free riders," and also the lack of success of the

⁷⁷⁴ The CCSBT is thus subject to analysis prior to the IOTC.

regulatory frameworks established by the RFMOs.⁷⁷⁵ A key mechanism for the successful establishment of the necessary conservation and management measures is the creation of an effective decision-making body established under the relevant RFMOs' founding instruments.

Article 10(j) of the 1995 UN Fish Stocks Agreement requires states to cooperate by agreeing "on decision-making procedures which facilitate the adoption of conservation and management measures in a timely and effective manner."⁷⁷⁶ This includes both an effective voting mechanism and the relevant "criteria for adopting decisions so that the fishery and the ecosystem over which it has jurisdiction are managed sustainably."⁷⁷⁷ A central question in this study is whether and how the established decision-making procedures of the tuna RFMOs enable these organizations to adopt progressive conservation and management measures to conserve marine ecosystems and non-target species. The findings of this thesis may consequently also reveal whether there exist institutional barriers for the operationalization of the ecosystem approach to fisheries if they have not adopted such measures.

The fourth and concluding step will summarize the findings of each section. Some recommendations regarding the central question of whether and how the tuna RFMOs' founding instruments may facilitate the operationalization of the ecosystem approach to fisheries are provided when considered feasible in light of the findings.

⁷⁷⁵ Howard S. Schiffman, *Marine Conservation Agreements: The Law and Policy of Reservations and Vetoes*. Page 3. See also Section 5.3 which identified some of the constraints which may affect the tuna RFMOs' ability to implement and operationalize, e.g., the ecosystem approach to fisheries.

⁷⁷⁶ Article 10(j) of the 1995 UN Fish Stocks Agreement was subject to closer analysis in Section 5.2.5 of this thesis.

⁷⁷⁷ Michael W. Lodge et al., *Recommended Best Practices for Regional Fisheries Management Organizations: Report of an Independent Panel to Develop a Model for Improved Governance by Regional Fisheries Management Organizations*. Page 70.

6.3 The IATTC

6.3.1 Historical Remarks

The IATTC was formally established on 31 May 1949 when the United States of America and the Republic of Costa Rica concluded a bilateral convention to maintain the populations of yellowfin and skipjack tuna, and other stocks of fish captured by tuna fishing vessels in the eastern Pacific Ocean, at levels that would permit “maximum sustained catches year after year.”⁷⁷⁸ Already at the time of its foundation, the IATTC had a broader management scope than single-species management of its targeted stocks.⁷⁷⁹ In accordance with Article II of the 1949 Convention, the Commission would conduct investigations into the “effects of natural factors and human activities on the abundance of the populations of fishes supporting” the targeted fish stocks.⁷⁸⁰ The obligation may be regarded as including traces of ecosystem considerations and a recognition of the interdependence of species, which is extraordinary given the time of the establishment of the IATTC. However, the IATTC differed from other RFMOs established both prior to and after the adoption of the 1995 UN Fish Stocks Agreement and the Code of Conduct, as its sole objective was “originally “gathering and interpretation of factual information” acquired through scientific research.”⁷⁸¹ Consequently, the management mandate of the IATTC did not explicitly include a mandate to regulate the tuna fisheries in the eastern Pacific Ocean at the time of its establishment. The fact that the IATTC originally did not allocate fishing efforts and/or quotas to its convention area may explain why it had a broader management mandate, also including non-target species, as early as in 1949, as its

⁷⁷⁸ IATTC, Convention for the Establishment of an Inter-American Tropical Tuna Commission (Washington, May 31, 1949), <https://www.iattc.org/getattachment/f6186557-7738-45aa-baf3-193118b325da/1949%20IATTC%20Convention>. See Article I of the instrument, which states that the parties “agree to establish and operate a joint Commission, to be known as the Inter-American Tropical Tuna Commission...which shall carry out the objectives” of the Convention.

⁷⁷⁹ See Section 4.2.4 for more information on the single-species approach and how it differs from the ecosystem approach to fisheries.

⁷⁸⁰ IATTC, Convention for the Establishment of an Inter-American Tropical Tuna Commission, Article II.

⁷⁸¹ See Sylvain Caillot - IATTC, “Role and Characteristics,” accessed March 9, 2023, <https://www.iattc.org/en-US/About/Role> for more information.

sole objective was to investigate how the tuna species should be maintained from a scientific perspective.

In 1976, the responsibilities of the IATTC were expanded to address severe issues arising from tuna and dolphin interactions in the eastern Pacific Ocean. As fishermen discovered that yellowfin tuna aggregated beneath dolphin herds, the fishing gear changed to purse seines to enable the fishers to encircle nets around the dolphins to catch the tunas below.⁷⁸² The incidental mortality of dolphins in tuna fisheries is commonly known as “the tuna-dolphin problem,” and the most successful efforts to lower the mortality rates have proven to be interdisciplinary approaches to bycatch mitigation.⁷⁸³ In response to the declining dolphin stocks, the IATTC initiated a formal dolphin conservation program in 1976 to monitor and analyze the causes and effects of dolphin mortality, with an aim to maintain the eastern Pacific Ocean dolphin populations “at or above levels that would assure their long-term survival.”⁷⁸⁴ In 1992, the IATTC held meetings to address its member states’ continued concerns about dolphin deaths, resulting in the 1992 La Jolla Agreement which established the International Dolphin Conservation Program.⁷⁸⁵ In 1998, the Agreement on the International Dolphin Conservation Program (AIDCP) was adopted, superseding the La Jolla Agreement.⁷⁸⁶ The AIDCP recognizes the seriousness of the tuna-dolphin problem, and establishes mortality limits for relevant dolphin stocks and measures to reduce bycatch and discard of these species.⁷⁸⁷ The adoption of the AIDCP also represents an expansion of the objective of reducing mortality by including a variety of concrete measures to minimize the impacts on

⁷⁸² See, e.g., Evelyne Meltzer and Susanna Fuller, *The Quest for Sustainable International Fisheries: Regional Efforts to Implement the 1995 United Nations Fish Stocks Agreement: An Overview for the May 2006 Review Conference* (NRC Research Press, 2009). Page 159.

⁷⁸³ Lisa T. Ballance et al., “A History of the Tuna-Dolphin Problem: Successes, Failures, and Lessons Learned,” *Frontiers in Marine Science* 8(2021), <https://www.frontiersin.org/articles/10.3389/fmars.2021.754755>. Page 2.

⁷⁸⁴ Meltzer and Fuller, *The Quest for Sustainable International Fisheries*. Page 159.

⁷⁸⁵ The program included, e.g., a maximum dolphin mortality limit for vessels operating in tuna fisheries. See IATTC, IATTC Resolution on the La Jolla Agreement - Agreement for the Conservation of Dolphins, 01/98(1992), <https://www.iattc.org/getattachment/3393b4d0-08b9-42c5-8ab6-efdaa70f331b/La%20Jolla%20Agreement> for more information.

⁷⁸⁶ La Jolla Agreement for the Reduction of Dolphin Mortality in the Eastern Pacific Ocean (1992), available at: <https://www.iattc.org/getattachment/3393b4d0-08b9-42c5-8ab6-efdaa70f331b/La%20Jolla%20Agreement>

⁷⁸⁷ Howard S. Schiffman, *Marine Conservation Agreements: The Law and Policy of Reservations and Vetoes*. Page 117.

dolphins in tuna fisheries, including certification of captains and crews and the development of systems to track and verify whether tuna has been harvested with or without harm or mortality of dolphins.⁷⁸⁸ The IATTC currently holds the secretariat of the Agreement and covers many of its functions, including managing the scientific observer program on board the fleet of tuna purse seine vessels that operates in the eastern Pacific Ocean. As emphasized by Cameron and Jefferies, the approach to the tuna-dolphin problem initiated through the IATTC “demonstrates the ability of an RFMO to respond, in a legal way, to a recognized problem,” and “that a functional and pragmatic response to this issue is possible.”⁷⁸⁹ It also demonstrates how RFMOs may function as key actors in the work of conserving non-target species negatively affected by tuna fisheries.

In 1998, the member states of the IATTC decided to revise its founding convention in response to the development of international legal obligations for the conservation and management of living marine resources in accordance with the Law of the Sea Convention, the Agenda 21 and the Rio Declaration of 1992, the 1995 FAO Code of Conduct, and the 1995 UN Fish Stocks Agreement, among other instruments.⁷⁹⁰ During the period when these global instruments were adopted, the Commission of the IATTC also expanded its management mandate to include issues beyond scientific research, including the adoption of management measures for the conservation and management of targeted fish stocks.⁷⁹¹ To address the inconsistency of its founding convention and the legal regime for the conservation and management of living marine resources in areas beyond national jurisdiction, and the actual expansion of the original management mandate of the Commission, the parties to the IATTC began their negotiations for a new regional treaty in 1998.⁷⁹² After establishing a working group at its 61st meeting to review the IATTC Convention, the final treaty was adopted on June 27, 2003, by resolution C-03-02.⁷⁹³ The Antigua Convention entered into force in 2010 and is a

⁷⁸⁸ Ibid. Page 118.

⁷⁸⁹ Cameron S. G. Jefferies, *Marine Mammal Conservation and the Law of the Sea* (New York, NY: Oxford University Press, 2016). Page 279.

⁷⁹⁰ Sylvain Caillot - IATTC, “Role and Characteristics.”

⁷⁹¹ Ibid.

⁷⁹² Ibid.

⁷⁹³ IATTC Resolution C-03-02, “Resolution on the Adoption of the Conservation for the Strengthening of the Inter-American Tropical Tuna Commission Established by the 1949 Convention Between the United States of America

comprehensive instrument which significantly expands the management mandate and objectives of the IATTC when compared to the instrument adopted in 1949.⁷⁹⁴

The parties to the Antigua Convention are 16 states, the EU, and the fishing entity Chinese Taipei.⁷⁹⁵ Colombia, Vanuatu, and Venezuela did not withdraw from the Commission after the adoption of the Antigua Convention but are still not formal parties to the instrument.⁷⁹⁶⁷⁹⁷ The Antigua Convention, having been ratified by 18 parties, makes the IATTC a relatively large RFMO in terms of membership on a global scale, which may have both positive and negative implications for the its ability to operationalize the ecosystem approach to fisheries. On the positive side, the total number of contracting parties to the IATTC Convention may arguably increase the available resources for conservation measures and efforts. This naturally includes financial contributions to annual budgets and development of expertise in research and monitoring. The total number of member states and their geographical proximity to the convention area may also lead to greater diversity of perspectives and experiences, which may result in the adoption of effective and innovative conservation and management measures for the governance of the IATTC convention area. At the same time, the large number of

and the Republic of Costa Rica – Antigua Convention,” 70th Meeting (Antigua, Guatemala, June 24, 2003), [https://www.iattc.org/getattachment/65ff4d6d-512f-4d88-b2fc-](https://www.iattc.org/getattachment/65ff4d6d-512f-4d88-b2fc-a77822fc34b9/Adoption%20of%20the%20Antigua%20Convention)

[a77822fc34b9/Adoption%20of%20the%20Antigua%20Convention](https://www.iattc.org/getattachment/65ff4d6d-512f-4d88-b2fc-a77822fc34b9/Adoption%20of%20the%20Antigua%20Convention). Last accessed 29.05.2024.

⁷⁹⁴ The management mandates of the IATTC will be subject to closer analysis in Section 5.3.2.

⁷⁹⁵ See Sylvain Caillot - IATTC, “Role and Characteristics,” for more information regarding the member states of the IATTC.

⁷⁹⁶ Ibid. The IATTC decided that each of the present parties to the 1949 IATTC Convention would continue to be allowed representation in the Commission after the adoption of the Antigua Convention to ensure institutional continuity regardless of their accession to the new instrument. However, two of the states which did not withdraw from the Commission at the time of the adoption of the Antigua Convention are now in the process of ratifying the instrument.

⁷⁹⁷ The Antigua Convention is “open for accession by any State or regional economic integration organization...that meets the requirements of Article XXVI in accordance with Article XXX(1)(a), and/or whose vessels fish for fish stocks covered by this Convention, following consultations with the Parties” in accordance with Article XXX(1)(b) or “that otherwise is invited to accede on the basis of a decision by the Parties” in accordance with Article XXX(1)(c). Article XXVII states that the Convention is open for signature by the parties to the 1959 IATTC Convention, by “States not Party to the 1949 Convention with a coastline bordering the Convention Area,” by “States and regional economic integration organizations which are not Parties to the 1949 Convention and whose vessels have fished for fish stocks covered by this Convention at any time during the last four years preceding the adoption of this Convention,” which participated in the negotiations of the establishment of the instrument, or entered into “consultations with the Parties to the 1949 Convention.”

member states of the IATTC requires effective decision-making mechanisms to facilitate the operationalization of the ecosystem approach to fisheries. A commission comprising several contracting parties may encounter challenges in terms of reaching agreement on conservation and management measures due to the parties' domestic priorities.⁷⁹⁸ Although not the focus of this thesis, it may also be argued that the complexity of coordinating and enforcing conservation and management measures may pose significant challenges due to the large number of contracting parties. This places a responsibility upon the organizations' commission to enable the establishment of effective mechanisms to ensure proper implementation and operationalization of the adopted measures.

The history of the IATTC reveals that its member states as early as the 1950s were concerned about the species interactions in the Pacific Ocean, and how the species supporting the targeted fish stocks were important for the stock abundance of the tunas. The focus of the IATTC on ecological connections was further strengthened in parallel with the development of the tuna-dolphin problem and it has played a pivotal role in the conservation of these vulnerable non-target species. Thus, it seems reasonable to assume that a focus on ecosystem considerations and conservation of non-target species is included in the management mandate of the IATTC, which will be explored in the following.

6.3.2 Regulatory Area and Management Mandate

The basis for the exploration and analysis of the IATTC's management mandate will be the Antigua Convention, which was adopted in 2003 and superseded the IATTC Convention of 1949.⁷⁹⁹ This begs the question of whether it is pertinent to assess the founding convention of the IATTC first, when one of the purposes of this chapter is to assess how the development

⁷⁹⁸ Section 6.3.3 will explore whether the decision-making mechanism of the IATTC facilitates the operationalization of the ecosystem approach to fisheries. See also Haas, Bianca, et al., "Factors influencing the performance of regional fisheries management organizations," which assesses how diverse political priorities may negatively influence the work of RFMOs on page 5.

⁷⁹⁹ The rationale for studying the Antigua Convention to explore and analyze the management mandate of the IATTC is to establish what the current management mandate of the RFMO entails. It could be interesting to explore how the management mandate has developed in a historical context, but this falls outside the scope of this project's research questions and will not be included in this chapter.

of the normative framework has influenced the obligations in the tuna RFMOs' founding instruments. The Antigua Convention represents a rather new instrument in this regard. However, I would argue that assessing the tuna RFMOs in an order based on the time of their establishment will not preclude the purpose of assessing whether and how these instruments facilitate the implementation and operationalization of the ecosystem approach to fisheries. Section 6.8 will elaborate on the question of whether and how the tuna RFMOs' founding instruments facilitate the implementation of the approach, and information on when the relevant provisions were adopted will be provided in the analyses.

The regulatory area of the IATTC comprises a defined area of the Pacific Ocean "bounded by the coastline of North, Central, and South America", thus with clearly defined borders of the convention area.⁸⁰⁰ The IATTC consequently manages a vast geographical area, which naturally also encompasses diverse ecosystems. This implies that enhanced monitoring and acquisition of sufficient scientific data are necessary to facilitate the operationalization of the ecosystem approach to fisheries.

Article I of the Antigua Convention defines the fish stocks covered by the Convention as "stocks of tunas and tuna-like species and other species of fish taken by vessels fishing for tuna and tuna-like species in the Convention area." The inclusion of the wording "other species of fish taken by vessels fishing for tuna and tuna-like species" shows that non-target fish species are in focus in the founding instrument of the IATTC. This is reinforced in its objective as stipulated in Article II of the Antigua Convention, which emphasizes that "the objective of this Convention is to ensure the long-term conservation and sustainable use of the fish stocks covered" by the instrument. This objective also includes non-target fish species caught in tuna fishing operations in the regulatory area of the IATTC in accordance with the definition provided in Article I of the instrument. As will be illustrated in the following, the adoption of relevant provisions to protect and conserve non-target species reflects that the

⁸⁰⁰ The regulatory area of the IATTC is defined in the Antigua Convention, Article III to be "the 50°N parallel from the coast of North America to its intersection with the 150°W meridian," the "150°W meridian to its intersection with the 50°S parallel" and "the 50°S parallel to its intersection with the coast of South America."

IATTC is striving to establish a holistic management regime in accordance with Articles I and II of the Antigua Convention.

The application of the precautionary approach is explicitly recognized in Article IV of the instrument, and the member states of the Commission shall both “directly and through the Commission...apply the precautionary approach, as described in the relevant provisions of the Code of Conduct and/or the 1995 UN Fish Stocks Agreement, for the conservation, management and sustainable use “of the fish stocks covered” by the Convention.⁸⁰¹ The approach taken by the IATTC by requiring the application of the precautionary approach in line with the provisions of the FAO Code of Conduct reflects the scenario described in Section 4.4.2, i.e., the Commission is making the voluntary provisions of the Code of Conduct binding upon its member states.

Furthermore, “where the status of target stocks or non-target or associated or dependent species is of concern, the member states of the Commission shall subject such stocks and species to enhanced monitoring in order to review their status and the efficacy of conservation and management measures.”⁸⁰² The third paragraph of Article IV recognizes the need for conservation and management of non-target species in tuna fisheries and is unique in the context of the tuna RFMOs. The fact that the conservation and management of non-target species is considered equal to the conservation and management of the targeted stocks underscores that the IATTC has adopted a progressive approach to resource conservation and management. The member states of the Commission shall also revise the measures taken for both target and non-target species “regularly in the light of new scientific information available.”⁸⁰³ This reflects an adaptive approach to management which is clearly in line with the ecosystem approach to fisheries.

⁸⁰¹ The obligation to apply the precautionary approach is also recognized as one of the core functions to be performed by the Commission in Article VII(g) of the Antigua Convention. See Section 4.3.2 for a presentation of the relationship between the precautionary approach and the ecosystem approach.

⁸⁰² IATTC, Antigua Convention. Article IV(3).

⁸⁰³ IATTC, Antigua Convention. Article IV(3).

But the explicit inclusion of the precautionary approach in its convention is not the only significant step the Commission of the IATTC has taken to ensure the conservation of marine ecosystems and non-target species through its management mandate. Article VII explicitly recognizes the ecosystem approach to fisheries and relevant management objectives and measures to implement the approach. The functions of the Commission are listed in Article VII, starting with a clear statement that the Commission shall perform a range of functions, but that priority shall be given to tuna and tuna-like species. The functions are then listed and include to “promote, carry out and coordinate scientific research concerning the abundance, biology and biometry in the Convention area of fish stocks covered by this Convention and, as necessary, of associated and dependent species, and the effects of natural factors and human activities on the populations of these stocks and species.”⁸⁰⁴ Yet again, associated and dependent species are considered equal to the targeted stocks. Litra a of Article VII also reflects an ecosystem-based approach to fisheries management, as effects on the species arising from other human activities than fisheries should be accounted for when scientific research is conducted, making the IATTC move beyond the normative requirements of the ecosystem approach to fisheries.⁸⁰⁵ The Commission shall adopt measures, based on the best scientific evidence available, to “ensure long-term conservation and sustainable use of the fish stocks covered by the Convention and to maintain and restore populations of harvested species at levels of abundance which can produce the maximum sustainable yield.”⁸⁰⁶ Further, the Commission shall “adopt standards for collection, verification, and timely exchange and reporting of data concerning the fisheries for fish stocks covered by this Convention.”⁸⁰⁷

⁸⁰⁴ IATTC, Antigua Convention. Article VII(1)(a).

⁸⁰⁵ See Section 4.2.4 for more information regarding the distinctions between “ecosystem-based fisheries management” and the “ecosystem approach to fisheries.”

⁸⁰⁶ IATTC, Antigua Convention. Article VII(1)(c). To achieve the objective of maintaining or restoring the stocks at levels which can produce the MSY, the Commission shall set the TAC and/or a total allowable level of fishing capacity and/or levels of fishing effort in the regulatory area “as a whole.” The fact that the fishing capacity and fishing effort shall be decided for the Convention area “as a whole” ensures compatibility of the conservation and management measures, as this may prevent the targeted species from being exploited at unsustainable levels outside of designated areas where fishing capacity and fishing effort are not explicitly regulated.

⁸⁰⁷ This obligation corresponds with the requirements of collection of accurate data in a timely manner as encompassed in Article 5(j) of the 1995 UN Fish Stocks Agreement.

Turning to the IATTC’s specific regime for the conservation and management of non-target species, the ecosystem approach to fisheries is explicitly recognized in Article VII(d). The Commission shall “adopt, as necessary, conservation and management measures and recommendations for species belonging to the same ecosystem and that are affected by fishing for, or dependent on or associated with, the fish stocks covered by this Convention” in accordance with the provision. The goal is to maintain or restore “populations of such species above levels at which their reproduction may become seriously threatened,” reflecting the obligation in Article 5(e) of the 1995 UN Fish Stocks Agreement.⁸⁰⁸ As expressed by the Scientific Advisory Committee of the IATTC, the Antigua Convention “is consistent with” the ecosystem approach to fisheries as stipulated in the FAO Code of Conduct and the Reykjavik Declaration.⁸⁰⁹

However, the obligation to adopt conservation and management measures in accordance with Article VII of the Antigua Convention is directed at keeping the non-target species above levels where their abundance may become “seriously threatened.” This implies that the Commission is not obliged to adopt measures before such a scenario occurs, and that the provision may be used as a safety mechanism when scientific evidence implies that a stock is on the verge of becoming “seriously threatened,” rather than as a mechanism to maintain the marine ecosystem and residing species at viable levels in the first place. As in many other international instruments reflecting and/or incorporating traces of the ecosystem approach to fisheries, the threshold for when a stock is to be considered as “seriously threatened” is not further defined or explained, leading to some vagueness regarding the provision’s scope and application.⁸¹⁰ The IATTC is nevertheless conducting “novel and innovative ecological

⁸⁰⁸ The implications of the obligation to maintain or restore “populations of such species above levels at which their reproduction may become seriously threatened” was assessed in Section 4.3.2, and it has been established that the obligation is of a weak character and does not clarify the types of positive measures which ought to be taken in such circumstances, which also applies to the management mandate established by the IATTC.

⁸⁰⁹ IATTC Scientific Advisory Committee, “SAC-13-10 Ecosystem Considerations,” May 16, 2022, https://www.iattc.org/GetAttachment/4b63e5bd-bc41-4c71-9ad6-f9b3d50b6e39/SAC-13-10_Ecosystem-considerations.pdf. Last accessed 29.05.2024. The ecosystem approach to fisheries was formally adopted during the FAO Technical Consultation on Ecosystem-based Fisheries Management held in Reykjavik from 16 to 19 September 2002. See Section 4.2.3 for more information regarding the history of the approach.

⁸¹⁰ See, e.g., Article 5(e) of the 1995 UN Fish Stocks Agreement.

research aimed at obtaining the data and developing the tools required to implement” the ecosystem approach to fisheries in tuna fisheries taking place in the Pacific Ocean,⁸¹¹ and has adopted a strategic scientific plan for activities relating to the ecosystems in this area between 2019-2023. This emphasizes that the IATTC is striving to fulfil the obligations established in accordance with its management mandate pursuant to its founding instrument.⁸¹²

Article VII(g) emphasizes that the Commission shall “adopt appropriate measures to avoid, reduce and minimize waste, discards, catch by lost or discarded gear, catch of non-target species(both fish and non-fish species) and impacts on associated or dependent species, in particular endangered species.” The provision echoes the first part of Article 5(f) of the 1995 UN Fish Stocks Agreement, with some alterations. The most obvious difference is the amendment of the wording to become “adopt appropriate measures to avoid, reduce and minimize” in the provision.⁸¹³ The obligation is strengthened by the inclusion of the words “avoid” and “reduce,” placing a stronger obligation on the IATTC member states than Article 5(f) of the Fish Stocks Agreement. Further, the Commission recognizes the need for a functional framework to reach the objective of impact minimalization on non-target species by the inclusion of an obligation for the Commission to “adopt appropriate measures.” The inclusion of this obligation is of great significance, as it obliges the Commission to facilitate the operationalization of management objectives in line with the recognized measures established in accordance with the ecosystem approach to fisheries.⁸¹⁴ Another observation

⁸¹¹ IATTC Scientific Advisory Committee, “SAC-13-10 Ecosystem Considerations,” May 16, 2022, https://www.iattc.org/GetAttachment/4b63e5bd-bc41-4c71-9ad6-f9b3d50b6e39/SAC-13-10_Ecosystem-considerations.pdf. Last accessed 29.05.2023.

⁸¹² IATTC, “IATTC-93-06a - IATTC Strategic Science Plan, 2019-2023,” 93rd Meeting (San Diego, California (USA), August 24-30, 2018), https://iattc.org/getattachment/54e1e93b-833b-4600-9f74-ae50be1abc46/IATTC-93-06a_Strategic-Science-Plan.pdf. Last accessed 29.05.2023.

The strategic science plan covers seven research goals for the period 2019-2023 and includes data collection for scientific support of management, life history studies, sustainable fisheries, ecological impacts of fishing, assessment and mitigation, interactions between the environment, ecosystem and fisheries, knowledge transfer and capacity building and scientific excellence.

⁸¹³ The obligation in Article 5(f) of the 1995 UN Fish Stocks Agreement emphasizes that the states are obliged to “minimize...discards, catch by lost or abandoned gear, catch of non-target species...and impacts on associated or dependent species.” See also Section 4.4 for more information on the normative framework addressing the objective of minimizing ghost fishing.

⁸¹⁴ Some of the management measures applicable to achieve the objectives in Article 5(f) of the 1995 UN Fish Stocks Agreement are clarified in the FAO Guidelines, which were presented in Section 4.4 of this thesis. Some

is that the IATTC's founding instrument requires the state parties to minimize catch by lost or discarded fishing gear, whereas the 1995 UN Fish Stocks Agreement obliges states to minimize catch by lost or abandoned gear. As discussed in Section 4.4.2, the normative framework relevant to minimize ghost fishing has developed through different processes and under different international bodies. Consequently, the IATTC has seemingly adopted a pragmatic approach by merging the different obligations derived from the pollution and dumping framework with the normative framework for fisheries. The term "abandoned" does not occur in the IATTC's Antigua Convention, and it has not been possible to establish the reasons for its exclusion. Whether and how the obligation of minimizing catch by lost or otherwise discarded fishing gear is put into practice in the IATTC's regulatory framework will be further assessed in Chapter 7 of this thesis. It is nevertheless clear that the IATTC has established a clear-cut obligation to operationalize the objective through its explicit recognition in the Antigua Convention.

Furthermore, Article VII(k) obliges the Commission to "promote, to the extent practicable, the development and use of selective, environmentally safe and cost-effective fishing gear and techniques and such other related activities." The provision demonstrates that the member states of the IATTC are actively trying to minimize bycatch and other alterations to the marine environment and marine ecosystems posed by fishing gear. The obligation is limited by the wording "to the extent practicable," leaving the Commission with some discretion regarding the implementation and operationalization of the provision.⁸¹⁵

An obligation "to promote the application of any relevant provision of the Code of Conduct and of other relevant international instruments" is found in Article VII(n). The term "other relevant international instruments" is not further explained in the provision, but the international plans of action (IPOAs) adopted by the FAO in line with the Code of Conduct are explicitly mentioned as relevant examples. The fact that the IATTC has included an obligation to promote the application of relevant instruments makes the Antigua Convention a 'living

of the relevant measures include gear restrictions, spatial and temporal measures, and measures to mitigate discard of fishing gear.

⁸¹⁵ The identical phrase "to the extent practicable" is used in Article 5(f) of the 1995 UN Fish Stocks Agreement.

instrument,' capable of adjusting to changing circumstances and emerging issues. This reflects an adaptive approach to management and creates a dual regulatory framework where the Commission of the IATTC may develop new legal obligations tailor-made within the scope of its management mandate, while also attempting to implement the normative framework adopted by the FAO and other international bodies. To date, two of the IPOAs adopted by the FAO concern bycatch mitigation to protect various non-target species frequently caught as bycatch,⁸¹⁶ and the IATTC's recognition of these instruments reflects a clear acknowledgement of the importance of conserving these species. It also seems reasonable to argue that the implementation guidelines adopted by the FAO represent "other relevant international instruments" in accordance with Article VII(n) of the Antigua Convention.⁸¹⁷ This may be regarded as creating a link to Article 10(c) of the 1995 UN Fish Stocks Agreement, which obliges state parties to "adopt and apply any generally recommended international minimum standards for the responsible conduct of fishing operations."⁸¹⁸ However, it is not clear what the scope of the obligation in Article VII(n) of the Antigua Convention entails, as the state parties are only obliged to "promote" the application of other instruments. Consequently, the scope of the obligation may not actually lead to the application of other instruments in the IATTC's regulatory framework, but it at least ensures that such instruments are "promoted" and presumably taken into consideration by the members of the IATTC.

The Commission of the IATTC is further obliged to ensure that consideration is given to "the need for coordination and compatibility with measures adopted pursuant to the AIDCP," when

⁸¹⁶ The FAO has adopted four IPOAs since 1999, and these are the International Plan of Action for Reducing Incidental Catch of Seabirds in Longline Fisheries, the International Plan of Action for the Conservation and Management of Sharks, the International Plan of Action to Prevent, Deter, and Eliminate Illegal, Unreported and Unregulated Fishing and the International Plan of Action for the Management of Fishing Capacity. See FAO, "Fisheries and Aquaculture - Fisheries and Aquaculture - International Plans of Action," accessed March 13, 2023, <https://www.fao.org/fishery/en/code/ipoa> for more information regarding the IPOAs.

⁸¹⁷ The status of the FAO guidelines relevant to the implementation and operationalization of the ecosystem approach to fisheries was presented and analyzed in Section 4.4.2.

⁸¹⁸ The scope of the obligation in Article 10(c) of the 1995 UN Fish Stocks Agreement was subject to closer examination in Section 4.4.2.

it develops and adopts new measures in accordance with Article VII(j).⁸¹⁹ The inclusion of this provision shows that the IATTC is still a pivotal driver for the conservation of dolphin species in Pacific Ocean tuna fisheries, and demonstrates that the history of the close relationship between the IATTC and the AIDCP continuously spurs the work of the RFMO.

It is beyond doubt that the IATTC has developed a modern and elaborate legal framework for conserving and managing non-target species within its convention area, and that several of the provisions in the Antigua Convention recognize the normative scope of the ecosystem approach to fisheries.⁸²⁰ The need for conserving non-target species is explicitly recognized in several of the provisions of the Antigua Convention, testifying to an RFMO that has expanded its original management mandate,⁸²¹ moving beyond the single-species approach which had traditionally predominated regulatory frameworks for tuna fisheries.⁸²² However, the Commission of the IATTC still aims to give priority to the conservation and management of tuna and tuna-like species in accordance with Article VII(1) of the instrument, leading to potential scenarios where the conservation of marine ecosystems and non-target species may be downplayed in situations where there is a lack of available time or funding, and where there are competing interests between conserving target stocks and non-target species.⁸²³ These scenarios have the potential of undermining the significant work of conserving non-target species, and ultimately the operationalization and application of the ecosystem approach to fisheries. Thus, it is of utmost importance that the state parties of the IATTC commit themselves to implement and operationalize the approach to ensure future governance of non-target species negatively affected by tuna fisheries.

⁸¹⁹ The obligation only applies to measures adopted under Article VII(a) to (i) of the Antigua Convention. See Section 6.3.1 for more information regarding the historical relationship between the IATTC and the AIDCP and how the two organizations are interconnected.

⁸²⁰ The normative scope of the ecosystem approach to fisheries was assessed in Section 4.2.4 of this thesis.

⁸²¹ See Section 6.3.1 which explored the history of the IATTC and how the Commission adopted a new convention in 2003 to reflect changes in its legal framework and practices.

⁸²² See Section 4.2.4 for more information regarding the concept of single-species management and how it differs from, e.g., the ecosystem approach to fisheries.

⁸²³ Section 8.4.1 will discuss these potential constraints and how they may negatively affect some of the tuna RFMOs' work to implement and operationalize the ecosystem approach to fisheries.

Nevertheless, the IATTC represents a tuna RFMO primarily established to manage tuna fisheries in the eastern Pacific Ocean, and it seems reasonable to argue that it must be allowed to use its discretion to focus on its core functions in situations where there is limited capacity or funding to pursue the fulfilment of multiple management objectives at the same time. Of interest is how the IATTC is working to ensure that all the relevant sub-paragraphs of Article VII regarding the functions of the Commission are fulfilled in practice, and which management measures have been adopted under subparagraphs (a),⁸²⁴ (f),⁸²⁵ (g),⁸²⁶ and (n)⁸²⁷ to operationalize the ecosystem approach to fisheries. This will be further addressed in Chapter 7 in relation to the management objective of minimizing catch by lost, abandoned, or otherwise discarded fishing gear based on the ecosystem approach to fisheries.

6.3.3 Decision-Making Mechanisms

The IATTC makes decisions based on a consensus of its present member states in the relevant meetings unless otherwise is expressly provided for in the provisions of the Antigua Convention.⁸²⁸ Two-thirds of the members represent a quorum, and Commission meetings shall only be held when such quorums are present.⁸²⁹ Decisions on the adoption of amendments to the Antigua Convention,⁸³⁰ and invitations to accede to the Convention in

⁸²⁴ Article VII(a) concerns the obligation to “promote, carry out and coordinate scientific research concerning the abundance, biology and biometry in the Convention Area for fish stocks covered by this Convention and, as necessary, of associated or dependent species, and the effects of natural factors and human activities on the populations of these stocks and species.”

⁸²⁵ Article VII(f) is the clearest manifestation of the ecosystem approach to fisheries in the Antigua Convention, obliging the Commission to adopt “conservation and management measures and recommendations for species belonging to the same ecosystem and that are affected by fishing for, or dependent on or associated with, the fish stocks covered” by the Convention to ensure that their reproduction does not become “seriously threatened.”

⁸²⁶ The obligation of impact minimalization and reduction of discard, catch by lost or discarded gear, catch of non-target species, and impacts on associated, dependent, or endangered species is encompassed in Article VII(g).

⁸²⁷ The obligation to promote the application of the FAO Code of Conduct and other relevant international instruments is manifested in Article VII(n) of the Antigua Convention.

⁸²⁸ IATTC, Antigua Convention. Article IX(1).

⁸²⁹ IATTC, Antigua Convention. Article VIII(3).

⁸³⁰ This also includes amendments to the annexes to the Antigua Convention in accordance with Article IX(2).

accordance with Article XXX(c), require a consensus of all parties.⁸³¹ The consensus of all commission members is also required for the adoption and amendment of the budget of the Commission and for decisions regarding the development of criteria for and/or decision-making regarding the allocation of total allowable catch, total allowable fishing capacity or levels of fishing efforts.⁸³²

The adoption of conservation and management measures by the IATTC shall also be based on consensus of a quorum in accordance with Article IX(1) of the Antigua Convention.⁸³³ Consequently, the decision-making mechanisms of the IATTC involve several possibilities and potential barriers to the operationalization of the ecosystem approach to fisheries.

When an RFMO adopts decisions based on consensus among the parties, all views and interests of the member states may be included in the process leading to the adoption of the measures. When all states are involved in this process, it may also foster commitment to implement decisions, which may enhance compliance by all member states.⁸³⁴ Further, consensus-based decision-making mechanisms may lead to more transparency during negotiations, which may increase the legitimacy of the adopted decisions.⁸³⁵ Ultimately, consensus-based decision-making has the potential of creating strong bonds of “mutual trust and solidarity.”⁸³⁶

By contrast, the IATTC is running the risk of adopting “watered-down” decisions to accommodate the interests and priorities of all its member states.⁸³⁷ Another well-known risk

⁸³¹ IATTC, Antigua Convention. Article IX(2).

⁸³² IATTC, Antigua Convention. Article IX(3)(a) and Article IX(3)(b) in accordance with Article VII(1)(I).

⁸³³ This also includes the adoption of measures to conserve marine ecosystems and non-target species.

⁸³⁴ See Section 5.2.3 which explored how the concept of co-management offers valuable insights into how participation in decision-making may enhance compliance. See also Jentoft, McCay, and Wilson, “Social theory and fisheries co-management,” which makes this argument on page 423.

⁸³⁵ Sara L. McDonald and Deborah Rigling Gallagher, “A Story About People and Porpoises: Consensus-Based Decision Making in the Shadow of Political Action,” *Environmental Management (New York)* 56, No. 4(2015): 814–21, <https://doi.org/10.1007/s00267-015-0545-6>. Page 814.

⁸³⁶ Darcy Leach, “When Freedom Is Not an Endless Meeting: A New Look at Efficiency in Consensus-Based Decision Making,” *The Sociological Quarterly* 57 (1 December 2016): 36–70, <https://doi.org/10.1111/tsq.12137>. Page 36.

⁸³⁷ See Section 5.3 of this thesis which explored how different interests and political priorities may influence the decision-making mechanisms of RFMOs.

of consensus-based decision-making is that it may take a long time to reach a final decision.⁸³⁸ The need to adopt conservation and management measures in a timely and effective manner is emphasized in several provisions of the 1995 UN Fish Stocks Agreement, and consensus-based decision-making may ultimately hamper an organization's ability to quickly respond to pressing and emerging issues.⁸³⁹ Consensus-based decision-making may also lead to scenarios where "the lowest common denominator is given significant influence."⁸⁴⁰ Ultimately, consensus-based decision-making procedures in RFMOs "provide *de facto* right of veto to each member of an RFMO, allowing them to undermine the conservation effect of proposed decisions and, ultimately, the efficacy of the organization as a whole."⁸⁴¹

The IATTC may naturally adopt progressive and comprehensive conservation and management measures to facilitate the operationalization of the ecosystem approach to fisheries which all its members are committed to implement in practice. Yet it runs the risk of adopting less novel and innovative measures for the conservation and management of marine ecosystems and non-target species as the decisions will have to reflect the priorities and interests of all its contracting parties. The success of the decision-making mechanisms covered by the Antigua Convention arguably rests on several factors, including the complexity of the decisions to be made and the dynamics among the member states. The scope and content of the IATTCs' conservation and management measures adopted by consensus will be further analyzed in detail in Chapter 7 of this thesis.

The decisions adopted by the IATTC "shall be binding for all members forty-five (45) days after their notification," which clearly differs from the other tuna RFMOs, which have longer

⁸³⁸ Leach, "When Freedom Is Not an Endless Meeting." Page 41. However, Leach argues that "decisions based on one-way communication might well be made more quickly, but they would also likely be poorer decisions that lead to less effective group performance" on the same page. See also Tore Henriksen, "Allocation of Fishing Rights: Principles and Alternative Procedures." Page 550.

⁸³⁹ The requirement of the establishment of a decision-making body which enables the RFMO to adopt decisions in a "timely and effective manner" is encompassed in Article 10(j) of the 1995 UN Fish Stocks Agreement.

⁸⁴⁰ Tore Henriksen, "Allocation of Fishing Rights: Principles and Alternative Procedures." Page 550. See also McDorman, "Implementing Existing Tools: Turning Words Into Actions – Decision-Making Processes of Regional Fisheries Management Organisations (RFMOs)," which provides exactly the same argument on page 429.

⁸⁴¹ Rosemary Rayfuse, "Regional Fisheries Bodies and Ocean Acidification," in *Research Handbook on Ocean Acidification Law and Policy*, eds. VanderZwaag L David, Oral Nilüfer, and Stephens Tim (Edward Elgar Publishing, 2021). Page 139.

periods between the adoption of a decision and its entry into force.⁸⁴² The quick process from the adoption of a decision to its entry into force may be a direct consequence of the consensus-based decision-making process of the IATTC, as it is presumably easier to implement and operationalize a decision which all member states have accepted and approved in the first place.

6.3.4 Summary

The IATTC has since its origins proven to be an organization that aims at enhancing a holistic management approach that takes into consideration species interactions, minimization of bycatch of species frequently caught in Pacific Ocean tuna fisheries, and wider impacts of fishing operations on marine ecosystems and their residing species. The Antigua Convention explicitly included central elements of the ecosystem approach to fisheries, enabling the IATTC to adopt conservation and management measures tailored to conserving marine ecosystems and non-target species, including an explicit obligation to minimize catch by lost or discarded fishing gear. The decision-making mechanisms of the IATTC are based on the adoption of conservation and management measures by a consensus of the quorum present at commission meetings. Consensus-based decision-making involves several possibilities and potential challenges for the operationalization of the ecosystem approach to fisheries, including a prominent level of compliance through common commitments supported by all the member states of the tuna RFMO and the risk of measures being watered down to ensure that consensus is reached. The parties to the IATTC are thus committed to strive to reach agreement to facilitate the operationalization of the ecosystem approach to fisheries, and the successful application of the approach ultimately depends on their willingness in this regard.

⁸⁴² IATTC, Antigua Convention, Article IX(7). This applies as the main rule, unless otherwise it is explicitly specified in the Convention or agreed when the decision is adopted. A comparison of the period between the adoption of a decision and its entry into force in the five tuna RFMOs will be provided in Section 6.8.

6.4 The ICCAT

6.4.1 Historical Remarks

The thirty-eighth session of the FAO held in 1965 authorized the Director-General to call a conference of representatives to prepare and adopt an instrument to establish a commission for the conservation and management of tuna and tuna-like species in the Atlantic Ocean.⁸⁴³ The conference was held in Rio de Janeiro from 2 to 14 May 1966 and representatives from 17 states and three observer states were present at the negotiations.⁸⁴⁴ A draft convention had been prepared by the FAO Working Party for Rational Utilization of Tuna Resources in the Atlantic Ocean in 1965 prior to the conference,⁸⁴⁵ and the ICCAT Convention was prepared and opened for signature based on the recommendations of the Working Party.⁸⁴⁶ The Convention was subsequently reproduced as Annex I to the Conference of Plenipotentiaries on the Conservation of Atlantic Tunas.⁸⁴⁷ Since its adoption in 1969, the ICCAT has revised and amended its Convention seven times.⁸⁴⁸ The latest revision, reproduced in a draft protocol in November 2019, explicitly includes ecosystem considerations and conservation of non-target species for the first time in the organization's history.⁸⁴⁹ The ICCAT has initiated the process of amending the changes to its Convention, but they have not been formally included in the Convention to date. Pending the signatures of all its member states, the ICCAT nevertheless strives to facilitate the operationalization of the ecosystem approach to fisheries through the adoption of a progressive management mandate, encompassing obligations to conserve target species, non-target species and the marine ecosystems that sustain them. The following

⁸⁴³ ICCAT Basic Texts, CONFERENCE OF PLENIPOTENTIARIES ON THE CONSERVATION OF ATLANTIC TUNAS, Rio Conference(1966), Rio de Janeiro, Brazil, 1966, available at <https://www.iccat.int/Documents/Commission/BasicTexts.pdf>. Last accessed 29.05.2024. Para. 1.

⁸⁴⁴ Ibid. Paras 2-4.

⁸⁴⁵ Ibid. Para. 9.

⁸⁴⁶ Ibid. Para. 10.

⁸⁴⁷ Ibid.

⁸⁴⁸ See ICCAT Convention, available at <https://www.iccat.int/Documents/Commission/BasicTexts.pdf> which clearly states that the basic text of the Convention represents the 7th revision.

⁸⁴⁹ ICCAT, Draft Protocol to Amend the International Convention for the Conservation of Atlantic Tunas, November 7, 2019, available at https://www.iccat.int/com2019/ENG/PLE_108_ENG.pdf.

analysis will be based on the draft protocol and the suggested amendments to the ICCAT Convention (hereinafter called the amended ICCAT Convention).

The ICCAT Convention is open “for signature by the Government of any State which is a member of the United Nations or of any Specialized Agency of the United Nations” in accordance with Article XIV of the ICCAT Convention.⁸⁵⁰ There are currently 52 contracting parties to the ICCAT, including states from all parts of the world and the EU.⁸⁵¹ There are also five states that currently have the status of cooperating non-contracting parties, entities, and fishing entities.⁸⁵² The total number of contracting parties makes the ICCAT one of the biggest RFMOs on a global scale, with similar positive and negative implications for the operationalization of the ecosystem approach to fisheries as the IATTC.⁸⁵³ However, the complexity of coordinating and enforcing conservation and management measures may pose an even greater challenge for the ICCAT due to its large number of contracting parties. The ICCAT Commission thus plays a pivotal role in coordinating a substantial number of states’ fleets in the Atlantic high seas’ fisheries, and the next sections will explore how the organization is facilitating the operationalization of the ecosystem approach.

⁸⁵⁰ Further, the “Convention shall be open for signature or adherence by any inter-governmental economic integration organization constituted by States that have transferred to it competence over the matters governed by this Convention, including the competence to enter into treaties in respect of those matters,” in accordance with the ICCAT Convention, Article XIV(4). This naturally includes the EU, which became a formal party to the Convention in 1997. It is worth noting that it was the European Community that formally adhered to the ICCAT Convention in 1997 and that the European Union succeeded the European Community as a formal member in December 2009.

⁸⁵¹ For a full list of the contracting parties, see ICCAT, “ICCAT Contracting Parties.” Last Accessed 29.05.2024. <https://www.iccat.int/en/contracting.html>.

⁸⁵² Ibid. The ability to gain the status of a cooperating non-contracting party, entity or fishing entity was modernized by the ICCAT by the adoption of Resolution 21-24 in 2019, where Chinese Taipei was allowed to gain the status of a cooperating entity. See <https://www.iccat.int/Documents/Recs/compendiopdf-e/2021-24-e.pdf> for more information.

⁸⁵³ See Section 6.3.1 for more information about these implications.

6.4.2 Regulatory Area and Management Mandate

The relevant regulatory area to which the ICCAT Convention applies “shall be all waters of the Atlantic Ocean, including adjacent Seas” in accordance with Article I of the Convention. The fact that the ICCAT does not have a regulatory area with clearly defined borders, and that it is empowered to regulate fisheries in adjacent seas, creates a scenario where the migration patterns of the relevant stocks may be taken into account in the designation of conservation and management measures to ensure compatibility with the established management regime. It is beyond doubt that the conservation and management measures of the ICCAT apply both to the high seas and the adjacent exclusive economic zones of the coastal states bordering the convention area, which was commended and described as a strength of the ICCAT in comparison with other RFMOs by the panel assessing the organization during its second performance review.⁸⁵⁴ The vast convention area of the ICCAT may have both positive and negative implications for its ability to operationalize the ecosystem approach to fisheries.⁸⁵⁵ The large geographical area under its management mandate may allow the ICCAT to have a significant impact on conservation efforts, as it enables the organization to adopt measures with a wider scope of application to conserve, e.g., marine ecosystems and non-target species. On the other hand, the vast regulatory area requires enhanced monitoring and compliance efforts, which may make it a highly complex matter to obtain sufficient scientific data covering the whole area.⁸⁵⁶ Coordination and compliance among the member states may also pose a significant challenge, and even agreeing on the adoption of potential conservation measures for a vast area may pose a challenge given the potential divergent interests of the 52 member states of the Commission.⁸⁵⁷ However, it seems reasonable to assume that the

⁸⁵⁴ ICCAT, Report of the Independent Performance Review of ICCAT, 2016. Available at https://www.iccat.int/documents/other/0-2nd_performance_review_tri.pdf.

⁸⁵⁵ Whether the vast convention areas of the tuna RFMOs may affect their ability to operationalize the ecosystem approach to fisheries will be subject to closer analysis in Section 8.3.2 of this thesis.

⁸⁵⁶ See, e.g., Enright and Boteler, “The Ecosystem Approach in International Marine Environmental Law and Governance.” Page 343. Enright and Boetler argue that RFMOs leave “many stocks and species unmanaged” due to their management on a species or geographical basis.

⁸⁵⁷ See the presentation in Section 5.3 on how diverse and competing interests may represent a constraint to RFMOs’ ability to implement and operationalize, e.g., the ecosystem approach to fisheries.

convention area of the ICCAT may enable it to facilitate the operationalization of the ecosystem approach to fisheries to a great extent if the Commission successfully adopts conservation and management measures for the ecosystems and their associated species which are applied in its vast convention area.

The species covered by the management mandate of the ICCAT are not explicitly specified in its amended Convention. Some clarity is provided in the preamble, which states that the aim of the Convention is to establish cooperation that enables the parties to maintain the populations of “tuna and tuna-like fishes and elasmobranchs that are oceanic, pelagic, and highly migratory found in the Atlantic Ocean” at “levels which will permit their long term conservation and sustainable use for food and other purposes.”⁸⁵⁸ The clear recognition of elasmobranchs in the preamble of the amended Convention is quite unique and acknowledges that the ICCAT will have the competence to conserve and manage relevant shark species as targeted species when the amendments to its founding instrument are formally adopted.⁸⁵⁹ This represents a significant expansion of its founding instrument which only referred to “tuna and tuna-like fishes found in the Atlantic Ocean” in its preamble.⁸⁶⁰ The practical consequence of the amendment is that ICCAT is taking a pivotal role in the conservation and management of shark stocks which have previously been frequently caught as bycatch and otherwise negatively affected by fishing activities in its convention area. This approach shares similarities with the role of the IATTC in managing the tuna-dolphin problem, and yet again illustrates how RFMOs may play a key role in protection of non-target species. The recognition of the need to conserve and manage marine vertebrates is an integral part of the ecosystem approach to fisheries, through the predator-prey relationships between the species, and the suggested amendment to the ICCAT Convention testifies to an organization which is concerned with expanding its management mandate to safeguard the exploitation of other species than its traditionally targeted stocks.

⁸⁵⁸ ICCAT, Draft Protocol to Amend the International Convention for the Conservation of Atlantic Tunas.

⁸⁵⁹ ICCAT, Report of the Independent Performance Review of ICCAT, 2016. Page 12.

⁸⁶⁰ ICCAT Convention, Preamble.

In accordance with Article IV of the amended Convention, the “Commission and its Members, in conducting work under this Convention, shall act to...apply the precautionary approach and an ecosystem approach to fisheries management in accordance with relevant internationally agreed standards and, as appropriate, recommended practices and procedures.”⁸⁶¹ Some observations regarding the wording of the provision should be made here. The first is that the obligation to apply the precautionary approach and the ecosystem approach to fisheries management applies to both the Commission and the contracting parties. The dual application of the two approaches ensures that the member states are obliged to apply both approaches through domestic efforts and jointly through the Commission, which in turn will ensure compatibility in the convention area of the ICCAT, covering both high seas areas and areas under national jurisdiction. The ICCAT has thus seemingly created an effective conservation regime tailored to fit its management mandate by the inclusion of the dual application of the two approaches, which may facilitate the operationalization of the ecosystem approach to fisheries throughout its entire convention area. The dual obligation encompassed in Article IV may also expand the research capacity of the Commission, as the member states are required to implement relevant conservation and management measures at the domestic level. The scientific knowledge acquired through such processes may be shared with the Commission to secure compatibility and potentially lead to the development of corresponding conservation and management measures for other parts of the regulatory area of the ICCAT. Thus, the obligation in Article IV(a) of the amended ICCAT Convention may arguably lead to the adoption of innovative and progressive management measures through the efforts of the member states to develop such measures.

The second observation relevant for this analysis is the fact that the ICCAT is the only tuna RFMO that explicitly recognizes that the member states of the organization are obliged to apply the ecosystem approach to fisheries management in accordance with Article IV(a). The obligation is clearly articulated and it should be emphasized that it covers all relevant features of the approach, including the obligation to minimize catch by lost, abandoned, or otherwise

⁸⁶¹ ICCAT, Draft Protocol to Amend the International Convention for the Conservation of Atlantic Tunas. Article IV(a).

discarded fishing gear, subject to closer analysis in Chapter 7 of this thesis.⁸⁶² The approach taken by the ICCAT in amending its Convention is unique in the sense that it clearly demonstrates that the ecosystem approach to fisheries management shall permeate all “work under this Convention” in accordance with the first paragraph of Article IV. This naturally includes the adoption of relevant conservation measures for marine ecosystems and non-target species, but it also imposes an obligation to apply the ecosystem approach to fisheries in all scientific work and relevant decisions adopted by the Commission. In this way, the conservation of marine ecosystems shall be considered throughout the range of the organization’s work, making the ICCAT the most progressive RFMO in terms of facilitating the operationalization of the ecosystem approach to fisheries through its explicit recognition of the approach in the relevant instrument.⁸⁶³

The third observation relates to the last part of Article IV(a), where it is stated that the obligation to apply the precautionary approach and the ecosystem approach to fisheries management shall be “in accordance with relevant internationally agreed standards and, as appropriate, recommended practices and procedures.” Consequently, the member states of the ICCAT have agreed to adopt an adaptive obligation tailored to the development of international law in its current form and with future expansions. The provision reflects Article 10(c) of the 1995 UN Fish Stocks Agreement, and it has been established that applying “generally recommended international minimum standards” encompasses the provisions of the Agreement itself, the FAO Code of Conduct, and the FAO implementation guidelines in accordance with Article 10(c).⁸⁶⁴ However, the ICCAT expands the obligation to also encompass “recommended practices and procedures” as appropriate, indicating that best practices also ought to be implemented in its regulatory framework when such practices are developed. The recognition of “internationally agreed standards” in the ICCAT’s amended

⁸⁶² It should be emphasized that the operational level comprising the ecosystem approach to fisheries management has the same normative scope as the ecosystem approach to fisheries. See Section 4.2.4 for an explanation of the different levels.

⁸⁶³ See Sections 6.3.2, 6.5.2, 6.6.2 and 6.7.2 for more information about the management mandates of the other tuna RFMOs.

⁸⁶⁴ The scope of the obligation in Article 10(c) of the 1995 UN Fish Stocks Agreement was subject to closer examination in Section 4.4.2.

Convention has the potential of making it a ‘living instrument’ shaped to deal with emerging issues relating to the conservation of marine ecosystems in fisheries.

It should also be highlighted that the ICCAT is in the process of implementing an obligation to “protect biodiversity in the marine environment” by including Article IV(c) in its amended Convention. The scope of the obligation is not clarified in the instrument, but it apparently strengthens the need to consider ecological linkages in the relevant ecosystems and the obligation to conserve non-target species in the relevant fishing operations.⁸⁶⁵

The ICCAT adopts conservation and management measures based on Article IX of the amended ICCAT Convention, which states: “The Commission may, on the basis of scientific evidence, make recommendations,”⁸⁶⁶ which are “designed to ensure in the Convention area the long-term conservation and sustainable use of ICCAT species by maintaining or restoring the abundance of those species at or above levels capable of producing the maximum sustainable yield.”⁸⁶⁷ The “ICCAT species” must be understood to be a reference to the species included in the preamble of the Convention, which are specified as “tuna and tuna-like fishes and elasmobranchs that are oceanic, pelagic, and highly migratory found in the Atlantic Ocean,” creating a framework where sharks should be conserved and managed in the same manner as the relevant tuna species.

Furthermore, the Commission may make recommendations designed to “promote, where necessary, the conservation of other species that are dependent on or associated with ICCAT species, with a view to maintaining or restoring populations of such species above levels at which their reproduction may become seriously threatened.”⁸⁶⁸ This obligation reflects the recognition of ecological linkages between the targeted fish stocks and the relevant non-target species. However, Article IX of the amended ICCAT Convention has significant

⁸⁶⁵ It should be noted that the obligation in Article IV(c) of the amended ICCAT Convention is identical to Article 5(d) of the 1995 UN Fish Stocks Agreement, which was presented in Section 4.3.2.

⁸⁶⁶ ICCAT, Draft Protocol to Amend the International Convention for the Conservation of Atlantic Tunas. Article IX(1). It should be emphasized that these recommendations are binding upon the member states.

⁸⁶⁷ ICCAT, Draft Protocol to Amend the International Convention for the Conservation of Atlantic Tunas. Article IX(i).

⁸⁶⁸ ICCAT, Draft Protocol to Amend the International Convention for the Conservation of Atlantic Tunas. Article IX(1)(a)(ii).

shortcomings by stating that the recommendations may be adopted to ensure that the populations are kept at levels where their reproduction does not “become seriously threatened.” Similarly to the IATTC’s Antigua Convention, the instrument does not specify when the reproduction of species may “become seriously threatened,” causing vagueness in terms of when consideration of non-target species becomes necessary and when the threshold for such consideration is met.⁸⁶⁹ Rather than functioning as a basis for management, the obligation becomes a “safety mechanism” which seemingly enters into force when species are on the verge of becoming seriously threatened. That the Commission in such scenarios “may make recommendations” tailored to conserve stocks, also enables a lack of action, even though it is unlikely to happen in practice since these species are normally vital for the abundance of the targeted species. Despite the identified shortcomings in terms of conservation of non-target species, the amended ICCAT Convention as a whole clearly facilitate the operationalization of the ecosystem approach to fisheries through the establishment of a holistic management framework.

6.4.3 Decision-Making Mechanisms

Having established that the amended ICCAT Convention facilitates the operationalization of the ecosystem approach to fisheries through the inclusion of clearly articulated material obligations for its application in the work of the Commission, it is now time to assess how the procedural functions of the organization may affect its ability to operationalize the approach.

The ICCAT adopts decisions by a majority of the contracting parties where each party has one vote in accordance with Article III of the ICCAT Convention.⁸⁷⁰ Two-thirds of the contracting parties constitute a quorum.⁸⁷¹

⁸⁶⁹ See Section 6.3.2 which explored how Article VII(d) of the Antigua Convention encompasses an identical obligation.

⁸⁷⁰ ICCAT, Draft Protocol to Amend the International Convention for the Conservation of Atlantic Tunas. Article III. The general rule regarding decision-making by majority voting applies unless otherwise clearly specified in other provisions of the Convention.

⁸⁷¹ ICCAT, Draft Protocol to Amend the International Convention for the Conservation of Atlantic Tunas. Article III.

A decision-making process based on majority voting may have both positive and negative implications for the ability of the ICCAT to facilitate the operationalization of the ecosystem approach to fisheries. Majority voting may lead to faster decision-making than consensus-based voting as all the member states will not have to reach agreement before a decision is made, making the decision-making mechanism more efficient.⁸⁷² This may be advantageous in scenarios where prompt action is needed to mitigate pressing issues of relevance for the ICCAT. Some disadvantages of majority voting are that it has the potential of decreasing the “input legitimacy” of decisions internally in the RFMO,⁸⁷³ and naturally that the group of states representing the minority view may feel that the adopted measures do not reflect their views. Overall, it can be concluded that majority voting is a more effective decision-making mechanism to adopt quick decisions than one based on consensus, but that the success of this mechanism depends on the level of compliance by the states representing the minority view.⁸⁷⁴ However, the ICCAT would appear to have adopted a decision-making mechanism that may facilitate the adoption of relevant conservation and management measures to conserve marine ecosystems and non-target species in a timely and effective manner in accordance with Article 10(j) of the 1995 UN Fish Stocks Agreement. Majority voting may pave the way for the adoption of progressive conservation measures if most of the member states agree, which may be beneficial for the operationalization of the ecosystem approach to fisheries, as this approach requires the states to expand conventional management practices in the context of tuna fisheries.

All recommendations made under Article XIII of the ICCAT Convention normally become effective for all contracting parties six months after notification by the Commission, ensuring a relatively prompt implementation of the relevant measures for the potential operationalization of the ecosystem approach to fisheries.⁸⁷⁵ The ICCAT Convention empowers its contracting parties with the ability to object to the adoption of conservation

⁸⁷² See, e.g., Jamie Tijmes-Lhl, “Consensus and Majority Voting in the WTO,” *World Trade Review* 8, No. 3(2009): 417–37, <https://doi.org/10.1017/S1474745609004388>. Page 424.

⁸⁷³ *Ibid.* Pages 424-425.

⁸⁷⁴ See also Unterweger, *International Law on Tuna Fisheries Management*. Page 133.

⁸⁷⁵ ICCAT, Draft Protocol to Amend the International Convention for the Conservation of Atlantic Tunas. Article VIII, second paragraph.

and management measures in accordance with Article VIII(3). If a member state places an objection, the adopted measure will not become binding on this member state under Article VIII(3)(c). The fact that the ICCAT has established an opt-out clause for its members may consequently create an effective management regime where the member states can agree to adopt progressive conservation and management measures to safeguard the species covered by the management mandate, without running the risk of non-compliance by members, which could jeopardize operationalization. If a state does not intend to be bound by such measures after their adoption, it may subsequently opt out. However, it is beyond doubt that opt-out clauses have overall negative consequences for the management regime established by the ICCAT. One relevant example is that conservation and management measures adopted in accordance with Article VIII(3) might become weakened if several member states opt out and are not bound by them. Such clauses may ultimately “destroy the ability...to take effective measures.”⁸⁷⁶

6.4.4 Summary

By initiating a process of amending its founding instrument, the ICCAT seems to have taken the necessary steps to facilitate the operationalization of the ecosystem approach to fisheries. By including a clearly articulated obligation to apply the ecosystem approach to fisheries management in all the work of the Commission and the member states under the ICCAT Convention, this RFMO is facilitating the operationalization of the approach. The obligation is clearly articulated and it may be emphasized that it covers all relevant features of the approach, including the obligation to minimize catch by lost, abandoned, or discarded fishing gear, subject to closer analysis in this thesis.⁸⁷⁷ The member states of the ICCAT are also obliged to “protect biodiversity in the marine environment” in accordance with Article IV(c) of the amended ICCAT Convention, and to apply the ecosystem approach to fisheries management and the precautionary approach “in accordance with relevant internationally

⁸⁷⁶ Boyle and Redgwell, *Birnie, Boyle & Redgwell's International Law and the Environment*. Page 754.

⁸⁷⁷ It should be emphasized that the operational level comprising the ecosystem approach to fisheries management encompasses the same normative scope as the ecosystem approach to fisheries. See Section 4.2.4 for an explanation of the different levels.

agreed standards and, as appropriate, recommended practices and procedures.”⁸⁷⁸ The obligation is far-reaching and reflects the scope of Article 10(c) of the 1995 UN Fish Stocks Agreement, thereby giving effect to, e.g., the FAO Code of Conduct and FAO implementation guidelines.

The Commission of the ICCAT has adopted majority voting as its decision-making mechanism relevant to putting the ecosystem approach to fisheries into practice through the its adoption of conservation and management measures. This implies both potential strengths and weaknesses for the operationalization of the approach.

The relevant amendments to the ICCAT Convention have not yet entered into force. Consequently, the question of how the ecosystem approach to fisheries is currently being operationalized pursuant to the management mandate established in the Convention will have to be assessed through an examination of how the approach is currently shaping the management practices of the ICCAT. This assessment will be undertaken in Chapter 7.

⁸⁷⁸ ICCAT, Amended Convention. Article V(a).

6.5 The CCSBT

Similarly to the assessments of the IATTC and the ICCAT, this chapter will seek to establish how the material and procedural obligations in the CCSBT Convention facilitate the operationalization of the ecosystem approach to fisheries.

6.5.1 Historical Remarks

The CCSBT was formally founded when the Convention for the Conservation of Southern Bluefin Tuna entered into force on 20 May 1994.⁸⁷⁹ Prior to its adoption, Australia, Japan, and New Zealand had already entered into a voluntary agreement where they applied strict quotas for their fishing fleets from 1985.⁸⁸⁰ The objective of the imposing management measures through the use of quotas was to enable the stocks of southern bluefin tuna to rebuild after the species was subject to heavy fishing in the early 1960s, with the serious consequences of stock declines and rapid falls in annual catches.⁸⁸¹

In 1993, the fishing arrangement between Australia, Japan, and New Zealand, was formalized when they signed and acceded to the CCSBT Convention. Subsequently, the CCSBT decided to encourage the membership of the Republic of Korea, Taiwan, and Indonesia in response to fishing operations by these non-members in the southern bluefin tuna fishery, to ensure the effectiveness of its conservation and management measures.⁸⁸² The Republic of Korea and Indonesia ratified the CCSBT Convention and acceded to it in 2001 and 2008, respectively, and the fishing entity Taiwan has been an extended commission member since 2002.⁸⁸³ South Africa and the EU are also members of the extended commission of the CCSBT. Consequently,

⁸⁷⁹ CCSBT, Convention for the Conservation of Southern Bluefin Tuna (1994), available at: www.ccsbt.org/sites/default/files/userfiles/file/docs_english/basic_documents/convention.pdf.

⁸⁸⁰ CCSBT, "Origins of the Convention | CCSBT Commission for the Conservation of Southern Bluefin Tuna," last accessed 30.05.2024, <https://www.ccsbt.org/en/content/origins-convention>.

⁸⁸¹ Ibid.

⁸⁸² Ibid.

⁸⁸³ Ibid.

the CCSBT is one of the smallest RFMOs in terms of member states on a global scale and is currently operated by only five states, with three extended commission members.

The fact that the CCSBT is only operated by five states may naturally affect its ability to implement and operationalize the ecosystem approach to fisheries. Unlike the IATTC and the ICCAT, the CCSBT will arguably have to respond to legal developments and associated requirements with fewer resources, as the RFMOs are operated based on annual contributions to their budgets by their member states.⁸⁸⁴ This may lead to difficulties in addressing broader ecosystem considerations beyond the status of southern bluefin tuna, as there will be a limited number of perspectives and resources available to address the ecological linkages in terms of scientific research and the development of conservation and management frameworks. The limited membership status of the CCSBT may nevertheless facilitate effective procedural mechanisms for the operationalization of the ecosystem approach, through consensus-based decision-making. If all member states agree on the adoption of relevant conservation and management measures, a small RFMO in terms of member states may be able to reach consensus faster as the perspectives may be less diverse.⁸⁸⁵

A current concern is that some major fishing states operating in the southern bluefin tuna fishery, such as the US and China, are not currently members of the CCSBT.⁸⁸⁶ The CCSBT should thus support and facilitate the adherence of the relevant fishing states to its founding instrument.

The next section will explore how the regulatory area and management mandate of the CCSBT affects its ability to facilitate the operationalization of the ecosystem approach to fisheries.

⁸⁸⁴ Article 11 of the CCBT Convention describes how the contributions to its annual budget are allocated between its member states.

⁸⁸⁵ See Section 5.3 of this thesis, where it was established that competing interests and diverse priorities of member states of RFMOs may influence their ability to adopt conservation measures for ecosystems and non-target species.

⁸⁸⁶ OECD. "Expanding membership in the Commission for the Conservation of Southern Bluefin Tuna (CCSBT)," in *Strengthening Regional Fisheries Management Organisations*. Paris: OECD Publishing, 2009. <https://doi.org/10.1787/9789264073326-4-en>.

6.5.2 Regulatory Area and Management Mandate

The geographical area of competence of the CCSBT is not defined in its founding Convention, but it has a formal mandate to “ensure, through appropriate management, the conservation and optimum utilization of southern Bluefin tuna” in accordance with Article 3 of the CCSBT Convention. As the CCSBT does not have a defined regulatory area, its management mandate applies to southern bluefin tuna throughout its global migratory patterns. This differs from the other tuna RFMOs, which have explicit management mandates for clearly defined areas.⁸⁸⁷ The lack of a clear boundary of the regulatory area of the CCSBT at first seems beneficial for the operationalization of the ecosystem approach to fisheries, as it may facilitate conservation and management of ecosystems throughout the natural migration patterns of the tuna species. As marine species do not respect artificial boundaries and migrate through their natural patterns, the CCSBT’s approach may consequently ensure ecological connectivity in the ocean by not determining the boundaries of its regulatory area.⁸⁸⁸ The lack of a defined regulatory area also allows the organization to be flexible in responding to changes in ecosystem dynamics relevant to the targeted fish stock, which may enable it to adopt necessary measures in response to new scientific findings or changes in the distribution of the southern bluefin tuna and relevant non-target species throughout their natural migratory patterns. The notion that highly migratory species should be conserved and managed through their migration patterns was recognized by the ITLOS in the *Request for an Advisory Opinion submitted by the Sub-Regional Fisheries Commission*, where the tribunal stated that “fisheries conservation and management measures, to be effective, should concern the whole stock unit over its entire area of distribution or migration routes.”⁸⁸⁹ The lack of a clearly defined

⁸⁸⁷ See Sections 6.3.2, 6.4.2, 6.6.2, and 6.7.2 of this thesis for more information.

⁸⁸⁸ The term ‘connectivity’ may be understood to represent “the interlinked nature of the ocean” and encompasses the migration patterns of species. See e.g. Elise Johansen et al., “A Marine-Biology-Centric Definition of Ocean Connectivity and the Law of the Sea,” pages 190-191, UNEP, “Connectivity: A Critical Biodiversity Consideration in Global Ocean Sustainability,” 3 and Bethan C. O’Leary and Callum M. Roberts, “Ecological Connectivity across Ocean Depths: Implications for Protected Area Design,” *Global Ecology and Conservation* 15 (2018): 1–10.

⁸⁸⁹ *Request for Advisory Opinion submitted by the Sub-Regional Fisheries Commission*, Advisory Opinion, 2 April 2015, ITLOS Reports 2015, p. 4. Para 214.

regulatory area may as such be regarded as enhancing a management approach consistent with the Law of the Sea Convention,⁸⁹⁰ and may also foster closer collaboration between the member states and the Commission, and between the Commission and other regional and international organizations. The lack of a defined regulatory area allows the CCSBT to work with non-member states and other organizations to conserve southern bluefin tuna, ecosystems, and relevant non-target species across their entire range, which may lead to shared responsibility for conservation and management efforts and the development of more comprehensive conservation measures.

On the other hand, the CCSBT's undefined regulatory area may lead to difficulty in collecting accurate and timely scientific information on the status of non-target species, which may pose challenges in creating suitable and effective conservation and management frameworks. As the regulatory area changes due to the migration patterns of the southern bluefin tuna, the vast geographical area may lead to scenarios where the species residing in the relevant ecosystems may be under severe pressure unknown to the CCSBT. Another relevant challenge in not defining a clear-cut regulatory area is the potential lack of uniformity in adopted conservation and management measures across the migratory patterns of the southern bluefin tuna. The different member states may adopt different conservation measures for the relevant non-target species, and the vast area may make it difficult for the Commission to adopt measures that apply to all relevant areas where the southern bluefin tuna migrates. This scenario may lead to inconsistent conservation of non-target species across the region and create areas where these species are more vulnerable to exploitation.⁸⁹¹ To address such relevant challenges, the CCSBT may consider developing a defined regulatory area that includes all areas where southern bluefin tuna and non-target species interact or it may adopt consistent conservation and management measures applicable to the whole region. As developing such measures would require substantial funding, it seems feasible to suggest that

⁸⁹⁰ Ibid. Para. 213. The tribunal made this statement when interpreting the scope of Articles 61, 63, and 64 of the Law of the Sea Convention.

⁸⁹¹ Another significant challenge, not subject to closer examination in this study, involves the enforcement of the relevant conservation and management measures. The vast regulatory area may impede the Commission's ability to ensure compliance with the measures, as it is almost impossible to monitor compliance without a large number of observers or necessary monitoring systems.

the CCSBT should start by ensuring compatibility between existing measures, which is currently not regulated in its founding instrument. Amending its Convention with an obligation to achieve compatibility would arguably increase its ability to operationalize the ecosystem approach to fisheries.

Another distinctive feature of the CCSBT is that it only manages one specific tuna species, and that its Convention only applies to southern bluefin tuna.⁸⁹² In accordance with Article 5, the member states of the CCSBT “shall expeditiously provide to the Commission for the Conservation of Southern Bluefin Tuna scientific information, fishing catch and effort statistics and other data relevant to the conservation” of the targeted stock and “as appropriate, ecologically related species.”⁸⁹³ The term “ecologically related species” is defined as “living marine species which are associated with southern bluefin tuna, including but not restricted to both predators and prey of the targeted species.”⁸⁹⁴ The members of the CCSBT shall also “cooperate in collection and direct exchange, when appropriate, of fisheries data, biological samples and other information relevant for scientific research” regarding their target stock and ecologically related species. The obligation to “cooperate in collection and direct exchange of data” relating to ecologically related species is beneficial for the organization’s ability to operationalize the ecosystem approach to fisheries, as the vast geographical scope of application of the instrument will require significant work by the parties to ensure that the necessary scientific knowledge is acquired to adopt conservation and management measures for these species. The coordination of such scientific work would thus seem to be vital.

The functions of the Commission are described in Article 8 and include an obligation to “collect and accumulate...scientific information, statistical data and other information relating to southern bluefin tuna and ecologically related species,”⁸⁹⁵ and “any other information relating to southern bluefin tuna.”⁸⁹⁶ The Commission shall also consider “regulatory measures for

⁸⁹² In Article 1 of the CCSBT Convention, it is stated that the “Convention shall apply to southern bluefin tuna (*Thunnus Maccoy*).”

⁸⁹³ CCSBT Convention. Article 5(2).

⁸⁹⁴ CCSBT Convention. Article 2(a).

⁸⁹⁵ CCSBT Convention. Article 8(1)(a).

⁸⁹⁶ CCSBT Convention. Article 8(1)(c).

conservation, management and optimum utilisation of southern bluefin tuna.” The Commission may, “if necessary, decide upon other additional measures” in accordance with Article 8(3)(b). The provision does not clarify when it is to be invoked by the Commission nor the types of measures that may be adopted. Consequently, it is possible that conservation measures relating to ecologically related species may be adopted pursuant to the provision, as this may be necessary to conserve and manage the southern bluefin tuna considering, e.g., their predator-prey relationships. Article 8(3) may be regarded as indirectly enabling the operationalization of some core elements of the ecosystem approach to fisheries if the Commission of the CCSBT gives effect to the provision by adopting measures to safeguard non-target species. However, a significant shortcoming is that the Commission is restricted to apply the obligation only in scenarios where it is considered “necessary.” The question of when non-target species ought to be given consideration is not further specified in the provision, and the threshold for the requirement of necessity is unclear. This creates vagueness in terms of when the obligation ought to be put into practice by the Commission.

Further, the Commission shall “develop...consistent with international law, systems to monitor all fishing activities related to southern bluefin tuna in order to enhance scientific knowledge necessary” for its conservation and management and “in order to achieve effective implementation” of the CCSBT Convention and the measures adopted in its regulatory framework.⁸⁹⁷ The CCSBT Convention also established a scientific committee as an advisory body to the Commission, with a mandate that includes reporting to the Commission on its “findings or conclusions...on the status of the southern bluefin tuna stock and, where appropriate, of ecologically related species.”⁸⁹⁸

This brief analysis of the relevant provisions of the CCSBT’s founding instrument reveals that the CCSBT has established a management framework heavily based on single-species management.⁸⁹⁹ However, some attention is devoted to ecologically related species in some of the provisions of the instrument. These obligations primarily concern scientific research

⁸⁹⁷ CCSBT Convention. Article 8(9).

⁸⁹⁸ CCSBT Convention. Article 9(2)(c).

⁸⁹⁹ See Section 4.2.4 of this thesis for more information regarding the single-species approach and the ecosystem approach to fisheries and how they differ.

and work, and the explicit reference made to predator-prey relationships, reflecting a core element of the normative scope of the ecosystem approach to fisheries.⁹⁰⁰ This finding implies that the CCSBT may adopt conservation and management measures directed at conserving, e.g., non-target species based on Article 8(3)(b) of its founding instrument. The provision encompasses a mechanism providing the Commission with the power to “decide upon additional measures” for the conservation of southern bluefin tuna, which may include predator-prey relationships with non-target species. Thus, Article 8(3)(b) of the CCSBT Convention may facilitate the operationalization of the ecosystem approach to fisheries, but the application of the provision is limited by the wording “if necessary,” causing vagueness as to when the threshold of considering non-target species is met.

It is somewhat surprising that the CCSBT, which was formally established in the period when the 1995 UN Fish Stocks Agreement and the Code of Conduct were negotiated, has not included any explicit obligations regarding the conservation of non-target species or ecosystem considerations in general. However, there are several viable explanations for why the CCSBT Convention does not explicitly recognize, e.g., the application of the ecosystem approach to fisheries in the work of the Commission.

The first explanation may be the lack of a clearly defined convention area of the CCSBT. The southern bluefin tuna are described as fast-swimming pelagic fish, which migrate throughout the southern hemisphere, primarily between 30 and 50 degrees south.⁹⁰¹ As the CCSBT Convention applies to the southern bluefin tuna throughout its migratory patterns, its area of application might change due to the seasons and other environmental factors. Consequently, the lack of a clearly defined regulatory area may create scenarios where it may be difficult to conserve and manage, e.g., marine ecosystems and non-target species due to constant changes in the geographical area of application. The second viable explanation may be that the origins and history of the southern bluefin tuna fishery have influenced the drafting and adoption of the CCSBT Convention. The CCSBT itself states that its founding instrument was

⁹⁰⁰ Ibid.

⁹⁰¹ CCSBT, “About Southern Bluefin Tuna | CCSBT Commission for the Conservation of Southern Bluefin Tuna,” last accessed 30.05.2024, <https://www.ccsbt.org/en/content/about-southern-bluefin-tuna>. The southern bluefin tuna stock rarely occurs in the Pacific Ocean despite its vast migratory patterns.

adopted as a formalization of the arrangement between Australia, Japan, and New Zealand.⁹⁰² The original arrangement between the three countries was established with the sole objective to mitigate the severe overfishing of the southern bluefin tuna stock. It is thus not surprising that the CCSBT has a limited management mandate that only recognizes the need to conserve this tuna stock when the history of the RFMO is taken into consideration. A third explanation may be the number of contracting parties to the CCSBT, making it a relatively small tuna RFMO, consisting of just five commission members. As the implementation and operationalization of the ecosystem approach to fisheries requires extensive research capacity and funding to enable studies of relevant habitats, species interactions across the southern hemisphere and monitoring of the status of the relevant non-target species, it may not be surprising that the CCSBT directs its focus and available resources primarily at the conservation of its target stock.

Although the CCSBT Convention has been described as providing a limited management mandate for the conservation and management of marine ecosystems and non-target species, the CCSBT has taken some steps towards the conservation of such species through bycatch mitigation measures.⁹⁰³ The types of management measures it has adopted pursuant to its established regulatory framework will be further explored in Chapter 7, where its operationalization of the management objective of minimizing catch by lost, abandoned, or otherwise discarded fishing gear is subject to closer examination. The next section will examine the question of how the CCSBT's decision-making mechanisms may affect its ability to operationalize the ecosystem approach to fisheries.

6.5.3 Decision-Making Mechanisms

The CCSBT adopts decisions based on unanimous votes of the member states present at the relevant commission meetings.⁹⁰⁴ Two-thirds of the parties constitute a quorum enabling the

⁹⁰² See Section 6.5.1 of this thesis for more information about the drafting history and origins of the CCSBT Convention.

⁹⁰³ CCSBT, Resolution to align CCSBT's ecologically related species measures with those of other tuna RFMOs.

⁹⁰⁴ CCSBT Convention. Article 7.

Commission to adopt decisions pursuant to the relevant provisions of its founding instrument.⁹⁰⁵ The fact that Article 7 of the founding instrument grants each member state veto powers might hinder the adoption of progressive conservation and management measures. The origins of the inclusion of the exemptive powers in Article 7 must be considered in a historical context. As described by Schiffman, “a veto provision in an organization like the CCSBT prevents two coastal states, Australia and New Zealand, from out-voting Japan,” which traditionally had been more interested in full utilization of the southern bluefin tuna stock, as opposed to the desire to conserve the species of the other original members of the commission.⁹⁰⁶ The veto powers in the CCSBT Convention led to the well-known *Southern Bluefin Tuna Cases*.⁹⁰⁷ As the member states of the CCSBT were unable to agree on catch limits for the southern bluefin tuna stock, Australia and New Zealand invoked the dispute settlement mechanisms encompassed in Part XV of the Law of the Sea Convention, establishing an arbitral tribunal to decide on the matter.⁹⁰⁸ Another dispute between the CCSBT member states arose over Japan’s desire to initiate a joint experimental fishing program to increase scientific information on the southern bluefin tuna, where the additional catches would exceed the agreed total catch quotas of Japan.⁹⁰⁹ To preserve their rights pending the decision of the arbitral award, Australia and New Zealand invoked the application of the precautionary approach and sought an order of provisional measures in the International Tribunal for the Law of the Sea (ITLOS) to prevent Japan from continuing its experimental fishing program.⁹¹⁰ The Tribunal ruled in favor of Australia and New Zealand and initiated an order against Japan, indicating that the Japanese catches under the experimental program were to be counted towards the previously agreed annual allocation.⁹¹¹ One may therefore conclude that the inclusion of an unanimous decision-making mechanism in the CCSBT created fundamental disputes with regard to its management mandate. Unanimous decision-making ultimately will

⁹⁰⁵ CCSBT Convention. Article 6(7).

⁹⁰⁶ Schiffman, *Marine Conservation Agreements: The Law and Policy of Reservations and Vetoes*. Page 47.

⁹⁰⁷ Award on Jurisdiction and Admissibility, *Southern Bluefin Tuna Cases*, Aug. 4, 2000.

⁹⁰⁸ Ibid. For more information regarding the background of the case, see paras. 21-34.

⁹⁰⁹ See Award in Jurisdiction and Admissibility, *Southern Bluefin Tuna Cases*, Para. 24 and Schiffman, *Marine Conservation Agreements: The Law and Policy of Reservations and Vetoes*, page 121.

⁹¹⁰ *Southern Bluefin Tuna Cases* (New Zealand v. Japan; Australia v. Japan), Provisional Measures (ITLOS August 27, 1999).

⁹¹¹ *Southern Bluefin Tuna Cases* (New Zealand v. Japan; Australia v. Japan), Provisional Measures. Page 298.

in the future also have the potential of deterring and preventing the adoption of progressive conservation and management measures in the CCSBT. However, this decision-making mechanism also carries with it the possibility of ensuring compliance among the member states if all parties agree on the scope and content of the conservation and management measures. This will be beneficial if the CCSBT adopts conservation and management measures to facilitate the operationalization of, e.g., the ecosystem approach to fisheries.

All conservation and management measures established pursuant to Article 8(3) of the CCSBT Convention for the conservation, management, and optimum utilization of the CCSBT target stock of southern bluefin tuna and additional measures decided upon by the Commission shall become binding on the parties.⁹¹² The instrument does not specify when the adopted measures should become effective and binding, which is a unique feature of the CCSBT Convention. The four other tuna RFMOs have adopted explicit provisions regulating this matter.⁹¹³ This may grant the CCSBT some level of flexibility in implementing and operationalizing adopted conservation and management measures for the conservation of marine ecosystems and non-target species, but at the same time it requires its member states to make efforts to comply with the measures in a timely and effective manner in accordance with Article 10(j) of the 1995 UN Fish Stocks Agreement. This places a responsibility upon the member states not to utilize the lack of a specified period of time in Article 8 to defer the implementation of the conservation and management measures.

6.5.4 Summary

The CCSBT is a unique tuna RFMO in terms of its small number of member states, its undefined convention area and its narrow management mandate to conserve and manage only the stock of southern bluefin tuna. However, the CCSBT has some features which may be beneficial for the operationalization of the ecosystem approach to fisheries. A potential ability to conserve all relevant ecosystem components in its convention area may be based on the CCSBT

⁹¹² CCSBT Convention. Article 8 (7).

⁹¹³ See Sections 6.3.3, 6.4.3, 6.6.3, and 6.7.3 of this thesis regarding the procedural elements of the other four tuna RFMOs.

Convention's geographical area of application, which corresponds with the migration patterns of the target species. This approach was considered a feasible conservation approach for the targeted species in the case concerning a *Request for Advisory Opinion submitted by the Sub-Regional Fisheries Commission*.⁹¹⁴ As marine species do not respect artificial boundaries created by states and legal instruments, the approach taken by the CCSBT may align the most with the obligation to conserve ecosystems and the non-target species residing in these areas. This nevertheless requires substantial funding to acquire the necessary scientific information, in addition to willingness to adopt conservation and management measures applicable to vast geographical areas through the unanimous voting procedures of the CCSBT. As the CCSBT is one of the smallest RFMOs in terms of member states on a global scale and has been driven by diverse interests, as illustrated by the *Southern Bluefin Tuna Cases*,⁹¹⁵ it seems evident that it will have to overcome substantial challenges to enable these changes. As a starting point, it is thus recommended that the CCSBT adopts amendments to its Convention to ensure compatibility of the relevant measures among the member states and the Commission. It is also recommended that the CCSBT amends its Convention to clearly recognize the application of the ecosystem approach to fisheries, or at least revises Article 8(3) to create clarity as to how the Commission will facilitate the potential operationalization of the approach.

⁹¹⁴ *Request for Advisory Opinion submitted by the Sub-Regional Fisheries Commission*, Advisory Opinion, 2 April 2015, ITLOS Reports 2015, p. 4. Para. 214.

⁹¹⁵ See Section 6.5.3 of this thesis, which presented the background and relevant findings of the two judgements.

6.6 The IOTC

6.6.1 Historical Remarks

The Indian Ocean Tuna Commission was established in 1993 as an Article 14 body under the FAO Constitution.⁹¹⁶ The IOTC is currently the only tuna RFMO established under the framework of the FAO, which was instrumental for its foundation.⁹¹⁷ However, the high seas of the Indian Ocean were regulated even prior to the establishment of the IOTC. The Indian Ocean Fishery Commission (IOFC) was established in 1967 in response to the need for a regional fisheries body in the Indian Ocean and the “need for collective action for the development and rational utilization of the fishery resources.”⁹¹⁸ Interestingly, the species covered by the mandate of the IOFC were all living marine resources in its convention area.⁹¹⁹ In 1968, the need for a special management framework for tuna species was recognized by the members of the Commission, and the IOFC Tuna Committee was established “to assist IOFC in its consideration of the steps required to introduce management measures for heavily exploited stocks of tuna when these measures” were found necessary.⁹²⁰ Considering the work conducted by the Committee to ensure proper management of the tuna species in the Indian Ocean, the FAO prepared a draft treaty for the formal establishment of the IOTC, which was formally adopted in 1993.⁹²¹

⁹¹⁶ Article XIV of the FAO Constitution allows the FAO Council to approve and submit to agreements established by its Member Nations relating to food and agriculture which are of particular interest to the relevant states of geographical areas specified in such agreements. See also Article 1 of the IOTC Agreement.

⁹¹⁷ Hussain Sinan and Megan Bailey, “Understanding Barriers in Indian Ocean Tuna Commission Allocation Negotiations on Fishing Opportunities,” *Sustainability* 12, No. 16 (January 2020): 6665, <https://doi.org/10.3390/su12166665>. Page 2.

⁹¹⁸ J.J. Kambona and S.H. Marashi, “Process for the Establishment of the Indian Ocean Tuna Commission,” (Rome, Italy: FAO, 1996), <https://www.fao.org/3/W1750E/W1750E00.htm>. Chapter I.

⁹¹⁹ *Ibid.*

⁹²⁰ *Ibid.*

⁹²¹ *Ibid.* Chapter II. The IOFC ceased all its activities in 1999. See Lee A. Kimball, *International Ocean Governance: Using International Law and Organizations to Manage Marine Resources Sustainably* (IUCN, 2003), page 118 for a brief description of the dissolution of the IOFC.

There are currently 30 member states of the IOTC, and one state with the status of cooperating non-contracting party.⁹²² This makes the IOTC one of the RFMOs with the most member states on a global scale, with similar opportunities and challenges for the operationalization of the ecosystem approach to fisheries as the IAATC and the ICCAT.⁹²³ The IOTC nevertheless faces additional challenges due to its location in the Indian Ocean, where artisanal fisheries accounted for 64% of the catch of the species managed by the organization in 2018.⁹²⁴ Approximately 50% of the major tuna species in the Indian Ocean were harvested by small-scale fishing fleets during the same year, which contrasts with other tuna fisheries predominantly undertaken by industrial fishing vessels.⁹²⁵ Consequently, the IOTC depends on its member states to effectively facilitate the operationalization of the ecosystem approach to fisheries, and through domestic regulations and mechanisms to ensure compatibility between the measures adopted by the Commission and among its member states. Twenty-two of its contracting parties are coastal states with adjacent maritime zones bordering its regulatory area,⁹²⁶ emphasizing the need to ensure that suitable mechanisms for compatibility are adopted and enforced by the Commission of the IOTC.

Article IV of the IOTC Agreement regulates membership in the Commission. As distinct from the other tuna RFMOs, the close connection between the FAO and the IOTC is apparent in the provision as “membership shall be open to Members and Associate Members of the FAO”, subject to being “coastal States or Associate Members situated wholly or partly within the

⁹²² For a full list of the member states, see the IOTC website: <https://iotc.org/about-iotc/structure-commission> (Last accessed 30.05.2024). The European Union is a member of the organization, and France, Spain, Portugal, Italy, La Reunion, and Mayotte operate in the regulatory area of the IOTC under its membership. Liberia is currently the only state that has the status of a cooperating non-contracting party in the IOTC.

⁹²³ See Sections 6.3.1 and 6.4.1 of this thesis.

⁹²⁴ IOTC. “Implementation of IOTC Conservation and Management Measures - Part A. Understanding IOTC and the International Fisheries Management Framework.” FAO, 2018, 80 pages, pp. 22-23.

⁹²⁵ Ibid.

⁹²⁶ Sinan and Bailey, “Understanding Barriers in Indian Ocean Tuna Commission Allocation Negotiations on Fishing Opportunities.” Page 2.

Area,”⁹²⁷ or “States or Associate Members whose vessels engage in fishing in the Area for stocks covered” by the Agreement.^{928,929}

The wording of Article IV of the IOTC Agreement has sparked fundamental discussions regarding the ability of fishing entities to accede to the Agreement, causing major political tensions within the IOTC due to the participatory status of Taiwan.⁹³⁰ As an organization established under the FAO, the IOTC is located within the UN system recognizing the “one China policy.”⁹³¹ The impediments caused by the dispute on Taiwan’s right to accede to the Agreement have even triggered a wish to dissolve the IOTC as an “FAO organization,” and to establish an autonomous management body.⁹³² The political interests of China have been evident in the question of Taiwan’s access to the IOTC, as China has attempted to represent Taiwan in the meetings of the Commission and pay the annual contribution to the budget of the IOTC, covering the quantity of fish caught by its fleet.⁹³³ Nevertheless, Taiwan has continuously refused to share its catch data with the IOTC and China due to the deprivation of its right to be present at the meetings of the IOTC, because of its lack of FAO membership status.⁹³⁴ Taiwan has historically accounted for substantial amounts of tuna catches in the

⁹²⁷ IOTC Agreement. Article IV(i).

⁹²⁸ IOTC Agreement. Article IV(ii). Membership is also open for “regional economic integration organizations of which any State referred to in subparagraphs (i) or (ii) above is a member and to which that State has transferred competence over matters within the purview” of the Agreement. See Article IV(iii) of the IOTC Agreement for more information.

⁹²⁹ The Commission may accept members that are not members of the FAO as long as these states are members of the United Nations, any UN Specialized Agencies or of the International Atomic Energy Agency, if these states are “coastal States situated wholly or partly within” the convention area, or “States whose vessels engage in fishing in the Area for Stocks covered by” the Agreement in accordance with the IOTC Agreement, Article IV(2)(a)(I) and (ii). Under such circumstances, the Commission may accept formal membership by a two-thirds majority vote, provided that the state has “submitted an application for membership and a declaration made in a formal instrument that they accept” the Agreement of the IOTC.

⁹³⁰ See, e.g., Edeson, “An International Legal Extravaganza in the Indian Ocean: Placing the Indian Ocean Tuna Commission Outside the Framework of FAO,” *The International Journal of Marine and Coastal Law* 22, No. 4 (January 1, 2007): 485–515, <https://doi.org/10.1163/157180807782512198>.

⁹³¹ *Ibid.* Page 486.

⁹³² Edeson describes this in more detail in Edeson, “An International Legal Extravaganza in the Indian Ocean: Placing the Indian Ocean Tuna Commission Outside the Framework of FAO.”

⁹³³ Peter S. C. Ho, “The Impact of the U.N. Fish Stocks Agreement on Taiwan’s Participation in International Fisheries For a.” Page 144.

⁹³⁴ *Ibid.* Pages 143-144.

Indian Ocean and was considered the largest fish harvester in the Indian Ocean in the early 2000s, with over 300 fishing vessels operating in the area.⁹³⁵ The statistics also suggest that Taiwan accounts for 16% of the total catch of bigeye tuna, making it a major actor in the Indian Ocean tuna fisheries.⁹³⁶ The failure to incorporate Taiwan into the IOTC's management regime has continued to undermine its conservation and management measures for decades, as it has lacked substantial catch statistics and other relevant data from Taiwan.⁹³⁷ At present, Taiwan is participating in the IOTC as an "invited expert," which does not provide similar rights as those enjoyed by formal members or cooperating non-contracting parties.⁹³⁸ However, Taiwan now provides the IOTC with available scientific data and the IOTC designates allocations to Taiwan. But as described by Sinan et al., "as long as the IOTC lies within the framework of the FAO...Taiwan will not be granted a seat at the table without China's formal endorsement, which is unlikely due to the geopolitical situation."⁹³⁹ The situation is creating "political barriers, born from institutional barriers," which will also be hard to overcome in the future.⁹⁴⁰

The fact that the IOTC has been lacking catch statistics and scientific data from one of the major actors in the tuna fisheries in the Indian Ocean for lengthy periods may naturally have contributed to an imprecise conservation and management regime for target stocks, non-target species and the marine ecosystems that sustain them.⁹⁴¹ The next section will explore how the convention area and management mandate of the IOTC may influence its ability to

⁹³⁵ Ibid. Page 144.

⁹³⁶ Sinan and Bailey, "Understanding Barriers in Indian Ocean Tuna Commission Allocation Negotiations on Fishing Opportunities." Page 8.

⁹³⁷ Ibid. See also Edeson, "An International Legal Extravaganza in the Indian Ocean: Placing the Indian Ocean Tuna Commission Outside the Framework of FAO."

⁹³⁸ Sinan and Bailey, "Understanding Barriers in Indian Ocean Tuna Commission Allocation Negotiations on Fishing Opportunities." Page 8.

⁹³⁹ Ibid.

⁹⁴⁰ Ibid. Sinan and Bailey also highlight how the political tensions have affected the allocation process in the IOTC and how proposals to include Taiwan as a "Long-Term Participating Non-Contracting Party" have been rejected by China.

⁹⁴¹ An interesting question falling outside of the scope of this study is whether the IOTC has been able to remedy such potential scenarios created by the lack of scientific data, and whether the allocations and conservation and management measures adopted following the entrance of Taiwan as an "invited expert" have changed.

operationalize the ecosystem approach to fisheries in line with the requirements of the normative framework presented in Sections 4.3 and 4.4 of this thesis.

6.6.2 Regulatory Area and Management Mandate

In accordance with Article 2 of the IOTC Agreement, the IOTC convention area “shall be the Indian Ocean...and adjacent seas, north of the Antarctic Convergence, insofar as it is necessary to cover such seas for the purpose of conserving and managing stocks that migrate into or out of the Indian Ocean.”⁹⁴² The fact that the Agreement is applicable to adjacent sea areas when considered necessary due to the migration pattern of the relevant stocks implies that the IOTC is aiming to ensure a compatible conservation and management regime for its targeted species.⁹⁴³ The approach adopted by the IOTC is also favourable considering that artisanal fisheries constitute approximately 50% of the annual catches of the targeted species. The ability to ensure compatibility of the management regime may also facilitate conservation and management efforts for marine ecosystems and non-target species.

The species and stocks covered by the Agreement are specified in Article III, being those listed in Annex B to the Agreement. The Annex includes 16 species and groups of species, 11 of which are distinct species of tuna, three are different species of marlins, the others being a species of sailfish and swordfish.⁹⁴⁴ The term stocks is to be understood as “populations of such species which are located in the Area or migrate into or out” of the convention area.⁹⁴⁵ The list of species currently under the management mandate of the IOTC confirms that the organization is a “pure” tuna RFMO as it only deals with tuna and tuna-like species. Nine of the listed species of Annex B refer to species listed in Annex I to the Law of the Sea Convention.⁹⁴⁶ Interestingly, the IOTC has expanded the scope of its mandate to also

⁹⁴² IOTC Agreement. Article 2.

⁹⁴³ This approach to management is also adopted by the ICCAT, and both RFMOs are empowered to adopt conservation and management measures for adjacent seas bordering their regulatory areas. See Section 6.4.2 for more information regarding the convention area of the ICCAT.

⁹⁴⁴ IOTC Agreement. Annex B.

⁹⁴⁵ IOTC Agreement. Article 3.

⁹⁴⁶ These species are yellowfin tuna, skipjack tuna, bigeye tuna, albacore tuna, southern bluefin tuna, black marlin, striped marlin, Indo-Pacific sailfish and swordfish.

encompass seven species of tuna not listed in the Annex to the Law of the Sea Convention, suggesting that its management mandate is tailored to the conservation and management of highly migratory species based on their occurrence in the IOTC's regulatory area of competence. This is positive, as the conservation and management measures adopted by the IOTC may be given a greater scope of application through its expanded management mandate.⁹⁴⁷

Article V of the IOTC Agreement regulates the objectives, functions, and responsibilities of the Commission. The Commission "shall promote cooperation among its Members with a view to ensuring, through appropriate management, the conservation and optimum utilization of stocks covered" by the Agreement and "encouraging sustainable development of fisheries based on such stocks" in accordance with the first paragraph. The second paragraph then lists a range of functions that the Commission is to perform to achieve the objectives of the first paragraph. The provisions of the IOTC Agreement relevant for this study are as follows.

Article V(2)(a) of the IOTC Agreement emphasizes that the Commission shall keep track of and review "the conditions and trends of the stocks" and "gather, analyze and disseminate scientific information, catch and efforts statistics and other data relevant to the conservation and management of the stocks" and "fisheries based on the stocks" covered by the Agreement. An obligation to "encourage, recommend, and coordinate research and development activities in respect of the stocks and fisheries covered" by the Convention is encompassed in Article V(2)(b), while Article V(2)(c) obliges the Commission to "adopt, in accordance with Article IX and on the basis of scientific evidence, conservation and management measures, to ensure the conservation of the stocks covered" by the Agreement, and to "promote the objective of their optimum utilization" in the IOTC regulatory area. Article V clearly shows that the founding instrument of the IOTC strongly emphasizes single-species management approaches to its target stocks.⁹⁴⁸ There is no explicit reference to conservation of non-target species or ecosystem considerations in the provision, creating a management

⁹⁴⁷ These species are longtail tuna, kawakawa, frigate tuna, narrow barred Spanish mackerel, Indo-Pacific king mackerel, and Indo-Pacific blue marlin.

⁹⁴⁸ See Section 4.2.4 of this thesis where the concept of single-species management is presented.

mandate which does not naturally take into consideration the relevant species interactions in the Indian Ocean. However, Article V(2)(h) recognizes that the Commission is responsible for conducting “such other activities as may be necessary to fulfil its objectives,” and Article V(3) emphasizes that “the Commission may adopt decisions and recommendations, as required, with a view to furthering the objectives” of the Agreement. These two provisions may in theory be applied to conserve the marine ecosystems sustaining the IOTC’s targeted tuna species, or non-target species, of importance for their stock abundance. As in the case of the CCSBT, the founding instrument of the IOTC may thus implicitly encompass elements necessary to facilitate the operationalization of the ecosystem approach to fisheries by taking the “essential equivalence route” presented in Section 4.3.1. However, the lack of a clear reference to the ecosystem approach to fisheries or any of its relevant features, such as conservation of non-target species or predator-prey relationships, makes it highly questionable that the Commission would apply its regulatory powers to develop a regulatory framework for conserving marine ecosystems or non-target species on a sole basis. Despite the potential ability of the Commission to facilitate the operationalization of the ecosystem approach to fisheries through application of Articles V(2)(h) and V(3), the IOTC should be advised to amend its Convention to align it with the requirements of international law in accordance with the 1995 UN Fish Stocks Agreement and the Code of Conduct.

A plausible question that arises is how an RFMO established under the FAO as late as in 1993 does not explicitly recognize the ecosystem approach to fisheries, or even refers to elements of it, considering the parallel work of the FAO on establishing a framework for sustainable fisheries, later resulting in the adoption of the Code of Conduct in 1995. There seems to be no obvious reason for the lack of coherence between the adoption of the IOTC Agreement and the other work conducted by the FAO in the same period, besides the fact that the IOTC superseded and replaced the Tuna Committee of the IOFC. The fact that the IOTC Agreement was negotiated and drafted as a species-specific agreement to conserve and manage the heavily exploited tuna species in the region may thus explain why there are no traces of ecosystem considerations in the Agreement in its present form. At the time of its drafting and adoption, the IOFC was still operating in the Indian Ocean with the mandate to conserve and

manage all species occurring in the region,⁹⁴⁹ and the IOTC was established as an organization with a specific management mandate concerning the targeted tuna species. It is thus possible that the IOTC originally had a narrow management mandate to ensure coherence in the regime interactions that existed in the Indian Ocean at the time of its adoption. Chapter 7 will explore the types of conservation and management measures adopted by the IOTC in recent decades to minimize catch by lost, abandoned, or otherwise discarded fishing gear, and it will certainly be interesting to examine how its management mandate may influence the operationalization of the ecosystem approach to fisheries.

6.6.3 Decision-Making Mechanisms

In accordance with Article IX of the IOTC Agreement, the “Commission may, by a two-thirds majority of its members present and voting, adopt conservation and management measures binding on Members of the Commission.” Conservation and management measures for the stocks managed by the IOTC “shall be adopted upon the proposal of the sub-commission concerned” in accordance with the second paragraph of Article IX.

A two-thirds majority voting procedure requires a significant level of support before a decision is made, which has both positive and negative implications for the operationalization of the ecosystem approach to fisheries. A decision-making mechanism involving a two-thirds majority naturally ensures broad support for the conservation and management measures adopted. This may be beneficial for the effective implementation of such measures. This decision-making mechanism may also enable some level of flexibility in the decision-making process, as it allows for compromises and negotiations among the member states.⁹⁵⁰ On the other hand, two-thirds voting mechanisms may be time-consuming as it may take time to achieve a sufficient level of support for the conservation and management measures prior to

⁹⁴⁹ J.J. Kambona and S.H. Marashi, “Process for the Establishment of the Indian Ocean Tuna Commission.” Chapter I.

⁹⁵⁰ This is based on the fact that no state is granted veto powers in the decision-making process. See Section 6.3.3 which explored how veto powers may block the adoption of conservation and management measures in RFMOs.

their adoption.⁹⁵¹ Two-thirds majority voting may also lead to scenarios where the interests and priorities of the minority are not reflected in the adopted decisions, creating lower input legitimacy internally in the RFMO.⁹⁵²

Consequently, a two-thirds majority decision-making mechanism may represent an effective tool for the operationalization the ecosystem approach to fisheries in practice, as it requires significant support prior to the adoption of a decision, while also allowing for compromise and negotiations among the contracting parties.

The conservation and management measures adopted by the IOTC “shall become binding on Members 120 Days from the date specified in the Secretary’s notification or on such other date as may be specified by the Commission” in accordance with Article IX(4). This also means that conservation and management measures for the operationalization of the ecosystem approach to fisheries would enter into force approximately four months after their adoption, which seems to enable a prompt response to emerging and pressing issues.

Like the ICCAT, the IOTC has a “safety clause” for any contracting parties that object to the adopted conservation and management measures. This safety clause absolves the objecting party from being bound by the relevant measure.⁹⁵³ However, empowering contracting parties of RFMOs with “opt-out powers” has “the potential to undermine the regime and limit

⁹⁵¹ Two-thirds majority voting may involve the same disadvantages as consensus-based decision-making. However, a vital difference between the two is that the first mechanism does not grant veto powers to each commission member. This must be regarded as a strength in terms of enabling the adoption of measures. See Section 6.3.3 which explored some disadvantages of consensus-based decision-making in the context of this thesis. See also, e.g., Leach, who argues that consensus-based decision-making mechanisms lead to long processes before decisions are reached, in Leach, “When Freedom Is Not an Endless Meeting,” page 41, and Henriksen who emphasizes that consensus-based decision-making gives “the lowest common denominator significant influence” in Tore Henriksen, “Allocation of Fishing Rights: Principles and Alternative Procedures,” page 550. The latter perspective is also reflected by McDorman in McDorman, “Implementing Existing Tools: Turning Words Into Actions – Decision-Making Processes of Regional Fisheries Management Organisations (RFMOs),” on page 429.

⁹⁵² Tijmes-Lhl, “Consensus and Majority Voting in the WTO.” Page 424.

⁹⁵³ See IOTC Agreement. Article IX(5). The member objecting to the measure is also entitled to withdraw its objection to become bound by the relevant conservation and management measure at a later stage.

the effectiveness of measures adopted” by the Commission.⁹⁵⁴ For the IOTC, which does not have an explicit management mandate to conserve marine ecosystems and non-target species, the potential consequences of opt-out clauses may be severe as measures to conserve marine ecosystems may thus not achieve the necessary support to ensure their effective implementation.⁹⁵⁵

6.6.4 Summary

The IOTC is an RFMO which has certain similarities to other tuna RFMOs, but also some distinctive features. In terms of distinctiveness, the IOTC fisheries involve both artisanal and industrial fisheries, with small-scale vessels accounting for approximately 50% of the annual catches of the primary tuna species in the Indian Ocean. To accommodate the distinctive features of the Indian Ocean tuna fishery, the IOTC member states have adopted an instrument which is applicable to both the high seas and adjacent maritime zones bordering the high seas area where the IOTC has competence to regulate fisheries. Article II of the IOTC Agreement may ensure compatibility of the conservation and management measures adopted by the Commission, which seems vital for the operationalization of the ecosystem approach to fisheries in the tuna fishery of the Indian Ocean. However, the IOTC’s founding instrument arguably does not facilitate the operationalization of the approach. There are no clear references to ecosystem considerations in the comprehensive instrument, but some of its provisions may be flexible enough to encompass the adoption of measures to conserve non-target species vital for the abundance of the targeted stocks. It is nevertheless recommended that the IOTC amends or revises its current instrument to clearly recognize the need to conserve the ecosystems and non-target species in its area of competence.

The two-thirds majority voting procedure established pursuant to the IOTC Agreement has the potential of enabling the use of Articles V(2)(h) and V(3) to adopt conservation and

⁹⁵⁴ Schiffman, *Marine Conservation Agreements: The Law and Policy of Reservations and Vetoes*. Page 44. See also Boyle and Redgwell, *Birnie, Boyle & Redgwell’s International Law and the Environment*. Page 755.

⁹⁵⁵ See Section 6.6.1 of this thesis for more information on the IOTC’s management mandate established pursuant to its founding agreement.

management measures for the conservation and management of marine ecosystems and non-target species if a significant majority of the member states agree to apply the provisions in this manner. The fact that there is room for negotiation and that consensus among all parties is not a requirement for the application of these provisions may be beneficial for the implementation of novel approaches to management in the organization, particularly in view of the IOTC's rather narrow management mandate.

6.7 The WCPFC

6.7.1 Historical Remarks

The WCPFC Convention was adopted on 19 June 2004 by the establishment of the Western and Central Pacific Fisheries Commission to conserve and manage highly migratory fish stocks in the Western and Central Pacific Ocean.⁹⁵⁶ The negotiations leading to its adoption commenced in 1994 and lasted for six years.⁹⁵⁷ Several preparatory conferences were held from the conclusion of the Convention to its entry into force to lay the foundation for the Commission to initiate its work.⁹⁵⁸ The outcome of the negotiations conducted from 1994 onwards resulted in the adoption of a modern and elaborate framework drawing on several provisions of the 1995 UN Fish Stocks Agreement, but still accommodating the special characteristics of the western and central Pacific Ocean.⁹⁵⁹

Article 34 of the WCPFC Convention describes that it was open for signature by 26 specified states from 2000-2001.⁹⁶⁰ To date, 24 of the listed states have ratified and acceded to the treaty, in addition to the EU and the fishing entity Taiwan.⁹⁶¹ Like the IATTC, the ICCAT and

⁹⁵⁶ WCPFC, "About WCPFC," last accessed 30.05.2024, <https://www.wcpfc.int/about-wcpfc>.

⁹⁵⁷ Ibid.

⁹⁵⁸ Ibid.

⁹⁵⁹ Ibid.

⁹⁶⁰ The specified states are: Australia, Canada, China, Cook Islands, Federated States of Micronesia, Fiji Islands, France, Indonesia, Japan, Republic of Kiribati, Republic of the Marshall Islands, Republic of Nauru, New Zealand, Niue, Republic of Palau, Independent State of Papua New Guinea, Republic of the Philippines, Republic of Korea, Independent State of Samoa, Solomon Islands, Kingdom of Tonga, Tuvalu, United Kingdom of Great Britain and Northern Ireland in respect of Pitcairn, Henderson, Ducie and Oeno Islands, United States of America and Republic of Vanuatu. In accordance with Article 35 of the WCPFC Convention regarding accession to the instrument, the Convention shall remain open for the 26 states listed in Article 34 even after the specified one-year ratification period.

⁹⁶¹ The states listed in Article 34 which have not adhered to the treaty are the Republic of Korea and the United Kingdom of Great Brittan and Northern Ireland in respect of Pitcairn, Henderson, Ducie and Oeno Islands. See WCPFC, "About WCPFC," last accessed 30.05.2024, <https://www.wcpfc.int/about-wcpfc> for more information. The contracting parties to the WCPFC may "invite other States...whose nationals and fishing vessels wish to conduct fishing for highly migratory fish stocks in the Convention Area to accede" to the Convention in accordance with Article 35(2) of its founding instrument. The decision on the invitation must be made by consensus among all existing parties.

the IOTC, the WCPFC is a relatively large RFMO in terms of its total number of member states, consequently facing similar possibilities and challenges as the three other organizations in terms of their complexity.⁹⁶²

6.7.2 Regulatory Area and Management Mandates

The regulatory area of the WCPFC “comprises all waters of the Pacific Ocean bounded to the south and to the east” by a specified line defined in the Convention.⁹⁶³ The Convention applies to “all stocks of highly migratory fish within the Convention Area except saurians.”⁹⁶⁴ The conservation and management measures adopted under the Convention “shall be applied throughout the range of the stocks, or to specific areas within the Convention Area, as determined by the Commission.”⁹⁶⁵ During its first performance review in 2012, the review panel noted that the compatibility of measures was one of the most challenging issues facing the Commission’s work from a legal perspective.⁹⁶⁶ The compatibility issue has consequently given rise to different interpretations of the convention area of the WCPFC.⁹⁶⁷ The vagueness created by Article 3(1) when defining the convention area has sparked fundamental questions regarding its application to territorial and archipelagic waters of the coastal states bordering the WCPFC convention area, caused by the inclusion of the wording “all waters” in the provision. The review panel evaluated this matter thoroughly in its assessment and concluded that the WCPFC Convention is only applicable to the high seas and the EEZs of the relevant

⁹⁶² See Sections 6.3.1, 6.4.1 and 6.6.1 of this thesis for more information.

⁹⁶³ The WCPFC, Convention on the Conservation and Management of Highly Migratory Fish Stocks in the Eastern and Central Pacific Ocean (2004), Article 3(1). The following line identifies the WCPFC’s regulatory area: “From the south coast of Australia due south along the 141° meridian of east longitude to its intersection with the 55° parallel of south latitude; thence due east along the 55° parallel of south latitude to its intersection with the 150° meridian of east longitude; thence due south along the 150° meridian of east longitude to its intersection with the 60° parallel of south latitude; thence due east along the 60° parallel of south latitude to its intersection with the 130° meridian of west longitude; thence due north along the 130° meridian of west longitude to its intersection with the 4° parallel of south latitude; thence due west along the 4° parallel of south latitude to its intersection with the 150° meridian of west longitude; thence due north along the 150° meridian of west longitude.”

⁹⁶⁴ WCPFC Convention. Article 3(3).

⁹⁶⁵ Ibid.

⁹⁶⁶ WCPFC. “Review of the Performance of the WCPFC.” Page 17.

⁹⁶⁷ Ibid.

states, as the legal regime of sovereignty governs territorial and archipelagic waters in accordance with the Law of the Sea Convention.⁹⁶⁸ The convention area of the WCPFC nevertheless requires compatibility of conservation and management measures adopted by the Commission and the measures adopted by its member states due to the areas of the WCPFC that overlap with the EEZs of several coastal states, as recognized in Articles 7 and 8 of the WCPFC Convention.

Article 8(1) of the instrument requires that conservation and management measures established for the high seas and those established for coastal states' EEZs are mutually compatible. This obliges the parties of the WCPFC to cooperate in duly fulfilling the obligation of ensuring compatibility, to "ensure conservation and management of highly migratory fish stocks in their entirety." Article 7 of the WCPFC Convention requires member states to apply the principles and measures for conservation laid down in Article 5 to their maritime zones "in the exercise of their sovereign rights."⁹⁶⁹ In this way, the WCPFC Convention obliges the contracting parties to ensure compatibility of the relevant conservation and management measures, leading to scenarios where measures adopted to conserve marine ecosystems and non-target species will be given a vast geographical scope of application, unless otherwise expressly determined by the Commission.⁹⁷⁰ The compatibility regime established pursuant to the WCPFC Convention is favourable for the operationalization of the ecosystem approach to fisheries as it enables the WCPFC to adopt a management framework which may be applicable to such vast geographical areas. This ensures that the ecosystems and residing non-target species may be conserved to a great extent, as the measures will be applicable throughout the entire western and central Pacific tuna fishery. The adoption of progressive domestic conservation and management measures by the member states will also have to be shared with the Commission, potentially paving the way for the inclusion of innovative and

⁹⁶⁸ Ibid. The panel assesses the convention area of the WCPFC on pages 76-80.

⁹⁶⁹ Article 5 of the WCPFC Convention will be subject to analysis in the following.

⁹⁷⁰ The significance of ensuring compatibility of measures was also explored in Section 3.3.1 of this thesis.

adaptive measures in the WCPFC's regulatory framework, if these are subsequently adopted.⁹⁷¹

Article 2 of the WCPFC Convention defines its mandate as ensuring “through effective management, the long-term conservation and sustainable use of highly migratory fish stocks in the western and central Pacific Ocean” in accordance with the Law of the Sea Convention and the 1995 UN Fish Stocks Agreement.⁹⁷² The relevant principles and measures for the conservation and management of highly migratory species covered by the WCPFC's mandate are specified in the previously mentioned Article 5 of the WCPFC Convention. These principles and measures reflect several of the provisions of the 1995 UN Fish Stocks Agreement, and the provisions relevant to this study are as follows.

The member states, in giving effect to their duty to cooperate in accordance with the Law of the Sea Convention and the 1995 UN Fish Stocks Agreement, shall “adopt measures to ensure long-term sustainability of highly migratory fish stocks” in the WCPFC's regulatory area and “promote their optimum utilization.”⁹⁷³ Such measures shall be “based on the best scientific evidence available” and be “designed to maintain or restore stocks at levels capable of producing their maximum sustainable yield, as qualified by relevant environmental and economic factors.”⁹⁷⁴ Some relevant factors to be taken into consideration are “fishing patterns, the interdependence of stocks and any generally recommended international minimum standards.”⁹⁷⁵ Articles 5(a) and (b) of the WCPFC Convention primarily concern the need to effectively manage and conserve the targeted fish stocks, which corresponds with the overall objective of the WCPFC as specified in Article 2 of the instrument. However, the provisions recognize that the fish stocks targeted by the WCPFC are interconnected with other

⁹⁷¹ The WCPFC Convention includes provisions to ensure that the principles and measures encompassed in Article 5 are applied in areas under national jurisdiction in the regulatory area of the RFMO, and that conservation and management measures established for the high seas and areas under national jurisdiction are compatible to “ensure conservation and management of highly migratory fish stocks in their entirety.”

⁹⁷² WCPFC Convention. Article 2.

⁹⁷³ WCPFC Convention. Article 5(a).

⁹⁷⁴ WCPFC Convention. Article 5(b).

⁹⁷⁵ WCPFC Convention. Article 5(b). The generally recommended minimum standards may be subregional, regional, or global, and naturally include the implementation guidelines adopted by the FAO introduced in Sections 4.4.2 and 4.4.3 of this thesis.

species of the marine ecosystems by the wording “interdependence of stocks,” and that this needs to be accounted for when conservation and management measures are designed and adopted. The inclusion of this wording is favourable as it demonstrates that the targeted species cannot be managed in isolation from their wider ecosystem interactions, despite the overall objective of managing these species under the framework of the WCPFC. The Convention also makes a clear reference to Article 10(c) of the 1995 UN Fish Stocks Agreement by the wording “any generally recommended international minimum standards,” obliging the state parties to take, e.g., the FAO Code of Conduct and the FAO implementation guidelines into consideration.⁹⁷⁶

An obligation to apply the precautionary approach is explicitly recognized in Article 5(c) of the WCPFC Convention, and an explicit obligation to assess “the impacts of fishing, other human activities and environmental factors on target stocks, non-target species, and species belonging to the same ecosystem or dependent upon or associated with the target stocks” is stipulated in Article 5(d).⁹⁷⁷ This provision reflects the approach of ecosystem-based fisheries management, where all relevant factors are taken into consideration in the conservation and management measures adopted by the WCPFC, and shows that it is attempting to establish a management framework that even goes beyond the normative scope of the ecosystem approach to fisheries.⁹⁷⁸

Furthermore, the members of the Commission shall “adopt measures to minimize waste, discards, catch by lost or abandoned gear, pollution originating from fishing vessels, catch of non-target species, both fish and non-fish species and impacts on associated and dependent

⁹⁷⁶ See Section 4.4.2 where it was established that Article 10(c) encompasses relevant FAO instruments for the conservation of species and ecosystems.

⁹⁷⁷ The fact that the WCPFC shall take “other human activities and environmental factors” into consideration reflects the concept of ecosystem-based fisheries management, where all cumulative impacts on the species are assessed before suitable management measures are designed and adopted. See Section 4.2.4 of this thesis for a general presentation of the concept of ecosystem-based fisheries management. It should also be emphasized that the WCPFC and the IATTC have adopted similar provisions in their founding instruments, consequently reflecting that both RFMOs are striving to operationalize the approach. See Section 6.3.2 for more information about Article VII of the Antigua Convention.

⁹⁷⁸ See Section 4.2.4 of this thesis for further information on the concept of ecosystem-based fisheries management.

species, in particular endangered species.” This provision encapsulates one of the core features of the ecosystem approach to fisheries in addressing conservation of non-target species. The provision is goal-oriented and spells out clear objectives for the conservation of the relevant species. However, the obligation does not provide any clarity as to how the objectives shall be reached. Some clarity is seen in Article 5(e), which obliges the members of the Commission to “promote the development and use of selective, environmentally safe and cost-effective fishing gear and techniques,” which may be regarded as operationalizing the objectives in Article 5(c) to some extent through the reference to the development of specific management measures.⁹⁷⁹ The contracting parties shall also “protect biodiversity in the marine environment.”⁹⁸⁰ The requirements to fulfil the obligation are not further specified, and the states are granted discretion when deciding upon how to implement and operationalize the obligation in practice. However, one may safely conclude that the provision “sharpens” the responsibilities of the parties by imposing a requirement of considering how the fishing operations may impact marine biodiversity.

The obligations stated in Articles 5(c) to (e) reflect vital features of the ecosystem approach to fisheries, more specifically objectives and measures for the conservation of non-target species. The obligations share several similarities with the provisions of the IATTC’s Antigua Convention. However, the WCPFC Convention expands the scope of the obligations by emphasizing that the provisions shall be applied in all relevant scenarios.⁹⁸¹ Whereas the IATTC shall give priority to tuna and tuna-like species when this is deemed necessary,⁹⁸² the obligations in the WCPFC Convention apply without a similar limitation. Another difference between the two instruments is that the IATTC is only obliged to adopt conservation and management measures for non-target species to keep them above levels where their abundance and reproduction ability become seriously threatened.⁹⁸³ No similar limitation

⁹⁷⁹ WCPFC Convention. Article 5(e).

⁹⁸⁰ WCPFC Convention. Article 4(f).

⁹⁸¹ It should nevertheless be emphasized that the IATTC has included the wording “avoid and reduce” in Article VII(g) of the Antigua Convention, which must be considered as placing a more comprehensive obligation on its Commission than the similar provision of the WCPFC, which only includes the word “minimize.”

⁹⁸² For a comparison, see Article VII(g) of the IATTC’s Antigua Convention, presented in Section 6.3.2 of this thesis.

⁹⁸³ See IATTC, Antigua Convention, Article VII.

applies to the conservation and management regime established pursuant to the WCPFC Convention, and one can thus argue that the WCPFC Convention has established the most progressive management framework for the conservation of ecosystems and non-target species of the five tuna RFMOs.

A detailed list of how the precautionary approach shall be applied and operationalized is found in Article 6 of the WCPFC Convention. Some of the key provisions relevant to this thesis are an obligation to take into consideration the uncertainties of “the impact of fishing activities on non-target and associated species,”⁹⁸⁴ the obligation to “develop data collection and research programmes to assess the impacts of fishing” on these species and their environment,⁹⁸⁵ and the obligation to “adopt plans where necessary to ensure the conservation of such species and to protect habitats of special concern.”⁹⁸⁶ Finally, where the status of non-target species is of concern, the members of the Commission “shall subject such stocks and species to enhanced monitoring in order to review their status and the efficiency of conservation and management measures.”⁹⁸⁷ Further, the members of the Commission shall revise such measures on a regular basis when new information is obtained.⁹⁸⁸ These provisions illustrate that the general status of the stocks of non-target species is of great concern for the WCPFC Commission, and that measures necessary for their conservation and protection from the potential menace of fishing operations are deemed important. The WCPFC Convention also considers the interconnection of the different ecosystem components and the vital importance of habitats supporting the abundance of target and non-target species.⁹⁸⁹ This is quite unique in the sense that no other tuna RFMOs have adopted

⁹⁸⁴ WCPFC Convention. Article 6(b).

⁹⁸⁵ WCPFC Convention. Article 6(c).

⁹⁸⁶ WCPFC Convention. Article 6(c). It should be emphasized that the WCPFC is the only tuna RFMO that explicitly includes an obligation to conserve habitats in its founding convention, which is quite unique since the management mandates of the other four tuna RFMOs do not make any similar references to this important part of marine ecosystems.

⁹⁸⁷ *Ibid.*

⁹⁸⁸ WCPFC Convention. Article 6(4).

⁹⁸⁹ The distinctive parts of the ecosystem and their interconnectedness were subject to closer analysis in Sections 4.1 and 4.2 of this thesis.

similar concrete obligations to operationalize the precautionary approach, and in turn the ecosystem approach to fisheries.⁹⁹⁰

The WCPFC has also established a scientific committee responsible for encouraging and promoting cooperation in scientific work and reviewing the “results of research and analyses of target stocks or non-target or associated or dependent species in the Convention Area,” enabling an adaptive approach to management in line with the ecosystem approach to fisheries, as changing circumstances or emerging issues may be accounted for in the management framework of the organization.⁹⁹¹

Like the IATTC, which renewed its management mandate with the adoption of the Antigua Convention in 2004, the contracting parties of the WCPFC have developed a modern legal framework for the conservation and management of ecosystems and non-target species. The particular need for conservation and management measures tailored to conserving non-target species is explicitly recognized in Article 5 of the Convention, creating a holistic and integrated framework moving beyond the single-species approach, which was the predominant management approach before the adoption of the 1995 UN Fish Stocks Agreement and the Code of Conduct.⁹⁹²

It is beyond doubt that the WCPFC Convention is facilitating the operationalization of the ecosystem approach to fisheries through the material obligations assessed in this section.

⁹⁹⁰ The relationship between the ecosystem approach and the precautionary approach was presented and discussed in Section 4.3.2 of this thesis. See also Trouwborst, “The Precautionary Principle and the Ecosystem Approach in International Law.” Page 36.

⁹⁹¹ See WCPFC Convention, Article 12, where the various functions of the scientific committee are described.

⁹⁹² A detailed assessment of the management mandate of the IATTC and Article VII(1)(g) of the Antigua Convention were provided in Section 6.3.2 of this thesis.

6.7.3 Decision-Making Mechanisms

Article 20 of the WCPFC Convention encompasses rules for the decision-making process, emphasizing that “as a general rule, decision-making in the Commission shall be made by consensus.”⁹⁹³ In scenarios where it is not expressly stated in the Convention that a potential decision needs to be made by consensus, and efforts to reach such consensus are exhausted and fail, “decisions on voting on questions of procedure shall be taken by a majority of those present and voting,” and decisions “on questions of substance shall be taken by a three-fourths majority of those present and voting”, subject to some additional limitations.⁹⁹⁴

The WCPFC has thus adopted a similar decision-making mechanism to the IATTC, which requires consensus prior to the adoption of conservation and management measures, including measures to conserve marine ecosystems and non-target species. As briefly discussed in Section 6.3.3, consensus-based decision-making mechanisms may contribute to effective operationalization of the ecosystem approach to fisheries through the establishment of a mutual commitment among the member states to fulfil their obligations, as all parties have agreed on the scope and content of an adopted measure. Consensus-based decision-making nevertheless involves a risk of lengthy processes which may cumulate in watered-down conservation and management measures to accommodate diverse and competing interests and priorities among the member states.⁹⁹⁵ The scope and content of the regulatory framework adopted by the WCPFC pursuant to its founding instrument will be subject to closer analysis in Chapter 7 of this thesis.

The decisions adopted by the WCPFC become effective and binding upon its member states 60 days after the date of their adoption, which is clearly in line with the requirement of

⁹⁹³ WCPFC Convention. Article 20(1). A consensus is defined as “the absence of any formal objection made at the time the decision was taken” in the same provision.

⁹⁹⁴ See WCPFC Convention. Article 20(2). The additional requirement on decisions regarding substance is that the “majority includes a three-fourths majority of the members of the South Pacific Forum Fisheries Agency present and voting and a three-fourths majority of non-members of the South Pacific Forum Fisheries Agency present and voting.” Under no circumstances “shall a proposal be defeated by two or fewer votes in either Chamber.”

⁹⁹⁵ See Section 5.3 of this thesis.

adoption of decisions in a timely and effective manner as required by the 1995 UN Fish Stocks Agreement.⁹⁹⁶ If a member state is absent when a decision is made or a party votes against its adoption, the WCPFC Convention contains an option for the relevant state(s) to seek a review of the decision by a review panel. Such a procedure may be initiated if member states are of the opinion that the decision is either inconsistent with the provisions of the WCPFC Convention, the Law of the Sea Convention or the 1995 UN Fish Stocks Agreement,⁹⁹⁷ or if the decision “unjustifiably discriminates in form or in fact against the Member concerned.”⁹⁹⁸ Pending the recommendations of the review panel, no member states are required to give effect to the relevant decision subject to review.⁹⁹⁹ In cases where the relevant decision has to be “modified, amended or revoked, the Commission shall, at its next annual meeting, modify or amend its decision in order to conform with the findings and recommendations of the review panel or it may decide to revoke the decision,”¹⁰⁰⁰ and hold “a special meeting...within 60 days of the date of communication of the findings and recommendations of the review panel.”¹⁰⁰¹ Otherwise the adopted decision will become binding and in force 30 days after it is communicated if the review panel finds that the decision does not need to be modified, amended, or revoked.¹⁰⁰²

There are no opt-out clauses in the WCPFC Convention. The absence of such a clause is beneficial for the operationalization of the ecosystem approach to fisheries, as the WCPFC thus runs no risk of counterproductive actions by objecting member states.¹⁰⁰³

⁹⁹⁶ WCPFC Convention. Article 20(5).

⁹⁹⁷ WCPFC Convention. Article 20(6)(a).

⁹⁹⁸ WCPFC Convention. Article 20(6)(b).

⁹⁹⁹ WCPFC Convention. Article 20(7).

¹⁰⁰⁰ See WCPFC Convention. Article 20(9). The decision will be revoked if requested in writing by most member states.

¹⁰⁰¹ *Ibid.*

¹⁰⁰² WCPFC Convention. Article 20(8).

¹⁰⁰³ Such objections may have the potential of undermining relevant conservation and management measures through a lack of implementation, thereby influencing the effects of the measures. See Rosemary Rayfuse, “Regional Fisheries Bodies and Ocean Acidification.” Page 139.

6.7.4 Summary

The WCPFC has established a comprehensive management mandate to conserve marine ecosystems and non-target species pursuant to its founding Convention. The mandate encompasses clear material obligations for the conservation of the relevant ecosystems throughout the convention area, which also encompasses the EEZs of several coastal states. The compatibility requirements in the WCPFC Convention have been subject to political tensions in the past regarding the Convention's geographical scope of application, but this issue has now been resolved. The compatibility requirements of the WCPFC Convention establish a beneficial regulatory regime for the operationalization of the ecosystem approach to fisheries, as potential conservation and management measures are given application to vast geographical areas. Overall, the WCPFC may operationalize the ecosystem approach to fisheries pursuant to its management mandate if the parties are able to reach consensus on the designation of holistic and integrated conservation and management measures.

6.8 Relevant findings

The analyses conducted in the previous sections reveal how the five tuna RFMOs are empowered to establish management frameworks pursuant to their founding instruments. The scope of their management mandates varies, and the obligations relating to the operationalization of the ecosystem approach to fisheries and conservation of non-target species are quite diverse. There is also great variety in the total number of member states of the commissions of the tuna RFMOs, ranging from 52 contracting parties to the ICCAT Convention to only five in the case of the CCSBT. The number of contracting parties is likely to affect the organizations' ability to implement and operationalize the ecosystem approach to fisheries.

The IATTC, ICCAT and the WCPFC are the tuna RFMOs with the most progressive instruments in terms of facilitating the operationalization the ecosystem approach to fisheries. These tuna RFMOs have founding instruments encompassing clearly articulated management objectives and measures for the conservation of the different ecosystem components and non-target species. Interestingly, both the IATTC's Antigua Convention and the WCPFC Convention were adopted in 2004, at a time where the ecosystem approach to fisheries was high on the political agenda in the wake of the FAO Technical Consultation on the Ecosystem Approach held in 2002, which resulted in the adoption of the Reykjavik Declaration.¹⁰⁰⁴ Arguably, this may have influenced the ongoing processes in those two tuna RFMOs. Nevertheless, it seems reasonable to conclude that the adopted instruments are facilitating the operationalization of the ecosystem approach to fisheries in line with the legal requirements of the 1995 UN Fish Stocks Agreement and the voluntary FAO Code of Conduct with its implementation guidelines. The ICCAT is currently the only tuna RFMO which explicitly obliges the Commission and member states to apply an "ecosystem approach to fisheries management," creating a regulatory framework with a requirement for the approach to permeate all relevant work under the Convention. The approach taken by the ICCAT is unique in this sense, and its

¹⁰⁰⁴ FAO, Reykjavik Declaration on Responsible Fisheries in the Marine Ecosystem, 2001.

Convention will represent the most progressive legal instrument of the tuna RFMOs when its amendments are formally adopted.

By contrast, the IOTC does not make any explicit references to ecosystem considerations or conservation of non-target species in its founding instrument. As explained in Section 6.6.1, the lack of acknowledgement of the ecosystem approach to fisheries may be explained by the historical origins of the IOTC. However, the fact that neither the approach nor the conservation of non-target species are explicitly recognized in the IOTC's founding Agreement do not provide any answers to the important question of whether the IOTC is taking the necessary steps to operationalize the approach through the adoption of relevant conservation and management measures. The analysis in Section 4.3.1, which explored whether it is possible to infer the ecosystem approach from the provisions of the Law of the Sea Convention, demonstrates that whether the approach is explicitly or implicitly included may not be crucial for its actual implementation. What matters is how the approach is put into practice. There is certainly a difference between formally including an explicit or implicit management mandate encompassing the necessary elements for operationalizing the ecosystem approach to fisheries and the actual application of the approach by the RFMOs adopting relevant measures. The question regarding how the ecosystem approach to fisheries is operationalized through the adoption of conservation and management measures by the five tuna RFMOs will be subject to closer examination in Chapter 7, focusing on the objective to minimize catch by lost, abandoned, or otherwise discarded fishing gear.

However, one may reasonably conclude that the IOTC should amend its founding instrument to encompass ecosystem considerations to facilitate the operationalization of the ecosystem approach to fisheries in its future work. This would create a coherent management mandate which would align with the legal obligations in international law and place a clear obligation upon the member states and the Commission to make efforts to conserve ecosystems and non-target species. Recalling that Section 5.3 explored how competing interests and different priorities among the member states of the tuna RFMOs may constrain the operationalization of the ecosystem approach to fisheries, it is of utmost importance that the member states mutually commit to implement and operationalize the approach.

The CCSBT is located somewhere between full recognition of the ecosystem approach to fisheries and a total lack of reference to the approach and the conservation of non-target species in its founding instruments. Consequently, the CCSBT would also benefit from formally including explicit ecosystem considerations in its management mandate, as this would place a stricter obligation upon its member states individually and in their cooperation in the Commission. Even though the CCSBT only consists of five member states and covers vast and undefined geographical areas, a recognition of the need to conserve ecosystems and non-target species in its Convention could potentially facilitate the application of gear modifications to minimize catch by lost, abandoned, or otherwise discarded fishing gear. This management objective and corresponding measures apply directly to fishing operations independently of where they are taking place and may consequently fit within the management framework established pursuant to the CCSBT Convention.

Turning now to the procedural mechanisms for the operationalization of the ecosystem approach to fisheries in the tuna RFMOs, it is evident that these organizations also show variation in their decision-making mechanisms. How these mechanisms may influence the tuna RFMOs' operationalization of the ecosystem approach to fisheries will be subject to closer analysis when considered relevant in the following chapters of this thesis, bridging the findings of the current section with a discussion of how the approach is put into practice based on the regulatory frameworks of the tuna RFMOs.

The IATTC and WCPFC adopt decisions based on a consensus when they have reached a quorum, the CCSBT's decisions are based on unanimous voting, those of the ICCAT are based on majority voting, while the IOTC adopts decisions based on two-thirds majority voting.

It comes as no surprise that the CCSBT has established the most rigid decision-making mechanism considering its origins and number of member states. However, as suggested by Lodge et al., RFMOs with only three to five member states should establish "safeguards designed to make it more difficult for a member to claim the equivalent of a veto on decisions without engaging in any meaningful negotiation or to take unilateral action opposed by the

other members.”¹⁰⁰⁵ Such safeguards could be the use of external facilitators in cases of disagreement and the inclusion of tailor-made and effective dispute resolution procedures in the RFMO. These mechanisms may prevent similar disputes as those experienced by the CCSBT in the *Southern Bluefin Tuna Cases*.¹⁰⁰⁶ Both the IATTC and the WCPFC adopt their decisions based on consensus, which ultimately could paralyze them in their decision-making process. Based on the findings of Section 5.3, it seems clear that diverse priorities and views among the member states may hamper the adoption of conservation and management measures, and hence the operationalization of the ecosystem approach to fisheries.¹⁰⁰⁷ Whether and how this plays out in practice is subject to further empirical analysis in Chapters 7 and 8 of this thesis. Furthermore, the WCPFC has allowed for objections to adopted decisions to enable a smoother process, where the opposing states may agree to vote in favor of a decision and object afterwards.¹⁰⁰⁸ The ICCAT and the IOTC adopt decisions based on variations of majority voting, which may facilitate the adoption of novel and progressive conservation and management measures. The founding instruments of both organizations nevertheless include opt-out clauses, which arguably may affect the effectiveness of the adopted measures. It is not known how such clauses may influence the operationalization of the ecosystem approach to fisheries, but it seems reasonable to argue that they may have the “the potential to undermine the regime and limit the effectiveness of measures adopted” by the two commissions.¹⁰⁰⁹

Another interesting difference revealed by the exploration of the decision-making mechanisms of the tuna RFMOs is that the time between the adoption of a decision and its entry into force varies significantly among them. The decisions adopted by the IATTC and the

¹⁰⁰⁵ Michael W. Lodge et al., *Recommended Best Practices for Regional Fisheries Management Organizations: Report of an Independent Panel to Develop a Model for Improved Governance by Regional Fisheries Management Organizations*. Page 74.

¹⁰⁰⁶ Ibid.

¹⁰⁰⁷ See the presentation in Section 5.3 of this thesis for a literature review on this topic.

¹⁰⁰⁸ This is described as a procedure which “has no legal effects besides preventing consensus and can, therefore, be viewed as no more than a stage in the decision-making process. See The Global Tuna Alliance, Tuna Protection Alliance and WWF, “The Indian Ocean Tuna Commission: The Misuse of Objections and the Impact on Sustainable Fisheries Management,” March 2023, <https://www.globaltunaalliance.com/wp-content/uploads/2023/03/IOTC-Objections-Report-FINAL.pdf>. Page 8.

¹⁰⁰⁹ Schiffman, *Marine Conservation Agreements: The Law and Policy of Reservations and Vetoes*. Page 44.

WCPFC enter into force within 45 and 60 days of the decision being made. On the other hand, the decisions of the ICCAT and the IOTC enter into force 6 months and 120 days after their adoption. The founding instrument of the CCSBT does not specify when its adopted decisions enter into force. The brief period between the adoption of a decision and its entry into force in accordance with the IATTC's Antigua Convention and the WCPFC Convention may very well be a result of the established decision-making procedure in these RFMOs, requiring consensus among their member states. It is certainly easier to implement and operationalize a decision when all parties have agreed to its substance. This may also explain why there is a longer period before enacting adopted decisions in the ICCAT and the IOTC, whose decisions are based on majority voting. It should nevertheless be emphasized that mechanisms to ensure prompt implementation and operationalization of the decisions are favourable for the operationalization of the ecosystem approach to fisheries, as these enable an adaptive approach where the RFMO may quickly adjust to changing circumstances regarding, e.g., the status of relevant ecosystems and non-target species. It is advised that the CCSBT includes a provision explicitly stating when its adopted decisions enter into force to create an effective regulatory framework pursuant to its founding instrument.

The decision-making mechanisms of the tuna RFMOs are vital for the operationalization of the ecosystem approach to fisheries and may provide clarity regarding the central question of how they are facilitating the implementation and operationalization of the approach. The decision-making mechanisms of the tuna RFMOs will be subject to closer analysis when considered relevant in the following.

As the analysis in this chapter clearly shows, the tuna RFMOs represent diversity regarding the formal inclusion of a management mandate and procedural mechanisms to implement and operationalize the ecosystem approach to fisheries in their founding instruments. Chapter 7 will seek to explore the types and scope of conservation and management measures adopted by the organizations and will refer back to the findings of this chapter when considered feasible to shed light on how the formal management mandates and decision-making mechanisms of the tuna RFMOs may influence the operationalization of the ecosystem approach to fisheries.

7. Chapter VII: A Study of the Tuna RFMOs' Operationalization of the Objective of Minimizing Catch by Lost, Abandoned, or Otherwise Discarded Fishing Gear

7.1 Introduction

This chapter delves into the tuna RFMOs' implementation and operationalization of the ecosystem approach to fisheries by systematically assessing their conservation and management measures adopted between 2000-2023. The primary aim of the chapter is to enable an assessment of whether and how the organizations have operationalized the objective of minimizing catch by lost, abandoned, and/or discarded fishing gear, representing the case study of this PhD. As presented in Section 1.2, the choice to focus on this specific management objective is based on the call for implementation of mitigation measures to minimize catch by abandoned, lost, or otherwise discarded fishing gear in the performance reviews of the five tuna RFMOs. These organizations are currently in the process of implementing relevant measures, which will provide valuable insights into how the ecosystem approach to fisheries may be implemented in practice in the context of tuna RFMOs. Section 4.4 identified a range of measures applicable to minimize ghost fishing, and the following sections will systematically assess whether and how the tuna RFMOs have implemented and operationalized the normative framework. Further, the interrogation of the management practices adopted by the tuna RFMOs will also reveal existing gaps between the management frameworks they have adopted and the applicable normative framework.

As introduced in Section 2.3.3 (Identifying and Analyzing the Conservation and Management Measures Adopted by the Tuna RFMOs), the following analysis of the tuna RFMOs' established conservation and management frameworks is in three parts. The first step of the analysis comprises a quantitative presentation of the total number of adopted conservation and management measures addressing the objective of minimizing catch by lost, abandoned, or otherwise discarded fishing gear. The second step comprises a doctrinal analysis of the scope and content of the "active" conservation and management measures currently in force in the

five tuna RFMOs, with the aim of assessing whether and how the measures are implemented in and by these organizations and identifying potential gaps between the normative framework identified in Part I of this thesis and the practices adopted by the tuna RFMOs. Further, these steps have the potential to reveal possible best practices for the operationalization of the ecosystem approach to fisheries.

The third step involves comparing how the distinct tuna RFMOs have operationalized the management objective of minimizing catch by lost, abandoned, or otherwise discarded fishing gear. The comparative approach will assist the identification of consistent practices and variations in and by the tuna RFMOs and may consequently provide insights into shared challenges and possibilities for future conservation of marine ecosystems. Where relevant, the assessment will refer back to the findings of Chapter 6 regarding how the RFMOs' substantive and procedural characteristics may impact the different outcomes.

7.2 Overview of Adopted Conservation and Management Measures and Measures Presently in Force

A presentation of how the relevant conservation and management measures are identified in this thesis was provided in Section 2.3.3, and it has been established that the identification of the tuna RFMOs' adopted conservation and management measures is based on the utilization of the publicly available search engines in the digital databases of the organizations, followed by a systematic assessment of all measures adopted in 2000-2023, in order to identify those addressing the management objective of minimizing catch by lost, abandoned, and/or discarded fishing gear.

Mapping the conservation and management measures adopted in 2000-2023 yields the following findings:

IATTC

- Resolution C-19-01: Amendment to Resolution C-18-05 on the Collection and Analyses of Data on Fish-Aggregating Devices
- Resolution C-19-04: Resolution to Mitigate Impacts on Sea Turtles
- Resolution C-23-05: Amendment to Resolution C-19-01 on the Collection and Analyses of Data on Fish-Aggregating Devices

ICCAT

- Recommendation 03-04: Relating to Mediterranean Swordfish
- Recommendation 19-11: Recommendation by ICCAT on Abandoned, Lost or Otherwise Discarded Fishing Gear
- Recommendation 21-01: Recommendation by ICCAT Replacing Recommendation 19-02 Replacing Recommendation 16-01 on a Multi-Annual Conservation and Management Programme for Tropical Tunas
- Recommendation 19-11: Recommendation by ICCAT on Abandoned, Lost or Otherwise Discarded Fishing Gear

CCSBT

IOTC

- Resolution 12/04: On the Conservation of Marine Turtles
- Resolution 12/12: To Prohibit the Use of Large-Scale Driftnets on the High Seas in the IOTC Area
- Resolution 19/02: Procedures on a Fish Aggregating Devices (FADs) Management Plan
- Resolution 19/04: Concerning the IOTC Record of Vessels Authorised to Operate in the IOTC Area of Competence
- Resolution 23/01: On Management of Anchored Fish Aggregating Devices
- Resolution 23/04: On Establishing a Catch Limit for Bigeye Tuna in the IOTC Area of Competence

WCPFC

- CMM 2008-04 - Conservation and Management Measure to Prohibit the Use of Large Scale Driftnets on the High Seas in the Convention Area
- CMM 2017-04 - Conservation and Management Measure on Marine Pollution
- CMM 2018-03 - Conservation and Management Measure to mitigate the impact of fishing for highly migratory fish stocks on seabirds
- CMM 2018-04 - Conservation and Management of Sea Turtles | Conservation and Management Measures
- CMM-2019-07 - Conservation and Management Measure for Compliance Monitoring Scheme
- CMM-2021-01: Conservation and Management Measure for Bigeye, Yellowfin and Skipjack Tuna in the Western and Central Pacific Ocean

Figure 5: An illustration of the total number of adopted conservation and management measures which relate to the objective of minimizing catch by lost, abandoned, and/or discarded fishing gear, presently in force in the tuna RFMOs by 31 December 2023. Created with BioRender.

As illustrated by Figure 5, the tuna RFMOs have adopted a limited number of conservation and management measures addressing the objective of minimizing catch by lost, abandoned, or otherwise discarded fishing gear during the last two decades. While not the primary focus of this study, the total number of adopted conservation and management measures nevertheless provides some insights.

An important observation is that the CCSBT does not seem to have adopted any conservation and management measures relating to the objective of minimizing ghost fishing during the last two decades, and it has not been possible to identify any measures referring to this

objective in an assessment of the organizations' management practices in the given period. Section 4.4.2 established that Article 5(f) of the 1995 UN Fish Stocks Agreement obliges States to minimize "catch by lost or abandoned gear,"¹⁰¹⁰ and that the legally binding MARPOL 73/78 prohibits intentional discharge of fishing gear at sea. It was also established that Article 10(c) of the 1995 UN Fish Stocks agreement requires states to "adopt and apply generally recommended international minimum standards" to fulfill their duty to cooperate in high seas fisheries, and that such standards are at least based on the provisions of the Agreement itself and other legally binding global instruments. Assessing the overlapping participation between the two global instruments and the CCSBT yields the following findings.

As presented in Section 6.5.1, the CCSBT currently has five member states of its commission.¹⁰¹¹ All of the five members of this RFMO have ratified the MARPOL 73/78 Annex V and the 1995 UN Fish Stocks Agreement.¹⁰¹² As emphasized by Andreassen, "this illustrates that all of the member States of the CCSBT are bound by the legally binding obligations applicable to minimize ghost fishing, in accordance with these two instruments."¹⁰¹³ To ensure compliance with international law, the member states of the CCSBT will consequently have to implement the mitigation measures encompassed in the 1995 UN Fish Stocks Agreement and the MARPOL 73/78.¹⁰¹⁴

¹⁰¹⁰ Section 4.4.2 also established that Article 10(c) of the 1995 UN Fish Stocks Agreement obliges states to "adopt and apply generally recommended international minimum standards" to fulfill their duty to cooperate in high seas fisheries.

¹⁰¹¹ Taiwan is part of the CCSBT's extended commission. See, e.g., Zhu, who discusses the establishment of the extended commission of the CCSBT to facilitate the participation of Taiwan in Jie Zhu, *Study on the Issue of Taiwan's Participation in the International Space* (Springer Nature, 2022). Page 144.

¹⁰¹² For a full list of member states of the CCSBT, see <https://www.ccsbt.org/en>. Similarly, for a full list of contracting parties to the MARPOL 73/78 Annex V, see <https://www.imo.org/en/About/Conventions/Pages/StatusOfConventions.aspx>, and for a full list of signatories to the 1995 UN Fish Stocks Agreement, see https://www.un.org/depts/los/reference_files/chronological_lists_of_ratifications.htm#Agreement%20for%20the%20implementation%20of%20the%20provisions%20of%20the%20Convention%20of%2010%20December%201982%20relating%20to%20the%20conservation%20and%20management%20of%20straddling%20fish%20stocks%20and%20highly%20migratory%20fish%20stocks

¹⁰¹³ Ingrid Solstad Andreassen, "The Role of tuna RFMOs in Combating 'Ghost Fishing': Where is the Catch?"

¹⁰¹⁴ Ibid.

However, to recall the findings in Section 6.5.3, the CCSBT utilizes a consensus-based decision-making mechanism, which ultimately grants veto powers to each of their member states.¹⁰¹⁵ The adoption of measures to implement the obligations of minimizing catch by lost, abandoned, or otherwise discarded fishing gear may consequently be prevented by a single negative vote, “creating scenarios where some States may potentially seek to fulfill their duty to cooperate by adopting measures to minimize ghost fishing, but paradoxically may be failing to fulfill this obligation due to the reluctance of other Members in the relevant RFMO to implement such measures.”¹⁰¹⁶ As emphasized by Andreassen, “if anything, this potential scenario demonstrates the need for States to commit to minimize catch by ‘lost, abandoned, or otherwise discarded fishing gear’ in future fisheries governance.”¹⁰¹⁷

Further, Figure 5 also illustrates that the four remaining tuna RFMOs, the IATTC, ICCAT, IOTC and WCPFC, have adopted one or more of the relevant conservation and management measures identified through the analysis of the normative framework in Section 4.4.3, and a preliminary assessment of the adopted measures indicates that most of them relate to the management of fishing aggregating devices (FADs). How FAD management may minimize catch by lost, abandoned, or otherwise discarded fishing gear will be subject to closer analysis in Section 7.3.

The following sections will discuss the conservation and management measures currently in force in all the tuna RFMOs, aiming at identifying how these measures align with the normative framework identified in Sections 4.4.2 and 4.4.3. The analysis will also identify potential gaps between this framework and what is currently done in and by the tuna RFMOs. It is important to emphasize that the following sections will not elaborate on the potential effectiveness of the adopted conservation and management measures in terms of enforcement,¹⁰¹⁸ but rather assess whether and how the tuna RFMOs have implemented and

¹⁰¹⁵ See CCSBT Convention, Article 7, and Ingrid Solstad Andreassen, “The Role of tuna RFMOs in Combating ‘Ghost Fishing’: Where is the Catch?”

¹⁰¹⁶ Ingrid Solstad Andreassen, “The Role of tuna RFMOs in Combating ‘Ghost Fishing’: Where is the Catch?”

¹⁰¹⁷ Ibid.

¹⁰¹⁸ As emphasized in Section 1.5, the use of the verbs “to implement” and “to operationalize” in its various forms in this study do not encompass assessments of enforcement.

operationalized the measures identified in the relevant normative framework through a doctrinal analysis of the scope of the adopted measures.

The following analysis will comprise a continuous assessment of the conservation and management measures adopted by the organizations in relation to each of the applicable measures identified in the normative framework.¹⁰¹⁹ The assessment begins with a separate section on FAD management, as the adopted conservation and management measures dealing with these devices are distinct and only applicable to them. One can thus argue that the tuna RFMOs have established separate regulatory frameworks to mitigate the causes and effects of catch by lost, abandoned, and/or discarded FADs and management frameworks to mitigate the causes and effects posed by other fishing gear frequently used in tuna fisheries. This distinction prompts a closer assessment of both frameworks, starting with how the adopted FAD management measures may safeguard marine ecosystems and non-target species through the operationalization of the objective of minimizing ghost fishing.

The structure of the following two assessments will be different. The evaluation of the tuna RFMOs' adopted regulatory frameworks for FAD management in Section 7.3 will be undertaken by examining each RFMO individually. On the other hand, Section 7.4, addressing the measures applicable to all other gear types, will be based on the identified management measures presented in Section 4.4.3. Here, the measures adopted by the separate tuna RFMOs will be analyzed collectively.

The rationale for the selected approach of different assessments in Sections 7.3 and 7.4 is based on the total numbers of conservation and management measures adopted by the tuna RFMOs to mitigate impacts of FADs on marine ecosystems, in contrast to the limited number of measures adopted for other gear types. Assessing the adopted measures for each RFMO separately enables the identification of their existing FAD management measures in a comprehensive and cohesive manner, organization by organization, before a comparison of the different practices is presented. Given the low number of adopted measures covering other gear types, the presentation and analysis in Section 7.4 will focus on the measures

¹⁰¹⁹ These measures were identified through the analysis in Section 4.4.3.

rather than the organizations to facilitate a more effective analysis of the established management practices of the tuna RFMOs.

7.3 Regulatory Frameworks for FAD Management

The fact that marine species aggregate around floating objects was described as early as 200 AD when the Roman author Oppian reported on the use of floating objects to catch dolphinfish in the Mediterranean.¹⁰²⁰ The introduction of floating objects by purse seine vessels in the eastern Pacific in the 1950s represents the first observation of floating objects in commercial tuna fisheries,¹⁰²¹ marking the acceleration of the use of human-made objects “consisting of a floating raft supporting hanging nets and/or ropes” to aggregate tuna species.¹⁰²² There are two basic categories of FADs: anchored FADs and drifting FADs.¹⁰²³ Anchored FADs are primarily utilized in small-scale coastal, artisanal and sport fisheries, whereas drifting FADs are commonly deployed by industrial purse seine fishing vessels.¹⁰²⁴

The total catch of tuna species in the world reached 5.2 metric tons in 2018, a figure which has more than doubled since the early 1990s.¹⁰²⁵ Much of this growth may be attributed “to the introduction of drifting Fish Aggregating Devices...which have allowed the international tuna purse seine fleets to more effectively aggregate, locate and catch schools of tuna throughout the world’s oceans.”¹⁰²⁶ Modern drifting FADs usually have sonar-equipped satellite buoys attached to the devices, enabling tracking of their location and information

¹⁰²⁰ Laurent Dagorn et al., “Is It Good or Bad to Fish with FADs? What Are the Real Impacts of the Use of Drifting FADs on Pelagic Marine Ecosystems?” *Fish and Fisheries* 14, No. 3 (2013): 391–415, <https://doi.org/10.1111/j.1467-2979.2012.00478.x>, page 392 and Ahmed Riyaz Jauharee et al., “Tuna Behaviour at Anchored FADs Inferred from Local Ecological Knowledge (LEK) of Pole-and-Line Tuna Fishers in the Maldives,” *PLoS One* 16, No. 7 (2021): e0254617, <https://doi.org/10.1371/journal.pone.0254617>.

¹⁰²¹ Dagorn et al., “Is It Good or Bad to Fish with FADs?” Page 392.

¹⁰²² Guillermo Gomez et al., “The IUU Nature of FADs: Implications for Tuna Management and Markets,” *Coastal Management* 48, No. 6 (1 November 2020): 534–58, <https://doi.org/10.1080/08920753.2020.1845585>. Page 534.

¹⁰²³ Dagorn et al., “Is It Good or Bad to Fish with FADs?” Page 392.

¹⁰²⁴ Ibid.

¹⁰²⁵ Guillermo Gomez et al., “The IUU Nature of FADs: Implications for Tuna Management and Markets.” Page 354.

¹⁰²⁶ Ibid.

about captures in the submerged parts of the devices.¹⁰²⁷ These devices may have nets or ropes that can reach 100 meters depth.¹⁰²⁸ The total amount of drifting FADs deployed every single year is estimated to be approximately 100 000 devices,¹⁰²⁹ with an estimated loss rate of around 44%.¹⁰³⁰ These numbers illustrate how these devices may pose a serious threat to the marine environment if they continue ghost fishing after being lost or abandoned at sea.

Despite increasing economic efficiency and the effectiveness of tuna fishing operations, the use of FADs has several negative impacts on the marine environment. Gomez et al. have conducted a literature review to map the diverse impacts, where they state that they include higher bycatch rates, destruction of sensitive coral reefs and habitats, the introduction of marine pollution if the devices are lost, abandoned, or otherwise discarded, the creation of ecological traps, unauthorized and unsupervised fishing activities if the FAD drifts into areas where fishing should not be conducted, significant captures of juvenile tuna which may affect the abundance of the species, and other potential impacts of the FADs in relation to ghost fishing.¹⁰³¹

The following assessment will aim to establish whether and how the tuna RFMOs are operationalizing the objective of minimizing catch by lost, abandoned, or otherwise discarded fishing gear in relation to the utilization of FADs in fishing operations. As illustrated by Figure 5, the CCSBT has not adopted any conservation and management measures relating to the objective of minimizing ghost fishing, and this finding includes the management of FADs. The four other tuna RFMOs have adopted conservation and management measures addressing the use of FADs in tuna fishing operations, including specific obligations relevant for minimizing ghost fishing. The scope and content of these measures varies, and an assessment of the adopted FAD measures will be presented in the following sections.

¹⁰²⁷ Gomez et al., “The IUU Nature of FADs: Implications for Tuna Management and Markets.” Pages 534-535.

¹⁰²⁸ Hilario Murua et al., “Lessons learnt from the first large-scale biodegradable FAD research experiment to mitigate drifting FADs impacts on the ecosystem,” *Marine Policy* 148 (1 February 2023): 105394, <https://doi.org/10.1016/j.marpol.2022.105394>. Page 1.

¹⁰²⁹ Ibid.

¹⁰³⁰ Ibid.

¹⁰³¹ Gomez et al., “The IUU Nature of FADs: Implications for Tuna Management and Markets.” Page 535.

7.3.1 The IATTC

At present, the IATTC has in force three conservation and management measures relevant to the management objective of minimizing ghost fishing, and all these measures address FAD management.¹⁰³²

The IATTC adopted Resolution C-19-04 to mitigate impacts on sea turtles in 2019,¹⁰³³ obliging its member states and cooperating non-contracting parties to ensure that the owners, operators, or vessel crew of purse seine vessels fishing for species covered by the Antigua Convention “to promptly release unharmed, to the extent practicable, all sea turtles observed entangled in fish-aggregating devices.”¹⁰³⁴ The obligation to release all entangled sea turtles is a mitigation measure that may be effective after incidental capture has taken place, but it also requires fishing vessels to frequently check whether their FADs have generated any bycatch. The measure may therefore be regarded as primarily aimed at operationalizing the management objective of minimizing bycatch,¹⁰³⁵ but also as a mitigation measure relevant to minimize catch by lost, abandoned, and/or discarded fishing gear, giving the measure a dual application. Resolution C-19-04 applies to all purse seine vessels fishing for species covered by the Antigua Convention and is seemingly not limited to the vessels’ own FADs. A doctrinal interpretation of the obligation consequently suggests that all purse seine vessels are required to release all sea turtles seen entangled in a FAD, regardless of whether it is used in a current active fishing operation or whether the FAD may be conducting ghost fishing after being lost or intentionally discarded. The potential scope of the measure if interpreted in this manner is significant and may largely safeguard marine turtles residing in the IATTC’s convention area.

¹⁰³² See Figure 5 for more information regarding the total number of conservation and management measures currently in force in the tuna RFMOs. The findings presented in Figure 5 also illustrate that the IATTC has not adopted any additional conservation and management measures to minimize catch by lost, abandoned, or otherwise discarded fishing gear posed by other gear types, which will be the focus in Section 7.4.

¹⁰³³ IATTC, “Resolution C-19-04: Resolution to Mitigate Impacts on Sea Turtles,” 94th meeting, 2019.

¹⁰³⁴ *Ibid.* Para. 2(d).

¹⁰³⁵ As encompassed in, e.g., Article 5(f) of the 1995 UN Fish Stocks Agreement.

The IATTC adopted Resolution C-19-01 in 2019, and the Commission emphasizes that “all fishing gears, including fish-aggregating devices (FADs), have an effect on the stocks and the pelagic ecosystem” in the Eastern Pacific Ocean.¹⁰³⁶ The Commission also recognizes that the existing framework for FAD management in the IATTC “needs to be expanded and improved upon to ensure that the effects of the use of FADs on...non-target, associated and dependent species, are fully understood,”¹⁰³⁷ and states that the Commission is striving to acquire the best scientific advice to mitigate such negative effects.¹⁰³⁸ Finally, the Commission notes that “the development of improved FAD designs, in particular non-entangling FADs, both drifting and anchored, helps reduce the incidence of entanglement of sharks, sea turtles and other species.”¹⁰³⁹ The preamble of Resolution C-19-01 clearly illustrates that the IATTC is concerned about the wider effects on the marine environment of FADs in tuna fisheries, and that the Commission consequently is making efforts to implement mitigation measures to remedy potential negative impacts on the marine environment.

The resolution covers several material and procedural obligations, and the provisions specifically relevant for the conservation of non-target species and the ecosystems will be emphasized in the following to enable an assessment of whether and how the IATTC is implementing and operationalizing the management objective of minimizing catch by lost, abandoned, or otherwise discarded fishing gear in order to conserve marine ecosystems and species.

The first relevant provision of Resolution C-19-01 covers collection of all relevant information on the use of FADs on purse seine vessels. On-board observers are obliged to gather such information, and the captains are obliged to provide the observers with the relevant FAD identification codes and, “as appropriate,” any other relevant information regarding the operational FADs.¹⁰⁴⁰ If observers are not on board the relevant vessels, the captains are

¹⁰³⁶ IATTC, “Resolution C-19-01: Amendment to Resolution C-18-05 on the Collection and Analyses of Data on Fish-Aggregating Devices,” 94th meeting 2019. Preamble.

¹⁰³⁷ *Ibid.* Preamble.

¹⁰³⁸ *Ibid.* The statement refers to the effects of the use of FADs on target species and non-target species equally.

¹⁰³⁹ *Ibid.*

¹⁰⁴⁰ *Ibid.* Para. 2.

responsible for recording the information in the FAD form developed by the IATTC.¹⁰⁴¹ The IATTC has developed a detailed guide on the scope of the reporting obligations in relation to FAD interactions, including the results of potential sets in relation to catch and bycatch.¹⁰⁴² The established reporting regime has the potential of ensuring that all FADs are retrieved after fishing operations, as the FADs in use must be registered, and their potential impacts on the marine environment are closely monitored.

Another relevant provision in relation to FAD data collection is found in the fifth paragraph of Resolution C-19-01. The scientific staff of the IATTC “shall present to the Commission initial recommendations based on information collected...for the management of FADs, including possible effects of FADs in the tuna fishery” in the Eastern Pacific Ocean.¹⁰⁴³ It is not specified what the reference to “possible effects” entails, but one may assume that relevant impacts on ecosystems are covered by the preamble to the Resolution, which explicitly recognizes that all effects on tuna fisheries and the ecosystems shall be assessed.¹⁰⁴⁴

Further, the Commission “shall consider adopting management measures” based on the relevant recommendations, “including a region-wide FAD management plan.”¹⁰⁴⁵ The plan “may include, *inter alia*, recommendations regarding FAD deployments and FAD sets, the use of biodegradable materials in new and improved FADs and the gradual phasing out of FAD designs that do not mitigate the entanglement of sharks, sea turtles, and other species.”¹⁰⁴⁶ The potential development of a region-wide FAD management plan will represent a coordinated approach to managing FAD fishing in the eastern Pacific Ocean, which will overall strengthen the conservation of non-target species and the ecosystems that sustain them. The

¹⁰⁴¹ Ibid.

¹⁰⁴² IATTC, “Resolution C-19-01: Amendment to Resolution C-18-05 on the Collection and Analyses of Data on Fish-Aggregating Devices.” Annex I. Section viii. Other information to be recorded includes the position, date, hour, identification number, FAD type, design, type of activity, and characteristics of attached buoys or positioning gear. See Annex I, sections i-ix for more information.

¹⁰⁴³ IATTC, “Resolution C-19-01: Amendment to Resolution C-18-05 on the Collection and Analyses of Data on Fish-Aggregating Devices.” Para. 5. The collected information shall be presented no later than at the IATTC’s annual meeting in 2020. The IATTC has also established an FAD working group, whose mandates are explained in detail in Annex III to the Resolution.

¹⁰⁴⁴ Ibid. Preamble.

¹⁰⁴⁵ Ibid. Para. 5.

¹⁰⁴⁶ Ibid.

list of potential measures that may be included in such plans addresses some of the core issues of FAD fisheries, including the potential consequences of ghost fishing.

By introducing FAD designs comprising biodegradable materials, the Commission may adopt measures designed to reduce the long-term environmental impact of lost, abandoned, or otherwise discarded fishing gear by preventing plastics from entering the ocean and reducing the time when the FAD may function in the water without human control. The gradual phasing out of FAD designs that may affect the rates of entanglement of sharks, sea turtles, and other species also represents a proactive approach to balancing the need to conduct fishing operations with the conservation of non-target species and their relevant ecosystems. Studies have confirmed that modifications of FAD designs are of immense importance for the potential entanglement of marine species,¹⁰⁴⁷ and this is undoubtedly recognized by the IATTC by the inclusion of the measure of gradually phasing out entangling designs and non-biodegradable materials in the FADs deployed in its convention area. The inclusion of the wording *inter alia* in the provision also suggests that other potential FAD management measures may be adopted in accordance with the outcomes of the work of the scientific staff of the IATTC.

Section 2 of Resolution C-19-01 deals with FAD identification, and the member states and cooperating non-members “shall require the owners and operators of their applicable purse-seine fishing vessels to identify all FADs deployed or modified by such vessels” by 1 January 2017.¹⁰⁴⁸ A detailed identification scheme is included in Annex I to the Resolution, including the designation of unique alphanumeric codes for vessels utilizing FADs in their fishing operations.¹⁰⁴⁹ The obligation of gear marking of FADs may be perceived as a preventive

¹⁰⁴⁷ See, e.g., Murua et al., “Lessons learnt from the first large-scale biodegradable FAD research experiment to mitigate drifting FADs impacts on the ecosystem” which analyzes how the transition to biodegradable FADs may affect the marine environment and minimize adverse effects from derelict FADs.

¹⁰⁴⁸ IATTC, “Resolution C-19-01: Amendment to Resolution C-18-05 on the Collection and Analyses of Data on Fish-Aggregating Devices.” Para. 9.

¹⁰⁴⁹ IATTC, “Resolution C-19-01: Amendment to Resolution C-18-05 on the Collection and Analyses of Data on Fish-Aggregating Devices.” Annex I. Section iv. The established regime for FAD identification includes specifications on how the unique alphanumeric codes shall be painted on the FADs prior to deployment, stating that the used paint must be durable, and that the result must be visible during daytime. It is also specified that the captain and crew shall render assistance if an observer is having difficulty in viewing the codes.

measure to avoid intentional abandonment of the devices, as the likelihood of detection and ascertaining gear ownership is higher when the FAD is marked.¹⁰⁵⁰ The preventive element of the provision may be further strengthened if the gear marking obligation is combined with enforcement mechanisms that apply when gear is intentionally abandoned or discarded as waste at sea. However, an assessment of Resolution C-19-01 reveals clearly that the IATTC has not developed such mechanisms, and that there appear to be no consequences for intentional gear disposal at sea in the organization's FAD measures.

Section 3 of the Resolution specifically covers the application of non-entangling FAD designs, and the member states and cooperating non-members "shall ensure that the design and deployment of FADs are based on the principles set out in Annex II" to reduce the accidental entanglement of marine species.¹⁰⁵¹ Annex II comprises several technical principles, including specifications on how loose netting hanging below the FAD shall be avoided,¹⁰⁵² restrictions on the use of mesh netting in the submerged parts of the devices,¹⁰⁵³ and the promotion of the use of natural and biodegradable materials for drifting FADs to reduce synthetic marine debris.¹⁰⁵⁴ These gear modifications may potentially reduce the impacts of ghost fishing on the marine environment if the FADs are accidentally lost or intentionally abandoned or discarded in purse seine fishing operations in the eastern Pacific Ocean.¹⁰⁵⁵

The third resolution addressing the objective of minimizing catch by lost, abandoned, or otherwise discarded fishing gear currently in force in the IATTC is Resolution C-23-05.¹⁰⁵⁶ This resolution reinforces an identical obligation in relation to the design and deployment of FADs

¹⁰⁵⁰ The requirement of gear marking is encompassed in Food and Agriculture Organization of the United Nations, *Voluntary Guidelines on the Marking of Fishing Gear*. Article 2. See also Section 4.4.3, where it was established that requiring the marking of fishing gear is a measure to operationalize the ecosystem approach to fisheries.

¹⁰⁵¹ IATTC, "Resolution C-19-01: Amendment to Resolution C-18-05 on the Collection and Analyses of Data on Fish-Aggregating Devices." Section 3, para. 10.

¹⁰⁵² *Ibid.* Annex II. Para. 1.

¹⁰⁵³ *Ibid.* Annex II. Para. 2.

¹⁰⁵⁴ *Ibid.* Annex II. Para. 3.

¹⁰⁵⁵ See Murua et al., "Lessons learnt from the first large-scale biodegradable FAD research experiment to mitigate drifting FADs impacts on the ecosystem" for more information regarding the impacts on the marine environment stemming from lost, abandoned, or otherwise discarded FADs.

¹⁰⁵⁶ IATTC, "Resolution C-23-05: Amendment to Resolution C-19-01 on the Collection and Analyses of Data on Fish-Aggregating Devices," 101st Meeting, 2023.

to reduce the entanglement of marine species to that stated in Section 2 of the previously analyzed Resolution C-19-01.¹⁰⁵⁷ However, Resolution C-23-05 emphasizes that Annex II and paragraph 10 shall be replaced and superseded by Resolution C-23-04 on 1 January 2025.¹⁰⁵⁸ Resolution C-23-04 encompasses several obligations for the member states and cooperating non-members,¹⁰⁵⁹ including the requirement of using only non-entangling FAD materials and designs,¹⁰⁶⁰ a complete ban on the use of mesh nets in FAD constructions,¹⁰⁶¹ and an obligation to use only biodegradable materials in the construction of drifting FADs.¹⁰⁶² The Resolution also covers reporting obligations in terms of the implementation and operationalization of the requirements of the measure,¹⁰⁶³ and overall represents a significant strengthening of the regime established by the adoption of Resolution C-19-01. Resolution C-23-04 is at the time of writing not in force and is thus not included in Figure 5 due to the coding process, but it nevertheless offers some interesting insights in terms of studying how the regulatory framework for FAD management of the IATTC is developing in terms of adopting obligations to be imposed on the member states and cooperating non-members when it enters into force.

7.3.1.1 Discussion and Recommendations

The analysis of the FAD management regime established by the IATTC illustrates that the organization has adopted measures which require the mandatory marking of FADs, an obligation to only use non-entangling FAD designs to mitigate the impact on non-target species and the marine ecosystems in the eastern Pacific Ocean and an obligation to use only biodegradable materials in FAD designs. The adoption of these measures represents a significant effort to tackle the potential effects of FAD fisheries on the marine environment

¹⁰⁵⁷ Ibid. Para. 10.

¹⁰⁵⁸ Ibid. Para. 11.

¹⁰⁵⁹ IATTC, "Resolution C-23-04: FADs Biodegradables," 101st Meeting 2023.

¹⁰⁶⁰ Ibid. Para. 2(a).

¹⁰⁶¹ Ibid. Para. 2(b).

¹⁰⁶² Ibid. Para. 3. The requirement has been specifically adopted to reduce the amount of synthetic marine debris. However, the provision is still of relevance as the use of biodegradable materials will reduce the fishing power of lost, abandoned, or discarded devices at a faster pace than devices made of synthetic materials.

¹⁰⁶³ Ibid. Para. 7.

and a way of ensuring that the IATTC's regulatory framework aligns with the normative requirements of Article 5(e) of the 1995 UN Fish Stocks Agreement.¹⁰⁶⁴ However, the IATTC has seemingly not adopted any enforcement mechanisms in cases of non-compliance. Another significant shortcoming of the FAD management measures analyzed in Section 7.3.1 is that the IATTC has not established any requirements of retrieving lost FADs, bans on discarding used devices at sea, reporting obligations or the establishment of suitable gear disposal systems. This is somewhat surprising, given the fact that the IATTC is one of the most progressive tuna RFMOs in relation to the obligations encompassed in its founding instrument, which explicitly state that the IATTC shall minimize catch by lost, abandoned, or otherwise discarded fishing gear.¹⁰⁶⁵ The fact that the founding instrument of the IATTC explicitly reflects the wording of Article 5(f) of the 1995 UN Fish Stocks Agreement¹⁰⁶⁶ suggests that this tuna RFMO is not fulfilling the management mandate specified in its founding instrument.

The fact that the two conservation and management measures currently in force in the IATTC that are relevant to the implementation and operationalization of the objective of minimizing catch by lost, abandoned, or otherwise discarded fishing gear only address some relevant measures in relation to FAD management may be regarded as representing a breach of Articles 5(f) 10(c) of the 1995 UN Fish Stocks Agreement and Annex V of MARPOL 73/78. The member states of the commission are thus advised to adopt amendments to the IATTC's management framework to ensure compliance with the legal obligations of minimizing ghost fishing, extending to encompass conservation and management measures relevant to all gear types and related activities of fisheries. The causes of the IATTC member states' lack of compliance with the legal obligations are not presently known, but potential issues will be subject to further analysis and evaluation in Chapter 8.

¹⁰⁶⁴ See Section 6.3.2, which established that the IATTC has a management mandate consistent with the provisions reflecting the ecosystem approach to fisheries as expressed in Article 5(e) of the 1995 UN Fish Stocks Agreement and the FAO Code of Conduct.

¹⁰⁶⁵ See Section 6.3.2, which assessed the implementation of the ecosystem approach to fisheries in the IATTC's founding instrument.

¹⁰⁶⁶ *Ibid.*

7.3.2 The ICCAT

Turning to the ICCAT, this organization currently has two conservation and management measures in force which address catch by lost, abandoned, or otherwise discarded fishing gear in relation to FADs. Recommendation 21-01 was adopted in 2021 and covers the reporting of lost FADs, use of non-entangling designs for FADs and use of biodegradable materials in FAD constructions.¹⁰⁶⁷ In the rationale for the adoption of the preceding measure, Recommendation 16-01, the ICCAT noted that the standing committee on research and statistics compiled a report in 2013 where the effects on both sea turtles and shark bycatch were recognized and the “need to provide advice on the design of FADs that would lessen their impact on by-catch species” was highlighted.¹⁰⁶⁸ The Commission also noted that “information on dimension and material of the floating part and of the underwater hanging structure should be provided” and “the entangling or non-entangling features of the underwater hanging structure should be reported.”¹⁰⁶⁹ The recognition of the impact on non-target species stemming from FAD fisheries is in itself an important statement which indicates that the ICCAT as early as 2016 was concerned about the potential wider impact on the marine environment and ecosystems of their management of FAD fisheries.

Turning to the specific provisions in Recommendation 21-01, it is clear that the organization has taken significant steps towards mitigating the effects of FAD fisheries on marine ecosystems and non-target species. The first relevant measure obliges the member states and cooperating non-contracting parties to ensure that their purse seine vessels have no more than 300 active FADs at any time.¹⁰⁷⁰ This may have the potential effect of preventing the setting of excessive FADs, as a large number of FADs may lead to intentional gear

¹⁰⁶⁷ ICCAT, “Recommendation 21-01: Recommendation by ICCAT Replacing Recommendation 19-02 Replacing Recommendation 16-01 on a Multi-Annual Conservation and Management Programme for Tropical Tunas,” 2021.

¹⁰⁶⁸ ICCAT, “Recommendation 16-01: Recommendation by ICCAT on a Multi-Annual Conservation and Management Programme for Tropical Tunas.” Preamble.

¹⁰⁶⁹ Ibid.

¹⁰⁷⁰ ICCAT, “Recommendation 21-01: Recommendation by ICCAT Replacing Recommendation 19-02 Replacing Recommendation 16-01 on a Multi-Annual Conservation and Management Programme for Tropical Tunas.” Para. 30.

abandonment and discarding of the FADs at sea after the fishing operation has finished.¹⁰⁷¹ Further, the member states and cooperating non-contracting parties which have vessels operating with FADs “shall submit to the Executive Secretary Management Plans for the use of such aggregating devices” on an annual basis.¹⁰⁷² The objective of these plans shall be to “improve the knowledge about FAD characteristics, buoy characteristics, FAD fishing...and related impacts on targeted and non-targeted species,”¹⁰⁷³ to “effectively manage the deployment and recovery of FADs, the activation of buoys and their potential loss”¹⁰⁷⁴ and to “reduce and limit the impacts of FADs and FAD fishing on the ecosystem.”¹⁰⁷⁵ The mandatory requirement of submitting the FAD management plans has several practical implications, including coordination of the total amount of FAD fisheries conducted by the relevant flag states. This is a vital step to ensure coherence in the regulatory framework established by the ICCAT by including information about the total number of FADs currently being used in its convention area. Further, the FAD management plans must include measures relating to the deployment and recovery of used FADs after fishing operations,¹⁰⁷⁶ suggesting that the measure will increase the retrieval rate of the gear as a response to the obligations formulated and subsequently included in the FAD management plans. Finally, the plans shall be adopted to “reduce and limit” the impacts of the devices and FAD fisheries on marine ecosystems. In Annex 5 to Recommendation 21-01,¹⁰⁷⁷ it is stated that “the surface structure of a FAD should not be covered or only covered with material implying minimum risk of entangling by-catch species,”¹⁰⁷⁸ that “the sub-surface components should be exclusively composed of non-entangling material,”¹⁰⁷⁹ and that “when designing FADs the use of biodegradable materials

¹⁰⁷¹ See, e.g., Gilman, “Status of International Monitoring and Management of Abandoned, Lost and Discarded Fishing Gear and Ghost Fishing,” which argues that setting of excessive fishing gear may lead to intentional discarding of parts of the gear on page 225.

¹⁰⁷² ICCAT, “Recommendation 21-01: Recommendation by ICCAT on a Multi-Annual Conservation and Management Programme for Tropical Tunas.” Para. 34.

¹⁰⁷³ Ibid. Para. 35(i).

¹⁰⁷⁴ Ibid. Para. 35(ii).

¹⁰⁷⁵ Ibid. Para. 35(iii).

¹⁰⁷⁶ Ibid. Para. 35(ii).

¹⁰⁷⁷ Ibid. Annex 5 - “Guidelines for reducing the ecological impact of FADs in ICCAT Fisheries.”

¹⁰⁷⁸ Ibid. Annex 5. Para. 1.

¹⁰⁷⁹ Ibid. Annex 5. Para. 2.

should be prioritised,”¹⁰⁸⁰ to reduce the ecological impact of FADs in the ICCAT’s fishing operations. The relevant mitigation measures in Annex 5 constitute technical guidelines for the design of FADs, but these measures are nevertheless made binding on the member states and cooperating non-contracting parties by their inclusion in paragraph 40 of Recommendation 21-01, thus creating a stringent and coherent conservation and management framework by ensuring that the technical guidelines are adopted in practice.

To “minimize the ecological impact of FADs, in particular the entanglement of sharks, turtles and other non-target species,” and reduce “the release of synthetic persistent marine debris” the member states and cooperating non-contracting parties shall ensure that all “FADs deployed are non-entangling in line with the guidelines under Annex 5.”¹⁰⁸¹ The relevant states shall also: “Endeavour that as of January 2021 all FADs deployed are non-entangling and constructed from biodegradable materials, including non-plastics.” The obligation to only deploy non-entangling FADs constructed from biodegradable materials is progressive. As will be illustrated in the following, the ICCAT has also established a ban on the use of FADs with non-biodegradable materials and thus sharpened the responsibilities of the relevant states. Overall, the measures outlined in Recommendation 21-01 share several similarities with the measures adopted by the IATTC,¹⁰⁸² and represent significant efforts to mitigate the effects of ghost fishing. If FADs are accidentally lost or intentionally abandoned or discarded, the normative scope of the measures reduces the probability of incidental capture without human control by decreasing the fishing ability of the gear through the utilization of biodegradable materials.

The final obligation stated in Recommendation 2021-01 of relevance for this assessment is the establishment of mandatory reporting procedures for the deployment of FADs and loss of such devices.¹⁰⁸³ All vessels which lose FADs shall report their last registered position,¹⁰⁸⁴ date

¹⁰⁸⁰ Ibid. Annex 5. Para. 3.

¹⁰⁸¹ Ibid. Para. 40(i).

¹⁰⁸² See Section 7.3.1 for detailed information about the measures adopted by the IATTC.

¹⁰⁸³ ICCAT, “Recommendation 21-01: Recommendation by ICCAT Replacing Recommendation 19-02 Replacing Recommendation 16-01 on a Multi-Annual Conservation and Management Programme for Tropical Tunas.” Para. 37.

¹⁰⁸⁴ Ibid. Para. 37(c)(i).

of such registration,¹⁰⁸⁵ and the relevant FAD identification of the lost device.¹⁰⁸⁶ The mandatory reporting obligations represent a preventive measure by underlining the duty to report potential non-retrieval of deployed FADs, indicating that fishers may retrieve them to avoid the additional work of reporting following their fishing operations. The adoption of mandatory reporting requirements for lost devices also represents a broader scope than that of the framework of the IATTC, indicating that the ICCAT is making efforts to remedy some of the key causes of intentional gear loss in FAD fisheries, not only any effects that may occur after the devices end up in the sea.

The second FAD measure adopted by the ICCAT currently in force is Recommendation 22-01.¹⁰⁸⁷ This covers the same issues as Recommendation 21-01 and reinforces identical obligations in terms of the objectives of FAD management plans,¹⁰⁸⁸ and the general reporting obligations for the deployment and loss of FADs.¹⁰⁸⁹ However, Recommendation 22-01 expands the scope of the previously adopted measures in terms of limiting the total amount of FADs that may be deployed, the mandatory use of non-entangling and biodegradable materials and constructions, the introduction of temporary FAD closures, and the adoption of general FAD management objectives.

To start with the latter, the ICCAT states that the general objectives for the management of FADs in its convention area include “to minimize the impact of FAD fishing on non-target species, where appropriate, including entanglement of marine species, particularly those of

¹⁰⁸⁵ Ibid. Para. 37(c)(ii).

¹⁰⁸⁶ Ibid. Para. 37(c)(iii).

¹⁰⁸⁷ ICCAT, “Recommendation 22-01: Recommendation by ICCAT replacing Recommendation 21-01 on a Multi-Annual Conservation and Management Programme for Tropical Tunas,” 2022.

¹⁰⁸⁸ See ICCAT, “Recommendation 22-01: Recommendation by ICCAT replacing Recommendation 21-01 on a Multi-Annual Conservation and Management Programme for Tropical Tunas,” paras. 34-36 and ICCAT, “Recommendation 21-01: Recommendation by ICCAT Replacing Recommendation 19-02 Replacing Recommendation 16-01 on a Multi-Annual Conservation and Management Programme for Tropical Tunas,” para. 35.

¹⁰⁸⁹ See ICCAT, “Recommendation 22-01: Recommendation by ICCAT replacing Recommendation 21-01 on a Multi-Annual Conservation and Management Programme for Tropical Tunas,” para. 37 and ICCAT, “Recommendation 21-01: Recommendation by ICCAT Replacing Recommendation 19-02 Replacing Recommendation 16-01 on a Multi-Annual Conservation and Management Programme for Tropical Tunas,” para. 37.

conservation concern,”¹⁰⁹⁰ and “to minimize the impact of FADs and FAD fishing on pelagic and coastal ecosystems, including by preventing the beaching, stranding or grounding of FADs in sensitive habitats or the alteration of pelagic habitat.”¹⁰⁹¹ The specific inclusion of these objectives in Recommendation 22-01 clearly demonstrates that the ICCAT is striving to mitigate the effects FAD fisheries may have on marine ecosystems and non-target species in its convention area, in addition to impacts on relevant coastal areas bordering its geographical area of competence. The inclusion of the wording “where appropriate” in relation to mitigating the potential impacts on non-target species of FAD fisheries creates some vagueness in terms of when the mitigation measures ought to be adopted. However, it seems reasonable to conclude that the mandatory design modifications of the devices mentioned in the recommendation are management measures to be applied by all member states and cooperating non-contracting parties in order to fulfill their obligations.

Recommendation 22-01 expands the scope of the obligations relating to non-entangling and biodegradable FAD design and construction, and the states are required to ensure that all FADs deployed in fishing operations are non-entangling and constructed from biodegradable materials.¹⁰⁹² The ICCAT continues its efforts to give substance to these obligations by including specific criteria for the designs of FADs in an annex to the recommendation, which states that the surface structures should not be covered/only covered by material which causes minimum risk of entanglement and the sub-surface components should only be made of non-entangling material.¹⁰⁹³

The obligations in Annex 5 are identical to those under Annex 5 of Recommendation 21-01, but paragraph 40 of Recommendation 22-01 significantly sharpens the responsibility of the member states and cooperating non-contracting parties of the ICCAT by requiring all FADs to

¹⁰⁹⁰ ICCAT, “Recommendation 22-01: Recommendation by ICCAT replacing Recommendation 21-01 on a Multi-Annual Conservation and Management Programme for Tropical Tunas.” Para. 25(b).

¹⁰⁹¹ Ibid. para. 25(d). The other recognized objectives are spelled out in Paras. 25(a) and (b) and cover the minimizing of impacts of potential high FAD density on other tuna fishing operations and on the productivity of targeted stocks stemming from the high catch rates of juvenile tuna in FAD fisheries.

¹⁰⁹² Ibid. paras. 40(i) and (ii).

¹⁰⁹³ Ibid. Annex 5.

have non-entangling designs and be composed of biodegradable materials.¹⁰⁹⁴ These regulations may be regarded as a vital prerequisite for operationalizing the obligation of minimizing impacts of fisheries on non-target species in accordance with Article 5(f) of the 1995 UN Fish Stocks Agreement, and hence also the operationalization of a vital part of the ecosystem approach to fisheries. This measure has the potential of mitigating some of the possible effects of FADs on the marine environment and marine species if they are lost, abandoned, or otherwise discarded in fishing operations.

Turning back to the FAD management objectives in Recommendation 22-01, the second identified objective is to minimize the impacts of FADs on “pelagic and coastal ecosystems” with a recognition of the potential impacts on “sensitive habitats or the alteration of pelagic habitat.”¹⁰⁹⁵ In relation to pelagic habitats, scientific research demonstrates that the inclusion of floating objects and logs in areas where they have previously not been present may affect the behavior of species, which in turn may affect the ecosystems that sustain them.¹⁰⁹⁶ Floating features, including reefs, shelf breaks and seamounts are known to attract and concentrate several marine species and represent “hotspots” for large predator species such as tunas, sharks, and sea turtles,¹⁰⁹⁷ and Moreno et al. argue that drifting FADs should be added to the list of such hotspots due to their ability to attract and concentrate marine species by introducing floating devices.¹⁰⁹⁸ The potential effects of FADs on “sensitive habitats” includes the “beaching, stranding, or grounding of FADs” in these areas, which may damage

¹⁰⁹⁴ The obligation laid down in ICCAT, “Recommendation 16-01: Recommendation by ICCAT on a Multi-Annual Conservation and Management Programme for Tropical Tunas,” para. 24 required the relevant states to “undertake research to gradually replace existing FADs with fully biodegradable and non-entangling FADs.”

¹⁰⁹⁵ ICCAT, “Recommendation 22-01: Recommendation by ICCAT replacing Recommendation 21-01 on a Multi-Annual Conservation and Management Programme for Tropical Tunas.” Para. 25(d).

¹⁰⁹⁶ See e.g., Laurent Dagorn et al., “Is It Good or Bad to Fish with FADs?” Pages 11-12. Dagorn et al. have conducted a literature review of relevant research publications and synthesized the findings, such as that tuna species change their behavior and migration patterns due to floating objects, and that FADs may create changes in the natural abundance of species and their composition.

¹⁰⁹⁷ See Boris Worm, Heike K. Lotze, and Ransom A. Myers, “Predator Diversity Hotspots in the Blue Ocean,” *Proceedings of the National Academy of Sciences - PNAS* 100, No. 17 (2003): 9884–88, <https://doi.org/10.1073/pnas.1333941100>.

¹⁰⁹⁸ G. Moreno et al., “Fish aggregating devices (FADs) as scientific platforms,” *Fisheries Research*, The use of fishing vessels as scientific platforms, 178 (1 June 2016): 122–29, <https://doi.org/10.1016/j.fishres.2015.09.021>. Moreno et al. argue that FADs as ecological hotspots generally should be used in scientific studies regarding the behavior of marine species.

the relevant habitats, including sensitive coral reefs, and pose a severe problem in terms of ghost fishing and as a source of marine litter in coastal areas.¹⁰⁹⁹ Studies have shown that 19-22% of all drifting FADs in the Atlantic Ocean end up beaching, which suggests that this represents a significant problem.¹¹⁰⁰ The fact that the ICCAT is determined to manage FAD fisheries in a manner which will minimize the potential effects on pelagic and coastal habitats must be regarded as a vital step in the process of implementing the ecosystem approach to fisheries in the organization. A central question of relevance for this study is how the objectives in Recommendation 22-01 are operationalized in practice. The previously analyzed requirements of non-entangling design and use of biodegradable materials are naturally relevant, as minimizing ghost fishing occurring in habitats may be enhanced by design modifications and the use of biodegradable materials, which may also reduce the potential period when the devices may impact the relevant habitats. The member states and cooperating non-contracting parties of the ICCAT are also obliged to include measures specifically tailored to preventing the loss or abandonment of FADs and recovering lost devices in their FAD management plans,¹¹⁰¹ and to report all lost FADs in accordance with paragraph 37 of Recommendation 22-01.¹¹⁰² Further, the ICCAT obliges member states and cooperating non-contracting parties to ensure that their flagged vessels do not deploy more than 300 FADs per vessel in 2023, and the relevant states are encouraged not to increase their total FAD fishing from their 2018 levels.¹¹⁰³ The total number of FADs per vessel represents a significant decrease in the total number of FADs that may be deployed, when compared to the first conservation and management measure adopted in 2016.¹¹⁰⁴ Clearly, the total

¹⁰⁹⁹ See, e.g., Taha Imzilen et al., “Spatial Management Can Significantly Reduce dFAD Beachings in Indian and Atlantic Ocean Tropical Tuna Purse Seine Fisheries,” *Biological Conservation* 254 (February 2021): 108939, <https://doi.org/10.1016/j.biocon.2020.108939>.

¹¹⁰⁰ Ibid. Page 108939. The number of lost drifting FADs that beach is a total of 2283 devices for the Atlantic Ocean.

¹¹⁰¹ ICCAT, “Recommendation 22-01: Recommendation by ICCAT replacing Recommendation 21-01 on a Multi-Annual Conservation and Management Programme for Tropical Tunas.” Annex 1. Paras. 3(j) and (k).

¹¹⁰² Ibid. Para. 37.

¹¹⁰³ Ibid. Paras. 30 and 31.

¹¹⁰⁴ The preceding Recommendation 16-01 to Recommendation 21-01 allowed for 500 FADs per vessel. See ICCAT, “Recommendation 16-01: Recommendation by ICCAT on a Multi-Annual Conservation and Management Programme for Tropical Tunas.” Para. 16.

number of FADs may impact the levels of ghost fishing and damage to habitats as the use of fewer devices naturally implies fewer potentially lost at sea.

Finally, the ICCAT implements FAD closures for 72 days each year by adopting Recommendation 22-01.¹¹⁰⁵ The measure is adopted to reduce the mortality of juvenile tuna in fishing operations, but may potentially contribute to wider conservation of the marine environment by limiting the time the FADs can affect non-target species and their habitats.¹¹⁰⁶ Nevertheless, despite contributing to achieving the objective of reducing mortality of juveniles, the FAD closures may have “the unpredicted side-effect of increasing fishing effort outside the closure,”¹¹⁰⁷ which may negatively affect marine ecosystems through changes in fishing pressure in different areas.¹¹⁰⁸ Consequently, the ICCAT should establish effective enforcement and monitoring mechanisms to ensure that FAD closures do not result in increased fishing effort in other geographical areas under its regulatory area of jurisdiction.

However, despite being indirectly relevant to the minimization of impacts on marine ecosystems and non-target species, the adoption of FAD closures to conserve juvenile tuna has unintended consequences in terms of conserving marine ecosystems and non-target species. Consequently, these measures are not relevant to the assessment of the tuna RFMOs’ conscious actions to operationalize the ecosystem approach to fisheries or minimize catch by lost, abandoned, or otherwise discarded fishing gear.¹¹⁰⁹

¹¹⁰⁵ ICCAT, “Recommendation 22-01: Recommendation by ICCAT replacing Recommendation 21-01 on a Multi-Annual Conservation and Management Programme for Tropical Tunas.” Paras. 27-28.

¹¹⁰⁶ Ibid. Para. 27.

¹¹⁰⁷ Daniel C Dunn, Guillermo Ortuño Crespo, and Richard Caddell, “Area-Based Fisheries Management,” in *Strengthening International Fisheries Law in an Era of Changing Oceans*, eds. Richard Caddell and Erik Jaap Molenaar (Oxford, England: Hart, 2019), 189–218. Page 201.

¹¹⁰⁸ Ibid.

¹¹⁰⁹ The rationale for the adopted measure is clearly stated to be the conservation of juvenile tunas, and not the impacts of FADs on ecosystems and non-target species. See ICCAT, “Recommendation 22-01: Recommendation by ICCAT replacing Recommendation 21-01 on a Multi-Annual Conservation and Management Programme for Tropical Tunas.” Para. 27.

7.3.2.1 Discussion and Recommendations

Overall, the regulatory framework for FADs established by the ICCAT comprises several management measures of relevance to mitigate both the causes and effects of ghost fishing. The ICCAT has established a regulatory framework with a wider scope than the IATTC, by also including mandatory reporting of lost devices and mandatory use of non-entangling designs and biodegradable materials for FADs used in its convention area. The adoption of Recommendations 21-01 and 22-01 represents significant steps towards the operationalization of the objective of minimizing catch by lost, abandoned, and/or discarded fishing gear, and covers several core measures identified in the normative framework presented in Section 4.4.3.

However, assessing whether and how the ICCAT's FAD measures align with the normative framework reveals that this RFMO has not implemented any explicit measures requiring the adoption and enforcement of the prohibition of intentionally discarding fishing gear at sea.¹¹¹⁰ The ICCAT has nevertheless adopted such a prohibition in Recommendation 19-11, which also encompasses the discarding of FADs.¹¹¹¹ A closer analysis of the scope and content of Recommendation 19-11 will be presented in Section 7.4.2, but it is worth noting that this section has already shown that the ICCAT has implemented and operationalized this prohibition, thus contributing to an assessment of whether and how the tuna RFMOs are responding to the normative framework regulating catch by lost, abandoned, or otherwise discarded fishing gear.

Comparing the ICCAT regulatory framework for FADs with the measures identified in the normative framework illustrates that the organization has implemented relevant measures to operationalize a prohibition of intentional discarding of fishing gear at sea, mandatory retrieval of lost FADs, mandatory use of biodegradable materials, mandatory marking of all devices, a ban of gear types that does not fulfill the criteria of being non-entangling and made

¹¹¹⁰ See Section 4.4.3 where conservation and management measures relevant to minimize catch by lost, abandoned, or otherwise discarded fishing gear was identified.

¹¹¹¹ See ICCAT, "Recommendation 19-11: Recommendation by ICCAT on Abandoned, Lost or Otherwise Discarded Fishing Gear," 2019.

of degradable materials, reporting obligations when devices are lost and finally gear modifications to prevent entangling of marine species. These findings in this thesis consequently demonstrate that the ICCAT has adopted a comprehensive framework that aligns with the requirements of the normative framework in terms of minimizing ghost fishing. Furthermore, the findings demonstrate that the ICCAT currently has implemented and operationalized all the relevant measures identified in Section 4.4.3 except for the establishment of suitable gear disposal systems for FADs. In this way, the ICCAT is currently operating in line with almost all the requirements in the normative framework, and the organization should be commended for its work in operationalizing the relevant measures.

However, the ICCAT is advised to amend its regulatory framework to include the establishment of suitable gear disposal systems for FADs to ensure full implementation and operationalization of the normative framework in line with the states' obligations to minimize ghost fishing under Article 5(f) and 10(c) of the 1995 UN Fish Stocks Agreement.

7.3.3 The IOTC

It is evident that the IOTC is a tuna RFMO that expands the scope of the obligations imposed on its member states and cooperating non-contracting parties, when the IOTC's regulatory framework for FADs is compared with the frameworks established by the IATTC and the ICCAT. The IOTC currently has four conservation and management measures in force addressing FAD management, and these measures will be subject to analysis in the following sections where similarities to and differences from the regulatory frameworks of the IATTC and ICCAT will be highlighted.

The IOTC adopted Resolution 12/04 on the Conservation of Marine Turtles as early as 2012,¹¹¹² obliging its member states and cooperating non-contracting parties to ensure that the operators of purse seine vessels fishing for species covered by the IOTC Agreement “to the extent practicable, release all marine turtles observed entangled in fish aggregating devices (FADs) or other fishing gear.”¹¹¹³ The obligation is similar to the IATTC's measure on mitigating impacts on sea turtles presented in Section 7.3.1,¹¹¹⁴ and its implications need not be repeated here. If the measure is given effect, it has the potential to largely safeguard marine turtles residing in the Indian Ocean.

Furthermore, all member states and cooperating non-contracting parties “are requested to...where appropriate undertake research trials of...alternative FAD designs...and other mitigation methods which may improve the mitigation of adverse effects on marine turtles.”¹¹¹⁵ Such results of potential research trials shall be reported to the scientific committee of the IOTC at least 30 days prior to its annual meeting.¹¹¹⁶ The scientific committee shall also request the IOTC Working Party on Ecosystems and Bycatch to “develop improved FAD designs to reduce the incidence of entanglement of marine turtles, including

¹¹¹² IOTC, “Resolution 12/04 On the Conservation of Marine Turtles,” 2012.

¹¹¹³ *Ibid.* Para. 9(a)(ii).

¹¹¹⁴ IATTC, “Resolution C-19-04: Resolution to Mitigate Impacts on Sea Turtles.” Para 2(d).

¹¹¹⁵ IOTC, “Resolution 12/04 On the Conservation of Marine Turtles,” 2012. Para. 10(a).

¹¹¹⁶ *Ibid.* Para. 10(b).

the use of biodegradable materials.”¹¹¹⁷ These obligations represent a coordinated effort to deal with the potential impacts of FAD fisheries on marine turtles, placing a shared responsibility on the relevant states, the scientific committee of the IOTC and its Working Party on Ecosystems and Bycatch. The outcomes of the research trials may be used by the Working Party to develop tailor-made measures to mitigate the impacts on sea turtles, which may potentially strengthen the overall conservation and management framework for these species. Such tailor-made measures may also be adopted for FAD fisheries. Overall, the adoption of Resolution 12/04 represents a species-specific conservation and management measure mitigating the impact of FAD fisheries on sea turtles. Similar measures have not yet been adopted for other non-target species potentially negatively affected by the use of FADs in the Indian Ocean.

The second relevant conservation and management measure in the IOTC regulatory framework is Resolution 19/02, which regulates FAD management plans.¹¹¹⁸ The preamble of the resolution recognizes the need to “mitigate possible negative effects on the ecosystems, including on juveniles and the incidental bycatch of non-target species, particularly sharks and marine turtles,” and notes that “the IOTC Scientific Committee advised the Commission that only non-entangling FADs, both drifting and anchored, should be designed, and deployed to prevent the entanglement of sharks, marine turtles and other species.”¹¹¹⁹ The resolution is applicable to the IOTC’s member states and cooperating non-contracting parties with purse seine vessels utilizing drifting FADs with instrumented buoys to aggregate tuna species in the IOTC’s geographical area of competence.¹¹²⁰ The resolution obliges each vessel to have no more than 300 operational buoys at any time,¹¹²¹ and the total number of instrumental buoys

¹¹¹⁷ Ibid. Para. 11.

¹¹¹⁸ IOTC, “Resolution 19/02: Procedures on a Fish Aggregating Devices (FADs) Management Plan,” 2019.

¹¹¹⁹ Ibid. Preamble.

¹¹²⁰ Ibid. Para. 2.

¹¹²¹ Operational buoys are defined as “any instrumented buoy, previously activated, switched on and deployed at sea on a drifting FAD or log, which transmit position and any other available information” in IOTC, “Resolution 19/02: Procedures on a Fish Aggregating Devices (FADs) Management Plan.” Para. 1(e).

that may be acquired by each vessel shall be set at no more than 500 buoys.¹¹²² The requirement for a cap of 300 drifting operational FADs is an identical obligation to the previously analyzed measure adopted by the ICCAT in 2022.¹¹²³ The obligation has the potential to reduce the total number of lost drifting FADs, which may decrease negative impacts on marine ecosystems and non-target species if the devices are accidentally lost or intentionally abandoned or discarded. The IOTC nevertheless goes one step further than the ICCAT by stating that a member state or cooperating non-contracting party “may adopt a lower limit” than 300 operational buoys for the vessels flying their flags. The obligation is voluntary in nature by the inclusion of the word “may,” but has the potential of reducing the overall total number of drifting FADs in the IOTC convention area if it is given effect by the relevant states.

The IOTC has also adopted operational obligations to ensure compliance with the maximum limit of drifting FADs, stating that all purse seine vessels shall declare to its flag state “the number of instrumented buoys onboard, including each unique identifier of the buoy before and after each fishing trip,”¹¹²⁴ and that “reactivation of an instrumented buoy shall only be possible once it has been brought back to port” by vessels authorized by the flag states.¹¹²⁵ These measures give substance to the overarching obligation to reduce the total number of drifting FADs that may be deployed by each vessel in the IOTC area of competence. Further, the measures also contribute to the overall framework of limiting ghost fishing as the potential loss of gear is significantly reduced by operationalizing a cap on the total amount of drifting FADs.

¹¹²² Ibid. Para. 4. An instrumented buoy is defined as a buoy clearly marked “with a unique reference number allowing identification of its owner and equipped with a satellite tracking system to monitor its position” in para. 1(e) of the resolution.

¹¹²³ See ICCAT, “Recommendation 22-01: Recommendation by ICCAT replacing Recommendation 21-01 on a Multi-Annual Conservation and Management Programme for Tropical Tunas.” The ICCAT nevertheless does not distinguish between FAD types in the same manner as the IOTC, creating some differences in the scope of application of the adopted measures. Whereas the measure adopted by the IOTC is only applicable to drifting FADs, the ICCAT recommendation is applicable to all FADs. However, as will be demonstrated later in this section, the IOTC has adopted a separate resolution for anchored FADs.

¹¹²⁴ IOTC, “Resolution 19/02: Procedures on a Fish Aggregating Devices (FADs) Management Plan.” Para. 7.

¹¹²⁵ Ibid. Para. 8.

Furthermore, Resolution 19/02 obliges all member states and cooperating non-contracting parties of the IOTC to ensure that each vessel annually reports its numbers of operational buoys, including lost and transferred FADs.¹¹²⁶ The relevant states shall also annually submit management plans for the use of FADs, and the plans shall include “initiatives to investigate, and to the extent possible minimise the capture of...non-target species associated with fishing on FADs.”¹¹²⁷ The management plans “shall also include guidelines to prevent, to the extent possible, the loss or abandonment of FADs,”¹¹²⁸ and the plans “shall be analyzed by the IOTC Compliance Committee.”¹¹²⁹

The relevant states are obliged to actively initiate investigations of how the use of FADs impacts non-target species. Consequently, the obligation may be characterized as being one of conduct, not results.¹¹³⁰ It is nevertheless a strength that the states are obliged to initiate investigations, and that all states are responsible for contributing to the overall scientific knowledge about the potential impacts of FADs on non-target species in the Indian Ocean. The scope of the obligation is expanded to include measures to minimize the capture of these species “to the extent possible.”¹¹³¹ It is not specified what types of measures will have to be included in the domestic management plans to comply with the obligation, but it should at least include the relevant provisions listed in Annex I and Annex II to the Resolution, which encompass guidelines for drifting and anchored FAD management plans.¹¹³² Both annexes stipulate that the plans should include, e.g., plans for monitoring and retrieval of lost FADs,¹¹³³ reporting obligations,¹¹³⁴ and a description of their use for bycatch reduction.¹¹³⁵ All measures listed in the two annexes are non-binding, but the potential measures that may be adopted based on these guidelines are nevertheless of significance for minimizing ghost fishing and the

¹¹²⁶ Ibid. Para. 10.

¹¹²⁷ Ibid. Para. 14. The management plans shall include identical initiatives to investigate and minimize the capture of small bigeye tuna and yellowfin tuna in accordance with the provision.

¹¹²⁸ Ibid.

¹¹²⁹ Ibid. Para. 13.

¹¹³⁰ Ibid. Para. 14.

¹¹³¹ Ibid.

¹¹³² Ibid. Annex I and Annex II.

¹¹³³ See Annex I(2) and Annex II(2)(h).

¹¹³⁴ See Annex I(3) and Annex II(3)(e).

¹¹³⁵ See Annex I(2) and Annex II(2)(e).

potential impacts of FAD fisheries on non-target species. A concrete way of operationalizing the obligations in Resolution 19/02 is to include the relevant measures stemming from these guidelines in the states' domestic FAD management plans.

In terms of preventing the loss or abandonment of FADs, the obligation encompassed in the fourteenth paragraph of Resolution 19/02 may be characterized as a combination of conduct and results. The states "shall include guidelines" to minimize such losses or abandonment, meaning that they are obliged to develop and include measures to minimize FAD loss in the IOTC convention area. The wording "to the extent practicable" indicates that the measures must be effective, but that the states are not obliged to ensure that no FADs are lost or abandoned in the relevant fisheries. However, domestic measures must be designed to minimize potential scenarios where FADs are accidentally lost or intentionally abandoned in accordance with the provision. Finally, a report of the progress of the states' FAD management plans shall be submitted to the Commission of the IOTC 60 days before the annual meeting.¹¹³⁶

Resolution 19/02 also covers obligations to reduce entanglement of non-target species and to use biodegradable materials in FAD construction. The member states and cooperating non-contracting parties "shall require their flagged vessels to use non-entangling designs and materials in the constructions of FADs" to "reduce the entanglement of sharks, marine turtles or any other species."¹¹³⁷ The obligation is similar to the previously analyzed recommendation adopted by the ICCAT in 2022,¹¹³⁸ which also requires the mandatory use of non-entangling FAD designs. The IOTC Resolution 19/02 also emphasizes that "the use of natural or biodegradable materials in FAD construction should be promoted," to reduce synthetic debris ending up in the ocean, and that the Commission is aiming to phase out non-biodegradable FAD designs by 1 January 2022.¹¹³⁹ The IOTC also encourages its member states and cooperating non-contracting parties "to conduct trials using biodegradable materials to facilitate the transition to the use of only biodegradable material" for drifting FADs by their

¹¹³⁶ IOTC, "Resolution 19/02: Procedures on a Fish Aggregating Devices (FADs) Management Plan." Para. 16.

¹¹³⁷ Ibid. Para. 17.

¹¹³⁸ ICCAT, "Recommendation 22-01: Recommendation by ICCAT replacing Recommendation 21-01 on a Multi-Annual Conservation and Management Programme for Tropical Tunas." Para. 40(i).

¹¹³⁹ IOTC, "Resolution 19/02: Procedures on a Fish Aggregating Devices (FADs) Management Plan." Para. 18.

flagged vessels.¹¹⁴⁰ The results of these trials shall be presented to the IOTC Scientific Committee, which shall use the data to provide recommendations to the Commission “as appropriate.”¹¹⁴¹ This may lead to the adoption of progressive and tailor-made conservation and management measures applicable to the IOTC’s geographical area of competence to, e.g., minimize the effects of FAD fisheries on ecosystems and non-target species, and to minimize ghost fishing. However, the obligation is formulated as an encouragement, meaning that it is voluntary for states to initiate research trials. By not making research trials mandatory for the member states and cooperating non-contracting parties, the Scientific Committee is running the risk of not obtaining sufficient data to provide recommendations for the implementation of biodegradable FADs to the Commission. Such a scenario will undermine the purpose of Resolution 19/02,¹¹⁴² and hamper the efforts to mitigate negative effects on ecosystems and non-target species. The Commission is nevertheless aiming at phasing out FAD constructions composed of non-biodegradable materials, which must be regarded as a statement of commitment for the IOTC’s future work to minimize the potential impacts of FAD fisheries in its geographical area of competence.

Interestingly, the IOTC also expands its current regulatory framework to include a requirement of encouraging the removal of “traditional” FADs made of non-biodegradable materials and/or entangling designs from the water, retaining them onboard and only disposing them in ports.¹¹⁴³ The obligation became effective on 1 January 2022, and applies to all vessels that encounter such traditional FADs after this date.¹¹⁴⁴ The measure is novel in terms of preventing the intentional abandonment and disposal of previously used FADs at sea, as the vessels owning the devices are obliged to retrieve the FADs from the ocean and dispose of them in ports. Even more interesting is the fact that the obligation requires all vessels to take part in the cleaning up process, i.e. if any vessel encounters a traditional FAD with entangling constructions and/or non-biodegradable designs, it shall remove it from the water regardless of the status of its ownership. This represents an innovative approach to the transition to non-

¹¹⁴⁰ Ibid. Para. 19.

¹¹⁴¹ Ibid.

¹¹⁴² Ibid. Preamble.

¹¹⁴³ Ibid.

¹¹⁴⁴ Ibid.

entangling and biodegradable designs of FADs and may significantly reduce the rates of ghost fishing in the IOTC Convention Area as all these devices shall be removed from the ocean.

The operationalization of the obligation nevertheless requires that the vessels actively implement the management measure in their fishing operations, and that the vessel operators are willing to retrieve the FADs once they are encountered. One may argue that it would be beneficial for all fishing vessels to retrieve the traditional FADs as it would make the deployment of new devices more efficient in terms of available space, but it may also represent a time-consuming activity, allowing less time for deploying new FADs or navigating. Information on the total numbers of FADs retrieved in 2022-2023 is at present not available, but the adoption of the measure might represent a best practice to be followed by the other tuna RFMOs if it turns out to be successful. Whatever the outcome, the IOTC should be commended for actively taking measures to retrieve lost and/or abandoned FADs with non-entangling designs and/or non-biodegradable materials. The measure further illustrates how tuna RFMOs may be able to minimize ghost fishing as long as the IOTC is able to ensure compliance with the measure by the relevant fishing vessels and flag states.

Resolution 19/02 also covers the development of marking schemes for FADs, but simultaneously requires the member states and cooperating non-contracting parties to ensure that the instrumented buoys of all FADs are marked with unique reference numbers to identify gear ownership until the FAD marking scheme is launched.¹¹⁴⁵ This illustrates that the IOTC is actively taking action to ensure that all FADs deployed in its convention area are clearly marked in the period of development of the FAD marking scheme, and that it is trying to mitigate the potential consequences of non-identification with immediate effect. As previously analyzed in relation to IATTC Resolution C-19-01,¹¹⁴⁶ the obligation of gear marking of FADs represents a preventive measure to avoid intentional abandonment of the gear, as the risk of detection is higher when the FAD is marked, and the IOTC is clearly attempting to

¹¹⁴⁵ Ibid. Paras. 20 and 21.

¹¹⁴⁶ See Section 7.3.1 for more information about the IATTC's Resolution C-19-01.

mitigate the potential consequences of lack of identification of gear ownership by adopting the resolution.

Finally, the IOTC has adopted a measure obliging the Commission to establish tracking and recovery policies for drifting FADs, which shall define and include “tracking, reporting of lost DFADs, arrangements to alert coastal States of derelict/lost DFADs at risk of beaching in near real-time, how and who recovers the DFADs, how the recovery costs are collected and shared.”¹¹⁴⁷ Elements of the measure share similarities with the previously analyzed ICCAT Recommendation 22-01,¹¹⁴⁸ and it is a strength that also the IOTC is recognizing the potential risks posed by beaching FADs. Although the IOTC does not explicitly emphasize the rationale for including this element in its regulatory framework, one may conclude that this measure will have positive implications for marine ecosystems, habitats and non-target species residing in the areas close to the beaches of the coastal states.

A particularly interesting feature of the scope of the IOTC’s regulatory framework is that the organization is to define how the recovery costs shall be collected and shared when lost and/or abandoned FADs are retrieved, which creates a link between the socioeconomic and environmental impacts of lost and/or abandoned FADs on the states concerned.¹¹⁴⁹ This is another innovative approach as it requires the Commission to include economic aspects and costs in the assessment of the benefits of FAD removal for, e.g., the ecosystems that sustain their targeted species and the non-target species that are negatively affected by the fisheries.

The third resolution adopted by the IOTC in relation to management of FAD fisheries is Resolution 23/01 on the management of anchored FADs.¹¹⁵⁰ This resolution is applicable to all member states and cooperating non-contracting parties that deploy anchored FADs “for

¹¹⁴⁷ Ibid. Para. 25.

¹¹⁴⁸ See ICCAT, “Recommendation 22-01: Recommendation by ICCAT replacing Recommendation 21-01 on a Multi-Annual Conservation and Management Programme for Tropical Tunas,” Para. 25(d), which was analyzed in Section 7.3.2.

¹¹⁴⁹ IOTC, “Resolution 19/02: Procedures on a Fish Aggregating Devices (FADs) Management Plan.” Para. 25.

¹¹⁵⁰ IOTC, “Resolution 23/01: On Management of Anchored Fish Aggregating Devices,” 2023. An anchored fish aggregating device is defined as a “FAD tethered to the bottom of the ocean, usually consisting of a buoy, and is anchored to the bottom of the ocean” in accordance with para. 1(b) of the resolution.

the purpose of fishing for tuna and tuna like species under the IOTC mandate,”¹¹⁵¹ and it entered into force on 1 January 2024.¹¹⁵² This conservation and management measure is adopted to ensure compliance with Article 5 of the 1995 UN Fish Stocks Agreement in terms of the obligation to “collect and share, in a timely manner, complete and accurate data concerning fishing activities on, inter alia, vessel position, catch of non-target species and fishing effort, as well as information from national and international research programmes,”¹¹⁵³ as the IOTC is cognizant that “the operational aspects of anchored FADs and drifting FADs are very different.” Consequently, the IOTC recognizes that measures adopted with the purpose of regulating drifting FADs are incompatible with the operations of anchored FADs.¹¹⁵⁴ The rationale for adopting the measure prompts some insightful observations, as the IOTC is currently the only tuna RFMO that has established a separate regulatory framework for anchored FADs.

A comparison of the measures in Resolution 23/01 with the measures stemming from the normative framework in relation to minimizing catch by lost, abandoned or otherwise discarded fishing gear reveals that the IOTC’s regulatory framework for anchored FADs is less well developed in terms of mitigating their potential impacts on the ecosystems and non-target species than the framework for drifting FADs.¹¹⁵⁵ The states are obliged to develop management plans for anchored FADs in accordance with guidelines annexed to the Resolution.¹¹⁵⁶ Similarly to the established regulatory regime for drifting FADs, such plans shall include, e.g., plans for monitoring and retrieval of lost anchored FADs,¹¹⁵⁷ and reporting obligations.¹¹⁵⁸ However, relevant descriptions of the application of the plan to reduce bycatch and impacts on non-target species are not included for anchored devices. This is

¹¹⁵¹ Ibid. Para. 2. Recreational fisheries are excluded from the scope of application of the resolution and the resolution is adopted “without prejudice or undermining the sovereign right of the coastal States and its existing national regulation” in accordance with the second paragraph.

¹¹⁵² IOTC, “Resolution 23/01: On Management of Anchored Fish Aggregating Devices,” 2023. Para. 3.

¹¹⁵³ Ibid. Preamble.

¹¹⁵⁴ Ibid.

¹¹⁵⁵ The relevant measures were identified in Section 4.4.3 of this thesis.

¹¹⁵⁶ Ibid. Annex I.

¹¹⁵⁷ IOTC, “Resolution 23/01: On Management of Anchored Fish Aggregating Devices.” Annex I(2)(d).

¹¹⁵⁸ Ibid. Annex I(3)(e).

somewhat surprising as research has shown that the catch rates for, e.g., certain species of sharks are similar for drifting FADs and anchored FADs,¹¹⁵⁹ indicating that specific measures to minimize the impacts on these species should also be included in the management plans for anchored FADs.

Resolution 23/01 also obliges the member states and cooperating non-contracting parties of the IOTC to ensure that their vessels only deploy and utilize anchored FADs “that are permanently marked with a Unique National Identification...number that identifies either the CPC or the vessel(s) that the AFAD belongs to.”¹¹⁶⁰ The relevant flag states shall carry out the obligation “until a scheme to operationalise the FAO Voluntary Guidelines on the Marking of Fishing Gear...is developed.”¹¹⁶¹ The permanent marking of anchored FADs ensures easy access to establish gear ownership of both operational FADs and lost, abandoned or discarded FADs functioning without human control. The recognition of the FAO Guidelines on the Marking of Fishing Gear illustrates the general potential of how the various FAO instruments may steer the work of the tuna RFMOs. The role of the FAO in the operationalization of the objective of minimizing, e.g., ghost fishing in the context of the tuna RFMOs will be further explored in Chapter 8.

To give substance to the obligation of permanent marking of the relevant fishing gear, all flag states are responsible for conducting inspections at sea to ensure that all FADs are marked in accordance with the provision.¹¹⁶² The at-sea inspections represent an operationalization of the relevant resolution to ensure compliance, which must be regarded as a strength in terms of ensuring gear ownership identification and minimizing the intentional abandonment or discarding of deployed anchored FADs.

¹¹⁵⁹ See, e.g., Bruno Leroy et al., “A Critique of the Ecosystem Impacts of Drifting and Anchored FADs Use by Purse-Seine Tuna Fisheries in the Western and Central Pacific Ocean,” *Aquatic Living Resources* 26, No. 1 (January 2013): 49–61, <https://doi.org/10.1051/alr/2012033>. Page 56.

¹¹⁶⁰ IOTC, “Resolution 23/01: On Management of Anchored Fish Aggregating Devices.” Para. 7. The identification number shall be permanently and clearly marked on the buoy of the FAD in accordance with the provision.

¹¹⁶¹ *Ibid.* Para. 7.

¹¹⁶² *Ibid.* Para. 9.

Finally, Resolution 23/04 covers measures applicable to the site selection and construction of anchored FADs. The member states and cooperating non-contracting parties “shall require that their flag vessels deploying new AFADs or replacing existing ones, take into account the nature and profile of the sea bottom when choosing a site and, where possible, avoid sites with steep slopes” to minimize the risk of losing the devices in the operations.¹¹⁶³ The measure is adopted to reduce the chances of losing the devices during deployment but also has the potential of minimize anchoring of FADs in sensitive environmental and habitat areas if the states give effect to this interpretation of the wording. Anchored FADs can potentially disturb the marine ecosystems and should, e.g., “not be deployed in sanctuaries or reserves and important ecosystems that are vital for endangered, threatened or protected species.”¹¹⁶⁴ Further, the fact that Resolution 23/04 has the potential of reducing the risk of gear loss during the deployment of the devices also represents an operationalization of the objective of minimizing catch by lost, abandoned, or otherwise discarded fishing gear. The provision may mitigate one of the causes of fishing gear loss, which poses a threat to the marine environment if it continues to conduct ghost fishing after the incidental loss.

Furthermore, the relevant states “shall ensure that only non-entangling and non-mesh materials are used in the sub-surface aggregates” of the anchored FADs.¹¹⁶⁵ As previously discussed, the use of non-entangling designs and non-mesh materials may limit the impacts on non-target species during active fishing operations and if the devices are accidentally lost or intentionally abandoned or discarded. Following the line of gear modifications to reduce the impact on the ecosystems and the non-target species, the states “shall encourage to construct AFADs from materials that will ensure increased longevity” to retain the integrity of the devices “for the longest lifespan possible.”¹¹⁶⁶ Constructing devices to last for the longest time possible suggests the presence of an incentive to preserve anchored FADs for future

¹¹⁶³ Ibid. Para. 12.

¹¹⁶⁴ See, e.g., Steve Beverly, Don Griffiths, and Robert Lee, “Anchored Fish Aggregating Devices for Artisanal Fisheries in South and Southeast Asia: Benefits and Risks,” *The Food and Agriculture Organization of the United Nations, Regional Office for Asia*, Bangkok, 2012. Page 10.

¹¹⁶⁵ IOTC, “Resolution 23/01: On Management of Anchored Fish Aggregating Devices.” Para. 14.

¹¹⁶⁶ Ibid. Para. 15.

fishing operations instead of disposing or abandoning them at sea where they may continue ghost fishing if the anchored part is no longer attached to the seafloor.

The IOTC is nevertheless advised to simultaneously ensure that these FAD constructions have non-entangling designs as these gear modifications are vital to reduce the potential impacts of ghost fishing if they are lost at sea. However, constructing the FADs to increase their longevity may have detrimental effects on the marine environment if the FADs are accidentally lost as they will persist at sea for long periods, which naturally should sharpen the responsibility to reduce their potential impact if they are lost.

Further, the states “should ensure” that sub-surface aggregators “are constructed from biodegradable materials” where such “aggregators are attached to the mooring line.”¹¹⁶⁷ The use of biodegradable materials will naturally reduce the lifespan of the aggregators, which minimizes the long-term environmental impact of the FADs if they are lost, discarded, or otherwise abandoned, and reduces the time they may conduct ghost fishing. The two latter measures under Resolution 23/01 seem to be obligations of conduct due to the words “encourage” and “should ensure.” If the measures are actively implemented and operationalized by the states, they may nevertheless have a significant impact on the risk of ghost fishing stemming from the deployment of the devices at sea.

Finally, the Scientific Committee of the IOTC shall analyze information when it becomes available and provide “advice on existing, additional or alternative AFAD management options for sustainable fisheries,”¹¹⁶⁸ and by 2025 “provide a set of relevant indicators that would allow monitoring the effects of AFAD fisheries” and “assess the efficiency of existing/additional/alternative AFAD management options.”¹¹⁶⁹ These obligations illustrate adaptive approaches to management, as new scientific information should be incorporated in the scientific advice that informs the management plans. This obligation may lead to the

¹¹⁶⁷ Ibid.

¹¹⁶⁸ Ibid. Para. 17.

¹¹⁶⁹ Ibid. Para. 18.

adoption of progressive conservation and management measures in the future governance of FAD management and its effects on ecosystems and non-target species.

7.3.3.1 Discussion and Recommendations

Overall, the IOTC has established a comprehensive regulatory framework for FAD management which encompasses several of the identified measures to minimize catch by lost, abandoned, or otherwise discarded fishing gear presented in the normative framework. When the regulatory framework of the IOTC is compared with the measures identified in Section 4.3.3, the analysis reveals that the IOTC currently has implemented and operationalized mandatory retrieval of accidentally lost fishing gear, the mandatory use of biodegradable materials and gear modifications in terms of non-entangling designs, reporting obligations if fishing gear is lost and/or abandoned at sea and a ban of the deployment of traditional FADs with non-biodegradable materials and/or entangling designs. The IOTC has also adopted a conservation and management measure obliging vessels to dispose of retrieved FADs at port, which may be regarded as an implementation and operationalization of the normative requirement covering the establishment and use of suitable gear disposal systems. Although the IOTC has not adopted any specific measures obliging its member states and cooperating non-contracting parties to establish such systems, the availability of port facilities which may handle the fishing gear is a prerequisite for the obligation in Resolution 19/02. This implies that the IOTC is also making efforts to ensure the availability of such facilities and systems.

Further, the IOTC should be commended for adopting novel conservation and management measures in terms of retrieval of lost, abandoned, and/or discarded fishing gear, and the organization is currently the only tuna RFMO that is trying to mitigate the effects of such gear by encouraging vessels to retrieve fishing gear encountered regardless of gear ownership. The recognition of cost allocations for such processes is also a vital component of the operationalization of the measure and may provide incentives for gear retrieval when the matter is decided upon by the Commission.

However, the IOTC has not adopted a specific prohibition of discarding FADs at sea, and it is advised to include such an obligation in its regulatory framework for FADs. Adopting and

implementing a prohibition of intentional discard at sea will ensure compliance with Article 10(c) of the 1995 UN Fish Stocks Agreement and simultaneously give effect to the MARPOL 73/78 in a regional context.¹¹⁷⁰

¹¹⁷⁰ Section 4.4.2 explored how Article 10(c) of the 1995 UN Fish Stocks Agreement requires states to cooperate through RFMOs to “adopt and apply generally recognized international minimum standards.” Consequently, the states ought to implement, e.g., the MARPOL 73/78 at the transnational level through RFMOs.

7.3.4 The WCPFC

The last tuna RFMO that has established a regulatory framework for the use of FADs in fishing operations is the WCPFC. The WCPFC has adopted two conservation and management measures to regulate the use of FADs in fishing operations taking place in its convention area.

Conservation and Management Measure 2018-04 covers measures to minimize the impact of FAD fisheries on sea turtles.¹¹⁷¹ The measures are applicable to all member states and cooperating non-contracting parties with purse seine vessels fishing for species covered by the WCPFC's founding instrument and requires the states to ensure that operators of the vessels "to the extent practicable, release all sea turtles observed entangled in fish aggregating devices (FADs) or other fishing gear."¹¹⁷² This measure is identical to the previously assessed IOTC Resolution 12/04 and holds the same potential for conserving the non-target sea turtles from impacts of tuna fisheries in the western and central Pacific Ocean.¹¹⁷³ Further, the measure also requires the vessel operators to "provide to the Commission the results of any research related to the development of modified FAD designs to reduce sea turtle entanglement" and to "take measures to encourage the use of designs found to be successful at such reduction."¹¹⁷⁴ The obligations are voluntary in nature, but if research trials are conducted to reduce the impacts on sea turtles in FAD fisheries, the outcomes and findings of these studies shall be reported to the Commission.

The second relevant conservation and management measure adopted by the WCPFC is CMM 2021-01, which aimed to conserve and manage bigeye, yellowfin, and skipjack tuna in the western and central Pacific Ocean.¹¹⁷⁵ Despite primarily covering conservation and management measures for these targeted species, the Commission acknowledges that Article

¹¹⁷¹ WCPFC, "CMM 2018-04 - Conservation and Management of Sea Turtles | Conservation and Management Measures."

¹¹⁷² Ibid. Para. 5(ii).

¹¹⁷³ See Section 7.3.4 for more information about the regulatory framework for FAD fisheries established by the IOTC.

¹¹⁷⁴ Ibid. Para. 5(d).

¹¹⁷⁵ WCPFC, "CMM-2021-01: Conservation and Management Measure for Bigeye, Yellowfin and Skipjack Tuna in the Western and Central Pacific Ocean," 2021.

5(d) of the WCPFC Convention requires the assessment of “impacts of fishing, other human activities and environmental factors on...non-target species, and species belonging to the same ecosystem or depend upon or associated with the target stocks” in the preamble to the adopted measure.¹¹⁷⁶ The acknowledgement is given substance through the adoption of several procedural and material obligations.

The Commission has adopted a FAD closure in accordance with paragraph 14 of CMM-2021-01. The temporary closure lasts for three months annually from July to September, and all purse seine vessels, tender vessels or other vessels operating in support of the purse seine vessels are prohibited from “deploying, servicing and setting on FADs” in this period.¹¹⁷⁷ The closure is also spatially defined, covering all areas between 20°N and 20°S.¹¹⁷⁸ Additionally, all vessels “shall be prohibited to deploy, service or set on FADs in the high seas for two additional sequential months of the year.”¹¹⁷⁹ The Commission does not offer any explicit statements on the purpose of the FAD closures, but the measures are suitable to conserve target species and non-target species as the overall annual fishing effort decreases with the adoption of the closure. The provision shares several similarities with the ICCAT’s establishment of FAD closures,¹¹⁸⁰ and the potential effects and impacts posed by lost, abandoned, or intentionally discarded FADs on the marine environment are also similar.¹¹⁸¹

The second relevant obligation in the WCPFC’s CMM-2021-01 covers the utilization of non-entangling FAD designs and the use of biodegradable materials for the devices. The member states and cooperating non-contracting parties “shall ensure that the design and construction

¹¹⁷⁶ Ibid. Preamble.

¹¹⁷⁷ Ibid. Para. 14.

¹¹⁷⁸ Ibid.

¹¹⁷⁹ Ibid. Para. 15. Each member state and cooperating non-contracting party shall decide on the additional period and may choose between the periods of April-May or November-December under the provision. The obligation is not applicable to vessels flying the Kiribati flag, when such vessels are fishing in the high seas’ areas adjacent to the Kiribati EEZ and vessels flying the flag of the Philippines when they are fishing in the high seas pocket No. 1, as defined and elaborated on in Attachment 2 to CMM-2021-01, which is annexed to the conservation and management measure.

¹¹⁸⁰ See ICCAT, “Recommendation 22-01: Recommendation by ICCAT replacing Recommendation 21-01 on a Multi-Annual Conservation and Management Programme for Tropical Tunas” which was analyzed in Section 7.3.2.

¹¹⁸¹ See Section 7.3.2 where an assessment of the potential implications is provided.

of any FAD to be deployed in, or that drifts into the WCPFC Convention Area shall comply with the following specifications:¹¹⁸² the “use of mesh net shall be prohibited for any part of a FAD,”¹¹⁸³ if “the raft is covered, only non-entangling material and designs shall be used,”¹¹⁸⁴ and “the subsurface structure shall only be made using non-entangling materials.”¹¹⁸⁵ The specifications are adopted to reduce the entanglement of sea turtles, sharks, or any other species, and entered into force on 1 January 2024.¹¹⁸⁶ This measure is similar in many ways to the previously analyzed measures adopted by the IATTC, the ICCAT, and the IOTC, and the relevant gear modifications will reduce impacts of FADs both by reducing the bycatch rates of non-target species and by minimizing ghost fishing occurring if the devices are accidentally lost or intentionally abandoned, and/or discarded at sea. The wording of the paragraph nevertheless differs from the measures adopted by the other tuna RFMOs by the inclusion of the wording “or that drifts into the WCPFC Convention Area,” giving it a wider scope of application than the measures adopted by the IATTC, the ICCAT, and the IOTC. When subjected to interpretation, the inclusion of this wording indicates that FADs that are deployed in a coastal state’s maritime zones will have to comply with the listed specifications if they may potentially drift into the WCPFC area of competence, establishing a regulatory framework which could ensure that also coastal states utilize non-entangling FAD designs in their domestic fisheries taking place in their maritime zones. This measure is novel, and the WCPFC has adopted mandatory gear modifications which may have far-reaching implications in terms of the phasing out of traditional FADs with entangling designs.

Further, the member states and cooperating non-contracting parties of the WCPFC “shall encourage the vessels flying their flag to use, or transition towards using, non-plastic and biodegradable materials in the construction of FADs” to reduce synthetic marine debris.¹¹⁸⁷ Consequently, the obligation in the eighteenth paragraph of CMM-2021-01 is an obligation of

¹¹⁸² WCPFC, “CMM-2021-01: Conservation and Management Measure for Bigeye, Yellowfin and Skipjack Tuna in the Western and Central Pacific Ocean.” Para. 17.

¹¹⁸³ *Ibid.* Para. 17(a).

¹¹⁸⁴ *Ibid.* Para. 17(b).

¹¹⁸⁵ *Ibid.* Para. 17(c).

¹¹⁸⁶ *Ibid.* Para. 17.

¹¹⁸⁷ *Ibid.* Para. 18.

conduct, not of result. The states are obliged to “encourage” the use of FADs made of biodegradable materials, but the implementation and operationalization of the obligation is voluntary due to its nature of being a mere encouragement for the tuna fishing vessels. When this measure is compared with the measures adopted by the three other tuna RFMOs that have been closely assessed in Section 7.3, it is evident that the WCPFC is the only tuna RFMO that has not established a regulatory framework comprising mandatory use of biodegradable materials for FAD construction. The reasons for the WCPFC’s adoption of a voluntary obligation in this regard are not known but may be explained by the Commission’s rationale for adopting the measure. The eighteenth paragraph of CMM 2021-01 clearly recognizes that the purpose of the measure is to reduce synthetic marine debris in the WCPFC convention area, not including the impacts of FADs in relation to their capability of conducting ghost fishing if they are accidentally lost or intentionally discarded at sea. However, committing to reducing plastic pollution of lost, abandoned, or otherwise discarded fishing gear may also be seen as part of the obligation to protect and preserve the marine environment in accordance with Article 192 of the Law of the Sea Convention. As mentioned in the analysis in Section 4.3.1, the introduction of plastic waste from fishing gear represents marine pollution under Article 1(4) of the Law of the Sea Convention.¹¹⁸⁸ Consequently, Article 194(1) applies to plastics from fishing gear, obliging the states to “take, individually or jointly as appropriate, all measures consistent with this Convention that are necessary to prevent, reduce and control pollution of the marine environment from any source.” The member states of the WCPFC must therefore implement binding measures to mitigate the introduction of pollution to the marine environment to ensure compliance with the Law of the Sea Convention.

Despite not obliging its member states and cooperating non-contracting parties to use only FADs made of biodegradable materials, the scientific committee of the organization “shall provide specific recommendations to the Commission in 2022 including on a definition of biodegradable FADs, a timeline for the stepwise introduction of biodegradable FADs, potential

¹¹⁸⁸ See Finska et al., “Waste Management on Fishing Vessels and in Fishing Harbors in the Barents Sea.” Page 296. See also Ingrid Solstad Andreassen, “The Role of tuna RFMOs in Combating ‘Ghost Fishing’: Where is the Catch?”

gaps/needs and any other relevant information.”¹¹⁸⁹ The Commission shall subsequently “consider the adoption of measures on the implementation of biodegradable material on FADs” at its 2023 annual session.¹¹⁹⁰ The outcomes of these processes are not publicly available at the time of writing, but the relevant paragraphs are mitigating some of the core issues created by the voluntary obligation to utilize FADs made of biodegradable materials, as they demonstrate that the WCPFC is aiming to phase out the use of non-biodegradable FADs in the future. Notwithstanding the work of its scientific committee, the WCPFC is nevertheless advised to revise and amend CMM-2021-01 for the states to operationalize the management objective of minimizing catch by lost, abandoned, or otherwise discarded fishing gear in line with the normative framework requiring the mandatory use of biodegradable materials in fishing gear.¹¹⁹¹ Another viable option is to adopt a similar approach to the IOTC, which has expressly stated that non-biodegradable FADs shall be phased out by 2022, creating a thorough obligation in terms of agreeing on a target date for the process of phasing out such devices.¹¹⁹²

The WCPFC has also established a cap on the total number of FADs that may be deployed in its convention area, and the flag states operating in its geographical area of competence “shall ensure that each of its purse seine vessels have deployed at sea, at any time, no more than 350 Fish Aggregating Devices with activated instrumented buoys,” which are clearly marked with reference numbers.¹¹⁹³ Two observations can be made in relation to the provision. The first being that the established cap is higher than the caps established by the ICCAT and the IOTC, which sets the limit at 300 operational FADs per vessel.¹¹⁹⁴ However, the total number

¹¹⁸⁹ Ibid. Para. 19.

¹¹⁹⁰ Ibid. Para. 20.

¹¹⁹¹ See Sections 4.4.2 and 4.4.3 of this thesis which explored the normative framework regulating catch by lost, abandoned, or otherwise discarded fishing gear.

¹¹⁹² See IOTC, “Resolution 19/02: Procedures on a Fish Aggregating Devices (FADs) Management Plan,” Para. 18.

¹¹⁹³ WCPFC, “CMM-2021-01: Conservation and Management Measure for Bigeye, Yellowfin and Skipjack Tuna in the Western and Central Pacific Ocean.” Para. 21. An instrumented buoy is defined to be “a buoy with clearly marked reference number allowing its identification and equipped with a satellite tracking system to monitor its position” in accordance with the provision.

¹¹⁹⁴ See ICCAT, “Recommendation 22-01: Recommendation by ICCAT replacing Recommendation 21-01 on a Multi-Annual Conservation and Management Programme for Tropical Tunas” and IOTC, “Resolution 19/02: Procedures on a Fish Aggregating Devices (FADs) Management Plan.”

of FADs that may be deployed by each vessel shall be reviewed by the Commission at its annual meeting in 2023, with a view of assessing the effectiveness of the limit.¹¹⁹⁵ The second observation is that the relevant provisions also operationalize the normative framework addressing mandatory gear marking,¹¹⁹⁶ by requiring all FADs to be clearly marked with reference numbers to enable gear identification ownership if the FADs are unintentionally lost or intentionally abandoned or discarded at sea. Consequently, the gear marking requirement identified in the normative framework is operationalized in the WCPFC's regulatory framework for FADs, carrying the same implications as previously assessed in relation to the measures adopted by the IATTC, the ICCAT, and the IOTC.¹¹⁹⁷

The last provision of relevance for minimizing catch by lost, abandoned, or otherwise discarded FADs is found in the 22nd paragraph of CMM-2021-01, which an obligation to “encourage vessels to...responsibly manage the number of drifting FADs deployed each year,”¹¹⁹⁸ to “carry equipment on board to facilitate the retrieval of lost drifting FADs,”¹¹⁹⁹ to “make reasonable efforts to retrieve lost FADs,”¹²⁰⁰ and to “report the loss of drifting FADs, and if the loss occurred in the EEZ of a coastal State, report the loss to the coastal State concerned.”¹²⁰¹ The potential implications of operationalizing all these obligations have previously been analyzed in this chapter and need not be repeated here. What is interesting is that the WCPFC has continuously adopted measures to operationalize the objective of minimizing ghost fishing through establishing a regulatory framework comprising voluntary, non-binding obligations. The relevant states are bound to encourage their flagged vessels to comply with the provisions in CMM-2021-01, but the actual implementation and operationalization of the measures are voluntary for the vessels. This has the potential of

¹¹⁹⁵ WCPFC, “CMM-2021-01: Conservation and Management Measure for Bigeye, Yellowfin and Skipjack Tuna in the Western and Central Pacific Ocean.” Para. 23.

¹¹⁹⁶ See Section 4.4.3, where the normative framework covering gear marking was presented in more detail.

¹¹⁹⁷ See Sections 7.3.1, 7.3.2 and 7.3.3 for more information regarding the regulatory frameworks for FAD management established by the IATTC, the ICCAT, and the IOTC.

¹¹⁹⁸ WCPFC, “CMM-2021-01: Conservation and Management Measure for Bigeye, Yellowfin and Skipjack Tuna in the Western and Central Pacific Ocean.” Para. 22(a).

¹¹⁹⁹ *Ibid.* Para. 22(b).

¹²⁰⁰ *Ibid.* Para. 22(c).

¹²⁰¹ *Ibid.* Para. 22(d).

undermining the adopted measures or leaving them without substance, as their implementation is purely based on the willingness and capacity of each fishing vessel operating in the WCPFC convention area.

It should be noted that the WCPFC's CMM 2021-01 was superseded by CMM 2023-01 on 6 February 2024.¹²⁰² The latter measure is not included in the case-study as it was not in force by 31 December 2023. However, it should be noted that the WCPFC has decided to “take a decision on the implementation of bio-degradable FAD requirements” no later than 2026. This is problematic, as the tuna RFMO has postponed the adoption of measures to minimize the impacts of non-biodegradable materials for FADs for yet another 2 years.

7.3.4.1 Discussion and Recommendations

The WCPFC is currently the only tuna RFMO that has not adopted binding measures applicable to mitigate catch by lost, abandoned, and/or discarded FADs, and the organization should be advised to revise its current regulatory framework to operationalize the measures relating to retrieval of lost drifting FADs and reporting of lost devices to fully implement the normative framework regulating the subject matter.¹²⁰³

The analysis of the WCPFC regulatory framework for FADs has revealed that it has adopted measures covering mandatory marking of fishing gear, voluntary gear modifications to reduce the risk of entanglement of non-target species and voluntary use of biodegradable materials in FAD structures. As these gear modifications are voluntary, the WCPFC has consequently not adopted a ban on certain gear types to prohibit the deployment of traditional FADs.¹²⁰⁴ Neither has it established prohibition of intentional discard of FADs at sea, mandatory reporting, retrieval of lost, abandoned, and/or discarded FADs, nor measures requiring the establishment of suitable gear disposal systems. When compared to the IATTC, the ICCAT, and

¹²⁰² WCPFC “CMM-2023-01: Conservation and Management Measure for Bigeye, Yellowfin and Skipjack Tuna in the Western and Central Pacific Ocean.” Para. 18.

¹²⁰³ The applicable normative framework was presented in Sections 4.3 and 4.4.

¹²⁰⁴ The ban on traditional FADs with entangling designs and/or non-degradable materials has been adopted by the IATTC, the ICCAT, and the IOTC. See Sections 7.3.1, 7.3.2, and 7.3.4 for an analysis of these measures.

the IOTC, the WCPFC has the least developed regulatory framework to facilitate the implementation and operationalization of the management objective of minimizing catch by lost, abandoned, or otherwise discarded fishing gear in relation to FADs. This tuna RFMO is thus advised to amend its present regulatory framework to enable the states involved to fully implement and operationalize the requirements of the normative framework.

7.3.5 Summary of the relevant findings

The analysis has revealed that the IATTC, the ICCAT, and the IOTC have adopted substantial and far-reaching conservation and management measures to minimize catch by lost, abandoned, or otherwise discarded fishing gear in relation to FADs. A presentation of how these measures correspond with the normative framework regulating ghost fishing is provided in Figure 6, which summarizes the findings of Sections 7.3.1 to 7.3.4.

	IATTC	ICCAT	CCSBT	IOTC	WCPFC
Ban on certain gear types	x	x		x	
Prohibition of intentional discard of fishing gear at sea		x			
Establishment of suitable gear disposal systems in landing places				x	
Mandatory marking of fishing gear	x	x		x	x
Mandatory retrieval of lost, abandoned, and/or discarded fishing gear		x		x	
Mandatory reporting of lost, abandoned, and/or discarded fishing gear		x		x	
Mandatory use of biodegradable materials	x	x		x	
Gear modifications	x	x		x	

Figure 6: An illustration of the five tuna RFMOs’ adopted conservation and management measures in relation to FAD fisheries relevant to operationalizing the objective of minimizing catch by lost, abandoned, or otherwise discarded fishing gear. A detailed analysis of the scope and content of the adopted measures was provided throughout Section 7.3, and the table illustrates clearly which conservation and management measures each organization has adopted.

As illustrated by Figure 6, the ICCAT and the IOTC are the tuna RFMOs that have established the most comprehensive regulatory frameworks for implementation and operationalization measures for FADs, aligning with the normative framework regulating the objective of minimizing catch by lost, abandoned, or otherwise discarded fishing gear. These two organizations have established frameworks exclusively comprising binding obligations covering measures identified in the normative framework, except for adopting measures to establish suitable gear disposal systems for FADs. The binding nature of the adopted obligations has the potential of ensuring compliance, as legally binding obligations naturally prompt mechanisms for enforcement if the relevant states and vessels fail to implement and operationalize such obligations. Consequently, the member states and cooperating non-contracting parties of the ICCAT and IOTC are operationalizing vital measures to minimize ghost fishing in line with the ecosystem approach to fisheries and with the normative framework. By adopting binding obligations, the ICCAT and the IOTC are also demonstrating their commitment to mitigate the impacts of FAD fisheries on the marine environment, making the application of these measures' mandatory for all states and vessels operating in their convention areas.

The WCPFC is currently the tuna RFMO with the least developed regulatory framework for FADs in relation to the operationalization of the objective of minimizing catch by lost, abandoned, or otherwise discarded fishing gear, in comparison to the measures identified in the normative framework. The WCPFC has adopted measures obliging its member states and cooperating non-contracting parties to mark all fishing gear, but this is the only management measure that aligns with the normative framework presented in Section 4.4. However, the WCPFC has adopted voluntary gear modifications to reduce entanglement of non-target species and the use of biodegradable materials for FAD constructions. The member states of the organization are nevertheless advised to amend its regulatory framework to implement and operationalize the legal obligations of minimizing catch by lost, abandoned, or otherwise discarded fishing gear by adopting binding obligations encompassing the relevant measures identified in Section 4.4 of this thesis. An observation to be made in this regard is that the

WCPFC,¹²⁰⁵ like the CCSBT,¹²⁰⁶ operates with a consensual decision-making mechanism. Consequently, one single negative vote may prevent the adoption of conservation and management measures regulating ghost fishing.

Lastly, the IATTC is located somewhere between the ICCAT and the IOTC on the one hand and the WCPFC on the other when its regulatory framework for FADs is compared with the measures encompassed in the normative framework. The IATTC has adopted binding gear modifications in terms of prohibiting the use of traditional FADs with entangling designs and non-biodegradable materials. Consequently, the IATTC is operationalizing the measures covering a ban of certain gear types, mandatory use of biodegradable materials and mandatory gear modifications. The organization has also adopted a binding obligation requiring its member states and cooperating non-members to ensure that all FADs utilized in its geographical area of competence are clearly and permanently marked. However, the member states of the IATTC are nevertheless advised to amend its regulatory framework for FADs to facilitate the operationalization of the normative framework to minimize catch by lost, abandoned, or otherwise discarded fishing gear. Overall, it should be emphasized that measures banning intentional discarding of fishing gear at sea, mandating retrieval of lost gear, and mandating reporting of lost gear to enable retrieval are crucial measures that mitigate the potential causes and impacts of ghost fishing, and the member states of the IATTC ought to implement and operationalize these measures to ensure compliance with international law.

Further, it should be pointed out that the ICCAT and the IOTC have established comprehensive regulatory frameworks for FADs that operationalize almost all the measures in the normative framework to minimize catch by lost, abandoned, or otherwise discarded fishing gear. However, the analysis and interrogation of the regulatory frameworks of these two organizations reveal that neither of them has implemented and operationalized all the

¹²⁰⁵ Section 6.7.3 explored whether and how the WCPFC's decision-making mechanism may affect its implementation and operationalization of the ecosystem approach to fisheries.

¹²⁰⁶ Sections 6.5.3 and 7.2 of this thesis provide an assessment of how the CCSBT's decision-making mechanism may affect its ability to implement and operationalize the ecosystem approach to fisheries and the normative framework regulating catch by lost, abandoned, or otherwise discarded fishing gear.

measures in the normative framework regulating ghost fishing. This prompts a closer examination of the potential causes of the gaps between the management practices of these organizations and the legal framework, which will be subject to closer analysis in Chapter 8.

7.4 Regulatory Frameworks for Minimizing Catch by Lost, Abandoned, or Otherwise Discarded Fishing Gear

The following sections will comprise analyses of the regulatory frameworks of the tuna RFMOs in relation to the management objective of minimizing catch by lost, abandoned, or otherwise discarded fishing gear applicable to other gear types than the previously assessed FADs.¹²⁰⁷ Recalling that Section 4.4.3 established that the focus in this study centers on the impacts of lost, abandoned, or otherwise discarded fishing gear, this perspective enables the assessment of different reasons for fishing gear ending up at sea collectively despite their different origins.¹²⁰⁸

As described in Section 7.2, the following assessment is structured differently from the assessment conducted in Section 7.3. Contrary to the assessment of the tuna RFMOs' regulatory frameworks for FADs, the following analysis is based on an assessment of their regulatory frameworks through a continuous comparison of their adopted conservation and management measures categorized by the measures identified in the normative framework.¹²⁰⁹ The rationale for choosing this approach is the limited number of adopted conservation and management measures to minimize ghost fishing in the tuna RFMOs, and that a continuous comparison offers interesting insights as the measures currently in force in these organizations vary.

¹²⁰⁷ The tuna RFMOs' regulatory frameworks applicable to regulate ghost fishing of FADs were subject to closer analysis in Section 7.3.

¹²⁰⁸ Section 4.4.3 of this thesis explored how the origins of the objective of minimizing catch by lost or abandoned fishing gear were developed under the fisheries framework, whereas the regulatory framework applicable to minimizing discard of fishing gear is encompassed in instruments regulating marine pollution and dumping. Focusing on the impacts of lost, abandoned, or otherwise discarded fishing gear nevertheless provides a valuable framework for assessing the objectives in conjunction.

¹²⁰⁹ The relevant conservation and management measures stemming from the normative framework were presented in Section 4.4.3 of this thesis.

The analysis will begin with an assessment of the tuna RFMOs' adopted conservation and management measures banning certain gear types, and subsequently analyze the adopted measures covering prohibition of intentional discarding of fishing gear at sea, the establishment of suitable gear disposal systems, mandatory marking of fishing gear, retrieval of fishing gear, reporting of lost, abandoned, and/or discarded fishing gear, and finally the mandatory use of biodegradable materials and gear modifications to minimize ghost fishing and its effects on the marine environment.

7.4.1 Ban on Certain Gear Types

Section 4.4.2 explored the normative framework relevant for minimizing catch by lost, abandoned, and/or discarded fishing gear, and established that three UNGA resolutions contribute to this framework by calling on a global moratorium to prohibit the use of large-scale driftnets in high seas fisheries due to their impacts on the marine environment and non-target species.¹²¹⁰ Presently, the ICCAT, the IOTC, and the WCPFC are the tuna RFMOs that have adopted a ban on large-scale pelagic driftnets in their geographical areas of competence, operationalizing a vital element of the ecosystem approach to fisheries by enacting a ban on certain gear types which have a severe impact on the marine environment if accidentally lost or intentionally abandoned or discarded.

The ICCAT adopted Recommendation 03-04 in 2003 to conserve juvenile swordfish and manage swordfish captures in the Mediterranean,¹²¹¹ and all member states and cooperating non-contracting parties "shall prohibit the use of driftnets for fisheries of large pelagics in the Mediterranean."¹²¹² The measure was adopted to safeguard the yield and spawning biomass

¹²¹⁰ UN General Assembly, "United Nations Resolution 44/225 On Large-Scale Pelagic Driftnet Fishing and Its Impacts On The Living Resources Of the World's Oceans And Seas," A/RES/44/225, December 22, 1989, UN General Assembly, "United Nations Resolution 46/215 on Large-Scale Pelagic Driftnet Fishing and Its Impacts On The Living Resources Of the World's Oceans And Seas," A/RES/46/215, December 20, 1991, and UN General Assembly, "United Nations Resolution 53/33 on Large-Scale Pelagic Drift-Net Fishing, Unauthorized Fishing in Zones of National Jurisdiction and on the High Seas, Fisheries By-Catch and Discards, and Other Developments," A/RES/53/33, January 6, 1999.

¹²¹¹ ICCAT, "Recommendation 03-04: Relating to Mediterranean Swordfish," 2003. Preamble.

¹²¹² Ibid. Para. 3.

of targeted species, but one may conclude that the ban simultaneously serves to minimize the impacts of potentially lost driftnets on non-target species, although this is not the Commission's rationale for adopting the measure.

The IOTC's Resolution 12/12 goes further in terms of recognizing the potential impacts of large-scale driftnets on the ecosystems and non-target species when such nets are accidentally lost or intentionally discarded during fishing operations. The UNGA Resolution 46/215, which calls for global bans of large-scale driftnets in high seas fisheries, is recognized by the Commission in the preamble to the Resolution, along with an acknowledgment of the present concern that associated ghost fishing "by lost or discarded driftnets have serious detrimental effects" on "species of concern and the marine environment."¹²¹³ The IOTC has adopted several measures to mitigate these serious effects, starting with the adoption of an obligation that states that "the use of large-scale driftnets on the high seas within the IOTC area of competence shall be prohibited."¹²¹⁴ The statement is clear-cut and goal-oriented, aiming to completely ban the use of driftnets in the IOTC's convention area. The requirement of obliging all member states and cooperating non-contracting parties to "take all measures necessary to prohibit their fishing vessels from using large-scale driftnets while on the high seas in the IOTC area of competence" gives substance to the prohibition and is far-reaching in its implications.¹²¹⁵ The obligation to "take all measures necessary" gives the relevant flag states discretion and flexibility to apply the measures they consider most suitable to pursue the objective,¹²¹⁶ but at the same time creates a scenario where the states are obliged to adopt sufficient measures to ensure that the objective is achieved.

¹²¹³ IOTC, "Resolution 12/12: To Prohibit the Use of Large-Scale Driftnets on the High Seas in the IOTC Area," 2012. Preamble.

¹²¹⁴ Ibid. Para. 1. Large-scale driftnets are "defined as gillnets or other nets or a combination of nets that are more than 2.5 kilometers in length whose purpose is to enmesh, entrap, or entangle fish by drifting on the surface of, or in, the water column" under the provision.

¹²¹⁵ Ibid. Para. 2.

¹²¹⁶ The concept of flag state jurisdiction was presented in Section 3.2.1 of this thesis.

Further, a vessel “will be presumed to have used large-scale driftnets on the high seas...if it is found operating on the high seas...and is configured to use large-scale driftnets.”¹²¹⁷ The threshold for being in breach of Resolution 12/12 is set at being “configured” to conduct driftnet fisheries, and states must consequently ensure that their flagged vessels do not have fishing gear on board which will allow the vessel to deploy large-scale driftnets of more than 2.5 kilometers in total length. The obligation does not apply to vessels authorized to use large-scale driftnets in the EEZs of the coastal states, but the driftnets and other gear must “be stowed or secured in such a manner that they are not readily available to be used for fishing” when the vessel enters the IOTC convention area.¹²¹⁸

The reference to the different jurisdictional regimes applicable to fisheries on the high seas and in the EEZ of the relevant coastal states sheds light on the issue of compatibility of conservation and management measures adopted by RFMOs. Different regulatory frameworks for different maritime zones may represent a significant challenge in relation to the overall conservation of the marine environment, marine ecosystems and associated marine species.¹²¹⁹ Resolution 12/12 includes a statement emphasizing that “nothing in this measure shall prevent CPCs from applying more stringent measures to regulate the use of large-scale driftnets,”¹²²⁰ which may be regarded as a way of mitigating the compatibility issues arising from the zonal approach dividing the marine space in the Indian Ocean. The measure adopted allows flag states and coastal states to adopt more stringent measures applicable to fisheries in the relevant EEZs.

Finally, to fully operationalize the ban on large-scale driftnets, the IOTC obliges its member states and cooperating non-contracting parties to annually report “a summary of monitoring,

¹²¹⁷ IOTC, “Resolution 12/12: To Prohibit the Use of Large-Scale Driftnets on the High Seas in the IOTC Area.” para. 3. A vessel configured “to use large-scale drift-nets means having on board assembled gear that collectively would allow the vessel to deploy and retrieve large-scale driftnets” under the provision.

¹²¹⁸ Ibid. Para. 4.

¹²¹⁹ As explained in Section 3.3.1, Article 7 of the 1995 UN Fish Stocks Agreement recognizes the need to establish compatible regimes for the conservation and management of marine resources, and the conservation principles laid down in Article 5 of the Agreement consequently apply to areas beyond national jurisdiction and in the maritime zones of coastal states bordering the relevant high seas areas.

¹²²⁰ IOTC, “Resolution 12/12: To Prohibit the Use of Large-Scale Driftnets on the High Seas in the IOTC Area.” Para. 7.

control, and surveillance actions related to large-scale driftnet fishing on the high seas in the IOTC area of competence.”¹²²¹ The potential monitoring, control, and surveillance actions that may be applied by flag states are not defined or specified in the provision, but they will probably have to be tailor-made and sufficiently effective to achieve the objective of banning the use of all large-scale driftnets in high seas tuna fisheries in the IOTC convention area.

The adoption of the relevant UNGA resolutions was prompted by growing concerns over the use of large-scale driftnets, extending up to 30 miles in length,¹²²² posing significant threats to marine life, including thousands of dolphins, whales, pinnipeds, and porpoises inadvertently being captured annually by high seas driftnet tuna fisheries.¹²²³ The response adopted by the IOTC to mitigate these detrimental effects of large-scale driftnets in tuna fisheries illustrates how RFMOs may represent effective conservation bodies for marine ecosystems if the member states are able to reach sufficient levels of agreement to adopt such progressive conservation and management measures. By adopting Resolution 12/12 and creating an operational regulatory framework for achieving the objective of banning all large-scale tuna driftnet fishing, the IOTC is simultaneously ensuring that potential impacts on marine ecosystems and non-target species are minimized by preventing bycatch from occurring in these fishing operations and preventing ghost fishing that may occur if the driftnets are lost, abandoned, or otherwise discarded at sea. However, a striking fact is that a ban on certain gear types may lead to more intentional gear dumping at sea due to the risk of detection if such gear is nevertheless utilized in breach of relevant regulations.¹²²⁴ It is thus important that high seas monitoring, control, and surveillance mechanisms are effective and that the enforcement mechanisms are sufficiently developed to ensure compliance with Resolution 12/12 in the IOTC convention area.

¹²²¹ Ibid. Para. 5.

¹²²² See, e.g., James Harrison, *Making the Law of the Sea: A Study in the Development of International Law*, Vol. 80, Cambridge Studies in International and Comparative Law (Cambridge University Press, 2011), <https://doi.org/10.1017/CBO9780511974908>. Page 202.

¹²²³ Randall R. Reeves, “Conservation,” in *Encyclopedia of Marine Mammals*, eds. Bernd G. Würsig, J. G. M. Thewissen, and Kit M. Kovacs, 3rd edition. (London, England: Academic Press, 2018). Page 219.

¹²²⁴ See e.g., Gilman, “Status of International Monitoring and Management of Abandoned, Lost and Discarded Fishing Gear and Ghost Fishing.” Page 225.

The WCPFC is the third tuna RFMO that has adopted a ban on the use of large-scale driftnets. Similarly to the IOTC, the organization adopted Conservation and Management Measure 2008-04 in response to the call for a global moratorium on large-scale driftnet fisheries in UNGA Resolution 46/215, and out of concern for the impacts and interactions with various highly migratory species and the detrimental effects on marine species and the marine environment by lost or discarded nets if associated ghost fishing occurs.¹²²⁵ The provisions of CMM- 2008-04 share several similarities with the IOTC's Resolution 12-12.

The first obligation encompassed in CMM-2008-04 prohibits the use of large-scale driftnets on the high seas in the WCPFC convention area,¹²²⁶ and "such nets shall be considered prohibited fishing gear, the use of which shall constitute a serious violation in accordance with Article 25 of the WCPFC's founding instrument."¹²²⁷ Interestingly, the WCPFC bans the application of the nets while simultaneously labelling the carrying of such gear on board vessels as a "serious violation" of its Convention. By utilizing the enforcement mechanisms of the Commission, the members are obliged to ensure that vessels that have committed a violation characterized as serious shall cease all fishing operations until "all outstanding sanctions imposed by the flag state in respect of the violation have been complied with."¹²²⁸ A serious violation includes the activities listed in paragraph 11 of Article 21 of the 1995 UN Fish Stocks Agreement "and such other violations as may be determined by the Commission."¹²²⁹ Article 21(11)(e) of the Fish Stocks Agreement encompasses the issue of "using prohibited fishing gear." The WCPFC has thus established a regulatory framework where the use of large-scale pelagic driftnets is not only banned but also considered as the utilization of prohibited fishing gear in accordance with the 1995 UN Fish Stocks Agreement.

¹²²⁵ WCPFC, "CMM 2008-04 - Conservation and Management Measure to Prohibit the Use of Large Scale Driftnets on the High Seas in the Convention Area," 2008. Preamble.

¹²²⁶ Large-scale driftnets "are defined as gillnets or other nets or a combination of nets that are more than 2.5 kilometers in length whose purpose is to enmesh, entrap, or entangle fish by drifting on the surface of, or in, the water column" in the conservation and management measure. See footnote 1 in WCPFC, "CMM 2008-04 - Conservation and Management Measure to Prohibit the Use of Large Scale Driftnets on the High Seas in the Convention Area."

¹²²⁷ WCPFC, "CMM 2008-04 - Conservation and Management Measure to Prohibit the Use of Large Scale Driftnets on the High Seas in the Convention Area." Para. 1.

¹²²⁸ WCPFC Convention, Article 25(4).

¹²²⁹ Ibid.

This is interesting, as neither the ICCAT nor the IOTC takes a similar approach, but by attaching the relevant enforcement mechanisms to the prohibition, the WCPFC is operationalizing the objective of ensuring that large-scale pelagic driftnets will not be used in fishing operations in its geographical area of competence by taking significant steps to ensure compliance.

Further, the WCPFC has adopted obligations for member states and cooperating non-contracting parties to prohibit their vessels from utilizing large-scale driftnets on the high seas in the convention area,¹²³⁰ mandatory reporting of monitoring, control, and surveillance actions,¹²³¹ and an obligation stating that “nothing in this measure shall prevent CCMs from applying more stringent measures to regulate the use of large-scale driftnets.”¹²³² All these obligations are identical to those previously assessed in relation to the IOTC Resolution 12/12, and further analysis is thus not required at this point, as the potential outcomes and implications of the adopted provisions would be identical to those examined in relation to the IOTC Resolution 12/12.

Although CMM-2008-04 is similar in some ways to the IOTC Resolution 12/12, the two measures differ in relation to when a vessel is “configured” to use large-scale driftnets.¹²³³ The term “configured” to use large-scale driftnets “means having on board gear, either assembled or disassembled, that collectively would allow the vessel to deploy and retrieve large-scale driftnets” in accordance with CMM-2008-04. The WCPFC consequently widens the scope of paragraph 3 of the measure by stating that a vessel which is configured to use large-scale driftnets or is “in possession of large-scale driftnets” will be presumed “to have used large-scale driftnets on the high seas in the convention area.” A doctrinal interpretation of the provision emphasizes that simply carrying large-scale driftnets on board a fishing vessel would qualify as a breach of the obligation and activate the enforcement mechanisms encompassed in Article 25 of the WCPFC Convention. This is an interesting approach, as it also covers

¹²³⁰ WCPFC, “CMM 2008-04 - Conservation and Management Measure to Prohibit the Use of Large Scale Driftnets on the High Seas in the Convention Area.” Para. 2.

¹²³¹ *Ibid.* Para. 5.

¹²³² *Ibid.* Para. 7.

¹²³³ *Ibid.* The term configured is defined in footnote 2 of WCPFC, “CMM 2008-04 - Conservation and Management Measure to Prohibit the Use of Large Scale Driftnets on the High Seas in the Convention Area.”

preventive elements ensuring that such fishing gear is not brought out from the ports in the first place. By ensuring that the gear is not on board the relevant vessels, the WCPFC is thus limiting the chances of such gear being illegally used in fishing operations. As in the IOTC Convention Area, the measure is not applicable to a flagged vessel “which can demonstrate that it is duly authorized to use large-scale driftnets in waters under national jurisdiction.”¹²³⁴ However, the measure must overall be characterized as powerful by stating that simply carrying large-scale driftnets on the high seas will represent a serious violation of the 1995 UN Fish Stocks Agreement, which consequently activates the associated enforcement mechanisms in Article 25 of the WCPFC Convention.

Finally, the WCPFC is responsible for periodically assessing whether “additional measures should be adopted and implemented to ensure that large-scale driftnets are not used” in its geographical area of competence.¹²³⁵ This approach ensures the effectiveness of the relevant measures and provides the Commission with a mandate to propose suitable adjustments and expansions as data on the level of compliance become available. The measure was adopted in 2008 and has not formally been amended since, which may indicate that the Commission considers the compliance levels to be satisfactory at present.

7.4.1.1 Discussion and Recommendations

The assessment of the conservation and management measures adopted by the tuna RFMOs in relation to prohibiting certain gear types illustrates that the ICCAT, the IOTC, and the WCPFC have adopted a ban on the use of large-scale driftnets in their convention areas. Both the IOTC and the WCPFC have adopted these bans as a response to the UNGA resolutions and to minimize ghost fishing, whereas the ICCAT has adopted its recommendation to conserve its targeted species from the impact of the fishing gear in certain specific areas of the Mediterranean. Despite not adopting the measure to conserve non-target species, the ICCAT recommendation nevertheless contributes indirectly to minimizing the effect on these species

¹²³⁴ Ibid. Para. 4. Such a vessel is obliged to stow and secure “all of its large-scale driftnets and related fishing equipment” in “a manner that they are not readily available to be used for fishing” in accordance with the provision.

¹²³⁵ Ibid. Para. 6.

by limiting the potential impacts of lost, abandoned, and/or discarded large-scale driftnets on the marine environment. Overall, the IOTC and WCPFC have operationalized one of the recognized management measures in the normative framework applicable to minimize ghost fishing by adopting and enforcing their ban on the use of large-scale pelagic driftnets. The WCPFC is currently the RFMO with the most far-reaching measures due to their characterization of the use of such nets as a serious violation under the 1995 UN Fish Stocks Agreement, which authorizes the organization to impose stringent sanctions on vessels in breach of the obligation.

The IATTC and the CCSBT have not adopted any gear bans in their regulatory frameworks to implement and operationalize the management objective of minimizing ghost fishing, and it is not known why they have not included similar measures to those of the ICCAT, IOTC, and WCPFC.¹²³⁶ Despite uncertainty about the potential causes of non-implementation, the tuna RFMOs are encouraged to adopt prohibition of the use of large-scale driftnets in their future work to conserve non-target species and to implement the obligations in the normative framework comprising the ecosystem approach to fisheries.

¹²³⁶ The fact that the IATTC has not adopted a ban on large-scale driftnets is also recognized in Brianna Elliott, Marguerite Tarzia, and Andrew J. Read, "Cetacean bycatch management in regional fisheries management organizations: Current progress, gaps, and looking ahead," page 07. Elliott, Tarzia and Read emphasize that the IATTC is one of the few RFMOs worldwide that has not adopted such a ban, after assessing the regulatory frameworks of 14 RFMOs in relation to the conservation of cetaceans.

7.4.2 Prohibition of Intentional Discard of Fishing Gear at Sea

An assessment of the conservation and management measures adopted in 2000-2023, currently in force, reveals that only two of the five tuna RFMOs have adopted a prohibition of intentional gear dumping at sea. Adopting and enforcing such a prohibition is recognized as a key measure to operationalize the objective of minimizing catch by lost, abandoned, and/or discarded fishing gear, as it mitigates one of the key causes and the potential effects of ghost fishing on marine ecosystems and marine species.¹²³⁷ If fishing gear is never discarded at sea, there will never be any “catch” by discarded fishing gear. It has not been possible to establish precisely how much of the ghost gear is a result of intentional gear dumping, but a ban would presumably significantly reduce the total amount of fishing gear ending up at sea.

Knowledge of the great importance of preventing fishing gear from being discarded at sea prompts a closer assessment of the adopted conservation and management measures to mitigate this issue in the tuna RFMOs. To date, the ICCAT and the WCPFC have adopted comprehensive measures addressing ghost fishing and pollution stemming from fishing gear ending up without human surveillance at sea, including prohibitions on gear dumping.

The ICCAT adopted Recommendation 19-11 in 2019,¹²³⁸ representing a comprehensive conservation and management measure aiming at mitigating several issues in relation to lost, abandoned, or otherwise discarded fishing gear. The Commission recognized that “ghost fishing conducted by ALDFG constitutes an unmanaged and unsustainable exploitation of marine resources that leads to undesirable mortality of marine life” in the preamble to the Recommendation, along with other statements concerning how lost, abandoned, and/or discarded fishing gear contributes to marine pollution.¹²³⁹ Recommendation 19-11 comprises

¹²³⁷ See Section 4.4.3 for more information regarding the measures applicable to operationalize the obligations encompassed in the normative framework.

¹²³⁸ ICCAT, “Recommendation 19-11: Recommendation by ICCAT on Abandoned, Lost or Otherwise Discarded Fishing Gear,” 2019.

¹²³⁹ Ibid. Preamble.

several measures relevant to mitigate ghost fishing, which will be presented thematically in the following sections when considered relevant.

In relation to the management measure of prohibiting the intentional discard of fishing gear at sea, the ICCAT has adopted a clear obligation on all member states and cooperating non-contracting parties to “ensure that its fishing vessels authorized to fish species managed by ICCAT in the Convention area are prohibited from abandoning and discarding fishing gear except for safety reasons.”¹²⁴⁰ This provision reflects the IMO framework,¹²⁴¹ and expressly emphasizes that discarding of fishing gear is prohibited unless this is done to safeguard the vessel and the crew for safety reasons. The provision appears to establish a stringent prohibition in line with the obligations identified in the normative framework,¹²⁴² making the ICCAT take a significant step towards operationalizing the management objective of minimizing catch by lost, abandoned, or otherwise discarded fishing gear.

The second paragraph of Recommendation 19-11 encompasses the relevant definition of fishing gear in relation to the various obligations in the adopted conservation and management measure. The term fishing gear “is understood to mean fishing gear that poses a significant risk of ghost fishing when abandoned, lost or discarded in the ICCAT Convention area” under the provision.¹²⁴³ Interpreting and understanding the definition is important as it enables the establishment of the types of fishing gear that fall under the prohibition in the first paragraph. Basically, all types of fishing gear may pose a risk of ghost fishing if discarded at sea. The gear and fishing techniques most frequently used in tuna fisheries include purse seine nets which account for 66% of the total catches worldwide, longlines which account for 9%, pole and line fishing which accounts for 9%, gillnets which account for 4% of and other

¹²⁴⁰ Ibid. Para. 1. The relevant states shall take into consideration the special requirements of developing member states and cooperating non-contracting parties “in relation to conservation and management of straddling fish stocks and highly migratory fish stocks and development of fisheries for such stocks, and, in particular, with respect to artisanal and small-scale fisheries” in accordance with the same provision.

¹²⁴¹ See MARPOL Annex V and Resolution MEPC.295(71), 2017 Guidelines for the Implementation of MARPOL Annex V adopted on 7 July 2017, para. 1.2.

¹²⁴² Ibid.

¹²⁴³ ICCAT, “Recommendation 19-11: Recommendation by ICCAT on Abandoned, Lost or Otherwise Discarded Fishing Gear.” Para. 2.

gear types accounting for 14% of catches, classified as miscellaneous gear.¹²⁴⁴ The latter group includes harpoons and spears and is typically utilized in artisanal and small-scale fisheries.¹²⁴⁵ Whereas the use of such miscellaneous gear may be regarded as not posing any significant risk of ghost fishing due to its design and functions, the fishing gear utilized in industrial tuna fisheries certainly falls within this category by virtue of its design. All types of nets pose a serious threat to marine life and ecosystems if they are accidentally lost, abandoned, or intentionally discarded. Similarly, all lines pose a significant threat to marine mammals, seabirds, and other species in terms of entanglement. The scope of the definition must thus be regarded as encompassing all traditional fishing gear utilized in commercial tuna fisheries, creating a regulatory framework where all states are obliged to ensure that their flagged vessels are prohibited from discarding fishing gear at sea in the ICCAT convention area.

The fact that “longlines naturally fall under the scope of the definition is recognized by the ICCAT, which deliberately and expressly excludes longlines from its application,”¹²⁴⁶ by stating that “the provisions in this Recommendation do not apply to longline gear.”¹²⁴⁷ Scientific studies have established that around 20% of all longlines and 17% of their hooks end up in the global seas,¹²⁴⁸ and the ICCAT’s ban on discarding fishing gear thereby excludes approximately 20% of the fishing gear that annually ends up in the world’s oceans.¹²⁴⁹ It is not known why the ICCAT has excluded longline gears in its regulatory framework covering ghost fishing, but it is strongly advised to amend Recommendation 19-11 to cover all gear types that may be intentionally discarded at sea. Adopting Recommendation 19-11 must be regarded as a significant step towards protecting the marine environment, its associated ecosystems and

¹²⁴⁴ See, e.g., the scientific report produced by ISSF, “ISSF 2023-01: Status of the World Fisheries for Tuna,” 2 June 2023, available at: <https://www.iss-foundation.org/research-advocacy-recommendations/our-scientific-program/scientific-reports/>. Page 15.

¹²⁴⁵ See FAO Fisheries and Aquaculture Technical Paper 672, *Classification and Illustrated Definition of Fishing Gears* (FAO, 2021), <https://doi.org/10.4060/cb4966en>, pages 71-82.

¹²⁴⁶ Ingrid Solstad Andreassen, “The Role of tuna RFMOs in Combating ghost fishing: Where is the Catch?”

¹²⁴⁷ ICCAT, “Recommendation 19-11: Recommendation by ICCAT on Abandoned, Lost or Otherwise Discarded Fishing Gear.” Para. 2. Footnote 1.

¹²⁴⁸ Kelsey Richardson, Britta Denise Hardesty, and Chris Wilcox, “Estimates of Fishing Gear Loss Rates at a Global Scale: A Literature Review and Meta-Analysis,” *Fish and Fisheries* 20, No. 6(2019): 1218–31, <https://doi.org/10.1111/faf.12407>.

¹²⁴⁹ Ingrid Solstad Andreassen, “The Role of tuna RFMOs in Combating ghost fishing: Where is the Catch?”

marine life from the harmful effects of ghost fishing. The member states of the ICCAT are nevertheless not fully implementing and operationalizing the normative framework encompassing the objective of minimizing catch by discarded gear due to the exclusion of longline gear from their ban.

The WCPFC, which is the second tuna RFMO that has adopted a prohibition of intentional discarding of fishing gear at sea,¹²⁵⁰ adopted CMM-2017-04 in response to concerns about how “marine pollution is increasingly recognised as a significant global problem, with detrimental impacts on ocean and coastal environments, wildlife, economies and ecosystems.”¹²⁵¹ Furthermore, the Commission states that it is convinced that some activities associated with fisheries have the potential of affecting the WCPFC’s “efforts to minimise incidental mortality of non-target species and impacts on marine ecosystems,” and “abandoned, lost or otherwise discarded fishing gear in the marine environment can damage marine, reef and coastal habitats, be harmful to marine life through ghost fishing, entanglement, ingestion and acting as habitat for the spread of invasive species, and create a navigation hazard.”¹²⁵² The preamble to the conservation and management measure also recognizes several issues in relation to ghost gear as a source of pollution and marine debris, and the measure seems to have been adopted to mitigate the effects of lost, abandoned or otherwise discarded fishing gear both as pollution in the ocean and gear which may “ghost fish.”

Relevant to this section are the first three provisions of CMM 2017-04, which deal with obligations regulating the discarding of plastics and fishing gear at sea.¹²⁵³ The first provision encourages member states and cooperating non-contracting parties to “ratify, accept, approve or accede to the annexes of MARPOL and the London Protocol” at “the earliest possible opportunity if they have not already done so.”¹²⁵⁴ The explicit recognition of MARPOL

¹²⁵⁰ WCPFC, “CMM 2017-04 - Conservation and Management Measure on Marine Pollution,” 2017.

¹²⁵¹ *Ibid.* Preamble.

¹²⁵² *Ibid.*

¹²⁵³ Provisions relevant to other measures applicable to implement the normative framework will be analyzed in subsequent sections.

¹²⁵⁴ WCPFC, “CMM 2017-04 - Conservation and Management Measure on Marine Pollution.” Para. 1.

73/78 and the London Protocol demonstrates that the WCPFC is striving to address the issue of marine waste and discard of fishing gear at sea, especially when considering that Annex V of MARPOL expressly prohibits intentional disposal of fishing gear in the oceans.¹²⁵⁵

Turning to the second provision of CMM 2017-04 prompts several intriguing observations. The first is that the WCPFC obliges its member states and cooperating non-contracting parties to “prohibit their fishing vessels operating within the WCPFC Convention Area from discharging any plastics (including plastic packaging, items containing plastics and polystyrene).”¹²⁵⁶ The scope of the provision “is far-reaching in terms of including all items that contain polystyrene and other plastics, creating a legal obligation based on preventative elements in terms of minimizing the number of plastic substances that end up in the ocean.”¹²⁵⁷ However, a serious shortcoming of the measure is that the WCPFC expressly emphasizes that the scope of the provision is “not including fishing gear.”¹²⁵⁸ The WCPFC has thus established a ban on discarding all plastics at sea which excludes marine pollution stemming from fishing gear.¹²⁵⁹ Given the recognition of ghost fishing and its detrimental effects on marine ecosystems in the preamble of the adopted CMM, it seems clear that excluding fishing gear from the ban may be a deliberate act.¹²⁶⁰ However, the potential cause(s) of the clear-cut exclusion of fishing gear in the provision are not known.

An interesting observation in respect of the second paragraph of CMM 2017-04 is that the scope of the obligation may be regarded as representing a breach of the provisions of MARPOL 73/78 Annex V. In the first paragraph, the WCPFC encourages its member states and cooperating non-contracting parties to ratify and accede to the annexes of MARPOL, whereas the WCPFC itself establishes a regulatory framework where it does not adopt a prohibition of

¹²⁵⁵ See Section 4.4.2 where MARPOL Annex V and the London Protocol are introduced and subject to analysis in the context of this thesis. See also Ingrid Solstad Andreassen, “The Role of tuna RFMOs in Combating ghost fishing: Where is the Catch?”

¹²⁵⁶ WCPFC, “CMM 2017-04 - Conservation and Management Measure on Marine Pollution.” Para. 2.

¹²⁵⁷ Ingrid Solstad Andreassen, “The Role of tuna RFMOs in Combating ghost fishing: Where is the Catch?”

¹²⁵⁸ The wording “but not including fishing gear” is stated in the provision.

¹²⁵⁹ See also Ingrid Solstad Andreassen, “The Role of tuna RFMOs in Combating ghost fishing: Where is the Catch?”

¹²⁶⁰ *Ibid.*

intentional discarding of fishing gear at sea. The fact that the WCPFC's regulatory framework does not align with the obligations in Annex V of MARPOL 73/78 consequently creates inconsistency in the legal framework regulating ghost fishing in the WCPFC's area of competence.¹²⁶¹

The gap between the legally binding obligation of MARPOL 73/78 Annex V and CMM 2017-04 is significant. The existence of this gap may be a result of political tensions or the unwillingness of member states of the WCPFC to implement the global standards in the IMO instrument. As explored in Section 6.7.2, the WCPFC also operates with consensus-based decision-making mechanisms. Ultimately, one single negative vote will make attempts to implement the stringent prohibitions of MARPOL 73/78 Annex V fail.¹²⁶² Another plausible reason for the identified gap may be rooted in the fact that the WCPFC member states may not have sufficient capacity to implement the MARPOL 73/78 through cooperation in the WCPFC. The fact that the WCPFC is encouraging its member states to ratify and accede to the binding instrument indicates that some of its member states are not parties to the IMO instrument. It is thus plausible that the WCPFC is awaiting the domestic ratification processes of MARPOL Annex V in accordance with the first paragraph of CMM 2017-04 before adopting a similar prohibition applicable to its convention area. The WCPFC is nevertheless advised to amend its regulatory framework to ensure compliance with the international legal framework on abandoned, lost, or otherwise discarded fishing gear as soon as possible.

However, the third paragraph of CMM 2017-04 "mitigates some issues related to the WCPFC's deliberate exclusion of fishing gear from the prohibition of discharging plastics at sea."¹²⁶³ The member states and cooperating non-contracting parties "are encouraged to prohibit their fishing vessels operating within the WCPFC Convention Area from discharging...garbage, including fishing gear."¹²⁶⁴ Fishing gear "released into the water with the intention of later

¹²⁶¹ Ibid.

¹²⁶² Section 7.2 explored how the CCSBT has not adopted any conservation and management measures applicable to implement the normative framework regulating ghost fishing, and how its consensus-based decision-making mechanism may affect its member states' ability to implement and operationalize the ecosystem approach to fisheries and the objectives which may be used to comply with the approach.

¹²⁶³ Ingrid Solstad Andreassen, "The Role of tuna RFMOs in Combating ghost fishing: Where is the Catch?"

¹²⁶⁴ WCPFC, "CMM 2017-04 - Conservation and Management Measure on Marine Pollution." Para. 3(b).

retrieval such as FADs, traps and static nets are not considered garbage” under the provision.¹²⁶⁵ An interpretation of the definition of garbage in relation to fishing gear implies that all gear discarded at sea with the intention of non-retrieval will fall under the scope of the measure, thus including gear intentionally discarded at sea.¹²⁶⁶ Although “the WCPFC does not presently prohibit the intentional discarding of fishing gear at sea, it is nevertheless encouraging its member states and cooperating non-contracting parties to prohibit their fishing vessels from discarding fishing gear at sea.”¹²⁶⁷ This is an encouraging step towards the operationalization of the objective of minimizing catch by lost, abandoned, or otherwise discarded fishing gear.¹²⁶⁸ However, the WCPFC should amend Recommendation 17-04 to include a binding prohibition of intentional discard of fishing gear at sea.

7.4.2.1 Discussion and Recommendations

This section has established that only the ICCAT and the WCPFC have adopted measures to minimize intentional discarding of fishing gear at sea. The ICCAT has established a regulatory framework comprising measures which expressly prohibit intentional gear dumping from fishing vessels. However, its member states have excluded longline gear from the scope of the measure. The WCPFC has established a ban on discarding of all plastic materials at sea but excluded fishing gear from the scope of this measure. The reason for this exclusion is not known, but the WCPFC nevertheless “encourages its member states and cooperating non-contracting parties to prohibit intentional discharge of garbage, including fishing gear which is not intended to be retrieved at a later stage of the fishing operation.”¹²⁶⁹

The analysis has revealed that the member states of the ICCAT and the WCPFC have taken significant steps to implement and operationalize the objective of minimizing catch by discarded fishing gear in accordance with the legal framework. However, both RFMOs are

¹²⁶⁵ Ibid. Para. 3(b). Footnote 1.

¹²⁶⁶ Ingrid Solstad Andreassen, “The Role of tuna RFMOs in Combating ghost fishing: Where is the Catch?”

¹²⁶⁷ Ibid.

¹²⁶⁸ Hodgson describes the efforts taken by the WCPFC as “the most-far reaching measures” relating to lost, abandoned, or otherwise discarded fishing gear in the context of RFMOs. See Stephen Hodgson, *Legal Aspects of Abandoned, Lost or Otherwise Discarded Fishing Gear*. Page 21.

¹²⁶⁹ Ibid.

advised to amend their adopted measures to “include a complete prohibition of intentional discharge of fishing gear at sea without the identified exceptions.”¹²⁷⁰ With the recognition that a prohibition of intentional discard of fishing gear at sea will mitigate both causes and potential effects of ghost fishing, it should be strongly emphasized that the three remaining tuna RFMOs, the IATTC, the CCSBT, and the IOTC should make efforts to implement and operationalize such a prohibition to safeguard marine ecosystems and non-target species in their areas of competence.¹²⁷¹

¹²⁷⁰ Ibid.

¹²⁷¹ Ibid.

7.4.3 Establishing Gear Disposal Systems in Landing Places

Intricately connected to the measures relevant to minimize intentional discard of fishing gear at sea analyzed in the previous section, and measures relevant to establish procedures to systematically recuperate lost gear, which will be analyzed in the following section, is the establishment of suitable gear disposal systems to minimize the occurrence of ghost fishing.

The establishment of such systems has the potential of enabling effective handling of fishing gear that may otherwise be discarded at sea. This also applies to fishing gear retrieved from the sea, especially gear that is retrieved by other vessels than those of the owner(s) of the gear. A system for disposal after such retrieval is crucial, as it encourages disposal onshore.¹²⁷² Consequently, if fishing gear is disposed of onshore, the gear will never be able to conduct ghost fishing at sea, and “proper land-based waste disposal systems, including alternatives such as recycling” are considered essential to minimize the rates of fishing gear ending up in the ocean and the subsequent hazardous effects of ghost fishing.¹²⁷³ On the other hand, difficulty in ensuring suitable reception facilities discourages “disposal of used fishing gear and can also be a disincentive” to retrieve lost, abandoned, and/or discarded fishing gear, particularly in remote areas.¹²⁷⁴ It is thus vital that the member states and cooperating non-contracting parties of the tuna RFMOs make joint efforts to make gear disposal systems available for the vessels operating in their areas of competence.

Closer examination of the conservation and management measures adopted by the tuna RFMOs and whether they encompass requirements of establishing such disposal systems reveals that only one of them has adopted such a requirement. The WCPFC is the only tuna

¹²⁷² See Gilman, “Status of International Monitoring and Management of Abandoned, Lost and Discarded Fishing Gear and Ghost Fishing.” Page 225. Gilman states that discarding of unwanted gear may occur when port reception facilities are unavailable, and thus create a situation where it would be beneficial not to dispose of the gear onshore.

¹²⁷³ Division on Earth and Life Studies et al., “Appendix D: Parties to MARPOL Annex V and Members of Regional Fisheries Management Organizations,” in *Tackling Marine Debris in the 21st Century* (National Academies Press, 2008). Page 19.

¹²⁷⁴ *Ibid.* Page 14.

RFMO that has adopted a conservation and management measure addressing the establishment of suitable gear disposal systems.

The previously introduced CMM 2017-04 on marine pollution covers the request of ensuring that “adequate port reception facilities are provided to receive waste from fishing vessels” of the member states and cooperating non-contracting parties.¹²⁷⁵ Small island developing states are “requested to utilise, as appropriate, regional port reception facilities in accordance with international standards.”¹²⁷⁶ The measure is an obligation of results, and the states are required to ensure the availability of port reception facilities for the discard of fishing gear and other waste from vessels operating in the WCPFC convention area. If a small island state is not capable of providing such facilities, it shall make use of regional facilities to ensure the proper management of waste, making the obligation of offering suitable gear disposal systems a mandatory requirement for all the relevant states.

This shows that the WCPFC is implementing and operationalizing one of the core management measures identified in the analysis of the normative framework regulating catch by lost, abandoned, or otherwise discarded fishing gear by requiring that all states establish suitable gear disposal systems in their port facilities.¹²⁷⁷ The adoption of these conservation and management measures may also be regarded as giving substance to the prohibition of intentional discarding of fishing gear at sea, providing an alternative of disposal onshore. The level of compliance and utilization of the available facilities by the fishing vessels is not presently known, but their establishment is nevertheless unique in the sense that the WCPFC is the only tuna RFMO that has adopted a conservation and management measure dealing with suitable disposal of fishing gear onshore.

The ICCAT has not adopted a similar conservation and management measure, despite its efforts to prohibit intentional gear dumping at sea. Bearing in mind the importance of suitable gear disposal systems in port facilities to provide an alternative to intentional discarding of

¹²⁷⁵ WCPFC, “CMM 2017-04 - Conservation and Management Measure on Marine Pollution.” Para. 6.

¹²⁷⁶ *Ibid.*

¹²⁷⁷ See Section 4.4.3 for more information on the management measures applicable to implement and operationalize the normative framework regulating ghost fishing.

gear at sea prompts a question about the consistency of the ICCAT's regulatory framework for minimizing ghost fishing. One may well argue that requiring the establishment of gear disposal systems is an integral part of minimizing intentional discard of fishing gear, thereby providing substance to the ban on disposal of fishing gear at sea. By not implementing such measures, the ICCAT is not fully facilitating the operationalization of the objective of minimizing catch by discarded gear. Such operationalization will arguably be required to implement the ecosystem approach to fisheries and to ensure compliance with MARPOL 73/78.¹²⁷⁸ The ICCAT is thus advised to adopt measures obliging its member states and cooperating non-contracting parties to establish such facilities and systems to avoid attenuating their prohibition of gear dumping at sea. Similarly, the IATTC, CCSBT, and IOTC are also advised to adopt mandatory establishment of gear disposal systems in addition to a prohibition of intentional discard of fishing gear at sea to enable their member states and cooperating non-contracting parties to operationalize the objective of minimizing catch by lost, abandoned, and/or discarded fishing gear in accordance with Article 10(c) of the 1995 UN Fish Stocks Agreement and MARPOL 73/78.

¹²⁷⁸ See Section 4.4.2 of this thesis and MARPOL 73/78 Annex V, Regulation 8.

7.4.4 Mandatory Marking, Retrieval, and Reporting of Lost, Abandoned, or Otherwise Discarded Fishing Gear

Three recognized measures encompassed in the normative framework established on the basis of the ecosystem approach to minimize catch by lost, abandoned, or otherwise discarded fishing gear are the mandatory marking of all fishing gear, reporting of accidentally lost gear, and mandatory retrieval of such gear. These measures are distinct in nature, but nevertheless share some similarities in terms of how gear ownership may increase retrieval rates. Identification of gear ownership may encourage retrieval of fishing gear by its original owners due to the risk of identification of discarded gear, and by other vessels if the gear is reported missing at sea through approximate identification of where the gear was accidentally lost. Due to the interconnectedness of the different measures, they will be analyzed jointly in the following. The joint assessment will enable an analysis of how the implementation and operationalization of one of the measures may affect the other two.

The normative framework presented in Section 4.4.3 encompasses mandatory marking of fishing gear, reporting of lost gear, and the establishment of procedures to recuperate fishing gear. These measures may be considered as representing both preventive and reparative measures in relation to achieving the management objective of minimizing ghost fishing in accordance with Article 5(f) of the 1995 UN Fish Stocks Agreement. The preventive element relates to the rates of intentional discard and abandonment, which presumably will be lower if the fishing gear is permanently marked. Permanent marking of fishing gear thus has the potential of increasing retrieval rates and minimizing discard rates due to the risk of gear ownership detection. Consequently, permanent marking of fishing gear may also be considered as a means to operationalize regulations banning intentional discarding of fishing gear and a way of enhancing compliance. As established in Section 7.4.2, only two of the tuna RFMOs have presently adopted a prohibition of intentional discard of fishing gear at sea, creating substantial gaps between what is required as a matter of international law and

practices of the tuna RFMOs.¹²⁷⁹ However, gear ownership identification may also serve as a mitigation measure to return the lost gear to its owner(s). Such procedures are economically beneficial for the fishing vessels as they can utilize the initially lost gear in future fishing operations. The reparative element relates to the retrieval of lost, abandoned, or otherwise discarded fishing gear. If such fishing gear is returned to its owners, it may be used in future fishing operations or disposed of in suitable gear disposal facilities by its owners upon return to port. Recuperation of lost, abandoned, or otherwise discarded fishing gear is also a measure which automatically limits the impacts of fishing gear on the marine environment, marine ecosystems, and non-target species. Ghost gear naturally loses its function when it is removed from the sea. Finally, establishing systematic reporting procedures involve both preventive and reparative elements. Stringent reporting requirements may reduce the total amount of gear that ends up in the ocean in the first place due to the risk of detection. Furthermore, such requirements will facilitate the retrieval of lost or abandoned fishing gear due to identification of the approximate geographical location of the ghost gear.

Three of the five tuna RFMOs, the ICCAT, the IOTC, and the WCPFC, have adopted conservation and management measures obliging their member states and cooperating non-contracting parties to ensure that all flagged vessels only utilize fishing gear that is permanently marked with unique identification codes and mandatory reporting requirements for lost and abandoned fishing gear. The ICCAT and the WCPFC have additionally adopted mandatory retrieval requirements for lost fishing gear applicable to vessels operating in their geographical areas of competence. The adopted measures will be analyzed in the following, with the aim of establishing whether and how the three tuna RFMOs have implemented and operationalized the normative framework regulating ghost fishing. The management measures adopted by the tuna RFMOs encompassing mandatory marking, reporting and retrieval of lost fishing gear have previously been assessed in relation to FADs,¹²⁸⁰ but the

¹²⁷⁹ The scope and content of the ICCAT's "Recommendation 19-11: Recommendation by ICCAT on Abandoned, Lost or Otherwise Discarded Fishing Gear," 2019 and the WCPFC's "CMM 2017-04 - Conservation and Management Measure on Marine Pollution," 2017, were analyzed in Section 7.4.2.

¹²⁸⁰ See Sections 7.3.1, 7.3.2, 7.3.3 and 7.3.4 for more information on how these measures have been implemented and operationalized by the tuna RFMOs in relation to FAD management.

following presentation will elaborate on measures applicable to other gear types frequently used in tuna fisheries.

The ICCAT adopted Recommendation 03-12 as early as in 2003, where it was emphasized that each flag state “shall ensure that its fishing vessels...as well as fishing gears, are marked in such a way that they can be readily identified in accordance with generally accepted standards.”¹²⁸¹ The Commission then made a specific reference to the FAO standard specification for the marking and identification of fishing vessels as representing a “generally accepted standard” for the marking of vessels and gear.¹²⁸² This recognition aligns with the findings of the analysis in Section 4.4.2 of this thesis, which recognizes that relevant FAO instruments must be regarded as “generally recommended international minimum standards” in accordance with Article 119 of the Law of the Sea Convention and Article 10(c) of the 1995 UN Fish Stocks Agreement. Consequently, the ICCAT’s recognition may be regarded as demonstrating that the FAO guidelines inform the legal obligations in these two instruments in practice. In relation to retrieval of lost gear, the ICCAT has also adopted the previously assessed Recommendation 19-11, comprising several relevant elements to minimize catch by lost, abandoned, or otherwise discarded fishing gear.¹²⁸³ The Commission acknowledges that “to prevent ghost fishing, efforts should be undertaken to retrieve ALDFG,” and notes that the FAO Committee on Fisheries “endorsed Voluntary Guidelines on the Marking of Fishing Gear at its thirty-third session and further work to address ALDFG.”¹²⁸⁴ Yet again, the member states of the ICCAT recognize FAO guidelines as informing the normative framework applicable to minimize ghost fishing.

In relation to the measure comprising retrieval of lost fishing gear, all member states and cooperating non-contracting parties “shall ensure that vessels...have equipment on board to

¹²⁸¹ ICCAT, “Recommendation 03-12: Recommendation by ICCAT Considering the Duties of Contracting Parties and Cooperating Non-Contracting Parties, Entities, or Fishing Entities in Relation to Their Vessels Fishing in the ICCAT Convention Area,” 2003. Para. 3.

¹²⁸² Ibid.

¹²⁸³ ICCAT, “Recommendation 19-11: Recommendation by ICCAT on Abandoned, Lost or Otherwise Discarded Fishing Gear,” 2019.

¹²⁸⁴ Ibid.

retrieve lost fishing gear,”¹²⁸⁵ and “the master of a vessel that has lost fishing gear or part of it shall, to the extent possible, make every reasonable attempt to retrieve it as soon as possible.”¹²⁸⁶ The measure is applicable to “all vessels 12 meters and above fishing for ICCAT Species in the ICCAT convention area,” giving it a comprehensive scope of application.¹²⁸⁷ The obligations in Recommendation 19-11 are clearly stated and required all vessels falling under the scope of the measure to carry on board equipment to recuperate gear if it is accidentally lost, and the master of the vessel shall make every reasonable attempt to retrieve the gear. The first obligation is goal-oriented, requiring the vessels to carry the relevant equipment to enable potential retrieval of lost gear, whereas the obligation to retrieve the gear is an obligation of means, not results. The latter obligation is qualified by the inclusion of the wording “to the extent possible,” but nevertheless sets a high threshold by requiring the captain to make every effort to recuperate the gear. The high threshold aligns with the legal framework addressing the relationship between marine pollution and conservation of marine ecosystems, and the ICCAT is seemingly operationalizing Articles 192 and 194 of the Law of the Sea Convention by placing strict obligations on states to minimize pollution of the marine environment and ghost fishing through the requirements of recuperating lost gear at sea.¹²⁸⁸ By reducing the occurrence of ghost fishing, the measure also demonstrates how the objectives of the ecosystem approach to fisheries is put into practice through the ICCAT’s regulatory framework.

Further, the ICCAT is subjecting the different actors to different obligations by requiring the flag states to ensure that all vessels have the necessary equipment to retrieve lost gear, whereas the masters of the relevant vessels are personally responsible for attempting to retrieve the gear. Attaching personal responsibility to the master of the vessels suggests that the measure comprises a preventive element, as the master presumably will make every reasonable attempt to retrieve the relevant gear due to such personal responsibility.

¹²⁸⁵ Ibid. Para. 3(a). Relevant equipment “could be a simple anchor attached to a strong rope or wire, or otherwise as defined” in the domestic laws of the flag state in accordance with the second footnote to para. 3(a).

¹²⁸⁶ Ibid. Para. 3(b).

¹²⁸⁷ Ibid. Para. 3(a).

¹²⁸⁸ See particularly Section 4.4.2 regarding the normative framework regulating ghost fishing.

Another interesting observation in relation to the provisions is that the master is also responsible for attempting to recuperate all parts of gear, including the parts that end up in the sea if gear breaks or parts of it are lost during deployment or retrieval. Thus, the ICCAT has seemingly implemented and operationalized the management measure encompassing the systematic retrieval of lost gear by obliging the master to retrieve even parts of the gear. The provision of Recommendation 19-11 is novel, and the ICCAT is currently the only tuna RFMO that has adopted such a comprehensive approach enhancing the retrieval of lost fishing gear. However, a significant shortcoming of Recommendation 19-11 is that the provisions do not apply to longline gear.¹²⁸⁹ Ultimately, this also applies to the retrieval of lost gear, leading to the finding that the ICCAT has established a regulatory framework where the master of the vessel is not obliged to attempt to retrieve longline gear lost in fishing operations. In view of the findings of the scientific studies which estimate that about 20% of all longlines and 17% of the hooks used in longlines are lost at sea, the ICCAT has excluded a significant proportion of the amount of gear that poses a risk of ghost fishing if it is lost, abandoned, or otherwise discarded.¹²⁹⁰ The ICCAT is therefore advised to include longline gear and attached longline hooks in its adopted regulatory framework. This will ensure that its member states will operationalize their obligation to minimize catch by lost, abandoned, and/or discarded fishing gear in accordance with Articles 5(f) and 10(c) of the 1995 UN Fish Stocks Agreement and Annex V of the MARPOL 73/78.

In relation to reporting lost or abandoned fishing gear, the ICCAT has adopted a comprehensive approach by virtue of paragraphs 4 and 5 of Recommendation 19-11.¹²⁹¹ If the relevant “fishing gear cannot be retrieved, the master of the vessel shall notify the flag CPC within 24 hours” of the name and identification of the vessel,¹²⁹² the type and quantity of lost

¹²⁸⁹ ICCAT, “Recommendation 19-11: Recommendation by ICCAT on Abandoned, Lost or Otherwise Discarded Fishing Gear.” Footnote 1. This issue was also addressed and analyzed in Section 7.4.2 in relation to the measures prohibiting intentional discard of fishing gear at sea.

¹²⁹⁰ Kelsey Richardson, Britta Denise Hardesty, and Chris Wilcox, “Estimates of Fishing Gear Loss Rates at a Global Scale: A Literature Review and Meta-Analysis.”

¹²⁹¹ ICCAT, “Recommendation 19-11: Recommendation by ICCAT on Abandoned, Lost or Otherwise Discarded Fishing Gear.” Paras. 4 and 5.

¹²⁹² *Ibid.* Para. 4(a).

gear,¹²⁹³ the date, time, and position where the gear was lost,¹²⁹⁴ and the measures taken by the vessel to recuperate it.¹²⁹⁵ Yet again, the master of the vessel is personally responsible for the reporting if efforts to retrieve the accidentally lost fishing gear fail. The reporting obligations established under the provision are comprehensive and ultimately enable retrieval attempts by other vessels if detailed information regarding time and geographical location of the loss and relevant information about the gear drifting in the ocean is provided. The comprehensive reporting mechanisms also include preventive elements, and an observation to be made is that the ICCAT requires its member states and cooperating non-contracting parties to ensure that information about the retrieval attempts is included in the report by the master of the vessel. The obligation thus creates an incentive for the vessel to try to retrieve the lost gear and simultaneously an enforcement mechanism for the ICCAT in cases where there have been no attempts to recuperate fishing gear ending up in the sea. In such cases, the flag state will be in breach of Recommendation 19-11, paragraph 3(b).¹²⁹⁶

Furthermore, the ICCAT has also established reporting obligations for vessels which retrieve lost and/or abandoned fishing gear in accordance with the fifth paragraph of Recommendation 19-11. Following the successful retrieval of lost gear, “the master of the vessel shall notify the flag CPC within 24 hours” of the name and identification of the vessel,¹²⁹⁷ the name and identification of the vessel that initially lost the fishing gear if such information is known,¹²⁹⁸ the type and quantity of the retrieved gear,¹²⁹⁹ and the date, time and position of the recuperation of the gear.¹³⁰⁰ The adopted reporting obligations for retrieved fishing gear are comprehensive and seemingly apply both to the vessel that initially loses the fishing gear and vessels retrieving gear belonging to other vessels by virtue of the

¹²⁹³ Ibid. Paras. 4(b) and 4(c).

¹²⁹⁴ Ibid. Paras. 4(d) and 4(e).

¹²⁹⁵ Ibid. Para. 4(d).

¹²⁹⁶ The provision encompassed in paragraph 3(b) of Recommendation 19-11 requires the “master of a vessel that has lost fishing gear or parts of it” to “the extent possible, make every reasonable attempt to retrieve it as soon as possible.”

¹²⁹⁷ ICCAT, “Recommendation 19-11: Recommendation by ICCAT on Abandoned, Lost or Otherwise Discarded Fishing Gear.” Para. 5(a).

¹²⁹⁸ Ibid. Para. 5(b).

¹²⁹⁹ Ibid. Paras. 5(c) and 5(d).

¹³⁰⁰ Ibid. Paras. 5(e) and 5(d).

wording of *litra d*, which states that the master shall report the name and call sign of the vessel that has lost the gear in cases where this information is known. Bearing in mind that the ICCAT does not establish mandatory retrieval of other vessels' fishing gear upon encounter, the obligation is somewhat weak, and the relevant scenario will only occur when a master and the crew retrieve such gear based on their own willingness and available time to conduct a retrieval operation. Adopting reporting obligations for such scenarios nevertheless creates an incentive for retrieving other vessels' fishing gear and may decrease ghost fishing in the Atlantic Ocean. The reporting obligations are similar for vessels successfully retrieving their own fishing gear and create an incentive to avoid gear loss in the first place, as the reporting requirements are comprehensive in scope, suggesting that the master will make all efforts to avoid gear loss to avoid the burden of going through the subsequent reporting process.

The scope of the ICCAT's reporting obligations for lost fishing gear is comprehensive and must be regarded as representing an implementation and operationalization of the management measure dealing with reporting of lost gear in relation to minimizing ghost fishing encompassed in the normative framework. As will be illustrated in the following, the ICCAT has currently established the most comprehensive regulatory framework for reporting obligations of the tuna RFMOs.

The second tuna RFMO that has established mandatory marking of all fishing gear is the IOTC, which adopted Resolution 19/04 to ensure control of the vessels operating in its convention area and eliminate illegal, unreported and unregulated large-scale tuna fishing vessels.¹³⁰¹ Despite not having adopted the resolution to mitigate issues related to ghost fishing, the adopted conservation and management measures nevertheless contribute indirectly to minimizing catch by lost, abandoned, and/or discarded fishing gear in the Indian Ocean. The IOTC obliges its member states and cooperating non-contracting parties to ensure that "each gear used by its fishing vessels authorised to fish in the IOTC area of competence is marked appropriately."¹³⁰² The requirement of appropriate marking includes the marking of "ends of

¹³⁰¹ IOTC, "Resolution 19/04: Concerning the IOTC Record of Vessels Authorised to Operate in the IOTC Area of Competence," 2019. Preamble.

¹³⁰² *Ibid.* Para. 19(a).

nets, lines and gear in the sea” and “shall be fitted with flag or radar reflector buoys by day and light buoys by night sufficient to indicate their position and extent.”¹³⁰³ Further, “marker buoys or similar objects floating on the surface, and intended to indicate the location of fixed fishing gear, shall be clearly marked at all times with the letter(s) and/or number(s) of the vessel to which they belong.”¹³⁰⁴

The obligations capture the core elements of the implementation and operationalization of mandatory gear marking in accordance with the normative framework by requiring all member states and cooperating non-contracting parties to ensure that all fishing gear is marked, including floating buoys marking the location of the gear. In this way, the IOTC is ensuring that that owner identification is possible for all fishing gear used in its geographical area of competence, meaning that lost, abandoned, and/or discarded fishing gear can be traced back to its owners when identified at sea. The IOTC has nevertheless not established a regulatory framework encompassing a prohibition of intentional discard of fishing gear at sea or mandatory retrieval of lost gear, creating an issue where the obligation of mandatory gear marking adopted to minimize ghost fishing is left without substance. It seems reasonable to argue that despite the IOTC’s regulatory framework encompassing obligations of gear marking, it is not operationalizing the objective of minimizing ghost fishing established pursuant to the ecosystem approach to fisheries. The reason for the lack of substance of the provision may be traced back to the IOTC’s rationale for adopting resolution 19/04, which was to identify and mitigate IUU fishing, rather than minimizing ghost fishing. Paradoxically, the IOTC has thus implemented the requirement of mandatory gear marking but is nevertheless not operationalizing the management objective of minimizing catch by lost, abandoned, or otherwise discarded fishing gear in accordance with Article 5(f) of the 1995 UN Fish Stocks Agreement, since the measure is not consciously adopted to minimize ghost fishing.

The final tuna RFMO that has adopted conservation and management measures encompassing mandatory gear marking, reporting and retrieval of lost fishing gear is the WCPFC, which adopted the previously analyzed Conservation and Management Measure

¹³⁰³ Ibid.

¹³⁰⁴ Ibid. Para. 19(b).

2017-04 in 2017 to deal with marine pollution.¹³⁰⁵ As assessed in Sections 7.4.2 and 7.4.3, this conservation and management measure involves several obligations for member states and cooperating non-contracting parties, including a prohibition of intentional discarding of fishing gear and the mandatory establishment of gear disposal systems for fishing gear and waste.

The provisions relevant for the analysis in this section are encompassed in paragraph 5 of the measure, where it is emphasized that the member states and cooperating non-contracting parties “shall encourage their fishing vessels within the WCPFC Convention Area to retrieve abandoned, lost or discarded fishing gear.”¹³⁰⁶ The obligation is far-reaching, and the wording implies that it is applicable to all fishing vessels operating in the WCPFC’ geographical area of competence. It also appears to cover scenarios where a vessel encounters gear that has been lost, abandoned, or otherwise discarded by other fishing vessels, and the encountering vessel is then encouraged to retrieve the gear regardless of its original ownership. Despite being far-reaching in terms of application, a significant weakness of the provision is that the member states and cooperating non-contracting parties shall only “encourage their fishing vessels” to retrieve their own and other vessels’ gear upon encounter, meaning that the states are not obliged to require mandatory retrieval of fishing gear. Consequently, the obligation in the conservation and management measure is neither an obligation of means or results, but an obligation to encourage voluntary action among the fishing vessels to deal with the issue of ghost fishing. As previously emphasized, the measure will be reviewed every third year and an amendment with new obligations to eliminate marine pollution from fishing vessels will be considered.¹³⁰⁷ The measure has not been amended to date, but it will certainly be interesting to follow how the WCPFC considers its effectiveness in terms of retrieval of fishing gear and whether the member states decide to adopt more stringent obligations. Such measures ought to include mandatory retrieval of lost, abandoned, or otherwise discarded fishing gear to ensure the objective of eliminating the marine pollution posed by fishing gear ending up in the ocean.¹³⁰⁸ A relevant observation in this regard is that the WCPFC adopted a compliance

¹³⁰⁵ WCPFC, “CMM 2017-04 - Conservation and Management Measure on Marine Pollution,” 2017.

¹³⁰⁶ Ibid. Para. 5.

¹³⁰⁷ Ibid. Para. 12.

¹³⁰⁸ Ibid. Preamble.

monitoring scheme in 2019, requiring flag states to log and report loss of fishing gear, abandonment of gear and failures to report abandoned gear, indicating that the Commission is currently tracking the scope and potential effects of these issues in its convention area.¹³⁰⁹

Further, the regulatory framework of the WCPFC obliges member states and cooperating non-contracting parties to encourage their vessels to “retain the material on board, separate from other waste for discharge to port reception facilities,” when gear is retrieved, in accordance with the fifth paragraph of the measure.¹³¹⁰ This obligation is unique in the sense that no other tuna RFMOs require the gear to be disposed of in suitable gear disposal facilities in ports, and the measure was elaborated further upon in Section 7.4.3 dealing with the management measure of establishing suitable gear disposal systems. The mandatory retention of retrieved fishing gear gives substance to the obligation of establishing gear disposal systems and creates a coherent regulatory framework in terms of dealing with lost, abandoned, or otherwise discarded fishing gear. The provision may be regarded as operationalizing the normative framework regulating the ecosystem approach to fisheries, but it should be emphasized that the provision yet again comprises an “encouragement” and relies on voluntary implementation and operationalization. This has the potential of creating a weak obligation, which may undermine its adoption. The WCPFC is thus encouraged to adopt a binding measure to ensure compliance and operationalize the ecosystem approach to fisheries.

In relation to reporting of lost gear, the WCPFC obliges its member states and cooperating non-contracting parties to encourage their vessels “to report the latitude, longitude, type, size and age of abandoned, lost or discarded fishing gear.”¹³¹¹ The wording of the obligation reflects the fact that the WCPFC has not banned the intentional discarding of fishing gear, but it nevertheless encourages the vessels of the states to report discard when it takes place to enable retrieval of the gear by other vessels. In this way, the WCPFC depends on the willingness of captains of other fishing vessels to retrieve intentionally discarded fishing gear when a vessel has dumped the gear overboard. Although the actual implication of the

¹³⁰⁹ See WCPFC, “CMM-2019-07 - Conservation and Management Measure for Compliance Monitoring Scheme.” 2019. Annex 6.

¹³¹⁰ WCPFC, “CMM 2017-04 - Conservation and Management Measure on Marine Pollution.” Para. 5.

¹³¹¹ *Ibid.*

provision is unknown, the WCPFC should be advised to adopt a prohibition of intentional discard of fishing gear at sea to give substance to the reporting obligations. It makes little sense that the organization has established a regulatory framework covering reporting of intentionally discarded fishing gear to minimize ghost fishing, but still allows vessels to undertake the activity that creates the problem. The core of the issue may be the non-binding nature of the provision, making its implementation and operationalization voluntary. The WCPFC is thus strongly advised to amend its regulatory framework to establish coherent and binding regulations.

7.4.4.1 Discussion and Recommendations

The analysis in this section reveals that the ICCAT, the IOTC, and the WCPFC have established regulatory frameworks encompassing mandatory marking of all fishing gear, thereby implementing parts of the normative framework encompassing the ecosystem approach to fisheries by implementing measures to comply with the objective of minimizing ghost fishing. However, when assessing the scope and content of the adopted measures, considering their preambles and the organizations' purpose of adopting them, it becomes clear that the ICCAT and the WCPFC have adopted the gear marking measures to minimize ghost fishing, whereas the IOTC has adopted the measures to mitigate IUU fishing in its convention area. Despite having implemented mandatory gear marking of all fishing gear, the IOTC has paradoxically not operationalized the obligation of minimizing ghost fishing in accordance with the normative framework. An analysis of its adopted measure demonstrates that it does not have any substance in terms of encompassing mechanisms relevant to minimizing ghost fishing. This may also explain why the IOTC has not adopted any measures in relation to mandatory reporting of lost, abandoned, or otherwise discarded fishing gear or measures requiring mandatory retrieval of such gear, as minimizing ghost fishing has not been the aim in adopting the regulations in Resolution 19/04, which nevertheless cover mandatory gear marking requirements.

The ICCAT and the WCPFC are tuna RFMOs which have adopted regulatory frameworks also encompassing mandatory reporting of lost, abandoned, or otherwise discarded fishing gear and mandatory retrieval of such gear to minimize ghost fishing. The analysis has revealed that

they have both established stringent reporting obligations, but that the ICCAT has adopted a more comprehensive reporting regime for lost, abandoned, or otherwise discarded fishing gear than the WCPFC. However, when assessing the scope of the measures regulating retrieval of fishing gear, both tuna RFMOs have adopted conservation and management measures with significant shortcomings. The ICCAT has established a regulatory framework which obliges its member states and cooperating non-contracting parties to retrieve lost, abandoned, and/or discarded fishing gear, but has deliberately excluded longline gear from the scope of the measure. The WCPFC has established a framework which does not oblige vessels to retrieve lost, abandoned, and/or discarded fishing gear, but encourages them to do so. Consequently, both RFMOs should be advised to implement and operationalize binding obligations requiring the vessels operating in their geographical areas of competence to retrieve fishing gear at sea in order to operationalize the measures encompassed in the normative framework.

Clearly, the IATTC, the CCSBT, and the IOTC should be advised to implement and operationalize conservation and management measures encompassing mandatory gear marking with associated mechanisms to minimize ghost fishing. Similarly, the three organizations are advised to adopt mandatory reporting of lost, abandoned, and/or discarded fishing gear and mandatory retrieval of such gear. The analysis has revealed that there are clear gaps between these organizations' regulatory frameworks and what is required as a matter of international law.

7.4.5 Use of Biodegradable Materials in Fishing Gear and Gear Modifications to Minimize Impacts on the Marine Environment

As analyzed in Section 7.3 regarding the tuna RFMOs' regulatory frameworks for FAD fisheries, the use of biodegradable material and gear modifications to reduce the probability of entanglement of marine species in cases where fishing gear is accidentally lost, abandoned, or intentionally discarded at sea may represent effective ways of minimizing impacts on the marine environment, marine ecosystems and the species residing in or migrating through the relevant areas. The use of degradable material in certain parts of the gear to allow entrapped species to escape is also a gear modification, thus covering both measures mentioned above. Further, the use of escape cords in fishing nets may free trapped species and reduce the levels of ghost fishing if the gear is lost, abandoned, and/or discarded at sea.¹³¹²

An assessment of the conservation and management measures currently in force in the tuna RFMOs reveals that none of the five have adopted measures regulating the use of biodegradable materials, gear modifications to reduce entanglement or gear modifications to create escape routes for trapped species. These findings correspond with the findings of Gilman in 2015 but shed light on the fact that the tuna RFMOs have not adopted any measures during the last decade to minimize the issue of ghost fishing in relation to the use of degradable materials and gear modifications. This finding thus adds to the existing literature on the topic.¹³¹³

Another relevant aspect in relation to gear modifications applicable to achieve the objective of minimizing catch by lost and abandoned gear is the use of design and materials that minimize the risk of gear loss in the first place. The WCPFC has adopted a technical measure to reduce bycatch of seabirds which includes a provision that encapsulates such modifications,

¹³¹² See, e.g., OECD, *OECD Review of Fisheries 2022* (OECD Publishing, 2022). Page 46.

¹³¹³ Eric Gilman, "Status of International Monitoring and Management of Abandoned, Lost and Discarded Fishing Gear and Ghost Fishing." See also Eric Gilman, Kelvin Passfield, and Katrina Nakamura, "Performance of Regional Fisheries Management Organizations: Ecosystem-Based Governance of Bycatch and Discards." Gilman, Passfield and Nakamura argues that the "mean scores were relatively low" for measures to "mitigate ghost fishing" after assessing their performance on Page 337.

by requiring the use of hook-shielding devices which must be “designed to be retained on the fishing gear rather than being lost.”¹³¹⁴ This requirement is certainly a way of implementing and operationalizing the identified measures stemming from the normative framework, but it is presently the only measure adopted by the WCPFC in terms of gear modifications to minimize ghost fishing.

The findings of this thesis demonstrate that there clearly exist gaps between the measures in the normative framework applicable to minimize ghost fishing and what is currently done in and by the tuna RFMOs. Using biodegradable materials and gear modifications to reduce the impact of ghost gear on the marine environment, marine ecosystems and species would represent an implementation and operationalization of the ecosystem approach to fisheries.

Further, three of the five tuna RFMOs have adopted founding instruments requiring the member states to cooperate through their organization to minimize ghost fishing. Recalling the analysis in Chapter 5, Article VII(g) of the IATTC’s Antigua Convention obliges the member states to “adopt appropriate measures to avoid, reduce and minimize...catch by lost or discarded gear,”¹³¹⁵ Article IV(a) of the ICCAT’s amended convention obliges the state parties to apply the ecosystem approach to fisheries, including measures applicable to minimize ghost fishing,¹³¹⁶ and Article 5(d) of the WCPFC Convention obliges its contracting parties to “minimize catch by lost or abandoned gear.”¹³¹⁷ Linking the findings of this analysis with the analysis of Chapter 5 demonstrates that the existing gaps not only concern the normative framework established by global instruments, but that there also exist considerable gaps between the contracting parties’ obligations in the tuna RFMOs’ founding instruments and what the RFMOs currently do in practice. Ultimately, the member states of the tuna RFMOs

¹³¹⁴ See WCPFC, “CMM 2018-03 - Conservation and Management Measure to mitigate the impact of fishing for highly migratory fish stocks on seabirds.” Annex I. para. 6.

¹³¹⁵ See Section 6.3.2 of this thesis.

¹³¹⁶ See Section 6.4.2 of this thesis, which established that Article IV(a) obliges the state parties of the ICCAT to adopt measures to implement the obligations encompassed in the normative framework regulating the ecosystem approach to fisheries, including measures relevant for the implementation and operationalization of the objective of minimizing catch by lost, abandoned, or otherwise discarded fishing gear.

¹³¹⁷ See Section 6.7.2, which analyzed the scope and content of Article 5(d) of the WCPFC’s founding instrument.

ought to establish regulatory frameworks which comply both with global instruments and their own statutory obligations in their mandates.

Besides the mere requirement of hook-shielding devices adopted by the WCPFC, the analysis has revealed that the tuna RFMOs overall have not adopted any measures to implement and operationalize the use of biodegradable materials for fishing gear or gear modifications to minimize ghost fishing. The reasons for the lack of implementation and operationalization of these measures are not presently known. Some of the potential causes will be explored and analyzed in Chapter 8, which will explore the potential barriers and opportunities for the operationalization of the ecosystem approach to fisheries in the tuna RFMOs.

7.5 Summary of Relevant Findings

The analysis in Chapter 7 has revealed the existence of several significant gaps between what is required as a matter of international law and what is currently done in and by the tuna RFMOs. A comparison of the organizations’ regulatory frameworks and the management measures relevant to minimize ghost fishing encompassed in the legal framework is summarized and illustrated in Figure 7.

	IATTC	ICCAT	CCSBT	IOTC	WCPFC
Ban on certain gear types				X	X
Prohibition of intentional discard of fishing gear at sea		X			X
Establishment of suitable gear disposal systems in landing places					X
Mandatory marking of fishing gear		X		X	X
Mandatory retrieval of lost, abandoned, and/or discarded fishing gear		X			
Mandatory reporting of lost, abandoned, and/or discarded fishing gear		X			
Mandatory use of biodegradable materials					
Gear modifications					X

Figure 7. An illustration of the conservation and management measures adopted by the tuna RFMOs in relation to the management objective of minimizing catch by lost, abandoned, and/or discarded fishing gear. A detailed analysis of the scope and content of the adopted measures was provided

throughout Section 7.4, and the table illustrates that three out of the five organizations have adopted some form of measures in relation to the different categories.¹³¹⁸

As emphasized in Section 7.1, Figure 7 does not reveal the actual effectiveness of the adopted conservation and management measures but demonstrates whether and how the five tuna RFMOs have adopted such measures to operationalize the objective of minimizing ghost fishing in accordance with Articles 5(f) and 10(c) of the 1995 UN Fish Stocks Agreement and MARPOL 73/78 Annex V.

At present, only the ICCAT, IOTC and WCPFC have conservation and management measures in force to implement and/or operationalize the objective of minimizing catch by lost, abandoned, or otherwise discarded fishing gear in accordance with the normative framework. All three organizations have adopted measures encompassing mandatory procedures for marking fishing gear. Consequently, all organizations require that all fishing gear utilized in their geographical area of competence are clearly marked prior to deployment of the gear.

The IOTC and the WCPFC have also established a ban on large-scale pelagic driftnets as a response to the call for a global moratorium in accordance with UNGA Resolution 46/215, and both organizations recognize that ghost fishing by driftnets has serious detrimental effects on the marine environment. The ICCAT has also adopted a ban on large-scale pelagic driftnets for certain parts of its convention area, but a closer examination of the scope of this recommendation reveals that it was adopted to conserve juveniles of target fish stocks, thus not to minimize ghost fishing. Although indirectly contributing to minimizing ghost fishing of large-scale pelagic driftnets in the Atlantic Ocean, such effects of the measure represent unintended consequences in relation to the objective of minimizing catch by lost, abandoned, or otherwise discarded fishing gear. Thus, the measure does not demonstrate how the ICCAT is working to operationalize the ecosystem approach to fisheries and its associated management objectives.

¹³¹⁸ Parts of this figure will be reproduced in Ingrid Solstad Andreassen, "The Role of Tuna RFMOs in Combating 'Ghost Fishing': Where Is the Catch?"

The ICCAT and the WCPFC have adopted conservation and management measures which expressly prohibit intentional discard of fishing gear at sea, and the scope of these prohibitions was subject to closer analysis in Section 7.4.2. These two tuna RFMOs have also adopted mandatory procedures for retrieval of lost, abandoned, or otherwise discarded fishing gear and mandatory reporting procedures when gear is accidentally lost, abandoned, or intentionally discarded. The ICCAT has adopted the most far-reaching measure as it also obliges mandatory recuperation of parts of fishing gear lost at sea, expanding the scope to include all components of fishing gear. Despite formally adopting measures regulating retrieval and reporting of lost, abandoned, or otherwise discarded fishing gear, the WCPFC has adopted voluntary obligations for its member states and cooperating non-contracting parties. This creates a scenario where the WCPFC has implemented the applicable measures in the normative framework, but paradoxically has not operationalized these measures due to their non-binding status. The actual effectiveness of the measures relies on the willingness of the states to enforce them and make them mandatory for their vessels.

None of the tuna RFMOs have adopted conservation and management measures addressing mandatory use of biodegradable materials in fishing gear when their regulatory frameworks for FAD management are excluded from the assessment. The WCPFC is the only tuna RFMO that has adopted a measure dealing with gear modifications to reduce ghost fishing. This covers an obligation to use hook-shielding devices which must be “designed to be retained on the fishing gear rather than being lost.”¹³¹⁹

The findings of the analysis also illustrate that the IATTC and CCSBT have not adopted any measures to implement and operationalize the normative framework encompassing the objective of minimizing ghost fishing under the auspices of the ecosystem approach to fisheries. This indicates that these two tuna RFMOs are not operating in line with what is required as a matter of international law.¹³²⁰ Recalling that Article VII(g) of the IATTC’s Antigua Convention obliges the member states to “adopt appropriate measures to avoid, reduce and

¹³¹⁹ See WCPFC, “CMM 2018-03 - Conservation and Management Measure to mitigate the impact of fishing for highly migratory fish stocks on seabirds.” Annex I. para. 6.

¹³²⁰ The normative framework was presented in Section 4.4.2 of this thesis.

minimize...catch by lost or discarded fishing gear” through the Commission also demonstrates that the member states of the IATTC are neither complying with the regional treaty nor with the global framework regulating ghost fishing.¹³²¹

Article 5(f) of the legally binding 1995 UN Fish Stocks Agreement expressly obliges state parties to “minimize catch by lost or abandoned gear” and Regulation 3.2 of the binding MARPOL 73/78 Annex V prohibits the discarding of fishing gear at sea.¹³²² A comparison of the participation of the IATTC member states in these two instruments demonstrates significant overlapping participation.¹³²³ Only three of the IATTC’s contracting parties have not ratified and acceded to the MARPOL 73/78 Annex V, and six of these states have not ratified the 1995 UN Fish Stocks Agreement. Consequently, a relevant finding is that the member states of the IATTC should “strive to implement measures giving effect to their binding obligations encompassed in the 1995 UN Fish Stocks Agreement” and Annex V of the MARPOL 73/78 through their duty to cooperate.¹³²⁴ As established in Section 4.4.2, Article 10(c) of the 1995 UN Fish Stocks Agreement requires states to “adopt and apply any generally recommended international minimum standards for the responsible conduct of fishing operations” in fulfilling their obligation to cooperate in high seas fisheries through RFMOs. Such standards include the legally binding obligations encompassed in the instrument itself and the binding obligations in Annex V of MARPOL 73/78. Consequently, when the IATTC fails to implement the obligations of these instruments, its member states may ultimately be in breach of international law.

However, in the same way as the CCSBT,¹³²⁵ the IATTC operates with consensus-based decision-making mechanisms.¹³²⁶ The fact that one single negative vote is sufficient to prevent

¹³²¹ Section 6.3.2 explored the scope and content of the management mandate of the IATTC.

¹³²² See Section 4.4.2 for an analysis of the relevant provisions.

¹³²³ These findings will also be included in Ingrid Solstad Andreassen, “The Role of tuna RFMOs in Combating ghost fishing: Where is the Catch?”

¹³²⁴ Ingrid Solstad Andreassen, “The Role of tuna RFMOs in Combating ghost fishing: Where is the Catch?”

¹³²⁵ See Section 7.2 where a similar assessment of the overlapping participation of the CCSBT’s member states and the contracting parties of the 1995 UN Fish Stocks Agreement and Annex V of the MARPOL 73/78 was provided.

¹³²⁶ See Section 6.3.3 which assessed the decision-making mechanisms of the IATTC and its potential impact on its ability to implement and operationalize the ecosystem approach to fisheries.

measures to implement, e.g., the objectives established pursuant to the ecosystem approach to fisheries may ultimately impede the implementation and operationalization of the approach. Similarly to the recommendation provided to the member states of the CCSBT in Section 7.2, it is of the utmost importance that the member states of the IATTC also commit to minimize ghost fishing.

At the other end of the scale, the ICCAT and the WCPFC are the tuna RFMOs with the most comprehensive and progressive regulatory frameworks for minimizing ghost fishing. However, as illustrated by the analysis of their adopted prohibition of intentional discard of fishing gear at sea in Section 7.4.2, they nevertheless have significant gaps in their regulatory frameworks despite the formal inclusion of the relevant measures.

To contextualize these findings, one needs to recall the analysis in Chapter 4 of this thesis. Whereas the ecosystem approach to fisheries represents a novel approach to conserve marine living resources,¹³²⁷ the study of the regulatory frameworks of the five tuna RFMOs has revealed significant gaps between what is required as a matter of international law and what is currently done in and by these organizations. Despite the clear-cut obligations of the 1995 UN Fish Stocks Agreement, Annex V of MARPOL 73/78 and the non-binding FAO Code of Conduct, this thesis has identified that the implementation and operationalization of the ecosystem approach to fisheries by the tuna RFMOs has proven to be rather unsuccessful in terms of achieving the objective of minimizing catch by lost, abandoned, or otherwise discarded fishing gear. This illustrates that there exists a considerable gap between the law and actual practices in high seas fisheries.

Another finding is how the operational practices of the tuna RFMOs do not appear to be connected to the origins and normative status of the identified measures. The obligation to prohibit intentional discard of fishing gear is included in legally binding instruments adopted by the IMO, such as Annex V of MARPOL 73/78, whereas the obligation regulating marking of fishing gear stems from the voluntary FAO implementation guidelines. An examination of the

¹³²⁷ Section 4.3 established that the ecosystem approach to fisheries represents a framework of both objectives and specific measures to safeguard marine ecosystems and non-target species from the impacts of fishing operations.

tuna RFMOs' regulatory frameworks reveals clearly that they seemingly respond to both legally binding and voluntary obligations. Consequently, the FAO's role in developing the ecosystem approach to fisheries may be regarded as having a novel impact, as the relevant conservation and management measures developed under the FAO Code of Conduct are implemented and operationalized in practice in a similar manner to the legally binding obligations. This finding demonstrates the impact of soft law in international fisheries law, and how voluntary obligations are important tools for achieving good governance of marine living resources. This finding also implies that the ecosystem approach to fisheries has a role to play in high seas fisheries governance, although the operationalization of its objectives must receive more widespread attention and implementation by the tuna RFMOs to support their endeavor of future conservation of ecosystems and non-target species.

As illustrated by Figure 7, all tuna RFMOs have gaps in their regulatory frameworks following a systematic assessment of the implementation and operationalization of the normative framework. Consequently, the member states of the tuna RFMOs are advised to amend their present regulatory frameworks to ensure compliance with their obligations encompassed in legally binding instruments. It is recommended that the practical implications of this research are taken into consideration by the five tuna RFMOs to ensure that they implement the objective of minimizing catch by lost, abandoned, and/or discarded fishing gear for their future work to safeguard sustainable fisheries governance, ecosystems, and non-target species.

8. Chapter VIII: Challenges and Possibilities for the Operationalization of the Ecosystem Approach to Fisheries in the Context of Tuna RFMOs

8.1 Introduction

Whereas the existence of considerable gaps between the normative framework and the practices of the five tuna RFMOs were identified and analyzed in Chapter 7 of this PhD, the findings and analysis do not explain the potential reasons for these gaps. To discover some of these reasons and enable an assessment of the constraints currently affecting the tuna RFMOs' implementation and operationalization of the ecosystem approach to fisheries, in-depth interviews with key informants have been conducted as part of this PhD. The stepwise approach which will form the basis for the following analysis was presented in Section 2.3.4, along with information of how the key informants were identified.

The following analysis is based on the categorization of several potential constraints that may influence the implementation and operationalization of the ecosystem approach to fisheries, and the rationale for the selection of the categories was presented and explored in Section 2.3.4. As explained in Section 2.3.4.4, the different variables subject to closer examination in this chapter have been identified in the literature and expanded by new knowledge provided by the key informants. As a reminder, the relevant challenges for the operationalization of the ecosystem approach to fisheries will be analyzed and discussed based on the following categories:

1. Legal framework and legal processes, representing external factors influencing the implementation and operationalization of the approach,
2. institutional aspects and processes, representing internal factors and drivers relevant to implementation and operationalization,

3. contextual non-legal factors,¹³²⁸ which greatly reflect how domestic priorities and positions influence the tuna RFMOs' venture of implementing and operationalizing the approach.

Based on findings of the interviews with the key informants, the categories are split into several sub-categories to facilitate the identification and assessment of the challenges and possibilities for the operationalization of the ecosystem approach to fisheries in the five tuna RFMOs, starting with an assessment of relevant constraints prompted by external factors.

8.2 External factors: Legal Framework and Legal Processes

A central aspect of this study is to identify some of the key constraints affecting the tuna RFMOs' ability to implement and operationalize the ecosystem approach to fisheries. This necessitates an assessment of how the normative framework and processes are affecting the efforts taken by the tuna RFMOs to implement and operationalize the approach.

The following section will focus on how the normative obligations established based on the ecosystem approach to fisheries,¹³²⁹ and the operational framework developed, may in themselves represent constraints for the tuna RFMOs' implementation and operationalization of the approach. The following section will also explore the role of the FAO in facilitating the necessary internal processes when the tuna RFMOs are making efforts to operationalize the approach, and whether the legal obligations relevant to the operationalization of the approach are clearly articulated and sufficiently accessible to shape the management practices of the tuna RFMOs.

¹³²⁸ See Section 2.3.4.4 for a detailed explanation of how the different categories have been identified and included in this study.

¹³²⁹ The relevant normative framework and operational management measures for the ecosystem approach to fisheries were presented in Sections 4.3 and 4.4 of this thesis.

8.2.1 Disentangling the Ecosystem Approach to Fisheries Through the Lenses of the Tuna RFMOs

This section will explore how the key informants perceive the definition of the ecosystem approach to fisheries and how the approach potentially spurs the work of their respective organizations.

The key foundation of this study is that the normative framework obliges states fishing on the high seas to minimize their impacts on ecosystems and non-target species.¹³³⁰ Exploring the literature illustrates how some scholars perceive that the ecosystem approach to fisheries is clearly articulated and ready for implementation in fisheries management.¹³³¹ Karim et al. argue that since their adoption, ecosystem-based fisheries management approaches “have become widely accepted norms in fisheries management,” and that the RFMOs consequently should implement such approaches in their fisheries management.¹³³² On the contrary, Staples emphasizes that the ecosystem approach to fisheries does not provide the “answers,” as such approaches “only assist in helping the government and stakeholders in trying to find these.”¹³³³ The findings from the interviews reflect the latter perspective, as explained below.

¹³³⁰ See, e.g., Article 5(f) of the 1995 UN Fish Stocks Agreement, which obliges state parties to “minimize pollution, waste, discards, catch by lost or abandoned gear, catch of non-target species...and impacts on associated or dependent species, in particular endangered species, through measures including, to the extent practicable, the development and use of selective, environmentally safe and cost-effective fishing gear and techniques.”

¹³³¹ See, e.g., Juan-Jordá et al., “Report Card on Ecosystem-Based Fisheries Management in Tuna Regional Fisheries Management Organizations.” Page 322.

¹³³² Saiful Karim, Erika Techera, and Abdullah Al Arif, “Ecosystem-based fisheries management and the precautionary approach in the Indian Ocean regional fisheries management organisations,” *Marine Pollution Bulletin* 159 (1 October 2020): 111438, <https://doi.org/10.1016/j.marpolbul.2020.111438>. Page 2.

¹³³³ Derek Staples, *Ecosystem Approach to Fisheries and Aquaculture: Implementing the FAO Code of Conduct for Responsible Fisheries*, RAP Publication 2009/11 (Bangkok: Food and Agriculture Organization of the United States, Regional Office for Asia and the Pacific, 2009). Page 9.

8.2.1.1 Findings

The informants were asked to elaborate on the scope and content of the ecosystem approach to fisheries and how the current definition affects their work and efforts in conserving marine ecosystems and non-target species. Their responses to the questions illustrate that there still exist constraints for the implementation and operationalization of the approach based on its definition, and that the lack of clarity of what the concept entails still impedes their ability to implement and operationalize the ecosystem approach to fisheries.¹³³⁴

Informant 1 describes the ecosystem approach to fisheries in the following way:

“Yes, I guess I would describe an ecosystem approach as one that caters to, say all the, I want to say just living species, species, but all of the living and non-living, you know. In the case of fisheries, parts of that fishery, but also one that incorporates human interests. I think that is probably emerging more and more in international discussions around [the] ecosystem approach. So, it is kind of, I guess it is a comprehensive approach, it is holistic, it is one that does not exclude any part of that particular... We will say society, marine society.”¹³³⁵

And:

“I mean, I think the main point is that it is not necessarily about what is included, but that not excluding things that are, that need to be part of that management approach. It is just a different way of framing.”¹³³⁶

Thus, Informant 1 describes the ecosystem approach to fisheries as an approach which is holistic in nature and covers all aspects of what needs to be a part of the management approach. As will be illustrated in Section 8.3.1, RFMO 1 also has a management mandate which explicitly encompasses the ecosystem approach to fisheries through the inclusion of

¹³³⁴ Interview with informant 1 by Ingrid S. Andreassen, 13 April 2023, Interview with informant 2 by Ingrid S. Andreassen, 14 April 2023 and Interview with informant 3 by Ingrid S. Andreassen, 21 June 2023.

¹³³⁵ Interview with informant 1 by Ingrid S. Andreassen, 13 April 2023.

¹³³⁶ Interview with informant 1 by Ingrid S. Andreassen, 13 April 2023.

the approach in its statutory instrument. However, despite defining the ecosystem approach to fisheries as a holistic approach, taking into consideration all aspects relevant for the marine society, the informant at a later stage of the interview reveals that the organization presently lacks an operational definition of the approach in its management framework, affecting its internal decision-making processes. Informant 1 emphasizes:

“But I mean, again, without having a clear definition by the commission of what an ecosystem approach to fisheries is and what is required to get there.... I do not see members ever going there [to the voting mechanism of the RFMO] on an ecosystem approach to fisheries though, and certainly not in the absence of an agreed decision or definition as to what that looks like for the commission and what is required. That might be a question for later, if we ever do get to that point of defining and articulating what an ecosystem approach to fisheries means for the [RFMO 1].”¹³³⁷

How the FAO’s adopted definition of the ecosystem approach to fisheries may represent a major impediment to its implementation and operationalization at the regional level through RFMOs is more explicitly highlighted by Informant 2, who emphasizes that the adopted definition still largely reflects single-species management approaches. Informant 2 states:

“Many of those things are already essentially part of what I would refer to as a strictly single-species approach to fisheries management. For example, taking into account the knowledge and uncertainties about biotic, abiotic and human components of ecosystems, and their interactions [citing the FAO definition presented in Section 1.2 of this thesis].¹³³⁸ All of that is single species management. So, while I think this is a useful operating definition, I think the sort of the, the more commonly understood definition of ecosystem-based fisheries management, and then there is the ecosystem approach, and they think system-based fisheries management distinctions too, which I do not want to get into. But I think that a more commonly understood definition of it would be something a little bit broader than single-species management. So, I would

¹³³⁷ Interview with informant 1 by Ingrid S. Andreassen, 13 April 2023.

¹³³⁸ See also Garcia S.M. et al., “The ecosystem approach to fisheries. Issues, terminology, principles, institutional foundations, implementation and outlook.” Page 6.

apply this definition to say... I would expand it rather to say, you know, avoid too much bycatch and physical damage to habitat.”¹³³⁹

The remarks made by the second informant about the definition of the approach leads to an interesting observation about the aim of adopting the ecosystem approach, which was originally to “expand conventional fisheries management.”¹³⁴⁰ The adopted definition of the ecosystem approach to fisheries is naturally intricately connected to its aims, which may be perceived as expanding conventional fisheries management, traditionally heavily based on single-species management.¹³⁴¹ Consequently, some of its core elements may still be perceived as single-species management, as emphasized by Informant 2 in this interview study, causing constraints in terms of a lack of clarity about how RFMOs should change their existing practices to implement and operationalize the approach. Informant 2 also highlights at a later stage of the interview how the current definition may affect the RFMOs’ ability to implement and operationalize the ecosystem approach to fisheries, emphasizing:

“And then I think probably a third component, a third component that is essential is to understand trade-off between exploitation versus conservation values between species, which is not explicitly mentioned except in the component here about ‘and their interactions.’ Right, ‘by taking into account.’ And we do not know what that means really either.”¹³⁴²

And:

“This is an important example, which is that we end up with things, this is which, you know, if we go back to even the original definition. The, almost every, and almost every

¹³³⁹ Interview with informant 2 by Ingrid S. Andreassen, 14 April 2023.

¹³⁴⁰ See Ward, T., Tarte, D., Hegerl, E. and Short, K, “Ecosystem-based management of marine fisheries.” Page 6.

¹³⁴¹ The relationship between single-species management and the ecosystem approach to fisheries was subject to closer examination in Section 4.2.4, where the differences between the two management approaches were presented and explained.

¹³⁴² Interview with informant 2 by Ingrid S. Andreassen, 14 April 2023.

clause of the sentences kind of like, well, what does 'bouncing diverse societal objectives' consist of exactly?"¹³⁴³

The two statements given by Informant 2 demonstrate how the vagueness of the present definition of the ecosystem approach to fisheries may affect its implementation and operationalization at the regional level through RFMOs as there are no concrete guidance on the central question of how it ought to be put into practice by states or these organizations. The informant then reflects on how the approach may actually be implemented and operationalized, and states that the practices of RFMOs will be central in the development of the scope and content of the approach. Informant 2 emphasizes:

"Right, I thought about them and ignored them, that you know, we are 'taking into account the knowledge and uncertainties.' It was like, well, what does that mean, you know, in practice? So, we might with the challenge, with the progress of time, we might know these things based on what we have done as opposed to what the statutes... And this is not really a statute either, but rather on, based on what the text says we should have done. It is going to be more like what was actually done is going to define the meaning of the text that existed before it."¹³⁴⁴

Thus, Informant 2 ties the practical implementation and operationalization of the ecosystem approach to fisheries to the management practices and actual work that is carried out in the tuna RFMOs. These practices are perceived as identifying vital steps for the implementation and operationalization of the approach. Informant 2 perceives the lack of clarity in the existing definition as causing vagueness which will have to be dealt with through the establishment of management practices by the relevant actors to give sufficient substance to the approach. As presented in Chapter 4, the ecosystem approach to fisheries has been heavily debated due to its missing link between the established objectives encompassed in its definition and the creation of an operational framework necessary for its actual implementation and operationalization, and Informant 2 seems to emphasize that the vague requirements of the

¹³⁴³ Interview with informant 2 by Ingrid S. Andreassen, 14 April 2023.

¹³⁴⁴ Interview with informant 2 by Ingrid S. Andreassen, 14 April 2023.

approach still impede the conservation of marine ecosystems and non-target species due to the missing operational link between the established objectives and the development of management measures. In this way, the current work in the 2020s to operationalize the approach can also be perceived as “fraught with difficulty,”¹³⁴⁵ causing constraints for the tuna RFMOs in their efforts to conserve marine ecosystems and non-target species.

Informant 3 highlights precisely the issue at stake when asked to elaborate on what the ecosystem approach to fisheries covers, and underscores that its scope and content, along with the essential processes necessary for its implementation and operationalization, are so excessive that they may represent a constraint for the conservation of marine ecosystems and non-target species.¹³⁴⁶ Informant 3 also describes the ecosystem approach to fisheries as covering both management objectives and the process necessary to implement the approach, in addition to the development of assessable criteria to evaluate the performance of the approach. However, Informant 3 states that all these essential elements of the ecosystem approach to fisheries are rarely found, which may challenge the comprehensive processes necessary to facilitate its operationalization.¹³⁴⁷ Informant 2 agrees with the statement of Informant 3 in relation to the need of developing effective assessment criteria, emphasizing:

“As, as I said, there is this definition of ecosystem approach to fisheries management out there. It is, it is diluted enough that nobody really knows what it means. But that means everybody can say they are doing it.”¹³⁴⁸

¹³⁴⁵ See Section 4.2.3, which explored the history of the ecosystem approach to fisheries and Stephen Hall and B Mainprize, “Towards Ecosystem-based Fisheries Management” which describes the venture of implementing the approach as complex and difficult on page 2.

¹³⁴⁶ Interview with informant 3 by Ingrid S. Andreassen, 21 June 2023.

¹³⁴⁷ Interview with informant 3 by Ingrid S. Andreassen, 21 June 2023.

¹³⁴⁸ Interview with informant 2 by Ingrid S. Andreassen, 14 April 2023.

8.2.1.2 Discussion

Based on the findings presented in Section 8.2.1.1, one may reasonably conclude that the tuna RFMOs are still facing constraints which may be directly linked to the vagueness of the obligations in the existing normative framework and the definition of the ecosystem approach to fisheries adopted by the FAO.

Defining the scope and content of the ecosystem approach to fisheries in the internal management frameworks of the RFMOs through the adoption of management plans has been highlighted as a key prerequisite for their operationalization of the ecosystem approach to fisheries,¹³⁴⁹ and the lack of such action may consequently lead to fragmented implementation of some of the objectives of the approach while excluding others. As illustrated in Section 4.2.2, the risk of fragmentation has also been highlighted as one of the main criticisms of the development of a sector-based ecosystem approach for the fisheries industry. The analysis consequently reveals that the risk of fragmentation is not only linked to the lack of cross-sectoral management efforts, but also to the framework adopted under the sectoral approach applicable to fisheries. By not including clear-cut obligations in the tuna RFMOs' regulatory frameworks, there is clearly a risk of only implementing some of the objectives of the ecosystem approach to fisheries, while excluding others. Informant 1 explicitly states that the organization has not defined the scope of the approach internally in the organization, which may cause such fragmented implementation of the objectives of the ecosystem approach to fisheries.

The assessment of the conservation and management measures adopted by the tuna RFMOs, presented in Chapter 7, illustrates that some parts of their regulatory frameworks coincide and reflect the implementation of the established management objectives of the ecosystem approach to fisheries.¹³⁵⁰ However, the analysis in Section 7.4 reveals that the tuna RFMOs'

¹³⁴⁹ See e.g., Juan-Jordá et al., "Report Card on Ecosystem-Based Fisheries Management in Tuna Regional Fisheries Management Organization."

¹³⁵⁰ See Section 7.3 regarding the tuna RFMOs' operationalization of the ecosystem approach to fisheries in relation to their established regulatory frameworks for FAD management.

endeavor of operationalizing the objective of minimizing catch by lost, abandoned, or otherwise discarded fishing gear generally demonstrates gaps between what is required under international law and what the RFMOs' currently do.¹³⁵¹

Linking the findings of Chapter 7 with the analysis in this section may explain some of the causes of the existing gaps. RFMO 1 may not be implementing and operationalizing the ecosystem approach to fisheries due to the internal domestic priorities of its member states, as will be illustrated and elaborated further in Section 8.4.¹³⁵² However, it may also be assumed that the lack of adopted measures to operationalize the objectives established based on the ecosystem approach to fisheries may be a direct consequence of the lack of an overarching management plan for the implementation and operationalization of the approach in the organization. This may ultimately cause fragmented implementation of the objectives at stake, bringing back the question of whether developing sector-based approaches tailored to different activities is suitable to conserve marine ecosystems.¹³⁵³

Although the lack of management plans in RFMO 1 is related to the internal processes of the organization, an important factor seems to be the synergy between having an overarching operational definition of the ecosystem approach to fisheries in its regulatory framework and the implementation and operationalization of the obligations established on the basis of this potential framework. The lack of clarity regarding the obligations the member states ought to fulfil through their cooperation in RFMOs may lead to the establishment of fragmented regulatory frameworks internally in these organizations. Consequently, the RFMOs may operationalize certain objectives of the approach, while excluding others.

The constraints currently affecting the tuna RFMOs have manifested themselves in diverse ways, with RFMO 1 lacking a management plan to ensure that all objectives identified under

¹³⁵¹ See Section 7.4, which assessed the conservation and management measures adopted by the tuna RFMOs to minimize ghost fishing in their geographical areas of competence.

¹³⁵² How diverse priorities and political positions of the tuna RFMOs' member states may influence their internal processes to implement and operationalize the ecosystem approach to fisheries is subject to closer examination in Section 8.4, which will explore identified constraints for the implementation and operationalization of the approach and some of its underlying causes.

¹³⁵³ Section 4.2.2 explored how several scholars take the position that developing sectoral ecosystem approaches may contravene its original purpose.

the ecosystem approach to fisheries are implemented in its regulatory framework, Informant 2 highlighting how the existence of single-species management approaches and vagueness of the scope of the definition impede an effective implementation of the approach, and Informant 3 perceiving the approach as being so excessive and complex that its actual implementation will be “a rare commodity.”¹³⁵⁴

Thus, the literature review conducted by De Lucia leading to the conclusion that the “lack of a clear and precise definition is [...] often not considered to constitute an important hindrance in relation to the ability to operationalize the concept,”¹³⁵⁵ does not appear to apply in the context of tuna RFMOs. This interesting finding indicates that actors aiming to implement the sectoral ecosystem approach to fisheries are dependant on a higher level of clarity than those aiming to implement the “overarching” ecosystem approach.¹³⁵⁶ The explanation underpinning this finding may be that “concepts once introduced into international law may be difficult to replace,” as emphasized by Hey in relation to the transition from the concept of MSY to the ecosystem approach to fisheries in international fisheries law.¹³⁵⁷

In this way, developing an operational framework for the ecosystem approach to fisheries, along with mechanisms and criteria to assess its implementation and effectiveness, may represent a core task for the international legal and policy forums to facilitate the tuna RFMOs’ future operationalization of the approach. As illustrated in Chapter 4, the FAO has been considered a pioneer in making the ecosystem approach to fisheries functional through the adoption of technical guidelines to ease and facilitate the operationalization of the approach,¹³⁵⁸ and Section 8.2.2 will explore how the tuna RFMOs perceive the work of the FAO as assisting their efforts to operationalize the ecosystem approach to fisheries.

¹³⁵⁴ Interview with informant 1 by Ingrid S. Andreassen, 13 April 2023, Interview with informant 2 by Ingrid S. Andreassen, 14 April 2023 and Interview with informant 3 by Ingrid S. Andreassen, 21 June 2023.

¹³⁵⁵ Vito De Lucia, *The ‘Ecosystem Approach’ in International Environmental Law: Genealogy and Biopolitics*. Page 45.

¹³⁵⁶ See Section 4.2.2 where the statement made by De Lucia was further discussed.

¹³⁵⁷ Ellen Hey, “The Persistence of a Concept: Maximum Sustainable Yield.” Page 771.

¹³⁵⁸ See e.g., See e.g., W. J. Fletcher and G. Bianchi, “The FAO – EAF toolbox: Making the ecosystem approach accessible to all fisheries,” W. J. Fletcher et al. “A flexible and practical framework for reporting on ecologically

An interesting observation can also be made in relation to the statements given by Informant 2,¹³⁵⁹ regarding how the substance of the ecosystem approach to fisheries will have to be developed through the practices of the RFMOs. Defining the scope and content of the approach through the lenses of these bodies may be an effective step when considering their practical capabilities and functions, as they may adopt tailor-made conservation and management measures to facilitate the implementation and operationalization of the approach. However, despite the novelty this approach will represent in terms of creating an operational framework for the ecosystem approach to fisheries, it seems vital to bear in mind that the level of commitment of the member states in conserving marine ecosystems and non-target species will play the key role in such processes.¹³⁶⁰

As will be illustrated in Section 8.4, committing to implementing and operationalizing the ecosystem approach to fisheries seems to be a prerequisite for the future conservation of ecosystems and non-target species in areas beyond national jurisdiction. The political priorities of some of the member states of the tuna RFMOs are presently heavily influenced by domestic economic drivers.¹³⁶¹ As emphasized by Cullis-Suzuki and Pauly in their study of the effectiveness of RFMOs in conserving their targeted species, it “is evident from the results here that the priority of RFMOs – or at least of their member countries – has been first and foremost to guide the exploitation of fish stocks” and “while conservation is part of nearly all of their mandates, they have yet to demonstrate a genuine commitment to it on the water.”¹³⁶² It seems pertinent to argue that further work to disentangle the scope and content of the ecosystem approach to fisheries should take place in a forum dedicated to balance the exploitation of the targeted species with considerations of how conservation of marine

sustainable development for wild capture fisheries,” page 176 and also D. G. Webster, *Beyond the Tragedy in Global Fisheries*, page 327.

¹³⁵⁹ Interview with informant 2 by Ingrid S. Andreassen, 14 April 2023.

¹³⁶⁰ See, e.g., Haas et al., “Factors influencing the performance of regional fisheries management organizations,” first presented in Section 5.3 when assessing how political priorities and competing interests may negatively affect RFMOs’ ability to implement and operationalize the approach.

¹³⁶¹ How economic drivers set the criteria for the efforts of the tuna RFMOs in implementing and operationalizing the ecosystem approach to fisheries will be subject to closer examination in Section 8.2.

¹³⁶² Sarika Cullis-Suzuki and Daniel Pauly, “Failing the high seas: A global evaluation of regional fisheries management organizations.” Page 1042.

ecosystems and non-target species may be included in regulatory frameworks. One of the existing and potentially suitable forums is the mechanisms of the FAO, whose role in facilitating the operationalization of the ecosystem approach to fisheries in the tuna RFMOs will be subject to closer analysis in the following section.

8.2.2 The Role of the FAO

The FAO has been described as a pioneer, representing the international body that strives to make the ecosystem approach to fisheries functional by its continuous efforts to provide the actors in the fisheries sector with operational technical guidelines to facilitate the operationalization of the approach.¹³⁶³ Despite the continuous efforts of the FAO in translating the objectives of the ecosystem approach to fisheries into operational measures which may be implemented by states individually and through regional cooperation in RFMOs, this study has revealed that this work does not necessarily assist the tuna RFMOs in their implementation and operationalization of the approach. The following section will present the relevant findings from the interviews with the key informants.

8.2.2.1 Findings

According to two of the informants, the work of the FAO may influence and assist individual member states in their work to conserving marine ecosystems and non-target species, but no such mechanisms exist to assist the tuna RFMOs themselves. This is illustrated by the following quotes:

¹³⁶³ See e.g., W. J. Fletcher and G. Bianchi, "The FAO – EAF toolbox: Making the ecosystem approach accessible to all fisheries," *Ocean & Coastal Management* 90 (1 March 2014): 20–26, <https://doi.org/10.1016/j.ocecoaman.2013.12.014>, which describes the work of the FAO in making the ecosystem approach to fisheries accessible for all fisheries. Fletcher et al. also describe how the FAO has developed technical guidelines to support the implementation of the FAO Code of Conduct in W. J. Fletcher et al. "A flexible and practical framework for reporting on ecologically sustainable development for wild capture fisheries," page 176.

See also D. G. Webster, *Beyond the Tragedy in Global Fisheries*, page 327, which also describes the work of the FAO in adopting technical reference frameworks and Alf Håkon Hoel, "The Importance of Marine Science in Sustainable Fisheries: The Role of the 1995 UN Fish Stocks Agreement." Pages 388-389.

*"I do not know. That is my simple answer. I just do not know. I do not know how much the FAO's technical work is feeding into our work. Again, it is... If it is, then it is coming through the member countries who are taking the lead on development of these measures, but I do not know if it is."*¹³⁶⁴

*"Obviously there is, you know, there is a need for interpretation assistance, you know, in implementing various good approaches to fisheries management. And that is what the FAO has a major role in doing. And there's no point [RFMO 3] trying to reinvent the wheel in a lot of these sorts of things, they actually take those agreed approaches because the members of [RFMO 3] are also members of the FAO. And members of the, those organizations, you know, that develop those instruments and guidelines."*¹³⁶⁵

However, Informant 2 arrives at the opposite end of the spectrum when asked to elaborate on the role of the FAO technical guidelines and how they may shape the practices of the tuna RFMO. Informant 2 states:

*"I guess I would say not very much."*¹³⁶⁶

And:

*"As the technical guidelines for implementation, as if, even if we talked about it narrowly in terms of bycatch. Like sea bird identification guides, sea turtle identification guides, best handling for sea birds and sea turtles, those, there are copies and variants of those documents all throughout the fisheries world. I would say once, probably in the 1980s, FAO was like a, in a position of intellectual leadership. That, that has not been the case at the FAO for several years now."*¹³⁶⁷

¹³⁶⁴ Interview with informant 1 by Ingrid S. Andreassen, 13 April 2023.

¹³⁶⁵ Interview with informant 3 by Ingrid S. Andreassen, 21 June 2023.

¹³⁶⁶ Interview with informant 2 by Ingrid S. Andreassen, 14 April 2023.

¹³⁶⁷ Interview with informant 2 by Ingrid S. Andreassen, 14 April 2023.

This understanding is also shared by Informant 3, who interestingly perceives the role of the FAO to be primarily directed at assisting states with the operationalization of the ecosystem approach to fisheries at the domestic level.

Informant 2 clearly does not see the FAO's development of technical guidelines as shaping the present practice of implementing and operationalizing the ecosystem approach to fisheries. When asked specifically about whether the guidelines are assisting RFMO 2 in any way, Informant 2 highlights:

*"Not, like, no. Not really. I mean, what often happens...Or my observation has been that for some things like there is a, you know, a community, people within the fisheries community might gather together to talk about a certain issue in fisheries management, and we have these in multi... The sort of multi-RFMO forum. For example, like there are the tuna RFMO fora on bycatch and that kind of stuff. I mean, my observation is that people gather together to establish guidelines that they kind of already agreed on in the first place. Right. So, I think in a way they, the FAO processes might be useful insofar as, you know, writing down what those guidelines were after they have already happened."*¹³⁶⁸

When asked specifically about whether the RFMOs are shaping practice themselves rather than relying on the developed framework, Informant 2 states:

*"Well, it is not clear to me that what FAO does has any legal standing whatsoever. You know, what the, what the RFMOs decide to do does. So, that is, that is, that is part of the reason why as well."*¹³⁶⁹

¹³⁶⁸ Interview of Interview with informant 2 by Ingrid S. Andreassen, 14 April 2023.

¹³⁶⁹ Interview of Interview with informant 2 by Ingrid S. Andreassen, 14 April 2023.

8.2.2.2 Discussion

The findings of Section 8.2.2.1 demonstrate that neither of the informants see the FAO as contributing to the shaping of the regulatory frameworks of their organizations. This is most clearly emphasized by Informant 2, who illustrates how the different actors in the fisheries industry may currently be setting the criteria for the adoption of implementation guidelines for, e.g., the ecosystem approach to fisheries, giving rise to a central question about how the ecosystem approach to fisheries may develop in the future.

It seems crucial that the actors involved in the work of translating the objectives of the ecosystem approach to fisheries into operational guidelines to facilitate its implementation recognize the normative scope of the approach if it is to be developed through such mechanisms and processes. The statements given by Informant 2 prompt the question of the legitimacy of the present operational framework for the ecosystem approach to fisheries, as the level of transparency in the processes described by Informant 2 is unclear.

However, Informants 1 and 3 highlight how the FAO may be feeding into the work of the member states at the domestic level, whereby the members subsequently may advocate for the adoption of measures through the tuna RFMOs. One may therefore assume that the FAO has a role to play in future fisheries governance by designing measures which will operationalize the ecosystem approach to fisheries.

The complex puzzle of how to operationalize the approach is further complicated by the statements of Informant 2, which illustrate how RFMOs may possess one of the key roles for the development of operational guidelines for the implementation and operationalization of the ecosystem approach to fisheries. However, these statements may also suggest that the informant may not trust the existing forums in the FAO that are attempting to fulfil the same task. The statements about the role and mandate of the FAO show that the representative of RFMO 2 does not perceive the FAO as having legal standing with regard to the development of fisheries regulations, prompting the interesting question of interlinkages and cooperation between the FAO at the global level and the tuna RFMOs at the regional level.

It may very well be reasonable to argue that the responsibility for making the ecosystem approach to fisheries functional through the adoption of management measures at the regional level may facilitate the adoption of tailor-made measures which fit within the regulatory frameworks of the various tuna RFMOs, potentially followed by formalization of these measures through incorporation in, e.g., FAO guidelines.

However, as will be illustrated in Section 8.4, competing interests and domestic drivers presently permeate the work of the tuna RFMOs in their venture of operationalizing the ecosystem approach to fisheries, making some of them unable to conserve non-target species from familiar impacts of fishing operations.¹³⁷⁰ Another key observation in this regard is that the organizational structures of the tuna RFMOs currently do not facilitate the implementation and operationalization of the ecosystem approach to fisheries. This issue will be further examined in Section 8.3.3.

Taking the political priorities of the member states and assessing them in concert with the institutional structures of the tuna RFMOs suggests that the RFMOs should not be responsible for developing the scope and content of the ecosystem approach to fisheries. As emphasized by Cullis-Suzuki and Pauly, the tuna RFMOs are presently unable to fulfil their statutory management mandates in terms of managing their targeted stocks,¹³⁷¹ which seems to lead to the conclusion that an overarching process must take place in the global domain to shape the implementation of the ecosystem approach to fisheries.

Despite advocating for the development of an operational framework for the ecosystem approach to fisheries under the FAO, the work of the tuna RFMOs in this regard ought to be a central part of the relevant process and outcomes. As established in Chapter 5, even the five tuna RFMOs represent organizations with great diversity, and it seems vital that the needs and experiences of these organizations reaches the forum where the relevant negotiations

¹³⁷⁰ Chapters 6 and 7 also explored how the present regulatory frameworks of the tuna RFMOs in themselves represent a gap between their normative frameworks and operational practices, most clearly seen in this thesis in their lack of conservation and management measures to minimize ghost fishing.

¹³⁷¹ Cullis-Suzuki and Pauly, "Failing the high seas: A global evaluation of regional fisheries management organizations." Page 1042.

are taking place, the point being that the actors who aim to implement the ecosystem approach to fisheries need to participate in the relevant forums. Due to their diversity, it does not seem feasible to adopt one-size-fits-all solutions, and the different experiences of the RFMOs must consequently be taken into consideration in future developments of the approach. Thus, the member states of the RFMOs should support the work of the FAO in developing the ecosystem approach to fisheries through sharing their experiences from different regions.

The fact that none of the informants in the study perceive the work of the FAO as influencing their internal work at the regional level sheds light on a major constraint for the implementation and operationalization of the ecosystem approach to fisheries. If the global body perceived as the pioneer in the work of operationalizing the approach is not contributing to shaping the practices of the tuna RFMOs,¹³⁷² what forum is then suitable for this work?

The assessment of how the definition of the ecosystem approach to fisheries and the role of the FAO have facilitated its implementation and operationalization at the regional level through the tuna RFMOs has revealed considerable constraints currently affecting the efforts of the tuna RFMOs to implement and operationalize the approach. Most notable is how the role of the FAO in developing operational guidelines for the implementation and operationalization of the approach is not assisting the tuna RFMOs in transitioning from conventional fisheries management to the ecosystem approach to fisheries. The identified gap and missing interlinkages between the global body and the regional tuna RFMOs prompt the interesting question of how the approach should be developed in future fisheries management, and who the key actors in this future work ought to be.

¹³⁷² The current literature describes the role of the FAO as important for the development of an operational framework for the ecosystem approach to fisheries. See, e.g., Fletcher and Bianchi, "The FAO – EAF toolbox," Fletcher et al., "A flexible and practical framework for reporting on ecologically sustainable development for wild capture fisheries," and Webster, *Beyond the Tragedy in Global Fisheries*.

8.2.3. Recommendations

The findings and analysis in Section 8.2 suggest some recommendations for the future management of marine ecosystems and non-target species in high seas fisheries.

The analysis has revealed that the lack of a clear definition of the ecosystem approach to fisheries internally in the tuna RFMOs may represent a constraint for the operationalization of the approach. As the overarching definition adopted by the FAO in the Reykjavik Declaration has proven to be insufficient in terms of creating operational practices,¹³⁷³ it seems vital that the tuna RFMOs adopt internal definitions of the ecosystem approach to fisheries in their regulatory frameworks and management plans. Reinforcing the findings from Chapter 6, where it was established that only the ICCAT makes explicit reference to the approach in its founding instruments, highlights that the lack of clear operational definitions of the approach may be a far-reaching issue in the context of the tuna RFMOs.

Another central element in the analysis has been the role of the FAO in developing operational guidelines for the implementation and operationalization of the ecosystem approach to fisheries. This is generating a debate about how the approach ought to be developed and operationalized in the future, and which actors should be responsible for this process. In this regard, I would argue that it is vital that the FAO is involved in the process of designing operational management measures to ensure that the diverse societal interests in high seas fisheries are taken into consideration. However, the tuna RFMOs and their member states should both play key roles in this work as they have considerable experience which may be useful in the future development of the approach.

Having established that the normative framework and legal processes currently do not necessarily assist the tuna RFMOs in their work of implementing and operationalizing the ecosystem approach to fisheries, the next section will explore how internal institutional

¹³⁷³ FAO, Reykjavik Declaration on Responsible Fisheries in the Marine Ecosystem, 2001.

aspects and processes may affect the tuna RFMOs' ability to implement and operationalize the approach.

8.3 Internal Factors: Institutional Aspects and Processes

To understand the informants' views on internal factors, the findings will be split into four sub-categories: 1) how the management mandates of the tuna RFMOs may affect their ability to operationalize the ecosystem approach to fisheries; 2) how the vast geographical areas of competence of the tuna RFMOs potentially impact the implementation and operationalization of the approach; 3) whether, and if so how, their internal organizational structures are assisting or hindering the operationalization of the approach and how the scientific structures of the tuna RFMOs are facilitating the implementation and operationalization of the approach; 4) how the tuna RFMOs cooperate with other bodies in terms of sharing scientific knowledge to facilitate the conservation of ecosystems and non-target species in their convention areas.

8.3.1 The Management Mandates of the Tuna RFMOs

As analyzed in Chapter 5, the implementation and operationalization of the ecosystem approach to fisheries may be linked to the formal inclusion of a mandate to apply the approach in the organization's statutory instruments. Research assessing the effectiveness of RFMOs draws on similar assumptions regarding how the formal mandates in their statutory instruments spur their work in fulfilling their management objectives.¹³⁷⁴ Consequently, the tuna RFMOs have several times been advised to amend their mandates to facilitate the conservation of ecosystems and non-target species.¹³⁷⁵ Against this backdrop, a relevant question in this thesis is how the formal inclusion of the ecosystem approach to fisheries in

¹³⁷⁴ See, e.g., Cullis-Suzuki, Sarika, and Daniel Pauly. "Failing the high seas: A global evaluation of regional fisheries management organizations" which discusses how the RFMOs have failed to reach their main objectives in their founding instruments in relation to their targeted species on pages 1041-1042.

¹³⁷⁵ See, e.g., Juan-Jordá et al., "Report Card on Ecosystem-Based Fisheries Management in Tuna Regional Fisheries Management Organizations," and Gilman, Eric, Kelvin Passfield, and Katrina Nakamura. "Performance of Regional Fisheries Management Organizations: Ecosystem-Based Governance of Bycatch and Discards."

the founding instruments of the tuna RFMOs may affect their ability to implement and operationalize the approach.

8.3.1.1 Findings

The interviews with the key informants reveal that one of the underlying assumptions of this thesis may not be valid in terms of how the ecosystem approach to fisheries has been implemented in the context of tuna RFMOs. On the question of how the statutory management mandates in the founding instruments of the tuna RFMOs affect their ability to operationalize the ecosystem approach to fisheries, all informants emphasize that the inclusion of such formal mandates do not necessarily affect the organizations' ability to operationalize the approach.¹³⁷⁶

For example, Informant 2 states that the changes in the organization in relation to the objective of minimizing bycatch were initiated regardless of the lack of a formal mandate to regulate this area, and even predated the adoption of the ecosystem approach to fisheries in the organization's management framework and its founding instrument.¹³⁷⁷ Similarly, Informants 1 and 3 emphasize that the formal inclusion of a management mandate to implement and operationalize the ecosystem approach to fisheries does not affect the organization's ability to conserve and manage marine ecosystems when regarded in isolation from other internal aspects of the RFMOs per se.¹³⁷⁸

Informant 1 ties the organization's operationalization of the ecosystem approach to fisheries to the inclusion of Article 5 in the 1995 UN Fish Stocks Agreement,¹³⁷⁹¹³⁸⁰ while Informant 2 points out that there are other external drivers for changes in management practices than

¹³⁷⁶ Interview with informant 1 by Ingrid S. Andreassen, 13 April 2023, Interview with informant 2 by Ingrid S. Andreassen, 14 April 2023, and Interview with informant 3 by Ingrid S. Andreassen, 21 June 2023.

¹³⁷⁷ Interview with informant 2 by Ingrid S. Andreassen, 14 April 2023.

¹³⁷⁸ Interview with informant 1 by Ingrid S. Andreassen, 13 April 2023 and Interview with informant 3 by Ingrid S. Andreassen, 21 June 2023.

¹³⁷⁹ Article 5(f) of the 1995 UN Fish Stocks Agreement encompasses an obligation to conserve non-target species from impacts of the fishing industry. See Sections 4.3.2 and 4.4.2, where the scope and content of Article 5 were thoroughly analyzed and discussed.

¹³⁸⁰ Interview with informant 1 by Ingrid S. Andreassen, 13 April 2023.

formal amendments to the management mandates of the organizations.¹³⁸¹ The management practices of these two tuna RFMOs are thus seemingly connected to external factors and societal and legal developments. This is clearly illustrated by Informant 2 who states that societal pressure may influence the member states of tuna RFMOs to pursue changes in their regulatory frameworks:

“I think, you know, given especially like through the 2000s, from the late 1990s to up to about 2010, there was an enormous... I was not working at [RFMO 2] during this interval, at least not for the secretariat. But there was enormous political pressure to deal with, with especially high-profile bycatch, seabirds, and turtles specifically. So, I think in responding to that political pressure in bit by bit, essentially, they were evolving the mandate through practices as opposed to through statutory changes.”¹³⁸²

This statement clearly illustrates how bycatch mitigation measures were endorsed by RFMO 2 as a response to political pressure to conserve non-target species in fishing operations,¹³⁸³ highlighting that these external drivers have resulted in an evolving mandate through practice, rather than through formal amendments and revisions of the organization’s founding instrument.

The fact that the tuna RFMOs’ management practices may be influenced by external drivers suggests that these organizations have the capability of adopting adaptive management approaches to fit changing scenarios without having to formally amend their founding instruments. This statement is also supported by Informant 3, who states that the organization is not going to change its founding instrument because of the development of environmental approaches, but that they have designed a flexible instrument which allows for adaptivity when changing scenarios occur.¹³⁸⁴

¹³⁸¹ Interview with informant 2 by Ingrid S. Andreassen, 14 April 2023.

¹³⁸² Interview with informant 2 by Ingrid S. Andreassen, 14 April 2023.

¹³⁸³ Webster describes how the conservation of certain species may be driven by society at large through the concept of “charismatic megafauna,” and describes the development of conservation of some marine species based on this premise in D. G. Webster, *Beyond the Tragedy in Global Fisheries*, Section 8.2.2.

¹³⁸⁴ Interview with informant 3 by Ingrid S. Andreassen, 21 June 2023.

Having established that the formal management mandates of the tuna RFMOs are not *per se* vital for their ability to operationalize the ecosystem approach to fisheries, another central question is how the potential lack of a formal mandate to implement and operationalize the approach may affect their actual management practices. As distinct from their ability to conserve and manage marine ecosystems, the mandates may nevertheless affect the member states' responsibilities and priorities when fulfilling their duty to cooperate in high seas fisheries.¹³⁸⁵ This issue is illustrated by Informant 3, who emphasizes:

*"It is only, you know, if you came then to say, well, how are you doing on the ecosystem approach, the commissioners would go, 'We don't know.' Because they do not, you know, they do not have an ecosystem approach to, to monitor and report on."*¹³⁸⁶

8.3.1.2 Discussion

The findings of this thesis emphasize that the lack of a formal management mandate to apply the ecosystem approach to fisheries does not represent a constraint for the tuna RFMOs' implementation of the ecosystem approach to fisheries. This seems to contradict the argument in the existing literature that the lack of a formal mandate may impede the operationalization of the approach.¹³⁸⁷

However, the lack of a formal mandate to conserve and manage marine ecosystems and non-target species in the tuna RFMOs may lead to the adoption of decisions where the effects on these ecosystems are not explicitly taken into consideration, as the member states do not have a formal responsibility to conduct relevant assessments. This is explicitly recognized by Informant 3, who pointed to monitoring and reporting issues. As will be illustrated in Section 8.4, committing to implementing and operationalizing the ecosystem approach to fisheries seems to be a prerequisite for the conservation of marine ecosystems. As the political

¹³⁸⁵ See Section 3.2.5 of this thesis, where the obligation to cooperate in high seas fisheries, as encompassed in Articles 116-119 of the Law of the Sea Convention, was subject to closer examination.

¹³⁸⁶ Interview with informant 3 by Ingrid S. Andreassen, 21 June 2023.

¹³⁸⁷ See, e.g., Juan-Jordá et al., "Report Card on Ecosystem-Based Fisheries Management in Tuna Regional Fisheries Management Organizations," and Gilman, Eric, Kelvin Passfield, and Katrina Nakamura. "Performance of Regional Fisheries Management Organizations: Ecosystem-Based Governance of Bycatch and Discards."

priorities of the different member states of the tuna RFMOs are heavily influenced by domestic economic drivers, the recognition of the ecosystem approach to fisheries seems crucial for the balancing of competing interests and the allocation of funds.

Furthermore, the analysis reveals that the formal inclusion of the ecosystem approach to fisheries in the management mandates in the tuna RFMOs' statutory instruments is not a precondition for their ability to implement and operationalize the approach. The lack of a mandate to conserve and manage marine ecosystems may nevertheless have other consequences, such as less monitoring, reporting, and development of relevant conservation and management measures tailored to conserving the ecosystems and non-target species.¹³⁸⁸

The next section will explore how the areas of competence of the tuna RFMOs may affect their ability to operationalize the ecosystem approach to fisheries and link the findings in terms of how the management mandates may play a key role when perceived together with the designated convention areas of the tuna RFMOs.

¹³⁸⁸ How the lack of an ecosystem approach to fisheries in the statutory instruments of tuna RFMOs may influence the implementation and operationalization of the approach have, e.g., been highlighted by RFMO 3 through the statements provided throughout this section, illustrating the potential effects of not including the approach.

8.3.2 The Geographical Areas of Competence of the Tuna RFMOs

The geographical areas of competence of the tuna RFMOs were presented and discussed in Chapter 5, and it has been established that all five tuna RFMOs cover vast geographical areas of the high seas in terms of their jurisdictional scope.¹³⁸⁹ As the various tuna species migrate across vast distances, the tuna RFMOs have established their areas of competence to fit the migration patterns of their targeted species, thus bringing vast areas of the high seas under their management regimes. This approach to designating regulatory areas of RFMOs has been criticized as hampering the operationalization of the ecosystem approach to fisheries as it leaves many species and stocks unmanaged within the vast designated area.¹³⁹⁰ The FAO has equally published literature which raises concerns about how the “jurisdictional boundaries of the fishery organizations may not properly match the ecosystem boundaries.”¹³⁹¹ In this context, a relevant question in this study is whether and how the designation of such vast areas of competence may affect the tuna RFMOs’ ability to implement and operationalize the ecosystem approach to fisheries.

8.3.2.1 Findings

When asked to elaborate on whether and how the vast areas of competence of the tuna RFMOs affects their ability to implement the ecosystem approach to fisheries, all key informants emphasize that the vast areas do not affect this ability.¹³⁹² Of particular interest is the statement given by Informant 2 in this regard:

¹³⁸⁹ See Sections 6.3.2, 6.4.2, 6.5.2, 6.6.2, and 6.7.2 where the regulatory areas of competence of the five tuna RFMOs were presented and elaborated upon.

¹³⁹⁰ See, e.g., O’Higgins, Timothy G. *Ecosystem-Based Management, Ecosystem Services and Aquatic Biodiversity*. Springer Nature, 2020.

¹³⁹¹ Claire Attwood, K. L. Cochrane, and Caroline Hanks, *Putting into Practice the Ecosystem Approach to Fisheries*. Page 45. The term ecosystem boundaries is not a fixed term, but the COP of the CBD has emphasized that an ecosystem may comprise “a grain of soil, a pond, a forest, a biome or the entire biosphere” and that a central element is to determine the problem being addressed. See CBD, COP, Decision V/6, Section A, para. 3.

¹³⁹² Interview with informant 1 by Ingrid S. Andreassen, 13 April 2023, Interview with informant 2 by Ingrid S. Andreassen, 14 April 2023, and Interview with informant 3 by Ingrid S. Andreassen, 21 June 2023.

“I think that it, like, it is adequate as is currently defined. In terms of stock-by-stock definition, we look at that with genetics and tag information to figure out if the areas that are defined for the purposes of single-species management are appropriate.”¹³⁹³

However, despite not directly influencing the tuna RFMOs’ ability to implement the ecosystem approach to fisheries *per se*, two of the informants emphasize that the geographical areas of competence may nevertheless affect their capacity and ability to conserve the non-target species residing in those areas. This finding is supported by the statement given by Informant 2,¹³⁹⁴ which emphasizes that the defined area of competence of the tuna RFMO is appropriate for the purposes of single-species management. Informant 3 also points out:

“But in terms of the geographical area, it is what it is, and it covers the full distribution, so no problem for the [RFMO 3]’s species, but the other species. You know, I, I don't know.”¹³⁹⁵

The fact that the areas of competence of the five tuna RFMOs are presently designed to conserve and manage the tuna species is further underpinned by Informant 1, when addressing a follow-up question about how the vast geographical scope of jurisdiction of the RFMO affects its work in conserving non-target species.

“Is it a disadvantage? I do not know, I... It is what it is. It is one of those questions where I, I do not think it, it is not an alternative. There is no alternative. There was no shrinking of the convention area, just, you know, during the negotiations, this was... This was how it played out, because of the nature of these fisheries.”¹³⁹⁶

In this way, the statements of the three informants confirm that the geographical areas of competence of the five tuna RFMOs are designed to manage and conserve the targeted species, and that the geographical scope of their convention areas is suitable for this specific purpose. This finding is not novel and rather logical, given the management mandates in the

¹³⁹³ Interview with informant 2 by Ingrid S. Andreassen, 14 April 2023.

¹³⁹⁴ Interview with informant 2 by Ingrid S. Andreassen, 14 April 2023.

¹³⁹⁵ Interview with informant 3 by Ingrid S. Andreassen, 21 June 2023.

¹³⁹⁶ Interview with informant 1 by Ingrid S. Andreassen, 13 April 2023.

statutory instruments of the tuna RFMOs, which set their primary objective as the management of their target species.¹³⁹⁷ The statements of the key informants nevertheless raise the question of the existing links between the formal management mandates of the organizations and their areas of competence.

Section 8.3.1 explored how the key informants do not necessarily see the mandates in their statutory instruments as affecting the organizations' ability to implement and operationalize the ecosystem approach to fisheries when the mandates are considered in isolation from other factors influencing the implementation and operationalization of the approach. However, when the three informants are specifically asked about how the RFMOs' geographical areas of competence may affect the organizations' abilities to operationalize the approach, it becomes evident that their statements heavily reflect the fact that single-species management approaches are the prevailing views in the work undertaken by the organizations. The rather narrow focus on how the convention areas is designed to conserve their targeted species is intricately connected to their statutory mandates, highlighting the importance of formally including, e.g., the conservation of marine ecosystems and non-target species in these mandates. As the RFMOs' primary objectives are closely linked to the responsibility of conserving and managing the various tuna species, the vast areas under their jurisdiction may consequently create a gap between their member states' conventional obligations to conserve and manage marine ecosystems and non-target species residing in these areas¹³⁹⁸ and their management practices, which reflect their objective of conserving the tuna species within their natural distribution and migration patterns. This finding is supported by the statements given by all three informants, most notably by Informant 2, who emphasizes that the convention area of the organization is defined by the genetics and tag information for the purposes of single-species management,¹³⁹⁹ and Informant 3, who states that the geographical area of competence of the organization does not cause any issues for

¹³⁹⁷ See Sections 6.3.2, 6.4.2, 6.5.2, 6.6.2, and 6.7.2 which comprise assessments of the management mandates of the five tuna RFMOs.

¹³⁹⁸ As encompassed in Article 5(f) of the 1995 UN Fish Stocks Agreement.

¹³⁹⁹ Interview with informant 2 by Ingrid S. Andreassen, 14 April 2023.

the management of the target species, but that the organization is uncertain about how it may affect the non-target species.¹⁴⁰⁰

Despite not directly affecting the tuna RFMOs' ability to conserve marine ecosystems and non-target species, the lack of a formal statutory mandate providing the commissions with functions to conserve the diverse features of the marine ecosystems may play a significant role in relation to how the implementation and operationalization of the ecosystem approach to fisheries is performed in practice in the vast geographical areas of the tuna RFMOs. In this way, the formal inclusion of ecosystem considerations in their regulatory frameworks might lead to better scientific understanding of the intrinsic connections between the ecosystem components, as well as better monitoring and the adoption of holistic management approaches by the tuna RFMOs. Informant 3 makes a remarkable statement when elaborating upon the vast conventional area of RFMO 3 and how this area is connected to the organization's ability to implement and operationalize the ecosystem approach to fisheries. Informant 3 states:

"There's no way that [RFMO 3] looks at the [names the relevant area of the high seas] as an ecosystem and manages it, and tries to manage that. I do not think there is any organization that would actually, you know, would do, or could do, could do that."

8.3.2.2 Discussion

Despite being unable to conclude that the formal statutory mandates of the tuna RFMOs affect their ability to implement and operationalize the ecosystem approach to fisheries per se,¹⁴⁰¹ there nevertheless seems to exist a gap in their ability to implement and operationalize the approach when these statutory mandates are regarded in concert with their areas of competence. This leads to the interesting finding that the formal inclusion of the ecosystem approach to fisheries in the statutory instruments of the tuna RFMOs is likely to result in better conservation of marine ecosystems and non-target species in those areas. Consequently, the

¹⁴⁰⁰ Interview with informant 3 by Ingrid S. Andreassen, 21 June 2023.

¹⁴⁰¹ See the analysis and discussion in Section 8.2.1.

inclusion of the ecosystem approach to fisheries in the statutory management mandates of the tuna RFMOs should still be advised.¹⁴⁰² The findings of this study thus add to the existing literature on the topic,¹⁴⁰³ and reflect existing literature emphasizing that the management mandates of the tuna RFMOs are of vital importance, although not in the “traditional” sense. The study findings demonstrate how the areas of competence of the tuna RFMOs may represent one of the main constraints to the conservation of marine ecosystems and their residing non-target species.

Assessing the regulatory areas of the tuna RFMOs in conjunction with their management mandates reveals that the interplay between these two institutional aspects may be one of the key constraints currently impeding the operationalization of the ecosystem approach to fisheries in these organizations. As will be further discussed in Section 8.4, the political interests, priorities, and capacity of the member states of the tuna RFMOs also play a significant role for the implementation and operationalization of the approach, creating a complex dynamic between the diverse constraints that have the potential to hamper the implementation and operationalization of the approach.

Having established that the geographical areas of competence of the five tuna RFMOs may affect their ability to operationalize the ecosystem approach to fisheries, as they are primarily designed for single-species management of target stocks, the following sections will further explore how internal factors in the tuna RFMOs may affect the implementation and operationalization of the approach.

¹⁴⁰² The importance of including the ecosystem approach to fisheries in the management mandates of the tuna RFMOs was first elaborated upon in Chapter 6, where the organizations without such mandates were advised to implement the approach in their mandates.

¹⁴⁰³ See, e.g., Juan-Jordá et al., “Report Card on Ecosystem-Based Fisheries Management in Tuna Regional Fisheries Management Organizations,” and Gilman, Eric, Kelvin Passfield, and Katrina Nakamura. “Performance of Regional Fisheries Management Organizations: Ecosystem-Based Governance of Bycatch and Discards.”

8.3.3 Organizational Structures and Internal Processes

As emphasized in Section 5.3, the study conducted by Juan-Jordá et al. suggests that there exist weak institutional governance structures internally in the tuna RFMOs, which affect their ability to implement and operationalize the ecosystem approach to fisheries.¹⁴⁰⁴ Nakatsuka highlights another issue with the organizational structures of RFMOs, illustrating that there is little communication between fisheries managers and scientists in RFMOs due to the organizational structures of these international bodies, resulting in indirect communication via the exchanging of reports once a year prior to the annual meetings of the Commissions.¹⁴⁰⁵ Two issues are highlighted, the first being that the internal structures of the RFMOs may hinder effective communication and scientific cooperation between the different units internally in the tuna RFMOs, and the second being that the structure of the organizations may be a barrier to effective communication between the scientific units and the commissioners making the decisions and adopting the relevant conservation and management measures for the conservation of marine ecosystems and non-target species.

8.3.3.1 Findings

When the three key informants discuss whether the organizational structures of the tuna RFMOs assist or negatively affect the implementation and operationalization of the ecosystem approach to fisheries, it becomes clear that all three informants see the organizational structures of their organizations as an impediment to operationalization of the approach.

¹⁴⁰⁴ Juan-Jordá et al., “Report Card on Ecosystem-Based Fisheries Management in Tuna Regional Fisheries Management Organizations.”

¹⁴⁰⁵ Nakatsuka, Shuya. “Management strategy evaluation in regional fisheries management organizations – How to promote robust fisheries management in international settings.” Page 134. Nakatsuka assesses how the organizational structure of the RFMOs may impede the adoption of management strategy evaluations in the research paper, but the arguments used in the relevant section may be transferred to other issues such as the implementation and operationalization of the ecosystem approach to fisheries, as they refer to how the institutional structures of RFMOs may hinder effective communication between scientists and managers in these organizations.

However, they differentiate between the strength of the impediments these structures are generating.

Informant 1 pinpoints that changes to the organizational architecture of RFMO 1 may facilitate the implementation and operationalization of the ecosystem approach to fisheries, but that such changes seem unlikely to happen due to the mandate of the tuna RFMO, its available resources at the institutional level in terms of the number of staff that can carry out the necessary work and available time to perform work for additional committees and/or bodies.¹⁴⁰⁶ The second informant highlights the internal processes of RFMO 2 as one of the main barriers to the implementation and operationalization of the ecosystem approach to fisheries, when asked to elaborate upon the main constraints to the operationalization of the approach.

Informant 2 states:

“So, the second, my second point here is the process. I bring this up because, for example, at [RFMO 2], the prevailing operation of, of decision-making in fisheries is still through their panels, so there are sub-panels of the plenary commission. And the commission is an enormous meeting of about [states the total number of participants] people, and so the subpanels, panels one, two, three and four have assignments to specific species groups.”¹⁴⁰⁷

And:

“And I am not saying that the commission, nor that other decision-making structures, ignore multispecies interactions. I am just saying that the, the forum is dedicated to making a decision about one species and they have a hard time doing even that in many cases.”¹⁴⁰⁸

¹⁴⁰⁶ Interview with informant 1 by Ingrid S. Andreassen, 13 April 2023.

¹⁴⁰⁷ Interview with informant 2 by Ingrid S. Andreassen, 14 April 2023.

¹⁴⁰⁸ Interview with informant 2 by Ingrid S. Andreassen, 14 April 2023.

The two statements given by Informant 2 reveal that the internal processes of the organization are permeated by single-species management approaches, steering the work of the RFMO. When asked specifically about whether the institutional structure of RFMO 2 is hindering or assisting the operationalization of the ecosystem approach to fisheries, Informant 2 states:

“I would say it is, it is hindering, and it is, say refer to my comments previously about the panels being largely focused on single species. And then the same thing for question two in Section 2, how our decision-making procedures of [RFMO 2] are affecting the operation of the ecosystem approach to fisheries management, it is the same thing. The existing procedures are still predominantly and overwhelmingly single-species. So, if what we are talking about is an expanded version of the ecosystem approach to fisheries management, then that is an impediment.”¹⁴⁰⁹

The statements given by Informant 2 clearly illustrate that there exist institutional constraints to the operationalization of the ecosystem approach to fisheries in RFMO 2. These constraints primarily relate to the organizational structures and single-species processes taking place in the scientific bodies and in the decision-making mechanism of the organization.¹⁴¹⁰ The statements of Informant 3 also support the finding that institutional structures of the tuna RFMOs may affect their ability to implement and operationalize the approach. Informant 3 states that:

“At the [RFMO 3] level, you have, one of your main constraints is that it has not gotten out of the science-based, a science-based compartment, in terms of the way it is handled. It is handled by a working party, a scientific working party and, and information is, is trickled up to management, but no formal... Well, there is a formal way, but it is not incorporated to the extent, say that, you know, stock status of the main species is not, is not incorporated.”¹⁴¹¹

And:

¹⁴⁰⁹ Interview with informant 2 by Ingrid S. Andreassen, 14 April 2023.

¹⁴¹⁰ Interview with informant 2 by Ingrid S. Andreassen, 14 April 2023.

¹⁴¹¹ Interview with informant 3 by Ingrid S. Andreassen, 21 June 2023.

“The main constraint, you know, is, is that there is no overarching governmental process. Governance process applied to addressing the different components [of the ecosystem]. There is no way of drawing all of these things up in a management context. Particularly for the [RFMO 3], we just do not, we do not have that structure.”¹⁴¹²

The statements given by the three informants reveal that the three tuna RFMOs participating in this study may not have the institutional architecture to facilitate the implementation and operationalization of the ecosystem approach to fisheries.

Some key causes of the potential gaps are highlighted by Informant 1, who states that the tuna RFMO does not have the resources to change its structure to better facilitate the operationalization of the ecosystem approach to fisheries.¹⁴¹³ At a later stage in the interview, Informant 1 elaborates on the likelihood of making organizational structures that would facilitate more thorough considerations of multi-species interactions in the processes relevant to adopting conservation and management measures, emphasizing:

“I just think that for us, unfortunately, it might be in the, the far off future just because of all of the other priorities. I do not want to use that, I do not want to throw that word, priorities, around too loosely. Everything is a priority. Every year. It is really difficult to prioritize. We have a problem with that. But I think I could safely say that an ecosystem approach to fisheries management as a priority for this Commission is a number of years away.”¹⁴¹⁴

When asked about whether a potential solution to the issue may involve changes to the organizational structures of the tuna RFMOs, the second informant agrees with the statements given by Informant 1. Informant 2 emphasizes that institutional changes take place very slowly when asked about whether it is likely that RFMO 2 may change its organizational structure to effectively consider species interactions between the various internal bodies of

¹⁴¹² Interview with informant 3 by Ingrid S. Andreassen, 21 June 2023.

¹⁴¹³ Interview with informant 1 by Ingrid S. Andreassen, 13 April 2023.

¹⁴¹⁴ Interview with informant 1 by Ingrid S. Andreassen, 13 April 2023.

the RFMO. Informant 2 emphasizes that such changes also occur slowly and will be difficult to achieve in practice.¹⁴¹⁵

When asked specifically about the process of adopting conservation and management measures, and whether RFMO 2 may operationalize the ecosystem approach to fisheries through the development of measures that specifically includes multi-species interactions, Informant 2 points out:

“Yes, I think that that should happen.

I do not think it needs to happen for everything though, but I think where it does need to happen, then it should. And really my point in bringing this up is that there, the forum where that would occur, [it] is not clear to me that it exists.”¹⁴¹⁶

Overall, the statements provided by the three informants in relation to the institutional architecture of the tuna RFMOs demonstrate that they are presently operating with organizational structures which may not facilitate for the implementation and operationalization of the ecosystem approach to fisheries.

8.3.3.2 Discussion

The findings presented in the previous section validate the argument made by Juan-Jordá et al.,¹⁴¹⁷ which establishes that there exist weak institutional governance structures internally in the tuna RFMOs, affecting their ability to implement and operationalize the ecosystem approach to fisheries.

However, the findings of this thesis contribute to the academic debate by shedding light on the complex processes taking place internally in the tuna RFMOs, and some of the potential causes of the existing constraints to the operationalization of the approach. The main constraint is that single-species management is still permeating the work and decisions taken

¹⁴¹⁵ Interview with informant 2 by Ingrid S. Andreassen, 14 April 2023.

¹⁴¹⁶ Interview with informant 2 by Ingrid S. Andreassen, 14 April 2023.

¹⁴¹⁷ Juan-Jordá et al., “Report Card on Ecosystem-Based Fisheries Management in Tuna Regional Fisheries Management Organizations.”

by the tuna RFMOs and their member states. Although single-species management does not necessarily contradict management based on multi-species interactions,¹⁴¹⁸ there clearly exists a gap between the goal of implementing and operationalizing the ecosystem approach to fisheries and the organizational structures of the tuna RFMOs, which impedes the adoption of conservation and management measures that consider all vital ecosystem components.

Despite having established scientific sub-committees and panels working specifically on ecosystems,¹⁴¹⁹ the tuna RFMOs are still facing constraints to the operationalization of the approach based on their organizational structures. The interviews also indicate that potential changes to the organizational structures of the tuna RFMOs and efforts to enhance communication between the different sub-bodies to enable more efficient conservation and management efforts are unlikely to occur due to resource constraints and the substantial time commitment required. Consequently, the findings of this thesis confirm that there are weak institutional drivers internally in the tuna RFMOs that have participated in the interview study. These institutional drivers are closely connected to the organizational structure of the organizations and the lack of effective internal communication, confirming that the findings of Juan-Jordá et al. and Nakatsuka still impede the efforts of these organizations.¹⁴²⁰ One may thus conclude that the organizational structures of the tuna RFMOs currently represent constraints for the operationalization of the ecosystem approach to fisheries, impeding the effective conservation of marine ecosystems and non-target species in high seas tuna fisheries.

¹⁴¹⁸ See, e.g., Hilborn, who argues that single-species management is an integral part of the ecosystem approach to fisheries in Ray Hilborn, "Future Directions in Ecosystem Based Fisheries Management: A Personal Perspective." Page 236. See also Section 4.3.1 of this thesis which explores how single-species management to a certain extent may be perceived as being intertwined with the ecosystem approach to fisheries.

¹⁴¹⁹ See Chapter 6 where the institutional structure of the five tuna RFMOs was presented.

¹⁴²⁰ Juan-Jordá et al., "Report Card on Ecosystem-Based Fisheries Management in Tuna Regional Fisheries Management Organizations" and Nakatsuka, "Management strategy evaluation in regional fisheries management organizations – How to promote robust fisheries management in international settings."

8.3.4 Scientific Processes

Effective and sound scientific processes and advice represent the cornerstone of all work conducted by the tuna RFMOs in relation to managing and conserving target species, non-target species and marine ecosystems. The key focus in this thesis is dedicated to assessing how scientific evidence, research and advice are taken into consideration in the decision-making mechanisms of the five tuna RFMOs, as these forums are where conservation and management measures are adopted. As was established in Chapter 5, several factors may influence the scientific processes and adoption of conservation and management measures, and the member states of the RFMOs play the key role in providing statistical data and adopting proper measures to conserve all components of the marine ecosystems within the RFMOs' areas of competence.¹⁴²¹ The following presentation will explore how scientific processes may represent a constraint for the operationalization of the ecosystem approach in the context of tuna RFMOs.

8.3.4.1 Findings

When asked about whether a lack of scientific knowledge about the relevant ecosystems and non-target species is impeding the operationalization of the ecosystem approach to fisheries, two of the key informants highlight the need for more scientific information about the diverse factors influencing both the organizations' target species and the ecosystems located in their convention areas.

Informant 1 states:

"I would say that we have a lot of scientific knowledge that has formed the basis of the measures that we do have in place and that when they change, when those measures

¹⁴²¹ Heidrich et al. emphasize that reporting of fisheries catches for "both mandatory target and non-targeted species is vital, as detailed fisheries catch data are needed for the effective assessment of the impacts of fishing on populations and ecosystems and thus the management of fisheries resources." See Heidrich, Kristina N., Maria José Juan-Jordá, Hilario Murua, Christopher D. H. Thompson, Jessica J. Meeuwig, and Dirk Zeller. "Assessing Progress in Data Reporting by Tuna Regional Fisheries Management Organizations." Page 2.

change, it is because we have more knowledge. And we get more knowledge because we are consistently reviewing the research every year, [in] the Science Committee and that is contributing to changes in management measures. So, I do not know that there is a lack of, I think...We're constantly learning, so maybe that is where the lacking comes in. I would just probably frame this a little bit differently, that as we continue to research and have more information coming available.”¹⁴²²

This quote by Informant 1 is intrinsically connected to the decision-making mechanisms of RFMO 1 and illustrates that as scientific knowledge changes, so do the adopted conservation and management measures through adjustments to existing measures or adoption of new ones. When asked specifically about whether the measures are adopted in a timely and effective manner when the scientific knowledge changes, Informant 1 nevertheless discloses that such changes are neither timely nor effective. Informant 1 states:

“I mean, in my opinion, it is very strictly my opinion. No, it is probably not timely and no, it's probably not effective, but it is probably the best we can do given the nature of how the Commission operates and when decisions can be taken. So, I think if you talk to particular NGOs, they would say no, it is, the timing is horrible, it is very ineffective. But again, I, you know, I am a realist and I, this is the way the organization operates. This is what members agreed to and there is only so much that can be done at any given time.”¹⁴²³

And:

“Yeah, I mean it, it responds... I think we respond as best we can to the information that we have. But there have been times when decisions could not be taken simply because we have run out of time. But that happens. There's just not enough time to discuss.”¹⁴²⁴

¹⁴²² Interview with informant 1 by Ingrid S. Andreassen, 13 April 2023.

¹⁴²³ Interview with informant 1 by Ingrid S. Andreassen, 13 April 2023.

¹⁴²⁴ Interview with informant 1 by Ingrid S. Andreassen, 13 April 2023.

The two latter statements by Informant 1 illustrate that the organization may not be able to properly respond to changing scientific knowledge that requires intervening in a timely and effective manner. The rationale for this finding relates to both the institutional structure of the organization and its decision-making mechanisms. Informant 1 even states that the decision-making mechanism of the RFMO is organized in a manner where there might not be sufficient time available to address changes in scientific knowledge and advice that requires action.

The quotes of Informant 1¹⁴²⁵ are reinforced by Informant 2, who highlights different scientific aspects and processes as among the main constraints to the conservation of non-target species in the organization.¹⁴²⁶ Informant 2 emphasizes that poor scientific data, along with the single-species processes taking place in RFMO 2, are impeding effective conservation of non-target species in the geographical area of competence of the organization. Informant 2 highlights how the lack of scientific data identifying and supporting causes of declines in stock biomasses of, e.g., non-target species leads to scenarios that hinder conservation efforts due to the difficulty of convincingly arguing for their adoption. Informant 2 further argues that when scientific knowledge about marine ecosystems or non-target species changes, such changes are not taken into consideration internally in the RFMO in a timely and effective manner. Informant 2 gives substance to this claim by providing an example where the commissioners were aware of changes in distribution patterns causing new mixing of the organizations' targeted stocks as early as the 1950s and 1960s, but they did not consider the information sufficiently reliable to adopt conservation and management measures until the 2020s.¹⁴²⁷

The statements by Informant 2 demonstrate that both RFMO 1 and RFMO 2 may find it difficult to effectively implement and operationalize suggested changes in their conservation and management measures when scientific research and/or evidence reveal that such changes are required to conserve, e.g., marine ecosystems and non-target species. Informant

¹⁴²⁵ Interview with informant 1 by Ingrid S. Andreassen, 13 April 2023.

¹⁴²⁶ Interview with informant 2 by Ingrid S. Andreassen, 14 April 2023.

¹⁴²⁷ Interview with informant 2 by Ingrid S. Andreassen, 14 April 2023.

2 nevertheless explicitly ties these challenges to the political interests of the member states and their willingness to mitigate the changing scenarios by stating that changes may be “politically painful” and that the relevant states await sufficiently reliable information before decisions are made.¹⁴²⁸

The scenario described by Informant 2 where it took 60 years from when scientific evidence suggested that new species of tuna were migrating into the geographical area of competence of RFMO 2 until the organization was able to adopt conservation and management measures taking into consideration the species interactions and mixing of targeted stocks¹⁴²⁹ represents poor practice and highlights the seriousness for the member states to change their thresholds for what is considered as sufficiently reliable information to adopt necessary conservation and management measures. To make the situation even more serious, Informant 2 also emphasizes that the member states of RFMO 2 do not respond to scientific knowledge that is produced outside the organization itself. Informant 2 states:

“But it is also, it is also that, that RFMOs, and this is true of national governments that I have worked with as well, do not, do not respond to the broader scientific community about a particular issue. They, they use the information from their own internal processes as a basis for their decision-making. So, if that broader information does not exist within their existing institutional structure, then it does not even, does not even enter into the conversation.”¹⁴³⁰

Unlike the other two tuna RFMOs that had representatives participating in this study, RFMO 3 does not specifically perceive the lack of sufficient scientific knowledge as a constraint to the operationalization of the ecosystem approach to fisheries. Informant 3 nevertheless states:

“Although they have got a working party that, you know, works on this [referring to the working party for ecosystems in RFMO 2] and alliances with the other

¹⁴²⁸ Interview with informant 2 by Ingrid S. Andreassen, 14 April 2023.

¹⁴²⁹ Interview with informant 2 by Ingrid S. Andreassen, 14 April 2023.

¹⁴³⁰ Interview with informant 2 by Ingrid S. Andreassen, 14 April 2023.

organizations that actually have expertise in that. So, we do not have expertise on that in house, but we, we join up with [lists other regional conservation bodies] to...you know, to have their input into, into the work, and the advice that is produced.”¹⁴³¹

And:

“And as I said, in terms of the information coming through, there’s other organizations that are better placed to, you know, undertake the work to understand those other species. And so, that is why we have arrangements, corporation agreements with [lists other regional conservation bodies]... Because ultimately, I think they are sort of in their sphere or responsibility.”¹⁴³²

8.3.4.2 Discussion

Informant 1 highlights how a key challenge for the RFMO in its endeavor to operationalize the ecosystem approach to fisheries is available time to implement necessary measures through its decision-making mechanisms. As the tuna RFMOs have the mandate to manage vast geographical areas of the high seas,¹⁴³³ while many of their member states have ratified legal instruments which oblige them to conserve, e.g., marine ecosystems and non-target species, the statements by Informant 1 would suggest that the member states of the tuna RFMO may not be fulfilling their legal obligations pursuant to international law.¹⁴³⁴ This finding is based on the fact that the tuna RFMO is unable to dedicate sufficient time and resources to even enable the decision-making processes necessary to operationalize, e.g., the ecosystem approach to fisheries by amending existing conservation and management measures, or adoption of new measures, to mitigate relevant scenarios as they occur.¹⁴³⁵

¹⁴³¹ Interview with informant 3 by Ingrid S. Andreassen, 21 June 2023.

¹⁴³² Interview with informant 3 by Ingrid S. Andreassen, 21 June 2023.

¹⁴³³ The regulatory areas of competence of the five tuna RFMOs were presented and discussed in Sections 6.3.2, 6.4.2, 6.5.2, 6.6.2, and 6.7.2. Further analysis of how these geographical areas are intricately connected to the functions encompassed in, e.g., the 1995 UN Fish Stocks Agreement was provided in Section 8.3.2.

¹⁴³⁴ Article 5(f) of the 1995 UN Fish Stocks Agreement obliges state parties to minimize the impacts on non-target species in fisheries operations.

¹⁴³⁵ This finding is further discussed in chapter 9.

The statements of Informant 2 highlight how revision of existing conservation and management measures or adoption of new measures to conserve, e.g., marine ecosystems and non-target species are potentially impeded by a lack of sufficient scientific evidence, and in scenarios where the scientific advice may be produced by external organizations and bodies. Petersson et al. have assessed the role of non-state actors in tuna RFMOs, and their research was based on the assumption that “global fisheries institutions are resource-dependent organizations: given the complexity and uncertainty characterizing environmental problems and the policy choices available to tackle these problems, these institutions depend on information, knowledge, and resources provided” by such non-state actors.¹⁴³⁶ Incorporating the statement of Petersson et al. into this study may illustrate how the tuna RFMOs currently depend on scientific information from external actors to effectively carry out their functions, suggesting that the reluctance of the member states of RFMO 2 to consider such externally produced scientific information may represent a key constraint to the operationalization of the ecosystem approach to fisheries.

Hickey et al. highlight the issue at stake and emphasize: “While it has been identified that management strategies, risk perceptions, and trust are all important to the inter-organizational collaborative performance of environmental IOs, there has been little-to-no research integrating these concepts in the study of transboundary marine fisheries generally, and RFMOs specifically.”¹⁴³⁷ The findings of the present study may therefore add to existing literature by establishing that the utilization of externally produced scientific advice may represent a constraint to the operationalization of the ecosystem approach to fisheries in some of the tuna RFMOs, supporting the observations made by Hickey et al. through the empirical findings presented.

¹⁴³⁶ Matilda Tove Petersson et al., “Patterns and trends in non-state actor participation in regional fisheries management organizations,” *Marine Policy* 104(1 June 2019): 146–56, <https://doi.org/10.1016/j.marpol.2019.02.025>. Page 147.

¹⁴³⁷ Hickey, Gordon M., Hunter T. Snyder, Jasper R. deVries, and Owen Temby. “On inter-organizational trust, control and risk in transboundary fisheries governance.” *Marine Policy* 134(1 December 2021): 104772. <https://doi.org/10.1016/j.marpol.2021.104772>. Page 2.

The impediments created by the lack of response to externally produced scientific information may also be a result of intentional delaying of processes until the RFMO itself is able to produce scientific evidence considered sufficiently reliable internally in the organization. Whatever the causes of the organization's inability or unwillingness to respond to scientific information produced externally by other bodies and organs, the statement by Informant 2 prompts the interesting observation that RFMO 2 will be required to invest more effort and resources to achieve sufficiently reliable scientific data internally to effectively manage and conserve marine ecosystems and non-target species. The fact that "politically painful" decisions in a worst-case scenario deterred decision-making for around 60 years from the knowledge was acquired until the RFMO adopted a decision which included the "new" species indicates that RFMO 2 has serious constraints to overcome in terms of future governance of marine ecosystems and non-target species. As will be explored and analysed in Section 8.4, the political priorities and willingness of the member states to invest in the operationalization of the ecosystem approach to fisheries will be a crucial prerequisite in this venture.

The statements by Informant 3 emphasize that RFMO 3 may not see the conservation of non-target species as its own responsibility, and consequently relies on scientific cooperation with other regional conservation bodies to effectively manage its target species. Cooperation between regional bodies operating in the same geographical areas or areas bordering one another may represent an effective approach in terms of gathering and synthesizing scientific information, as they may share the available scientific information with each other to effectively conserve the ecosystems and species in question. Specialist competence and knowledge about the distinct species residing in the same ecosystem may naturally improve conservation of the relevant stocks. However, a requirement for effective conservation in such circumstances must be that the relevant bodies and organs perceive the potential conservation efforts as a joint responsibility in which they all participate, while incorporating the scientific advice into their regulatory frameworks to the extent possible. As illustrated by Informant 3, this may not be the case in terms of how RFMO 3 perceives its responsibility for conserving non-target species. RFMO 3 perceives the conservation of its targeted species as its responsibility, whereas other regional bodies are responsible for conserving other species occurring in its convention area. The statements by Informant 3 seem to contradict the key

principles of an ecosystem approach to fisheries, where considerations of multi-species interactions and conservation of non-target species are an integral part of fisheries management.¹⁴³⁸ As was explored in Section 8.3.1, the fact that RFMO 3 has not formally included the ecosystem approach to fisheries in its management mandate obviously affects its scientific work in relation to conserving marine ecosystems and non-target species. The statements regarding RFMO 3 yet again suggest that it should make efforts to amend its founding instrument to enhance conservation of, e.g., non-target species.¹⁴³⁹

The interview study has revealed that all participating tuna RFMOs are facing constraints to operationalization of the ecosystem approach to fisheries relating to various aspects of scientific processes and the available scientific information which may form the basis for internal decision-making. Interestingly, whereas the interview study reveals that all three tuna RFMOs have existing constraints impeding the operationalization of the approach, the key informants highlight different causes of these barriers. This is an interesting finding, as it is not possible to draw generalizable conclusions about how the scientific processes in these tuna RFMOs should be changed to facilitate an effective implementation of the ecosystem approach to fisheries. Consequently, one of the key findings of this thesis is that there is no single solution that would fit all.

The key informant representing RFMO 1 highlights that the organization finds it difficult to prioritize the adoption of conservation and management measures to conserve non-target species as there is a shortage of time during annual meetings to adopt such measures. The delay between changes in scientific knowledge requiring action by the organization and the adoption of conservation and management measures may thus have serious implications. Whereas RFMO 1 has limited time to dedicate to conserving marine ecosystems and non-target species during its commission meetings, RFMO 2 faces issues with effectively producing reliable scientific information which the commissioners will trust sufficiently to respond to. The constraints for RFMO 2 are intricately connected to the member states' lack of response to scientific knowledge produced externally and may suggest, e.g., insufficient trust. Whatever

¹⁴³⁸ See Section 4.2.4, which explored the normative scope of the ecosystem approach in the fisheries context.

¹⁴³⁹ See Section 8.2.3, where this recommendation was first made.

the causes, the situation described may potentially cause serious delays which could jeopardize the status of the marine ecosystems and non-target species negatively affected by tuna fishing in the organization's convention area. This thesis also reveals that RFMO 3 does not even perceive conservation of non-target species as part of its responsibilities and considers that other regional bodies are better equipped to deal with conservation efforts directed at those species.

Overall, the interview study and its findings reveal clear institutional gaps and structural problems in all the participating tuna RFMOs in relation to their efforts to conserve marine ecosystems and non-target species in fishing operations. These findings generally concur with existing research on the topic.¹⁴⁴⁰ The findings highlight grave flaws and shortcomings in how the organizations respond to changes in scientific information about non-target species and emphasize that neither RFMO 1 nor RFMO 2 is able to utilize new scientific knowledge in a timely and effective manner in accordance with the obligations of the 1995 UN Fish Stocks Agreement.¹⁴⁴¹ As previously discussed, RFMO 3 does not even perceive scientific knowledge about non-target species as its responsibility, preferring to let other regional conservation bodies deal with conservation efforts for these species. Consequently, the findings illustrate that the tuna RFMOs may not be able to fulfil their core functions as laid down in the 1995 UN Fish Stocks Agreement, which may consequently result in serious threats to the marine environment, marine ecosystems, and non-target species.

¹⁴⁴⁰ See, e.g., McDorman, "Implementing Existing Tools: Turning Words Into Actions – Decision-Making Processes of Regional Fisheries Management Organisations (RFMOs)," and Juan-Jordá et al., "Report Card on Ecosystem-Based Fisheries Management in Tuna Regional Fisheries Management Organizations."

¹⁴⁴¹ See Article 5(f) of the 1995 UN Fish Stocks Agreement.

8.3.4.3 Recommendations

Section 8.3 has established the existence of several internal factors negatively affecting the tuna RFMOs' ability to operationalize the ecosystem approach to fisheries. Picking up the threads from the previous section, the tuna RFMOs participating in this study are advised to develop mechanisms where scientific knowledge is effectively produced internally, to integrate scientific knowledge produced by external organizations and bodies, and to facilitate adoption of conservation and management measures in a timely and effective manner.

A recommendation for all the participating tuna RFMOs based on the findings of this study is that their member states must establish faster processes for the implementation of new scientific information calling for action to conserve marine ecosystems and non-target species. This recommendation is based on the identification of a serious gap between what is required as a matter of international law and what is currently done in and by the tuna RFMOs.¹⁴⁴²

The following section will assess how contextual issues, such as diverse domestic priorities and positions of the tuna RFMOs' member states, may influence negotiations in the Commission, and consequently represent a key constraint for the implementation and operationalization of the approach.

¹⁴⁴² Ibid.

8.4 Contextual Issues

This section aims to examine how the member states of the tuna RFMOs are currently influencing the implementation and operationalization of the ecosystem approach to fisheries. The following assessment will build on the literature presented in Section 5.2.6 and statements given by the key informants in relation to how political priorities, willingness, and finances are drivers in the work of implementing and operationalizing the approach.

The notion that diverse priorities among member states may affect the work of RFMOs permeates the literature relevant to this PhD. As explored in Section 5.2.6, the present body of literature represents a cohesive presentation of how diverse priorities and capacities among member states of RFMOs may influence both the outcomes of decision-making processes and initial considerations about the issues brought to the negotiation table. However, despite awareness of how political priorities and domestic capacity may influence internal decision-making in RFMOs, Barkin et al. emphasize that “exploring the driving factors determining states’ negotiation positions in international fisheries governance is still in its infancy.”¹⁴⁴³ In this context, a central question is how the diverse priorities and driving factors of the member states of the tuna RFMOs affect the implementation and operationalization of the ecosystem approach to fisheries, and the aim of this section is to identify the driving forces influencing the adoption of conservation and management measures in these organizations. Once the drivers are identified, an analysis of how they affect the implementation of the ecosystem approach to fisheries will subsequently be provided in Sections 8.4.1 and 8.4.2.

The responses given by the key informants during the interviews illustrate various cases where political priorities and the actual capacity of the relevant member states strongly influence the RFMOs’ potential and ability to implement and operationalize the ecosystem approach to fisheries, and the following presentation of the relevant findings and subsequent analysis will be split into two categories.

¹⁴⁴³ Samuel Barkin, J., Elizabeth R. DeSombre, Atsushi Ishii, and Isao Sakaguchi. “Domestic sources of international fisheries diplomacy: A framework for analysis.” Page 257.

The first category covers an analysis of general statements given by the key informants in relation to the political priorities and willingness of the member states of the relevant tuna RFMOs to invest in the implementation and operationalization of the ecosystem approach to fisheries and will attempt to synthesize how diverse priorities permeate the work of the tuna RFMOs. The second category involves some of the key causes of the underlying diversity of political priorities that may influence the operationalization of the approach. This analysis focuses on how financial constraints affect every step of the processes of implementing and operationalizing the approach, illustrating how investment by the member states in the operationalization of the approach will be the key to future conservation of marine ecosystems and non-target species.

8.4.1 Diverse Stakeholders, Political Priorities, Capacity and Time Commitments

The existing literature highlights how political will of member states of RFMOs represents “the essential ingredient” in their decision-making mechanisms,¹⁴⁴⁴ how the “lack of political will on the part of countries and their representatives to deal with the international fisheries crisis is indeed a real problem,” and how member states’ different positions may “lead to tensions during the meeting process,” while the different interests “also play an important role in what members put forward during the Commission meetings and which topics get addressed or not.”¹⁴⁴⁵ As emphasized in Section 5.2.3 of this thesis, Rosello summarizes the importance of political priorities in the following manner: “Although RFMOs have a formal role *de jure* under the UNCLOS and the UNFSA as fora in which international obligations to cooperate in the conservation and management...are to be defined and implemented, they often function in

¹⁴⁴⁴ McDorman, Ted. “Implementing Existing Tools: Turning Words Into Actions – Decision-Making Processes of Regional Fisheries Management Organisations (RFMOs).” Page 441.

See also Fischer, who states: “The functioning and success of RFMOs significantly depends on the political will of their members” in relation to their decision-making mechanisms, in Fischer, Johanne. “How transparent are RFMOs? Achievements and challenges.” Page 2.

¹⁴⁴⁵ Haas et al., “Factors influencing the performance of regional fisheries management organizations.” Page 5.

practice as bargaining sites,” where the interests of the contracting parties “feature prominently in such negotiations.”¹⁴⁴⁶

The following assessment is based on an analysis of the statements given by the key informants in relation to how political priorities affect their ability to implement and operationalize the ecosystem approach to fisheries. While not exploring the underlying causes of the political priorities, which will be the focus in Section 8.4.2, the analysis in this section will still offer valuable insights into how the member states’ political priorities play a significant role in all efforts taken by the tuna RFMOs in their endeavor to operationalize the approach.

8.4.1.1 Findings

According to the informants, political priorities and high diversity among the member states presently represents a major constraint to implement the ecosystem approach, as is clear from the following quotes:

“And the main constraints, I think are, because there are so many different stakeholders involved, and different stakeholders have different interests in the different parts of that ecosystem. And so, operationalizing that approach requires a very high level of agreement and willingness to work together and also just recognition of mutual benefits and mutual outcomes, which I think are really difficult to achieve when you have....”¹⁴⁴⁷

“Everything is, you know, often gets watered down. You got [lists the total number of Member States of the RFMO] members, you can imagine the range of considerations that need to be taken into account when you’ve got [lists the total number of Member States of the RFMO] members with, with different cultures, different approaches.”¹⁴⁴⁸

¹⁴⁴⁶ Mercedes Rosello, “Regional fishery management organisation measures and the imposition of criminal and administrative sanctions in respect of high seas fishing.” Page 6.

¹⁴⁴⁷ Interview with informant 1 by Ingrid S. Andreassen, 13 April 2023.

¹⁴⁴⁸ Interview with informant 3 by Ingrid S. Andreassen, 21 June 2023.

A related point made is how the outcomes of the decision-making process are negatively affected by the different approaches taken by the member states of the tuna RFMOs, leading to “watered-down” decisions when the states vote for the adoption of conservation and management measures.¹⁴⁴⁹

Another key constraint identified is the availability of resources and time. This is not surprising considering that the implementation and operationalization of the approach requires investment to facilitate the transition from the traditional single-species management which has previously dominated the management approaches taken by these organizations. As Informant 3 put it:

“And certainly, when you got time constraints, yeah you know, what are you going to talk about? Are you going to talk about your main species or are you going to talk about, you know, some other, let us say bycatch species which there is no mandate for, that is, that is, that is, a pretty hard-nosed way of looking at it, but it is the reality.”¹⁴⁵⁰

8.4.1. Discussion

The findings are in line with existing literature on the topic, which strongly emphasizes that political priorities and competing interests are a key constraints for effective decision-making processes in RFMOs.¹⁴⁵¹ The literature has not focused on environmental issues specifically, and this research thus adds to the existing body of literature by providing a case study of the implementation and operationalization of the ecosystem approach to fisheries, confirming that these challenges also exist in this context.

An interesting observation in relation to the research findings is that competing interests and diverse political priorities negatively affecting the tuna RFMOs’ efforts and abilities to implement and operationalize the ecosystem approach to fisheries are still present despite

¹⁴⁴⁹ Interview with informant 3 by Ingrid S. Andreassen, 21 June 2023.

¹⁴⁵⁰ Interview with informant 3 by Ingrid S. Andreassen, 21 June 2023.

¹⁴⁵¹ As reflected by, e.g., Pons, Melnychuk, and Hilborn, “Management Effectiveness of Large Pelagic Fisheries in the High Seas,” Samuel Barkin et al., “Domestic sources of international fisheries diplomacy,” and Haas et al., “Factors influencing the performance of regional fisheries management organizations.”

the formal inclusion of the obligation to minimize impacts on non-target species in fishing operations in the legally binding 1995 UN Fish Stocks Agreement.¹⁴⁵² Many of the member states of the tuna RFMOs have therefore committed themselves to conserve non-target species, and these states should therefore be expected to advocate for the implementation and operationalization of the ecosystem approach to fisheries during internal negotiations in the tuna RFMOs. The fact that managing multiple interests and diverse political positions negatively impacts the tuna RFMOs' ability to implement and operationalize the approach indicates that there exist domestic drivers taking precedence over the legal obligations to conserve marine ecosystems and non-target species, and this assumption will be further explored in Section 8.4.2. It is nevertheless clear that the balancing of multiple interests and priorities in some of the tuna RFMOs presently represents a key constraint for the implementation and operationalization of the ecosystem approach to fisheries. The internal balancing acts in these organizations are exacerbated by the large number of stakeholders. As Informant 1 put it, "the more stakeholders involved, the more difficult it is,"¹⁴⁵³ illustrating that the total number of member states may affect the internal processes in the tuna RFMOs in their attempts to conserve marine ecosystems and non-target species from the impacts of their fishing operations. This supports existing literature emphasizing that reaching agreement and political will among the member states is the essential ingredient in decision-making processes, and a large number of actors involved in decision-making will presumably mean more diversity in terms of political priorities among the actors.¹⁴⁵⁴ Bearing in mind that Chapter 5 explored how the CCSBT currently operates with a limited number of contracting parties,¹⁴⁵⁵ one might expect the CCSBT to be able to adopt the most progressive conservation and management measures to mitigate catch by lost, abandoned, or otherwise discarded fishing gear, which has been the key focus of this thesis, if the total number of member states is viewed in isolation from other factors and drivers influencing the RFMOs' ability to

¹⁴⁵² 1995 UN Fish Stocks Agreement. Article 5.

¹⁴⁵³ Interview with informant 1 by Ingrid S. Andreassen, 13 April 2023.

¹⁴⁵⁴ McDorman, Ted. "Implementing Existing Tools: Turning Words Into Actions – Decision-Making Processes of Regional Fisheries Management Organisations (RFMOs)."

¹⁴⁵⁵ See Section 6.5.1, where further remarks about the current number of member states of the CCSBT are provided.

implement and operationalize the ecosystem approach to fisheries. However, this project has revealed that the CCSBT has in fact not adopted any measures to minimize catch by lost, abandoned, or otherwise discarded fishing gear.¹⁴⁵⁶ Thus, the example of how the CCSBT is unable to minimize, e.g., the impacts of ghost fishing on marine ecosystems and non-target species serves to illustrate the diverse constraints that currently impede tuna RFMOs' efforts to implement and operationalize the ecosystem approach to fisheries. One of the main constraints for RFMO 1 in operationalizing the ecosystem approach to fisheries may thus differ from the constraints impeding the CCSBT's operationalization of the approach.¹⁴⁵⁷ This reinforces the finding that the diversity of the tuna RFMOs will render "one size fits all" solutions impractical and insufficient.

The statements by the three informants in relation to available resources and time highlight how the political priorities of the member states of the tuna RFMOs are not only affected by commitment to dedicate sufficient resources to an effective implementation and operationalization of the ecosystem approach to fisheries, but also by time commitments to prioritize the conservation of marine ecosystems and non-target species in the diverse internal forums of the RFMOs.¹⁴⁵⁸ How available resources and time are allocated to distinct functions and tasks of the tuna RFMOs is intricately connected to the economic drivers of these organizations and their member states. The close relationship between political priorities and economic drivers will be further examined in the following section, along with some underlying causes for the persistent constraints currently impeding the operationalization of the ecosystem approach to fisheries in the tuna RFMOs.

¹⁴⁵⁶ See Section 7.2 for more information about the CCSBT's adopted conservation and management measures.

¹⁴⁵⁷ It should be emphasized that this thesis has not been able to establish the exact causes of the lack of operationalization of the ecosystem approach to fisheries at the regional level through the mechanisms of the CCSBT. In this context, it nevertheless seems relevant to highlight that the CCSBT is currently operating with consensus-based decision-making, which may be a constraint in terms of adopting novel and holistic conservation and management measures, as any member state can block the adoption of such measures due to the decision-making mechanism. For more information about the CCSBT's decision-making mechanism, see Section 6.5.3 of this thesis.

¹⁴⁵⁸ As illustrated in Section 8.3.3, the interview with Informant 1 also highlights how the organization is hindered in its efforts to implement and operationalize the ecosystem approach to fisheries, due to insufficient time being allotted to adopt conservation and management measures to conserve marine ecosystems and non-target species during the Commission's annual meeting.

8.4.2 Economic Drivers and Capacity

The focus of this section is how economic drivers, interests, and capacity permeate the work of the tuna RFMOs in relation to their efforts to conserve marine ecosystems and non-target species.¹⁴⁵⁹ A key assumption in this study is that the tuna RFMOs are negatively affected by the limited funding available to conduct research and collect scientific information. Such information may provide sufficiently reliable information to enable its use in efforts to adopt conservation and management measures and to implement the changes in practice through effective operationalization of these measures. This assumption is also advocated by researchers in relation to RFMOs in general, and the literature clearly suggests that questions of costs and benefits are a central element of all work conducted by these organizations.¹⁴⁶⁰

8.4.2.1 Findings

All three informants make clear statements about how economics is a key driver in all their work in relation to the operationalization of the approach. When elaborating upon the financial constraints affecting the work of RFMO 1, the informant highlights several challenges relating to financing essential Commission meetings where conservation and management measures may be adopted, the diverse political positions of the Commissioners, where some mainly advocate for the interests of the fisheries industry and market factors, and the financial capacity of some member states to actually implement and operationalize the measures.¹⁴⁶¹

Informant 1 states:

“Maybe there are a couple of ways to look at this. Economics in the sense of when, when Members are able to come together and how often. Which is just constrained by availability and finances. [The thing] is, you know, that we do not have multiple annual

¹⁴⁵⁹ See Section 5.3 for more information on the literature presently covering this topic.

¹⁴⁶⁰ See, e.g., Pons, Melnychuk, and Hilborn, “Management Effectiveness of Large Pelagic Fisheries in the High Seas,” Haas et al, “Factors influencing the performance of regional fisheries management organizations” and Barkin and DeSombre, “Do We Need a Global Fisheries Management Organization?”

¹⁴⁶¹ Interview with informant 1 by Ingrid S. Andreassen, 13 April 2023.

sessions, partly because it is so expensive and partly because people are not available. So, there is, you know, economics in that.”

And that:

“I guess other constraints, economic constraints, would lie within some of the smaller members of the Commission and what kind of resources they are able to devote to ecosystem-based issues versus focusing only on the tuna, which is the key revenue generator. But again, I do not think that even when we are talking about tuna fisheries, we are not talking about them in isolation of these other non-target species. It is just not the focus. And so, you know, some of the smaller members, they simply cannot afford, they do not have the resources to put into other species maybe, at the national level. They are doing it now as members of the Commission, but it is, I would not consider that they are priorities necessarily.”¹⁴⁶²

This quote by Informant 1 illustrates that RFMO 1 is faced with multiple financial constraints for the implementation and operationalization of the ecosystem approach to fisheries. These constraints exist at various levels, including financing annual meetings of the Commission, the economic priorities of the member states and challenges in implementing conservation and management measures due to their potential costs.

The relationship between the three economic constraints currently affecting the ability of RFMO 1 to implement and operationalize the ecosystem approach to fisheries may ultimately have the potential to impede the adoption of conservation and management measures in the first place, and also to undermine their effectiveness, due to limited capacity to implement the measures domestically once they are adopted. When elaborating upon what the RFMO is doing to mitigate the financial constraints, Informant 1 emphasizes:

“And I do not know that we are working to mitigate these constraints. Really, I think it is just, this is the way we’re doing business at the moment and until there is a real desire for change, no pun intended, then this is how we are going to do things for a while. It

¹⁴⁶² Interview with informant 1 by Ingrid S. Andreassen, 13 April 2023.

is very difficult in these organizations, of this size in particular, to make changes in the way we do our work. It has evolved for sure from the very first commission meeting in [states the year of the RFMO's first commission meeting]. We have definitely evolved, but these are relatively small evolutions. And maybe we'll start to move that way where the ecosystem approach is concerned, but that really takes a concerted and conscientious effort on the part of the Commission to move in that direction, and it just has not done that yet.”¹⁴⁶³

This statement by Informant 1 illustrates that the RFMO has not taken any concrete steps to mitigate the diverse economic constraints currently affecting its ability to implement and operationalize the ecosystem approach to fisheries.

Informant 1 also highlights the fact that the members of the Commission have not made the necessary conscientious efforts required to operationalize the ecosystem approach to fisheries, leading to the relevant observation that the commissioners are not necessarily prioritizing marine ecosystems and non-target species when performing their functions in the RFMO.

Turning to RFMO 2, the second informant underlines that the cornerstone of all fisheries management is to achieve economic benefits from the fisheries, and that the pursuit of profit permeates all work of the organization. Informant 2 emphasizes:

“But I think it is, it is important in terms of the conversation around ecosystem aspects, generally speaking, which is that fisheries management, be it single-species management or ecosystem approach to fisheries management, is 100% about economic aspects. The reason for doing it in the first place is to have economic benefits of fishing. So, I think that there is this process and implementation costs of the ecosystem approach, but I think that characterizing, understanding, and responding to the economic consequences of any policy discussion that deals with trade-offs between one species and another in our more broadly defined definition of the ecosystem,

¹⁴⁶³ Interview with informant 1 by Ingrid S. Andreassen, 13 April 2023.

species management are, it is the thing. It is the reason, it is in a way, it is the reason it characterizes. It is not sort of a, not a sideshow, it is the thing!”¹⁴⁶⁴

This quote by Informant 2 illustrates that economics is the key driver in all management processes in RFMO 2, and that responses to policy discussions dealing with trade-offs between species primarily focus on the economic aspects relevant to the particular policy. Informant 2 also emphasizes that there exist specific financial constraints affecting the tuna RFMOs’ ability to implement and operationalize the ecosystem approach to fisheries. Informant 2 states:

“Yes. So here, the cost of doing more elaborate science, which is more expensive and more complicated. I would say every other recommendation [refers to identifiable scientific staff] have made throughout about what you could do to improve the implementation, that is like, the duplication cost associated with that... Be the process, more science, or panel reorganization, or more meetings or whatever it is. And then finally, the resulting costs of implementing any measures that, that mitigate ecosystem interactions or, you know, however it is you want to consider that stuff. You know, avoiding bycatch of species X, you know, may have costs that target the value of fisheries on species Y.”¹⁴⁶⁵

This statement by Informant 2 highlights how economic costs affect all aspects of the decision-making process of the RFMO, and its potential outcomes. Starting with the costs associated with gathering sufficient scientific information to enable the decision-making mechanisms of RFMO 2 to consider the adoption of conservation and management measures based on the scientific information and advice, Informant 2 emphasizes that the associated costs of conducting research are constraining the RFMO’s ability to implement and operationalize the ecosystem approach to fisheries.

Informant 2 also points out that the scientific staff has proposed changes on how to improve the implementation of the ecosystem approach to fisheries, but that such potential changes represent costs for the RFMO in relation to the various actions necessary to facilitate

¹⁴⁶⁴ Interview with informant 2 by Ingrid S. Andreassen, 14 April 2023.

¹⁴⁶⁵ Interview with informant 2 by Ingrid S. Andreassen, 14 April 2023.

implementation, thereby leading to a duplication of costs when the Commission potentially attempts to operationalize the proposed changes. The statement relates to changes in internal practices of the RFMO, and Informant 2 highlights that there exist economic constraints on the practical aspects of facilitating the proposed changes.¹⁴⁶⁶

The third constraint highlighted by Informant 2 relates to the costs after implementing conservation and management measures to minimize impacts from fisheries on marine ecosystems and non-target species.¹⁴⁶⁷ By introducing mitigation measures to, e.g., reduce bycatch of non-target species, the RFMOs are running the risk of affecting the economic value of landed catches of targeted species. This scenario links back to the commissioners' willingness to tolerate and accept the expenses associated with implementing and operationalizing conservation and management measures for long-term conservation of the relevant non-target species.

Overall, the statement by Informant 2 demonstrates the existence of several internal processes when conservation and management measures are discussed and potentially adopted, which are presently negatively affected by economic constraints. These constraints range from the stage where the tuna RFMO is attempting to acquire the scientific information necessary to form a basis for decision-making, costs to facilitate proposed changes and adoption of measures, and the actual implementation and operationalization of the measures. The statement sheds light on how all internal processes in the tuna RFMO are affected by financial aspects, and how they may constrain every step in the process of adoption of long-term conservation measures for marine ecosystems and non-target species. This shows that RFMO 2 is also facing multiple constraints in its efforts to operationalize the ecosystem approach to fisheries.

Informant 2 continues the interview by stating that the financial constraints are making the member states of the Commission argumentative and that economic aspects have affected

¹⁴⁶⁶ Interview with informant 2 by Ingrid S. Andreassen, 14 April 2023.

¹⁴⁶⁷ Interview with informant 2 by Ingrid S. Andreassen, 14 April 2023.

several conservation and management measures that eventually have been adopted by the organization. Informant 2 emphasizes:

“Well, they are contentious for sure, and for economic reasons, they are contentious. So, for example, bird mitigation measures. You know, there was initially quite a lot of resistance to bird mitigation measures. Again, for economic reasons, right, you have to have equipment, special equipment, observer coverage falls in this category as well. Like, there needs to be more space for the observer. The observers themselves are really, really busy at sea, you see? And then they are being asked to collect more and more data, etcetera, and so on, and so forth. Night fishing for seabirds. All of these things, they impose economic costs and there's resistance on account of those costs to implementing them. Especially where the evidence that they are effective is not always very good.”¹⁴⁶⁸

And:

“Right. So, circle hooks are, is another common example of this. Right? And then associated with the, the benefits to a single species of a given measure, it is like, circle hooks are a good example of this too, it's that it may be good for reducing the bycatch of some species while increasing the bycatch of other ones.”

These statements by Informant 2 shed light on the diverse challenges affecting the decision-making process of the RFMO, and clearly demonstrate the link between obtaining scientific information and the political will and priorities of the member states of the organization to respond to such information.

As illustrated in this section, RFMO 2 is facing several economic constraints that may affect its ability to implement and operationalize the ecosystem approach to fisheries. When asked about whether RFMO 2 has initiated actions to mitigate the economic constraints, Informant 2 states:

¹⁴⁶⁸ Interview with informant 2 by Ingrid S. Andreassen, 14 April 2023.

“No, like you know, not, not really. Except, as I was, I sort of talked about before, I think that the decision-making process, generally speaking, is about mitigating economic constraints. You know, while achieving some, some objectives, they also want those objectives to achieve that, like at a, with economic costs that are as small as possible. So, regulations, management, management measures, those impose, those impose costs across the whole spectrum. Right, from the organization’s costs to the costs of the vessel.”¹⁴⁶⁹

And:

“So, I mean, you’re sort of, your second question about, you know, if any, how [RFMO 2] is working to mitigate these constraints, I can’t think of any specific examples except to say that I, I promise you that mitigating economic constraints and achieving economic ends is a central part of every discussion that occurs in decision-making in [RFMO 2].”¹⁴⁷⁰

These two quotes by Informant 2 emphasize that RFMO 2 has not taken any concrete action towards mitigating its existing economic constraints. However, the quotes also underline that the decision-making process of the RFMO is primarily centred on economic aspects and how outcomes of policy decisions will affect the balance of costs and benefits for the member states and fisheries industries.

Finally, key Informant 3 states that RFMO 3 does not grapple with economic constraints at the institutional level when asked about how economics may influence its ability to implement and operationalize the ecosystem approach to fisheries. However, Informant 3 does state that the economic capacity of the organization may lead to the prioritization of issues relating to targeted stocks in terms of research funding. Informant 3 states:

“We do not really have any economic constraints. The members pay, you know, they agree to a plan of work. They agree to doing what needs to be done in terms of the

¹⁴⁶⁹ Interview with informant 2 by Ingrid S. Andreassen, 14 April 2023.

¹⁴⁷⁰ Interview with informant 2 by Ingrid S. Andreassen, 14 April 2023.

implementation of the, of the CMMs [conservation and management measures] and, and the way it goes.”¹⁴⁷¹

And:

“And as I mentioned, you know, there is if they want to understand more about an issue then there is, there’s a budget for, you know, better understanding. But then of course, there is a prioritization, usually a prioritization of the target species. So, again anything that is done on, on associated and dependent species, then it is, it tends to be linked to its, that there is some sort of impact on the target species. But there are no, there are no real economic constraints.”¹⁴⁷²

These statements show that RFMO 3 does not face economic issues relating to its implementation and operationalization of the adopted conservation and management measures, but instead points out that the issue at stake may be the prioritization of how to use available financial resources when multiple issues need to be researched simultaneously, and adds that the member states thus allocate funds to issues relevant for the conservation and management of their target stocks. This links back to the priorities of member states and their political will to enable reliable scientific processes on which they may base the adoption of conservation and management measures to conserve ecosystems and non-target species. When Informant 3 is asked specifically about whether member states are reluctant to introduce conservation and management measures to conserve these ecosystems and non-target species due to the potential expense involved, Informant 3 emphasizes:

“All sorts of reasons, yes. Yes, because it might mean a change of gear. It might mean that a fishery that their people would actually rely on, their, you know, their artisanal fishers are impacted. And so there are all sorts of reasons why you would not.”¹⁴⁷³

And:

¹⁴⁷¹ Interview with informant 3 by Ingrid S. Andreassen, 21 June 2023.

¹⁴⁷² Interview with informant 3 by Ingrid S. Andreassen, 21 June 2023.

¹⁴⁷³ Interview with informant 3 by Ingrid S. Andreassen, 21 June 2023.

“When that CMM is being discussed, you will get those members that are affected putting their hands up and saying you need to tone this down because we can’t, you know, we can’t implement it and it will have a great effect, blah blah blah, all those sorts of things. So that is where you get out. That is why, why you are getting your most of your, your CMMs by consensus. And they are probably not as hard or pragmatic as they possibly could be, because there is an element of negotiation in there.”¹⁴⁷⁴

These statements on how the member states of the organization perceive potential economic costs for conserving, e.g., marine ecosystems and non-target species reveal that the domestic interests of some of these states may impede the adoption of progressive conservation and management measures directed at conserving, e.g., non-target species negatively affected by the fishing operations. Despite Informant 3 emphasizing that RFMO 3 is not hampered by economic constraints in its efforts to implement and operationalize the ecosystem approach to fisheries in its everyday work at the institutional level, it nevertheless becomes evident that RFMO 3 is also facing challenges relating to persistent economic constraints which affect its decision-making processes. This finding is based on the statement of how the balancing of costs and benefits stemming from the adoption of potential conservation measures is “toned down” because of how the decisions will affect the various countries domestically.¹⁴⁷⁵

8.4.2.2 Discussion

Informant 1 emphasizes that economic factors negatively affect the Commission’s ability to hold annual meetings, that the commissioners are affected by domestic economic priorities, and that the capacity of the member states to implement adopted conservation and management measures represents a financial constraint.

The potential effects of the organization’s institutional challenge of holding annual meetings and adopting necessary conservation and management measures has already been explored and discussed in Section 8.3.4, which revealed that RFMO 1 has experienced scenarios where

¹⁴⁷⁴ Interview with informant 3 by Ingrid S. Andreassen, 21 June 2023.

¹⁴⁷⁵ Interview with informant 3 by Ingrid S. Andreassen, 21 June 2023.

conservation and management measures directed at conserving non-target species did not even enter into the conversation at the annual Commission meeting, as the RFMO ran out of available time to deal with the issue during its meeting.

The second part of the quote by key Informant 1 relates to the “two-level game,” which was introduced as a constraint for the operationalization of, e.g., the ecosystem approach to fisheries in Section 5.3.^{1476,1477} The commissioners are involved in a balancing act where they have to consider both long-term conservation efforts in relation to economic implications and expenses for the domestic fisheries industry, and the short-term economic interests of the industry in maintaining status quo or only making minor alterations to existing practices. Informant 1 highlights the competing interests of the RFMOs’ member states as one of the key challenges for the operationalization of the ecosystem approach to fisheries,^{1478,1479} pointing to the fact that some member states are driven by market interests during the negotiations taking place in the RFMO.

The third part of the quote by Informant 1 relates to the fact that some of the RFMOs’ member states may not have sufficient economic capacity to fully implement and operationalize the ecosystem approach to fisheries. It is well known that changes to existing fishing gear and practices may be expensive for the fishing vessels and industry. While the states are implementing the changes at the regional level to abide by the regulations adopted by the RFMO, the measures are not necessarily prioritized domestically, potentially creating a compatibility gap if these states have coastal zones bordering the geographical area of RFMO 1.¹⁴⁸⁰

¹⁴⁷⁶ See also, Samuel Barkin, J., Elizabeth R. DeSombre, Atsushi Ishii, and Isao Sakaguchi. “Domestic sources of international fisheries diplomacy.”

¹⁴⁷⁷ Interview with informant 1 by Ingrid S. Andreassen, 13 April 2023.

¹⁴⁷⁸ See Section 8.4.1 where this statement was presented and analyzed.

¹⁴⁷⁹ Interview with informant 1 by Ingrid S. Andreassen, 13 April 2023.

¹⁴⁸⁰ As explained in Section 3.3.1, Article 7 of the 1995 UN Fish Stocks Agreement recognizes the need to establish compatible regimes for the conservation and management of marine resources, and the conservation principles in Article 5 of the Agreement are applicable to areas beyond national jurisdiction and in the maritime zones of coastal states bordering high seas areas.

Turning to RFMO 2, the second key informant highlights how economic constraints affect the organization's ability to acquire the necessary scientific information to enable decision-making, how the costs represent a barrier to proposed changes and adoption of measures, and how the actual implementation and operationalization of adopted measures is an economic burden on the member states.

As seen in Section 8.3.4, RFMO 2 does not consider externally produced scientific information in its decision-making processes, and such external scientific evidence is not even taken into account in Commission meetings, which creates a scenario where RFMO 2 paradoxically will have to invest even more funds into scientific work than other RFMOs that do respond to externally produced scientific information. Given the identified constraints in relation to using such information, it is not surprising that RFMO 2 is finding it difficult to finance the research necessary to make sound decisions for, e.g., the operationalization of the ecosystem approach to fisheries.

The economic constraints on conducting more extensive research to enable the adoption of conservation and management measures may also be intricately connected to the vast geographical area of competence of the RFMOs, which the organizations ought to manage and conserve in line with the legally binding principles of the 1995 UN Fish Stocks Agreement.¹⁴⁸¹ Clearly, managing vast geographical areas requires more scientific research than smaller areas, and there is a vital need for advanced science to address the central question of how the tuna fisheries affect the ecosystems and non-target species residing within these vast areas. Linking the issues relating to conservation in vast geographical areas with potential problems in responding to external scientific information produced externally and the expense of doing more extensive research reveals clearly that RFMO 2 is also facing multiple barriers to the operationalization of the ecosystem approach to fisheries. As highlighted by Informant 2, investment in research is vital for the functioning of the organization,¹⁴⁸² and RFMO 2 is advised to consider externally produced scientific information

¹⁴⁸¹ 1995 UN Fish Stocks Agreement. Article 5(f).

¹⁴⁸² Interview with informant 2 by Ingrid S. Andreassen, 14 April 2023.

in parallel with investing more in its internal scientific research to mitigate the existing constraints for the operationalization of the approach.

Apparently, both RFMO 1 and RFMO 2 are faced with scenarios which link back to the commissioners' willingness to tolerate and accept the expenses associated with implementing and operationalizing conservation and management measures for long-term conservation of the relevant non-target species. as was elaborated on by De Bruyn, Murua and Aranda, and introduced in Section 5.3.¹⁴⁸³

If the information produced is not considered sufficiently reliable, it causes s among the member states about whether a particular conservation and management measure should be adopted. This is related to what Haas et al. have described as scenarios where some states are advocating for economic interests while another group of states is taking the "conservationist approach," causing internal tensions in RFMOs.¹⁴⁸⁴ The scenarios described by Informant 2 regarding mitigation measures to reduce bycatch of seabirds and the use of circle hooks demonstrate above all the complexity of factors that need to be considered by the tuna RFMOs when the commissioners vote for the adoption of conservation measures to, e.g., conserve non-target species. This highlights the need to invest in more extensive research to form the basis for the scientific advice presented to the decision-makers to avoid political tensions which may delay the adoption of necessary conservation and management measures for marine ecosystems and non-target species.

The decisions to facilitate the implementation and operationalization of the relevant conservation and management measures are taken based on the least economic impact possible, indicating that the commissioners are striving to adopt decisions with acceptable outcomes both regionally at the RFMO level and domestically by playing the "two-level game."¹⁴⁸⁵ It therefore seems crucial that the member states of the tuna RFMOs commit

¹⁴⁸³ Bruyn, Paul de, Hilario Murua, and Martín Aranda. "The Precautionary approach to fisheries management: How this is taken into account by Tuna regional fisheries management organisations (RFMOs)."

¹⁴⁸⁴ Haas, Bianca, Jeffrey McGee, Aysha Fleming, and Marcus Haward. "Factors influencing the performance of regional fisheries management organizations."

¹⁴⁸⁵ Samuel Barkin, J., Elizabeth R. DeSombre, Atsushi Ishii, and Isao Sakaguchi. "Domestic sources of international fisheries diplomacy: A framework for analysis."

themselves politically to implement and operationalize the ecosystem approach to fisheries at both the national and regional level to ensure that decisions on conservation of marine ecosystems and non-target species are not downplayed in negotiations based on the premise of the short-term economic benefits of maintaining existing practices when scientific information calls for changes.

The findings also identify that the commissioners of RFMO 3 are faced with the two-level game, resulting in potential constraints for the operationalization of the ecosystem approach to fisheries in the organization's decision-making processes.

The analysis of how potential economic constraints may affect the tuna RFMOs' ability to implement and operationalize the ecosystem approach to fisheries reveals overall that there exists a myriad of economic drivers and constraints that are affecting the various organization's work. The economic constraints discovered in this thesis exist at various levels, such as the institutional level in relation to financing meetings which enable the tuna RFMOs' decision-making mechanisms and their production of reliable scientific evidence. A further level involves the internal decision-making mechanisms of the organizations, which are heavily influenced by the competing interests of the diverse commissioners and stakeholders. Finally, economic constraints exist at the external domestic level where some member states are unable to implement and operationalize conservation and management measures adopted at the regional level by the tuna RFMOs. The various economic constraints currently affecting one or more of the tuna RFMOs are visually presented in Figure 8 below.

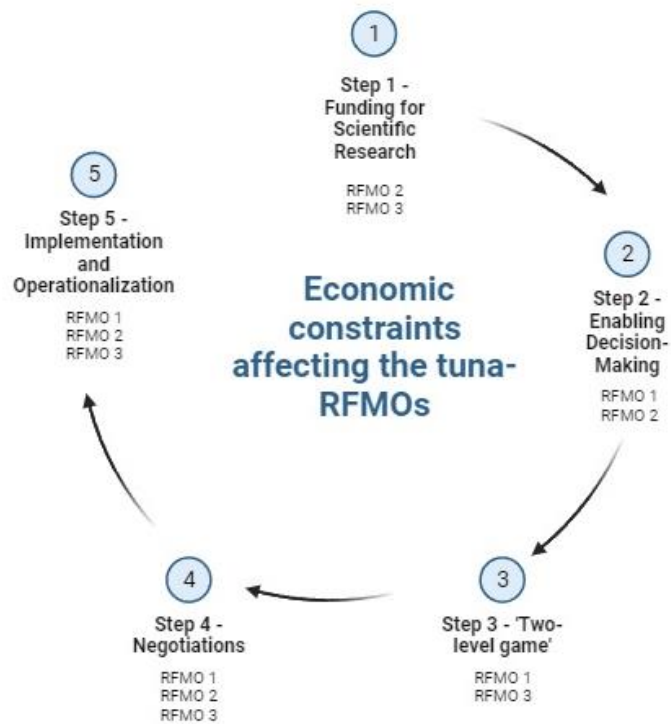


Figure 8: An illustration of the economic constraints currently affecting one or more tuna RFMOs in their implementation and operationalization of the ecosystem approach to fisheries. The figure is based on the findings of this study and on a categorization of the different statements of the key informants as presented in this chapter. Created with BioRender.

As illustrated by Figure 8, this thesis and its findings reveal the existence of several economic constraints negatively affecting the tuna RFMOs' ability to implement and operationalize the ecosystem approach to fisheries. Two of the key informants emphasize that their organizations are currently facing economic constraints on their ability to effectively conserve marine ecosystems and non-target species, as these RFMOs do not have sufficient resources to allocate to scientific research which could provide reliable scientific advice to form a basis for decisions. Furthermore, two of the key informants mention economic constraints affecting their organization's ability to facilitate decision-making internally due to lack of funding to enable time to be allotted to deal with issues relevant to the conservation of marine

ecosystems and non-target species. A further economic constraint relates to costs associated with making changes to the functions and structure of the Commission based on suggestions by scientists. Two of the key informants highlight how domestic political interests are heavily affected by the two-level game, and how domestic economic drivers affect the political positions of some member states of the tuna RFMOs. All three informants underline that competing interests of the member states may ultimately lead to watered-down decisions to implement and operationalize the ecosystem approach to fisheries, and that domestic economic interests also strongly influence the negotiations taking place in the three organizations. Finally, all three informants highlight how economic constraints are permeating the work of implementing and operationalizing the ecosystem approach to fisheries.

The identified constraints to the implementation and operationalization of the ecosystem approach to fisheries shed light on the fact that economic constraints influence every aspect and step of the work undertaken by the tuna RFMOs that is necessary to conserve marine ecosystems and non-target species. This starts with acquiring the scientific information necessary to create sound scientific advice, followed by facilitating commission meetings which may adopt conservation and management measures to operationalize the approach. Here, competing domestic interests may ultimately impede the adoption of such measures if they do not receive sufficient support, while negotiations during the commission meetings often involve diverse priorities and positions. Finally, there may be economic constraints at the level of implementation and operationalization if the measure gets adopted. As argued by Webster, ecosystem-based management “would be more widespread and holistic if not for political and economic challenges.”¹⁴⁸⁶ This statement is certainly also true for the sector-based ecosystem approach to fisheries.

The diversity of the economic constraints currently impeding the tuna RFMOs’ ability to fully implement and operationalize the ecosystem approach to fisheries yet again highlights the absence of a one size fits all solution in dealing with the existing barriers. Nevertheless, it would seem to be a crucial step for all the member states of the tuna RFMOs to initiate processes to re-examine their domestic priorities in order to conserve marine ecosystems.

¹⁴⁸⁶ Webster, *Beyond the Tragedy in Global Fisheries*. Page 329.

This approach may in turn help to solve economic constraints at the institutional level of the RFMOs. Additionally, the member states of each tuna RFMO are strongly encouraged to initiate efforts to mitigate the economic constraints recognized in their particular RFMO.

It is crucial to emphasize that the current management practices of the organizations,¹⁴⁸⁷ and continuous disregard of attempting to solve the identified underlying causes impeding the implementation and operationalization of the ecosystem approach to fisheries may represent a breach of the functions and responsibilities they ought to fulfil pursuant to international law. A central finding of this study is that by making no attempt to mitigate the constraints on the implementation and operationalization of the ecosystem approach to fisheries, the member states of the tuna RFMOs may be violating their obligations under the 1995 UN Fish Stocks Agreement,¹⁴⁸⁸ by failing to fulfil their obligations in high seas fisheries in accordance with Article 10 of the Agreement.

8.4.2.3 Recommendations

The analysis reveals an interconnection between constraints based on political will to implement the ecosystem approach to fisheries and constraints based on economic drivers and capacity.

A sound recommendation applicable to all the three tuna RFMOs participating in the interview study is thus that their member states must strengthen their political commitment and willingness to implement and operationalize the ecosystem approach to fisheries. This also includes tolerating short-term economic expenses to secure long-term conservation of both the target species and marine ecosystems, which will ultimately provide long-term economic benefits for all actors involved in the fisheries.

Based on the findings, it is also evident that ensuring sufficient support for the adoption of conservation and management measures directed at conserving, e.g., marine ecosystems and

¹⁴⁸⁷ The established regulatory frameworks of the tuna RFMOs in relation to the objective of minimizing catch by lost, abandoned, or otherwise discarded fishing gear were assessed and analyzed in Chapter 7 of this thesis.

¹⁴⁸⁸ See Article 5(f) of the 1995 UN Fish Stocks Agreement.

non-target species among the member states of the RFMOs is vital for the operationalization of the ecosystem approach to fisheries in the future work of the organizations.

A final recommendation is based on the statements by Informant 1. RFMO 1 is explicitly advised to change its existing practices and financing mechanisms for commission meetings, and set aside sufficient time, to enable decision-makers to fulfil their responsibilities under international law.¹⁴⁸⁹ Making such internal changes appears to be a prerequisite for the future implementation and operationalization of the ecosystem approach to fisheries, as pressing issues need to be dealt with through changes to existing fishing practices. Furthermore, although issues of compatibility of management regimes is not a key focus area of this project, it seems clear that the overall marine environment and marine ecosystems would benefit from the establishment of similar regimes for both the coastal areas bordering the regulatory areas of competence of tuna RFMOs and their convention areas. Securing and allocating sufficient funding to support the relevant states in their operationalization of the ecosystem approach to fisheries may thus be a plausible solution to the issue of potential non-implementation due to lack of financial capacity as experienced by RFMO 1.

The following section presents a summary discussion from the interviews with the key informants and elaborates on the central question of how the tuna RFMOs are currently fulfilling the functions established by international legal instruments.

¹⁴⁸⁹ The 1995 UN Fish Stocks Agreement obliges the state parties to implement, e.g., the ecosystem approach to fisheries in its fisheries management by virtue of Article 5(f).

8.5 Summary of Relevant Findings

This thesis has identified several constraints negatively affecting the tuna RFMOs' ability to implement and operationalize the ecosystem approach to fisheries, in addition to some recommendations for how these constraints may be mitigated.

One of the key constraints discussed in this thesis is how the lack of an operational definition of the ecosystem approach to fisheries creates vagueness in terms of how the approach ought to be implemented and operationalized through regional cooperation in RFMOs. This finding illustrates that despite calls for implementation of the approach,¹⁴⁹⁰ challenges remain in relation to the key question of how such implementation should be undertaken. The CBD COP Decision V/6 recognizes that “there is no single way to implement the ecosystem approach,”¹⁴⁹¹ and De Lucia argues that the “lack of a clear and precise definition is [...] often not considered to constitute an important hindrance in relation to the ability to operationalize the concept.”¹⁴⁹² However, this does not seem to apply in the context of tuna RFMOs, indicating that the actors implementing the sectoral ecosystem approach to fisheries are dependent on a higher level of clarity than those implementing the ecosystem approach in general. Consequently, developing an operational framework for the ecosystem approach to fisheries and mechanisms and criteria to assess its implementation may be a key task for suitable global forums such as the FAO to enable future implementation and operationalization of the approach. The findings of this thesis re-iterate those of Hey in the 2010s, who emphasized that “concepts once introduced into international law may be difficult to replace” after assessing the transition from the concept of MSY to the ecosystem approach to fisheries in international fisheries law.

¹⁴⁹⁰ Juan-Jordá et al., “Report Card on Ecosystem-Based Fisheries Management in Tuna Regional Fisheries Management Organizations” and Karim, Techera, and Arif, “Ecosystem-based fisheries management and the precautionary approach in the Indian Ocean regional fisheries management organizations.”

¹⁴⁹¹ CBD, COP, Decision V/6, 2000, Section A, para. 5.

¹⁴⁹² Vito De Lucia, *The ‘Ecosystem Approach’ in International Environmental Law: Genealogy and Biopolitics*. Page 45.

Another key finding of this thesis is that the representatives of tuna RFMOs do not perceive the work of the FAO in developing an operational framework for the ecosystem approach to fisheries as assisting these organizations in their endeavor to implement and operationalize the ecosystem approach to fisheries. The FAO has been described as a pioneer in translating objectives of the ecosystem approach to fisheries into concrete measures which may be used to implement and operationalize the approach.¹⁴⁹³ Thus, the findings of this thesis illustrate that the role of the FAO in developing the approach is perceived differently when studied through the lenses of the tuna RFMOs. This raises a reasonable question regarding the future development of the ecosystem approach to fisheries – if the FAO is not currently shaping the practice, what forum is then suitable for this work? The study has identified that one of the representatives of the tuna RFMOs is of the opinion that this work should be undertaken by the RFMOs themselves, but as emphasized in Section 8.2.3, I would argue that it is important that a global forum addresses this issue. However, the tuna RFMOs' member states ought to be involved in this important work to safeguard governance in future high seas fisheries.

This thesis also identifies how the management mandates of the tuna RFMOs may constrain the operationalization of the ecosystem approach to fisheries when considered in conjunction with their regulatory areas of competence. Consequently, assessing these internal factors in conjunction seems to reveal the existence of significant institutional challenges which may impede the implementation and operationalization of the ecosystem approach to fisheries.

Of particular interest is the fact that the informants in the study do not see the lack of a formal management mandate as representing a constraint for efforts to implement and/or operationalize the ecosystem approach to fisheries, when regarded in isolation from other

¹⁴⁹³ See, e.g., W. J. Fletcher and G. Bianchi, "The FAO – EAF toolbox: Making the ecosystem approach accessible to all fisheries," which describes the work of the FAO in making the ecosystem approach to fisheries accessible to all fisheries. Fletcher et al. also describe how the FAO has developed technical guidelines to support the implementation of the FAO Code of Conduct, in W. J. Fletcher et al. "A flexible and practical framework for reporting on ecologically sustainable development for wild capture fisheries" on page 176.

See also D. G. Webster, *Beyond the Tragedy in Global Fisheries*, page 327, which also describes the work of the FAO in adopting technical reference frameworks and Alf Håkon Hoel, "The Importance of Marine Science in Sustainable Fisheries: The Role of the 1995 UN Fish Stocks Agreement," pages 388-389.

internal factors.¹⁴⁹⁴ This finding contradicts existing literature emphasizing that the management mandates of the tuna RFMOs are key to their ability to implement the approach.¹⁴⁹⁵ Thus, the findings of this study bring new knowledge to the academic debate on the formal management mandates of tuna RFMOs, and illustrate that the mandates *per se* are not a vital prerequisite for the implementation of the ecosystem approach to fisheries. However, the mandates are important when viewed in conjunction with other internal factors that may influence the implementation and operationalization of the approach and should therefore still be reflected in the academic debate.

The present study also identifies that the organizational structures of the tuna RFMOs represent constraints to the operationalization of the ecosystem approach to fisheries. The study consequently supports existing literature addressing this topic¹⁴⁹⁶ and demonstrates that challenges still remain five years after the study of Juan-Jordá et al. was published. This raises a fundamental question about the tuna RFMOs' ability to respond to scientific calls for changes to their internal structures. This is problematic, as two of the key informants also recognize that internal changes in the RFMO are very slow.

Another finding of this thesis is that there exist clear institutional gaps and structural problems in all the tuna RFMOs in the interview study in relation to their efforts to conserve marine ecosystems and non-target species in fishing operations. These findings generally coincide with existing research on the topic,¹⁴⁹⁷ and highlight grave flaws and shortcomings in relation to how the organizations respond to changes in scientific information about non-target species. The study reveals that neither RFMO 1 nor RFMO 2 implement new scientific knowledge in a timely and effective manner in accordance with the obligations laid down in

¹⁴⁹⁴ See Section 8.3.1 of this thesis which explores the topic.

¹⁴⁹⁵ See, e.g., Juan-Jordá et al., "Report Card on Ecosystem-Based Fisheries Management in Tuna Regional Fisheries Management Organizations," and Gilman, Eric, Kelvin Passfield, and Katrina Nakamura, "Performance of Regional Fisheries Management Organizations: Ecosystem-Based Governance of Bycatch and Discards."

¹⁴⁹⁶ Juan-Jordá et al., "Report Card on Ecosystem-Based Fisheries Management in Tuna Regional Fisheries Management Organizations" and Nakatsuka, Shuya, "Management strategy evaluation in regional fisheries management organizations – How to promote robust fisheries management in international settings."

¹⁴⁹⁷ See, e.g., McDorman, "Implementing Existing Tools: Turning Words Into Actions – Decision-Making Processes of Regional Fisheries Management Organisations (RFMOs)" and Juan-Jordá et al., "Report Card on Ecosystem-Based Fisheries Management in Tuna Regional Fisheries Management Organizations."

the 1995 UN Fish Stocks Agreement.¹⁴⁹⁸ RFMO 3 does not even perceive scientific knowledge about non-target species as its responsibility, and prefers that other regional conservation bodies deal with the conservation efforts for these species. Consequently, the findings illustrate that the tuna RFMOs may not be able to fulfill their core functions under the 1995 UN Fish Stocks Agreement. A key finding of this thesis is nevertheless that the challenges currently negatively affecting the tuna RFMOs' possibilities to implement and operationalize the ecosystem approach to fisheries vary considerably. This is an interesting finding as it is thus impossible to draw general conclusions about how the scientific processes in the tuna RFMOs should be changed to facilitate effective implementation of the approach. As scholarly literature tends to assess the tuna RFMOs as a unit, one of the key findings of this thesis is that there is no single solution that would fit them all.

Lastly, this thesis identifies that some of the main barriers to the implementation and operationalization of the ecosystem approach to fisheries by the tuna RFMOs are competing interests, political priorities, capacity, available time, and economic drivers. The findings largely support existing literature addressing these diverse factors, but a novel finding of this thesis is that lack of available time at commission meetings may lead to scenarios which prevent the adoption of measures for the conservation of marine ecosystems and non-target species. This constraint has not previously been addressed in the literature, and this thesis consequently adds to the existing body of literature on the ecosystem approach to fisheries and tuna RFMOs.

Another central finding of this study is the diversity of the economic constraints currently impeding the tuna RFMOs' ability to fully implement and operationalize the ecosystem approach to fisheries. These diverse constraints yet again highlight the absence of a one size fits all solution in dealing with the existing barriers.

¹⁴⁹⁸ See Article 5(f) of the 1995 UN Fish Stocks Agreement.

9. Chapter IX: Findings of the Case Study

9.1 Introduction

Chapter 8 concluded the case study of the implementation and operationalization of the ecosystem approach to fisheries in the context of tuna RFMOs. This chapter will bring together the chapters of Section II of this thesis (Chapters 6-8) and offer valuable insights into the relevant findings of the study.

9.2 Insights from the Case Study

This thesis and its findings demonstrate the existence of multiple and diverse constraints affecting the tuna RFMOs' abilities and efforts to implement and operationalize the ecosystem approach to fisheries. These constraints exist on multiple levels, representing a complex puzzle which the tuna RFMOs are seemingly struggling to cope with. They are facing external constraints created by the normative framework and the main actors to the development of an operational framework for the ecosystem approach to fisheries, internal constraints created by weak institutional drivers and their organizational architectures currently hindering the effective operationalization of the approach, and finally constraints stemming from the domestic level of the member states, created by their diverse priorities and domestic drivers influencing the negotiations and outcomes of the decision-making processes of the tuna RFMOs.

As demonstrated in Section 8.5, this study confirms the findings identified in existing literature, but expands the existing knowledge by illustrating the complexity of the constraints currently affecting the tuna RFMOs' operationalization of the ecosystem approach to fisheries. Whereas research studies tend to focus on one aspect,¹⁴⁹⁹ this thesis synthesizes

¹⁴⁹⁹ See, e.g., Nakatsuka, "Management strategy evaluation in regional fisheries management organizations – How to promote robust fisheries management in international settings", which focuses on the development of

findings from the different categories in the literature, and even identifies new variables which have not previously been discovered.¹⁵⁰⁰ This thesis also adds to existing literature by providing novel ways to reflect on the different constraints currently affecting the tuna RFMOs in their endeavor of implementing and operationalizing the ecosystem approach to fisheries.

Although international law provides these organizations with the functions and responsibilities for conserving marine ecosystems and their residing non-target species from impacts caused by fishing operations,¹⁵⁰¹ the study reveals that these regional bodies legally mandated to conserve the world's common high seas resources may be unable to satisfactorily fulfil these functions. The existence of multiple constraints currently impedes their ability to implement and operationalize the ecosystem approach to fisheries. The complexity of the issue becomes even more complicated as the key informants, chosen to represent their respective RFMOs in the study, are aware of the diverse constraints identified that are presently influencing the potential implementation and operationalization of the approach in these organizations. This awareness is seen in the insights and knowledge provided by their statements, which were subject to closer analysis in the different sections of Section 8.

One of the most interesting findings of the analysis relates to constraints where the existence of plausible solutions is evident. These constraints include the scientific constraints currently affecting the implementation and operationalization of the approach,¹⁵⁰² and the persistent economic constraints permeating all efforts made by the RFMOs to implement and operationalize the approach.¹⁵⁰³ Consequently, this thesis supports the argument made by Hey in relation to how “concepts once introduced into international law may be difficult to replace,” currently representing one of the main constraints for the operationalization of the

management strategy evaluation, and Barkin et al., which focuses on domestic drivers in “Domestic sources of international fisheries diplomacy.”

¹⁵⁰⁰ Such as how available time during Commission meetings may represent a constraint for the tuna RFMOs' implementation and operationalization of the ecosystem approach to fisheries. See Section 8.4.1 of this thesis for more details.

¹⁵⁰¹ See Sections 5.2.5 and 4.3 of this thesis.

¹⁵⁰² See Section 8.3.4 of this thesis.

¹⁵⁰³ See Section 8.4.2 of this thesis.

ecosystem approach to fisheries by the tuna RFMOs. Their organizational structures, scientific processes, and diverse political priorities among stakeholders still center on single-species management approaches.¹⁵⁰⁴ Despite the awareness of the persisting constraints of the representatives of the tuna RFMOs, two of the informants expressly emphasize that the organizations are not doing anything to mitigate the pressing issues, and the last informant highlights how the RFMO does not even perceive the conservation of marine ecosystems and non-target species as part of its responsibility, suggesting that single-species management still strongly influences the work of the tuna RFMOs involved in the interview study. The statements given by the three informants highlight that all three tuna RFMOs concerned are unable to mitigate some key constraints on the implementation and operationalization of the ecosystem approach to fisheries, leading to the interesting observation that their member states may not be fulfilling their obligations under international law.

As will be discussed in the following, neither the 1995 UN Fish Stocks Agreement nor the FAO Code of Conduct sets a threshold for the actions to be taken by the contracting parties to comply with the obligations encompassing the ecosystem approach to fisheries,¹⁵⁰⁵ bringing the question frequently debated in the 2000s back to life: What is really the scope and content of the ecosystem approach to fisheries?

As illustrated in Chapter 4, the ecosystem approach to fisheries may be regarded as a management framework comprising management objectives which the states and RFMOs are to implement and operationalize through the adoption of conservation and management measures tailored to achieving the objectives. One of these objectives relevant to the conservation of marine ecosystems and non-target species has been examined in this thesis,¹⁵⁰⁶ revealing that the tuna RFMOs are responding to the obligations in the normative

¹⁵⁰⁴ Ellen Hey, “The Persistence of a Concept: Maximum Sustainable Yield.” Page 771. Hey describes how the concept of maximum sustainable yield may impede the implementation of, e.g., the ecosystem approach to fisheries in her published paper.

¹⁵⁰⁵ See Section 4.4 for more information about the legal requirements of the ecosystem approach to fisheries.

¹⁵⁰⁶ Whether and how the tuna RFMOs have implemented and operationalized the objective of minimizing catch by lost, abandoned or otherwise discarded fishing gear was systematically assessed in Chapter 7 of this thesis.

framework in relation to some of the identified objectives. Linking the findings of the analysis in Part II of this thesis yields several observations.

The most prominent successful example of where the tuna RFMOs have been able to adopt progressive conservation and management measures operationalizing the ecosystem approach to fisheries was discovered and analyzed in Section 7.3 in relation to the tuna RFMOs' regulatory frameworks for FAD management. The study of these regulatory frameworks illustrates that three of five tuna RFMOs have established a ban on traditional FADs with entangling designs and FADs composed of non-biodegradable materials,¹⁵⁰⁷ marking a transition where all vessels utilizing FADs in the RFMOs' regulatory areas of competence are obliged to invest in modern FAD designs to safeguard, e.g., non-target species from the potential impacts of the fishing gear. The approach taken by the three RFMOs that have banned traditional FAD designs and materials demonstrates that tuna RFMOs are capable of pragmatically responding to scientific knowledge about how their fishing operations impact the marine ecosystems and shows that they are able to adopt conservation and management measures to mitigate the impacts despite imposing economic expenses on the member states and vessels utilizing FADs in their fishing operations. The approach taken by the organizations when developing their regulatory frameworks clearly represents a trade-off with the economic costs of phasing out all traditional FADs utilized by the fishing vessels, which consequently has led to investment in new fishing gear. This investment in short-term costs thus leads to long-term conservation of the marine species, previously negatively impacted by the replaced fishing gear, which in turn is likely to result in economic benefits for the member states in the long run.

As the findings of Chapter 8 demonstrate that the balancing act between short term economic expenses and long-term conservation of marine ecosystems and non-target species presently represents one of the main constraints for the operationalization of the ecosystem approach to fisheries in the tuna RFMOs, the regulatory frameworks for FAD management that some RFMOs have adopted stands out as an example to follow in the potential operationalization of the other objectives of the ecosystem approach to fisheries. However, while the transition

¹⁵⁰⁷ These findings were presented and analyzed in Section 7.3.5 of this thesis.

to modern gear in FAD fisheries, aimed at mitigating some of the impacts on the marine environment, ecosystems and species, marks a positive change and can be perceived as an example of effective operationalization of the ecosystem approach to fisheries, it is also important to note that numerous examples of converse scenarios have been discovered in this thesis.

Severe shortcomings discovered in this study are the tuna RFMOs' lack of concrete actions to minimize the impacts and causes of catch by lost, abandoned, or otherwise discarded fishing gear, when their regulatory frameworks for FADs are excluded.¹⁵⁰⁸ The most severe examples are the lack of adoption of bans on intentional discard of fishing gear at sea,¹⁵⁰⁹ the lack of establishment of gear disposal systems onshore, and the lack of adoption of mandatory reporting of lost, abandoned, or otherwise discarded fishing gear and mandatory retrieval of such gear.¹⁵¹⁰ The existing scientific knowledge about the impacts of ghost fishing on the marine environment is comprehensive. However, the tuna RFMOs are not responding to such knowledge by their continuous failure to adopt relevant conservation and management measures to minimize this impact.

Chapter 8 of this thesis reveals some of the key constraints to the operationalization of the ecosystem approach to fisheries, and some of the underlying causes. The lack of implementation of measures to operationalize the objective of minimizing ghost fishing is probably a result of some of the identified constraints. The existence of these gaps between what is required as a matter of international law and the practices of the tuna RFMOs demonstrates that their member states may not be operating in accordance with the binding obligations encompassed in, e.g., Article 5(f) of the 1995 UN Fish Stocks Agreement. While Chapter 7 establishes that the member states may be in breach of international law by their lack of actions to minimize catch by lost, abandoned, or otherwise discarded fishing gear

¹⁵⁰⁸ The tuna RFMOs' regulatory frameworks for other gear types were systematically assessed in Section 7.4 of this thesis.

¹⁵⁰⁹ See Section 7.4.2 which comprises a comprehensive assessment of the tuna RFMOs' adopted conservation and management measures to prohibit intentional discard of fishing gear at sea.

¹⁵¹⁰ See Sections 7.4.3 and 7.4.4 for an assessment of the present regulatory frameworks adopted by the tuna RFMOs to operationalize the respective management measures.

through the adoption of conservation and management measures, Chapter 8 highlights that the member states may also operate in a manner which is inconsistent to fulfil the RFMOs' functions established by international law in accordance with Article 10(e) of the 1995 UN Fish Stocks Agreement.

A prerequisite for the implementation and operationalization of the ecosystem approach to fisheries is that the internal workings of the tuna RFMOs facilitate the processes considered necessary to implement and operationalize the approach. In this way, despite the wording of Article 5 of the 1995 UN Fish Stocks Agreement being result-oriented by stating that "States should minimize the impacts on non-target species," consequently establishing an obligation to "minimize" the impacts, the scope of the ecosystem approach to fisheries must also be considered to encompass the enabling of the necessary processes leading to the adoption of conservation and management measures tailored to fulfilling its objectives. Thus, deliberately not perceiving the conservation of non-target species or operationalization of the ecosystem approach to fisheries as the organization's responsibility and/or not making efforts to mitigate existing constraints to the operationalization of the approach may also represent non-compliance with the obligations in the legal framework. Consequently, a vital prerequisite for the implementation and operationalization of the ecosystem approach to fisheries in future high seas governance is that the tuna RFMOs must initiate necessary processes to overcome constraints impeding the adoption of conservation and management measures in the first place. This highlights the importance of the member states of the tuna RFMOs urgently taking action to lower the barriers to the operationalization of the ecosystem approach to fisheries in their respective organizations. Overall, based on the study and its findings, it may be concluded that the member states of the tuna RFMOs are not fulfilling their functions and legal obligations either in terms of implementing and operationalizing the management objectives established based on the ecosystem approach to fisheries or in terms of facilitating the necessary processes to be carried out prior to the adoption of the conservation and management measures.

This thesis establishes that political priorities and positions of the member states of the different tuna RFMOs set the premises for what the RFMOs and states are able to do jointly to implement and operationalize the ecosystem approach to fisheries. The political priorities

of the member states are heavily influenced by domestic economic drivers, shedding light on the fact that their domestic political priorities will presumably be the key in future conservation of ecosystems and non-target species negatively affected by fishing operations. This finding illustrates that potential changes of management practices of the tuna RFMOs must be a result of a bottom-up approach, where the diverse member states must commit themselves to develop regulatory frameworks and management mechanisms that enable their organizations to effectively perform their functions in terms of conserving the marine ecosystems and natural resources in their geographical areas of competence. The member states of the RFMOs thus hold the key to successful conservation of all ecosystem components affected by their industrial fisheries, and the stakeholders will have to tolerate short-term economic expenses to enable long-term conservation and economic benefits for all actors involved.

A final remark to be made in this thesis is that the tuna RFMOs traditionally have been operating as management bodies and not as conservation bodies *per se*. Their key focus has been the utilization of tuna and tuna-like species, not the conservation of marine ecosystems and non-target species. Several of the tuna RFMOs pre-date the legal developments that have enshrined the ecosystem approach to fisheries and the adoption of the 1995 UN Fish Stocks Agreement and the FAO Code of Conduct.¹⁵¹¹ It seems reasonable to argue that the origins of the tuna RFMOs may impact their member states' diverse priorities and positions, making the economic interests of maintaining existing fishing practices the prevailing view of some of these states. Albeit the status of RFMOs as traditional management bodies, the legal developments regarding the ecosystem approach to fisheries call for changes to these traditional practices, and the adoption of the 1995 UN Fish Stocks Agreement and FAO Code of Conduct marks a transition towards holistic fisheries management through their explicit recognition of such approaches. The resulting expansion of the original functions of the tuna RFMOs is evident, and it is time for their member states to acknowledge their obligations to

¹⁵¹¹ The history and origins of the tuna RFMOs were explored in Chapter 6 of this thesis, and information and analyses of the times of establishment and management mandates were provided in that chapter.

operationalize the approach by mitigating the identified constraints currently impeding the implementation of the ecosystem approach to fisheries.

10. Chapter X: Concluding Remarks

This PhD project has served its purpose of studying the implementation and operationalization of the ecosystem approach to fisheries in the context of tuna RFMOs. The case study revealed the existence of considerable gaps between the obligations encompassed in the normative framework and what is currently done in and by these organizations. The study has also identified some of the current constraints affecting the tuna RFMOs' ability to operationalize the approach. Whereas legal research tends to focus on the *lex lata* by applying the doctrinal method,¹⁵¹² this study moved beyond the traditional methodology applied in legal research. By applying a mixed methods approach, comprising doctrinal research and empirical legal research, this thesis also identified some of the key causes of the existing gaps between what is required under international law and practices in high seas tuna fisheries. It is time to revisit the research questions and offer some concluding remarks.

This study has attempted to address two main questions, which were presented in Section 1.3. The first research question was: "What are the legal requirements of the ecosystem approach to fisheries?"

The analysis in Chapter 4 established that the sectoral ecosystem approach in the context of fisheries consists of different operational levels with different normative scope. The operational level subject to analysis in this study was the ecosystem approach to fisheries, representing an expansion of conventional fisheries management. This approach encompasses different management objectives which ought to be achieved by the fisheries industry. The development of these objectives has been prompted by the legal developments taking place under different legal frameworks, creating a regulatory framework for fisheries management which recognizes the interdependence of species and the need to conserve all ecosystem components from impacts of fisheries.

¹⁵¹² Vaughan, "We Need To Talk About Method: A Call for More and Better Empirical Environmental Law Scholarship," page 14, and Ole W. Pedersen, "The Evolution and Emergence of Environmental Law Scholarship- A Perspective from Three Journals," pages 471-472.

This study has established that the core features of the sectoral approach are recognized in a several legal instruments, most explicitly in the 1995 UN Fish Stocks Agreement and the 1995 FAO Code of Conduct. Whereas the ecosystem approach to fisheries represents novelty by explicitly comprising clear objectives which are recognized in several instruments encompassing the normative framework for fisheries, its practical operationalization has proven to be difficult. The obligations in these instruments are result-oriented and do not provide any clear-cut solutions to the central question of how they ought to be fulfilled. To give substance to the objectives, the FAO has been a pioneer in translating them into concrete management measures which may be utilized to implement the ecosystem approach to fisheries in fisheries management frameworks. This study takes the position that these non-binding guidelines have a normative standing, and that member states of the tuna RFMOs ought to implement the measures in accordance with Article 10(c) of the 1995 UN Fish Stocks Agreement to fulfill their duty to cooperate in high seas fisheries. However, the normative framework regulating the application of the ecosystem approach to fisheries does not provide a cumulative list of operational measures that must be adopted to ensure compliance with the legally binding obligations of the 1995 UN Fish Stocks Agreement. Despite this, this thesis establishes that the member states of the five tuna RFMOs must actively adopt measures through these organizations to fulfill the obligation of minimizing ghost fishing in accordance with their legal obligations.

This PhD project, in aiming to examine whether and how the tuna RFMOs are putting the normative framework into practice, studied how the objective of minimizing catch by lost, abandoned, or otherwise discarded fishing gear has been operationalized in practice by the tuna RFMOs. By identifying the different measures applicable to achieve the objective through a doctrinal assessment of the normative framework regulating the ecosystem approach to fisheries, several management measures applicable to minimize ghost fishing were identified in various legal instruments. By focusing on the impacts of lost, abandoned, or otherwise discarded fishing gear, rather than the reasons for the gear ending up in the sea in the first place, the assessment undertaken in Chapter 4 also identifies the existence of regime interactions. The legal framework applicable to minimize intentional discard of fishing gear has primarily developed under the auspices of the IMO, whereas the normative framework

applicable to minimize catch by lost or abandoned gear has developed in instruments regulating fisheries law, primarily through the FAO's work in developing operational implementation guidelines to facilitate the implementation of the obligations in the 1995 UN Fish Stocks Agreement and the FAO Code of Conduct. Interestingly, the operational practices established pursuant to the two normative frameworks seem to have achieved equally widespread implementation in practice, indicating that whether the normative requirements are encompassed in legally binding instruments or in voluntary soft-law instruments does not affect the implementation in practice in the context of tuna RFMOs.

The second research question in this research project was: *“How have different tuna RFMOs implemented the ecosystem approach to fisheries and what constraints and possibilities can be identified in the operationalization of this approach in the tuna RFMOs?”*

The answers to these questions were addressed by developing a case study of whether and how the tuna RFMOs have implemented and operationalized the ecosystem approach to fisheries. The study assessed the tuna RFMOs' founding instruments and adopted conservation and management measures to examine whether and how the ecosystem approach has been put into practice. The interrogation of the tuna RFMOs' founding instruments revealed whether these organizations explicitly or implicitly implement the approach in their founding instruments or whether provisions encompassed in these instruments facilitate the adoption of conservation and management measures that align with the normative requirements of the ecosystem approach to fisheries. The analysis in this thesis reveals that the IATTC, ICCAT and WCPFC are the tuna RFMOs with the most progressive instruments in terms of implementing the normative requirements of the ecosystem approach to fisheries, but that only the ICCAT makes an explicit reference to the ecosystem approach to fisheries management in its amended Convention.¹⁵¹³ The assessment also discovered that the IOTC is a tuna RFMO which does not recognize the legal requirements of the ecosystem approach to fisheries in its founding instrument, whereas the CCSBT's founding instrument seems to include an implicit reference to some of its central requirements. As this

¹⁵¹³ ICCAT, Draft Protocol to Amend the International Convention for the Conservation of Atlantic Tunas, Article IV(a).

study has discovered a myriad of complex constraints which may influence the tuna RFMOs' operationalization of the ecosystem approach to fisheries, it is of utmost importance that the member states of the tuna RFMOs mutually commit themselves to conserve marine ecosystems through the RFMOs. Consequently, the organizations not recognizing the approach have been advised to initiate processes to amend or revise their founding instruments accordingly.

A different question addressed in this study is how the tuna RFMOs have operationalized the ecosystem approach to fisheries and how it is carried out in practice. As emphasized in Section 6.8, there is certainly a difference between formally including a management mandate enabling the operationalization of the ecosystem approach to fisheries and actually applying the approach by adopting conservation and management measures.

To enable an assessment of whether and how the ecosystem approach to fisheries has been put into practice, this thesis set out on a journey of exploring the organizations' regulatory frameworks, comprising the identification and analysis of conservation and management measures adopted in 2000-2023. The analysis of the adopted measures reveals that there exist considerable gaps between the normative framework and what is done in and by the tuna RFMOs, illustrated by the assessment of whether and how the tuna RFMOs are operationalizing the management objective of minimizing catch by lost, abandoned, or otherwise discarded fishing gear. This management objective was selected as the case-study of this PhD as the performance reviews of the tuna RFMOs highlight the need to implement measures to minimize ghost fishing in their regulatory frameworks. Studying the implementation of this specific management objective thus provided valuable insights into the different challenges and possibilities for the RFMOs' endeavor of implementing the ecosystem approach to fisheries, as the development of regulatory frameworks encompassing measures to minimize catch by lost, abandoned, or otherwise discarded fishing gear is still in its infancy.

The primary shortcomings discovered in this study pertain to the tuna RFMOs' insufficient efforts to minimize impacts and causes of ghost fishing in their convention areas, predominantly manifested through their lack of measures to prohibit international discard of

fishing gear at sea, their failure to establish onshore gear disposal systems, and the lack of mandatory reporting and retrieval of lost, abandoned, or otherwise discarded fishing gear. Despite extensive scientific evidence describing the detrimental effects of derelict fishing gear, and continuous global calls for changes by the UN General Assembly, the member states of the tuna RFMOs continue to neglect their responsibilities in high seas fisheries. Thus, the lack of adequate conservation and management measures to mitigate the pressing need for changes to existing fishing gear practices is clearly evident. Consequently, the member states of the tuna RFMOs may be in breach of their obligations under international law through their failure to implement and operationalize measures to minimize catch by lost, abandoned, or otherwise discarded fishing gear.

However, identifying gaps between the normative framework and the practices of the tuna RFMOs is not equivalent to identifying the causes of their existence. To discover the potential reasons for the member states' non-compliance with the normative framework and enable an assessment of the constraints presently affecting the tuna RFMOs' operationalization of the ecosystem approach to fisheries, in-depth interviews with key informants were conducted as part of the study.

These interviews confirmed the existence of several constraints on the implementation and operationalization of the ecosystem approach to fisheries by tuna RFMOs. As illustrated in Chapter 8, these constraints exist on multiple levels, creating a complex puzzle which the tuna RFMOs are currently struggling to handle. Whereas research projects tend to focus on some of the identified constraints, this thesis has revealed a significant number of barriers to the tuna RFMOs' operationalization of the ecosystem approach to fisheries.

One of the main findings of this study is that the tuna RFMOs are fully aware of how the identified constraints are negatively affecting their ability to comply with the legal framework encompassing the ecosystem approach to fisheries. However, they are not taking action to mitigate these constraints. By not making necessary changes to facilitate the implementation of the approach, the member states of the tuna RFMOs may also be operating in a manner which is inconsistent with their functions as established by the 1995 UN Fish Stocks Agreement.

The identified gaps between law and practice and the identification of some of the key constraints to their existence raises some fundamental questions about the role of the sector-based ecosystem approach to fisheries in future high seas fisheries governance. What will it encompass in terms of legal requirements? Who will be the actor(s) developing the approach? Finally, how will it be implemented in future high seas fisheries governance?

While this thesis reveals the existence of a missing link between the normative framework regulating the ecosystem approach to fisheries and its actual effects through operational practices in and by the tuna RFMOs, I would still argue that the approach is making an impact on high seas tuna fisheries. Several of the tuna RFMOs have amended their founding instruments to encompass the normative requirements of the approach, leading to an observation of how the member states have mutually committed to facilitate the operationalization of the approach in practice. However, it is of utmost importance that these member states actually take the next step of giving effect to the approach. The significance of the ecosystem approach to fisheries in high seas fisheries was recently reinforced by the ITLOS Advisory Opinion on Climate Change and International Law.¹⁵¹⁴ The Tribunal held that the reference in Article 119 of the Law of the Sea Convention to “relevant economic and environmental factors” entails “the application of the precautionary approach and an ecosystem approach.”¹⁵¹⁵ Consequently, states need to apply the ecosystem approach to fisheries, thus giving effect to their duty to cooperate in high seas fisheries.

This study has confirmed that the tuna RFMOs have a key role to play in this puzzle of operationalizing the ecosystem approach to fisheries on the high seas. These organizations represent prominent actors with decision-making competence covering approximately 91% of the world’s seas beyond national jurisdiction. If they are able to overcome the existing barriers to the operationalization of the ecosystem approach to fisheries and adopt tailor-made conservation and management measures to conserve marine ecosystems, the future will certainly look brighter. As the member states of the tuna RFMOs carry the main

¹⁵¹⁴ ITLOS, Request for an Advisory Opinion submitted by the Commission of Small Island States on Climate Change and International Law, Advisory Opinion, 21 May 2024, ITLOS, No. 31.

¹⁵¹⁵ *Ibid.* para. 418

responsibility for their functioning, they also possess the key to future conservation of marine ecosystems in high seas tuna fisheries.

Recalling the fact that fishing alters marine biodiversity has been widespread knowledge for decades,¹⁵¹⁶ and calls for changes to conventional and existing fishing practices have been equally widespread, it is time to put words into action.

¹⁵¹⁶ See, e.g., Boris Worm et al., "Impacts of Biodiversity Loss on Ocean Ecosystem Services." Page 292.

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Informant 2. Interview (2023), interviewed by Ingrid S. Andreassen, 14. April 2023.

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Annex I

Title of the project: The Ecosystem Approach to Fisheries: Assessing the Constraints and Possibilities for Future Conservation of Non-target Species in Tuna-RFMOs

CONSENT FORM

Please Tick Box

I understand this interview is for research about the operationalization of the ecosystem approach to fisheries within the tuna-RFMOs with a focus on the conservation of non-target species, and I have read the information sheet.

The research has been explained to me and I have had the opportunity to ask questions about the research.

I understand and agree that I am free to withdraw from the study at any time up to 30 days after this interview.

I understand and agree that this interview will be recorded using inbuilt recording features on Microsoft Teams

If necessary, I agree to the use of a translator during the interview.

I agree that I may be contacted up to three months after the interview for clarification or further questions if the need arises.

I agree that the interview data and verbatim quotes may be used in places like books, articles, and web pages (without identifying me).

I request for my name to be anonymised , pseudonymised , or displayed in the final research. (Tick one – anonymised is the default position).

I agree what I say will be stored on the UiT – The Arctic University of Norway’s Data Storage Facility, and the researchers encrypted external hard drive during research as approved by the Norwegian Centre for Research Data.

This information will be held and processed as data strictly for research purposes. I understand that this research is likely to result in journal articles and/or other publications, in which this data may be used in anonymised form.

.

I agree to participate in the research.

.....

Name of participant

Signature

Date

.....

.....

.....

Name of person taking consent

Signature

Date

Annex II

Interview Guide

General Questions

1. In your view, what is the ecosystem approach to fisheries and what does it entail?
2. In your view, what are the main constraints for the operationalization of the ecosystem approach to fisheries?
3. What has the [name of the RFMO] done to implement and operationalize the ecosystem approach to fisheries?
4. How are the [name of the RFMO] working to conserve non-target species?
5. In your view, what are the main constraints for the work regarding the conservation of non-target species?

Regulatory Aspects

1. How is the management mandate of the [name of the RFMO] affecting the organization's ability to operationalize the ecosystem approach in general and specifically the ability to conserve non-target species?
2. How is the geographical regulatory area of the [name of the RFMO] affecting the organization's ability to conserve marine ecosystems and non-target species?
3. In your view, is the legal framework and the legal requirements of an ecosystem approach to fisheries clearly articulated and easily accessible for the [name of the RFMO]?
4. In your opinion, how is the work of the UN Food and Agriculture Organization (FAO) in developing technical guidelines for the implementation of the ecosystem approach to fisheries shaping the practice of the RFMOs?

Institutional Aspects

1. In your view, is the governance architecture and organizational structure of the [name of the RFMO] helping or hindering the operationalization of the ecosystem approach to fisheries?

2. How are the decision-making procedures of the [name of the RFMO] affecting the operationalization of the ecosystem approach to fisheries?

Scientific Aspects

1. Is the lack of scientific knowledge about the relevant ecosystems and non-target species a relevant constraint for the operationalization of the ecosystem approach to fisheries in the [name of the RFMO]?
2. If yes, what is the [name of the RFMO] doing to mitigate the lack of relevant scientific knowledge?
3. In your opinion, is the relevant scientific knowledge about the ecosystems and non-target species implemented and operationalized in the [name of the RFMO] in a timely and effective manner when such knowledge changes?

Economic Aspects

1. In your view, how do economic constraints affect the operationalization of the ecosystem approach to fisheries in general?
 - Which economic constraints exist in the [name of the RFMO] and how do they affect the operationalization of the ecosystem approach to fisheries in the organization?
 - If any: how is the [name of the RFMO] working to mitigate the constraints?

Closing

1. Are there other relevant constraints for the operationalization of the ecosystem approach to fisheries in [name of the RFMO] that have not been addressed in this interview?
2. Do you have other reflections regarding the conservation of marine ecosystems and non-target species in future fisheries management?
3. Are there other relevant employees in the [name of the RFMO] that should be a part of this study?
4. Do you want to add anything else?
5. Have you got any questions for me?

Annex III



Assessment of processing of personal data

Reference number

694183

Assessment type

Standard

Date

28.02.2023

Title

The ecosystem approach to fisheries: Assessing the constraints and possibilities for the future conservation of non-target species in Tuna-RFMOs

Institution responsible for the project

UiT Norges Arktiske Universitet / Det juridiske fakultet

Project leader

Ingrid Solstad Andreassen

Project period

08.02.2023 - 01.01.2024

Categories of personal data

General

Legal basis

Consent (General Data Protection Regulation art. 6 nr. 1 a)

The processing of personal data is lawful, so long as it is carried out as stated in the notification form. The legal basis is valid until 01.01.2024.

