Regional Fisheries Management Organizations and Sustainable Development Goal 14: Opportunities and Challenges

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Statement of Ethical Conduct

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Glossary

ABNJ – Areas Beyond National Jurisdiction (the high seas)

BBNJ – Agreement for Biodiversity Beyond National Jurisdiction

CCAMLR – Commission for the Conservation of Antarctic Marine Living Resources

CCSBT – Commission for the Conservation of Southern Bluefin Tuna

CITES – Convention on International Trade in Endangered Species for Wild Fauna and Flora

CMMs – Conservation and Management Measures

eNGOs – environmental Non-Governmental Organisations

EU – European Union

EEZ – Exclusive Economic Zone

FAO – Food and Agriculture Organization of the United Nations

FFA – Forum Fisheries Agency

GFCM – General Fisheries Commission for the Mediterranean

IATTC – Inter-American Tropical Tuna Commission

ICCAT – International Commission for the Conservation of Atlantic Tunas

IOTC – Indian Ocean Tuna Commission

IPOA – International Plan of Action

ISA – International Seabed Authority

IUU – illegal, unreported and unregulated fishing

LDC – Least Developed Country

MDGs – Millennium Development Goals

MPA – Marine Protected Area

MSC – Marine Stewardship Council

MoU – Memorandum of Understanding

NAFO – Northwest Atlantic Fisheries Organization

NEAFC – North East Atlantic Fisheries Commission

NPFC – North Pacific Fisheries Commission

PNA – Parties to the Nauru Agreement

PR - Performance review

RFB – Regional Fisheries Body

RFMO – Regional Fishery Management Organizations

SDGs – United Nations Sustainable Development Goals

SEAFO – South East Atlantic Fisheries Organization

SIDS – Small Island Developing States

SIOFA – South Indian Ocean Fisheries Agreement

SPRFMO – South Pacific Regional Fisheries Management Organization

UN – United Nations

UNCLOS – United Nations Convention on the Law of the Sea

UNFSA – United Nations Fish Stocks Agreement

UNGA – United Nations General Assembly

VME – Vulnerable Marine Ecosystem

WCPFC – Western and Central Pacific Fisheries Commission

WWF – World Wildlife Fund

Abstract

Regional Fisheries Management Organizations (RFMOs) play a key role in promoting sustainable international fisheries management. They are influenced by internal dynamics and external initiatives, such as the United Nations Sustainable Development Goals (SDGs). The SDGs are a global initiative, comprising 17 goals and hundreds of targets that support a sustainable future by linking social, economic and environmental actions. The SDGs recognise the importance of the ocean for the livelihoods and food security of millions of people. SDG 14 – Life Below Water specifically addresses the conservation and sustainable use of the ocean, seas, and marine resources. As a goal-based governance approach, the SDGs are non-binding and rely on the actions of existing state and non-state actors. This thesis explores how the work of RFMOs could contribute to achieving the targets of SDG 14, and highlights the opportunities and challenges of RFMOs' engagement with SDG 14. As goal-setting governance approaches become increasingly popular, it is important to better understand how regional and sectoral organisations can contribute to globally agreed goals.

This research into RFMO engagement with SDG 14 uses a qualitative approach that provides important and novel insights into the dynamics between RFMOs and global goal-setting initiatives, such as the SDGs. Well-performing RFMOs are the key to achieving sustainably managed fisheries and, thus, the targets of SDG 14. A desktop analysis of documents and conservation and management measures assesses the current performance of RFMOs, their potential for improvement, and how their work can be linked to the various targets of SDG 14. The results of this analysis reveal that RFMO performance is improving in areas such as bycatch regulation and management practices and identified best practice examples. The results of the analysis also show that RFMOs' current work and their implementation of conservation and management measures might provide an important contribution to attaining SDG 14.

Interview analysis, which gathered the perspectives of 39 key stakeholders on the work of RFMOs and how they think RFMOs could contribute to SDG 14, reveals that RFMOs face several hurdles in engaging with external initiatives such as the SDGs. Key hurdles include time constraints during RFMO meetings, as well as a lack of capacity and resources among RFMO members to effectively implement new conservation measures. Another important issue identified by stakeholders is that the existing workload of the RFMOs' administrative bodies limits their ability to take on further tasks, which, in turn, impacts the RFMOs' potential engagement with SDG 14. These hurdles have not yet received detailed attention in the peer-reviewed literature, even though they profoundly shape RFMO activities.

The results of the desktop and interview analyses are supported by participant observation of two RFMO Commission meetings, which highlights the important role of underlying institutional dynamics within RFMOs. Member states are the main drivers of RFMO activities and determine which topics receive attention during annual meetings. Thus, member states need to acknowledge the important role of RFMOs in achieving SDG 14. Observations from the two RFMO Commission meetings reveal the

importance of ‘champion’ states taking the lead on key issues and working with other members, as well as the leadership ability of the Chairperson to steer and coordinate negotiation on management issues, which are key to achieving the targets of SDG 14.

This research aimed to answer the question of the potential contribution of RFMOs to SDG 14. Even though RFMOs are not officially engaging with the SDGs, the results show that their work makes an important contribution to the targets of SDG 14, as it is directed towards achieving more sustainably managed fisheries. Moreover, a new agreement for biodiversity beyond national jurisdiction (BBNJ), which is currently under negotiation, might foster further development towards topics addressed by the targets of SDG 14. This new agreement is likely to impact RFMOs due to overlapping areas of interest which might also have implications for attaining SDG 14.

In summary, this work shows that, while goal-based governance strategies are a widely used tool to pursue global objectives, the lack of acknowledgement and recognition of the role of existing actors in contributing to goals related to their objectives might constrain their success.

Chapter 1

Ideas and problems: introduction of the key themes

Part of the content within this chapter has been published as:

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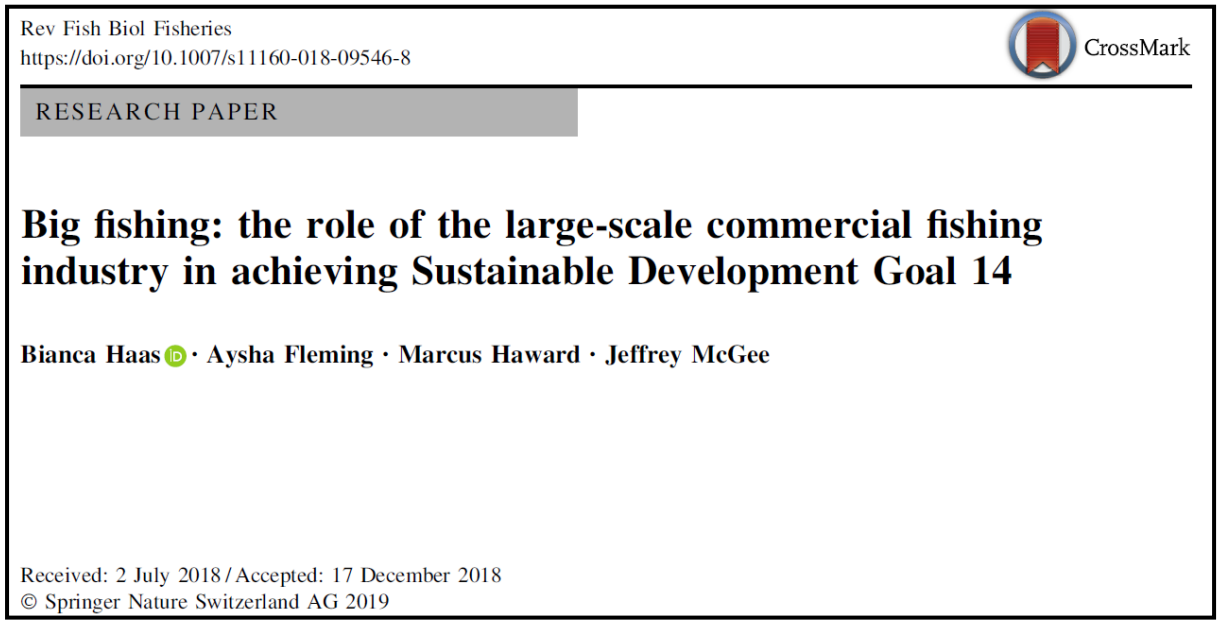
See Appendix C for the abstract of the published article. Note that this chapter is based on, and extends the published paper and has been reformatted for this thesis.



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RESEARCH PAPER

Big fishing: the role of the large-scale commercial fishing industry in achieving Sustainable Development Goal 14

Bianca Haas · Aysha Fleming · Marcus Haward · Jeffrey McGee

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1.1.Introduction

This chapter introduces the concept of goal-based governance as this is the main conceptual framework for this thesis. It provides an overview of the characteristics of a goal-based approach and introduces the United Nations Sustainable Development Goals (SDGs) as an example of goal-based strategies on a global scale. This thesis concentrates on SDG 14 – Life Below Water and the potential of regional fisheries management organisations (RFMOs) to contribute to the targets of SDG 14.

In 2015, the member states[1] of the United Nations committed to the United Nations Sustainable Development Goals (SDGs), a set of 17 goals supported by 169 targets. The ambitious objective of the SDGs is to achieve a sustainable future by addressing important social, economic and environmental issues. The SDGs are one of the newest examples of a governance strategy called a goal-setting approach. In contrast to its counterpart, a rule-setting approach, the goal-setting approach of the SDGs means that these goals are non-binding and highly dependent on the cooperation and participation of existing institutions and organisations (Underdal & Kim, 2017; Young, 2017a). SDG 14 addresses the need to conserve and sustainably use the oceans, seas, and marine resources for sustainable development. Marine resources provide a livelihood for millions of people (FAO, 2018, 2020), while capture fisheries contribute billions of dollars to the global economy (Sumaila et al., 2016). With a growing global population, the demand for fish is likely to increase; however, 34.2 per cent of all fished species are already considered to be overfished, and this tendency is accelerating (FAO, 2016b, 2018, 2020). The sustainable use and management of marine resources will be critical to address the global demand for fish, even more so with increasing climate change impacts on the marine ecosystem and pressure on the availability of resources (Allison & Bassett, 2015; Weatherdon et al., 2016).

While many international agreements and organisations seek to manage the oceans (Rogers et al., 2016), Regional Fisheries Management Organizations (RFMOs) play a key role in managing international fisheries, especially in high seas areas. Most of the global fish catch comes from the Exclusive Economic Zones (EEZ) from coastal countries, with only 4.2% of the annual catch coming from the high seas between 2009 and 2014 (Schiller et al., 2018). Even though this seems negligible, high seas fisheries need to be managed sustainably as they significantly impact the level and quality of the fish harvest from EEZs (Green & Rudyk, 2020). Thus, in this thesis, I argue that support of RFMOs will be important for achieving the targets of SDG 14, as these organizations bring together states with similar interests. The targets of SDG 14 cannot be achieved by a single states, as collective action is needed. Therefore, this research explores how regional organisations of this kind have the potential to contribute to goal-based governance strategies such as the SDGs.

[1] Conforming to accepted usage in international law and diplomacy, I use the term ‘state’ instead of ‘country’ throughout this thesis. The term ‘country’ (or ‘countries’) is used only where it is referred to in the source document.

1.2. A goal-setting approach

The main conceptual framework of this thesis is the goal-setting approach and how it is applied in the context of international fisheries management. This section provides an overview of the goal-setting approach, by explaining its characteristics, strengths and weaknesses.

1.2.1. Sustainable development – history and background

In 1987, the World Commission on Environment and Development (the Brundtland Commission) defined sustainable development as 'development that meets the needs of the present without compromising the ability of future generations to meet their own needs' (World Commission on Environment and Development, 1987). This is not suitable as a definition of sustainability for the SDGs, since it is too vague and the relationship between the economic, social and environmental aspects are not well defined (Kim & Bosselmann, 2015). It nonetheless provides the foundation for discussions around 'sustainability' and 'sustainable development'. In the early decades of the twenty-first century, sustainable development influences the international community as an overarching goal (Underdal & Kim, 2017). This is especially important since we have entered a new era, the 'Anthropocene', which is characterised by irreversible human impacts on the global environment (Crutzen, 2002). The human population has already transgressed three planetary boundaries defined as a safe space for humans to operate: (i) climate change; (ii) rate of biodiversity loss; and (iii) changes to the global nitrogen cycle (Rockström et al., 2009; Steffen et al., 2015). It is important to keep in mind that achieving sustainable development is a transgenerational task, meaning that more than one generation will be involved. This might impact the political will of the current generation to address this issue as it is unlikely to benefit from the achievements (Young et al., 2017).

1.2.2. Goal-setting as a governance strategy

Goal-setting is one method to achieve desired outcomes and is a tool often applied by the UN to achieve progress in international developments (Fukuda-Parr, 2013). Following the release of the Millennium Development Goals (MDGs) in the year 2000, goal-setting has received considerable attention as a governance strategy (Andresen & Iguchi, 2017; Haas & Stevens, 2017; Yamada, 2017). Another important example is the 2015 Paris Agreement on Climate Change, which aims to keep global temperature rise below 2°C (Young, 2017b). While the MDGs and Paris Agreement are two examples of using a goal-setting approach, we note that using goals as a governance approach not only helps to raise awareness of important issues, but also channels specific actions from various sectors towards the respective issues (Neumann & Unger, 2019). In contrast to the governance approach of rule-making, which tries to influence behaviour by providing rules (binding or non-binding), regulations and

compliance mechanisms (such as permits or licences), goal-setting aims to change behaviour by establishing priorities, commonly agreed objectives and indicators, and by emphasising long-term rather than short-term goals (Young, 2017a). The idea is that these goals, along with the behaviour change, might lead to policy changes from governments who have signed up to the agreement (Fukuda-Parr, 2013). The theory behind goal-setting is that, once actors have committed to the goals, they will adopt strategies to achieve them by making resources available and creating an environment which supports the achievement of the goals (Kanie et al., 2019). The core of the goal-setting approach is to measure the progress of state and non-state actors, using agreed indicators (Biermann & Kanie, 2017). Biermann and Kanie (2017) summarise the goal-setting approach as the 'bottom-up, non-confrontational, country-driven, and stakeholder aspects of governance' which are often cited by its supporters, even though the implementation might be difficult (p. 297). This 'bottom-up' approach to governance means that states and other stakeholders involved in setting particular goals will develop stewardship and work towards achieving them (Fukuda-Parr, 2013; Kanie et al., 2019). Generally, global goals provide a common standard, which can be adapted to regional and local characteristics (Fukuda-Parr, 2013).

Three types of goal-setting are described in the literature. The first concerns goals for aspirational purposes only, which might lead to increased support for a specific topic or address issues where common aspirations exist (Kanie et al., 2017), such as the need for human rights (Sandholtz & Stiles, 2009). A well-known aspirational goal is the objective of the Paris Agreement for Climate Change to keep the global temperature rise to no more than 2°C above pre-industrial levels. The second type describes goals which begin as aspirational goals, but are later supported by institutions and included in their operational framework (Kanie et al., 2017). The MDGs, for example, were established as aspirational goals, but their measures of success were later linked to the UN Secretariat (Kanie et al., 2017). Organisations often establish regulatory mechanisms to successfully implement goals (Kanie et al., 2017; Young, 2017a). The third type are goals which are directly linked to institutions and agencies; for example, those of the Commission on Sustainable Development which was created to measure the achievement of Agenda 21, established at the 1992 UN Conference on Environment and Development (Kanie et al., 2017). The SDGs are a mix of all three but share most similarities with types one and two. Concerning type three, the linked institution could be considered the High-level Political Forum on Sustainable Development; however, this was already established before the SDGs got developed (Kanie et al., 2017).

A key issue to consider in relation to a goal-setting analysis is the impact of goal displacement, a concept derived from work in public and business administration. Using the classic definition of Merton (1940), Sieber (1981), notes that goal displacement is a consequence of where an 'instrumental value' (a goal that is part of the desired endpoints) 'becomes a terminal value' (an end itself) (p.108). Put simply, it is the 'adherence to regulations and the exercise of delegated powers and competencies quite apart from

goal achievement' (Sieber, 1981, p.108) that becomes a focus, rather than the purpose of the goal. As Hughes (2003) notes, this can occur when organisational effort is directed towards the rules themselves (the technical elements of the goal) instead of towards fulfilling the organisation's purpose or the intention of the goal.

Goal-setting has many pros, for example, greater inclusiveness, but also cons, such as goal displacement. The next section explains in more detail the SDGs, their history and their strengths and weaknesses.

1.3.The Sustainable Development Goals (SDGs)

The SDGs are often regarded as the successors to the Millennium Development Goals (MDGs) established in the year 2000 to oversee the implementation of the Millennium Declaration (Fukuda-Parr, 2013). The MDGs were then transformed into aspirational targets for global priorities (Fukuda-Parr, 2013), such as eradicating extreme hunger and poverty or ensuring environmental sustainability. However, the MDGs encountered much criticism due, for example, to 'the bias against African and other countries with low starting points or the unfeasibility of reaching the goals for many countries' (Fukuda-Parr, 2013, p.9). The MDGs are simple, measurable and based on consensus – all attributes highlighted as strengths as well as weaknesses (Fukuda-Parr, 2013, 2016). In particular, the simple nature of the MDGs was said to lead to the loss of their aspirational nature in the course of national adaptation (Fukuda-Parr, 2016). The SDGs sought to avoid replicating the shortcomings of the MDGs, but face similar criticisms (Fukuda-Parr, 2016); they also show features which further distinguish them from the MDGs.

Where the MDGs established an agenda which primarily targeted developing states (Young et al., 2017), the SDGs highlight the need for behavioural changes across all countries, developed and developing (Sachs, 2012). Moreover, the MDGs were the result of political negotiations (Young, 2017a), whereas the development process of the SDGs not only incorporated the usual top-down approach, but was also influenced by external institutions, such as the International Council for Science, social movements by civil society and various UN agencies (Gupta & Nilsson, 2017). Overall, the purpose of the SDGs is to support 'integrative and systematic approaches to global problems' (Kanie et al., 2017, p.12). Achieving the SDGs will be an enormous challenge in a contested global governance environment since not all intergovernmental agencies which have the mandate to address certain goals will comply with the goal-setting approach of the SDGs (Bernstein, 2017). However, to achieve the SDGs, existing institutional arrangements will have to cooperate and at some point coordinate their work under the common goal of achieving the SDGs (Bernstein, 2017).

Due to their non-binding character, the SDGs are especially dependent on the voluntary work states are doing, since they are not legally obliged to implement the SDGs in their national legal and policy frameworks (Biermann et al., 2017). This often leads to goal prioritisation. But, rather than steering national politics, the SDGs are often used to 'legitimize existing priorities of national governments' (Forestier & Kim, 2020, p.6). It is also recognised that organinzations, governments and institutions, which work towards achieving the SDGs, might have difficulties as the SDGs' broad and universal application makes it difficult to translate the SDGs into national plans and frameworks (Allen et al., 2016, 2018; Stafford-Smith et al., 2017). Despite the non-binding nature of the SDGs, member states are still expected to implement the goals in their national framework and report regularly on their progress (United Nations, 2018a). The reporting mechanism supports transparency and makes all the information publicly available (United Nations Global Compact, 2018). For example, Australia maintains a platform which tracks the progress of the Australian Government regarding the SDGs. The annual performance of 157 states is also presented by the SDG Index and Dashboard Report, produced by the Sustainable Development Solutions Network (SDSN) and the Bertelsmann Stiftung (SDG Index & Dashboards, 2018).

1.3.1. How do the SDGs match up against effective goal-setting?

Although the specific features of goal-setting can vary depending on the situation (Young, 2017b), certain features are important for an effective goal-setting strategy. First, the number of goals should be small and measurable; second, the goals should be hierarchically structured and clearly defined; and, third, the different parties should be willing to cooperate and to work on the goals together (Underdal & Kim, 2017; Young, 2017a). Overall, effective goal-setting requires the collective effort of people who support the goals and the recruitment of new people to support the common objective (Young, 2017b). Against these criteria, the SDGs lack some of the features which are needed for an effective goal-setting approach. Whereas the MDGs had eight goals, the SDGs have 17 (Figure 1.1). Underdal and Kim (2017) note that one of the reasons for this difference in the number of goals might be failed diplomacy and lack of consensus between the parties. Because of their increased number, the SDGs are also often criticised as being too complex. However, the formulation of the different goals contains 'intangible qualitative objectives of equitable and sustainable development' which would be lost if the goals were simplified (Fukuda-Parr, 2016, p.50)

The second criterion for good goal-setting, hierarchically structured and clearly defined goals, is also not fulfilled by the SDGs. Underdal and Kim (2017) describe the SDGs as a 'collection of about equally important priorities [rather] than a hierarchically structured system' (p. 250). This is probably due to the fact that many of the targets and goals are based on existing objectives of international agreements (Underdal & Kim, 2017) and thus mirror the fragmented global governance system (Kim, 2016).

Having too many goals of equal importance leads to competition for attention and resources (Young, 2017a). There are a range of different institutions with the capacity to support the achievement of certain targets and goals. This will not solve the problem of the fragmentation, however, but, rather, increases it (Underdal & Kim, 2017). Furthermore, some of the goals and target lack clarity (Allen et al., 2016; Stafford-Smith et al., 2017), which might lead to goal displacement, the unstructured uptake of only certain aspects of the goal (Merton, 1968). Moreover, some institutions and their members will not acknowledge their role in supporting the achievement of certain goals and targets (Underdal & Kim, 2017). So, although the overarching goal of the SDGs is to reduce fragmentation and to support cooperation between the various institutions and arrangements (Bernstein, 2017), the way they are set up runs the risk of supporting further fragmentation (Kim, 2016).

Figure 1.1: The 17 United Nations Sustainable Development Goals.

Another important aspect missing from the SDGs is an overarching principle or vision that brings all the different goals together. Scholars highlighted the need for an overarching goal to have 'the power to trump other auxiliary SDGs and targets lower in the goal-system hierarchy' (Kim & Bosselmann,

2015, p.199). For example, Kim and Bosselmann (2015) defined this overarching goal 'as the protection of the biophysical preconditions that are essential for long-term sustainable development' (p. 207). Moreover, some of the goals are quite ambitious and might not be feasible until after 2030 (Young, 2017b). However, even though the SDGs do not follow the criteria for an effective goal-setting approach and are missing an overarching objective, these goals do offer the opportunity to raise awareness of the importance of sustainable development across social, economic and ecological issues, and might influence the discourse around sustainability and development (Young, 2017a). Thus, the SDGs could be used to influence the behaviour of various stakeholders, such as governments, international organisations or non-governmental organisations (Young, 2017a; Young et al., 2017).

The 17 SDGs provide a comprehensive list of global issues and, although it is too early to tell whether these goals will be a success or failure, they have increased awareness of important global issues (Young, 2017a). As this thesis deals with the issue of sustainable fisheries management, the most important goal is SDG 14, which is described in the next section.

1.4. SDG 14 – Life Below Water

SDG 14 – Life Below Water is the goal most closely related to the work of RFMOs. This goal is specifically directed to the marine environment: it acknowledges the importance of the oceans for human livelihoods and seeks to promote conservation and sustainable development of oceans, seas and marine resources. Seven main targets and three sub-targets support SDG 14 and specifically address issues such as marine pollution, sustainable management of fisheries, and conservation (Figure 1.2). As the world's oceans are a vital supplier of ecosystem services for human social and economic wellbeing and are intimately connected with terrestrial and atmospheric systems, they will likely play a key role in achieving many SDGs (Axelrod, 2011; Singh et al., 2017). Achieving the seven targets of SDG 14 would have be important for sustaining the livelihoods and food security of millions of people around the world. In 2018, the global fishing and aquaculture industry employed around 59.5 million people (FAO, 2020) and contributed around US$300 billion to the global economy in the year 2006 (Sumaila et al., 2016). The large-scale industrial and commercial fishing sector and small-scale fisheries and recreational fishing will have an important role to play in achieving the targets of SDG 14 (Brooker et al., 2016; Haas et al., 2019). However, despite the importance of SDG 14, a recent study found that only 2 per cent of all countries might achieve this goal by 2030 (Sachs et al., 2018).

To achieve SDG 14, a broad range of state and non-state actors will need to work towards these targets. In this thesis, I argue that RFMOs play an important role in contributing to the different targets of SDG 14. RFMOs are defined as organisations which have the mandate to manage the high seas and which have the ability to agree on legally binding measures for their members (FAO, 2019b). In addition to the RFMOs, the Marine Stewardship Council (MSC) has been identified as an important actor in

supporting the development of sustainable fisheries and supply chains (United Nations, 2017) and in providing an incentive for the fishing industry to engage with more sustainable fisheries practices (United Nations, 2019). The MSC has officially committed to the SDGs and will especially be supporting the targets of SDG 14 (MSC, 2019).

In addition to SDG 14, the United Nations has established another partly complementary initiative linked to fisheries governance and RFMOs (e.g., Ban et al., 2014; Gjerde et al., 2008). While the SDGs are non-binding (that is, soft law) and address a broad range of economic, social and ecological themes, the second initiative is the legally-binding agreement for the conservation and sustainable use of biodiversity beyond national jurisdiction (BBNJ), which is currently under negotiation. If successful, this will be the most significant hard law (that is, binding) development in ocean governance since the 1995 United Nations Fish Stocks Agreement (UNFSA) (Marciniak, 2017; Warner, 2014), which facilitated the formation of several RFMOs. While this agreement is not yet established, the discussion around it could nevertheless impact existing institutions in ocean and fisheries governance, such as RFMOs.

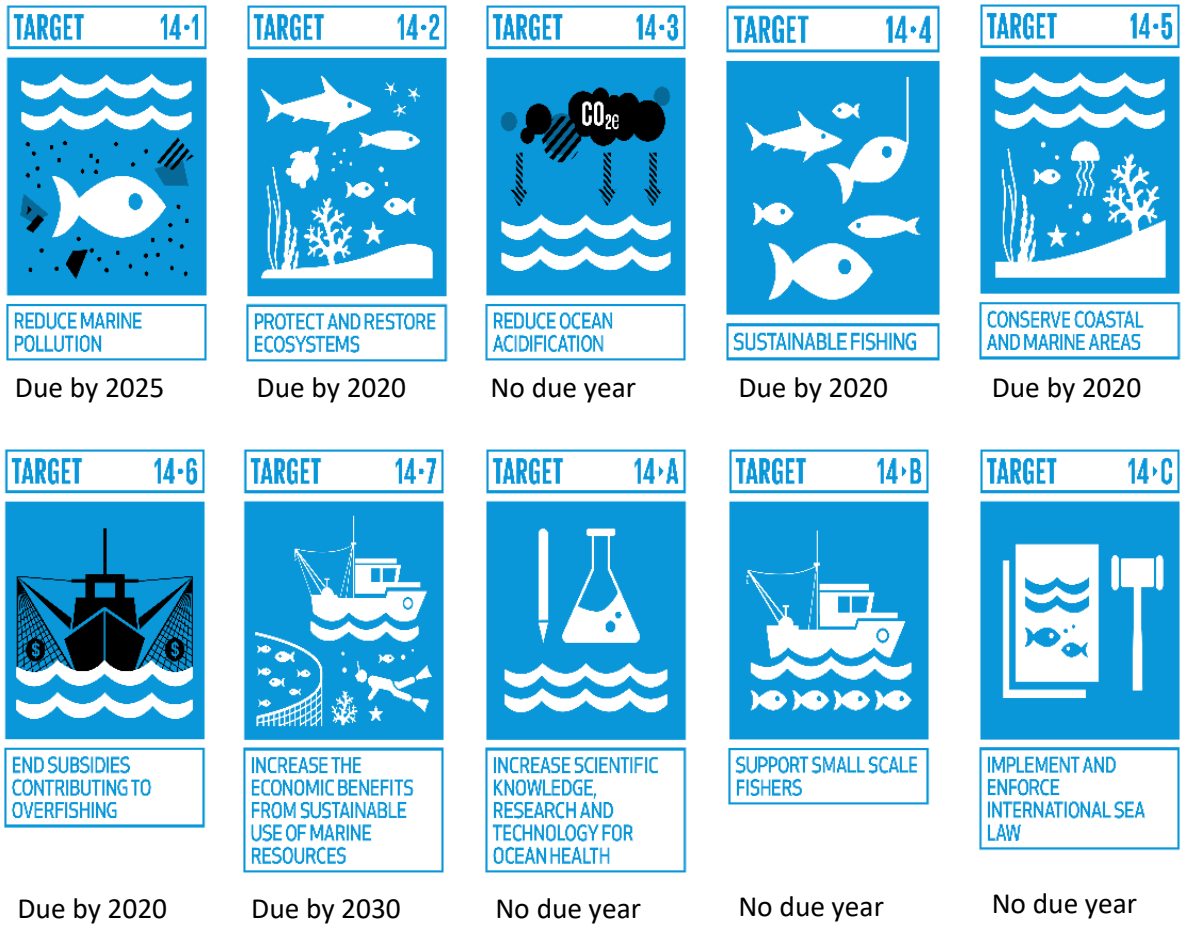


Figure 1.2: The seven main targets of SDG 14 (1-7) and three sub-targets (A-C) and the year they are due.

The first two sections of this chapter have described the conceptual framework of goal-based governance strategies and the SDGs. The next sections link the goal-based approaches with the research in this thesis, introduce the research and provide an overview of subsequent chapters.

1.5. The link between SDG 14 and ocean governance

The success of the SDGs will to some degree rely on the successful inclusion of the different goals in already existing organisations (Underdal & Kim, 2017). The existing governance institutions need to be aligned towards achieving the SDGs. In terms of SDG 14, ocean governance and its key institutions are imperative to support the different targets of SDG 14. RFMOs are key institutions of international fisheries management on the high seas and, besides fisheries management, ocean governance comprises other activities such as sea-bed mining or shipping. These activities are managed by different organisations and their management is often separated into different regions. Those functional and regional fragmentations led to a highly fragmented ocean governance system which is said to be weak regarding human activities at the high seas (Blanchard, 2017; Gjerde et al., 2008; Haward & Vince, 2008; Willock & Lack, 2006). This resulted in a loss of high-seas ecosystem productivity and significant negative economic and social consequences (Rogers et al., 2016). Fragmentation of governance at the global level is influenced by, and contributes to, slow progress in implementation of ocean management measures at the national level. The governance of the world oceans is currently dominated by an economic or extractive worldview, rather than an ecological or social worldview, leading to a greater emphasis on the production and utilisation of marine resources (Lobo & Jacques, 2017b).

The two key instruments that have profoundly shaped the management of fisheries on the high seas are the 1982 United Nations Law of the Sea (UNCLOS) and the 1995 United Nations Fish Stocks Agreement (UNFSA). Before UNCLOS entered into force in 1994, the high seas were characterised by a freedom to fish (Rayfuse & Warner, 2008). The importance of UNCLOS as the guiding framework for ocean conservation and resource use is also highlighted by SDG 14 sub-target 14.C, which supports the implementation of international law as reflected in UNCLOS. While UNCLOS maintained a commitment to the freedom of high seas fishing, this freedom was linked to an obligation to cooperate and conserve resources of the high seas. UNCLOS stated that ‘states shall cooperate with each other in the conservation and management of living resources in the areas of the high seas […] and shall enter into negotiations with a view to taking the measures necessary for the conservation of the living resources concerned’ (United Nations, 1982, Article 118). Thus, UNCLOS provided the foundation for the establishment of RFMOs. In 2001, the UNFSA entered into force and further extended the objectives of UNCLOS. The UNFSA aims to conserve and to manage straddling fish stocks and highly migratory fish species (United Nations, 1995). In the UNFSA, Article 8 emphasises the need for states to cooperate with each other directly or through sub-regional or regional fisheries management organisations (United Nations, 1995). Moreover, the UNFSA laid an important foundation for the application of conservation

principles by states, such as the use of the precautionary principle and ecosystem-based management (United Nations, 1995, Article 6). The UNFSA reinforced the role of RFMOs (United Nations, 1995, Article 10) and strengthened them. The next section goes into more detail concerning fisheries management and the relevant organisations and frameworks.

1.6. Managing the use of marine resources

This section provides more information regarding the framework of international fisheries management. Understanding the underlying structure of fisheries management is relevant to better streamline the implementation of SDG 14. This section is divided into three sub-sections, addressing the different layers of marine resource management.

1.6.1. The framework – ocean governance

The concept of governance has attracted a broad and diverse literature. It is usually understood as addressing a system or process coordinating interaction among state and non-state actors in a particular area and domain (Clement & Standish, 2018; Haward & Vince, 2008). Governance relies on institutional arrangements as the core of the system and cognitive, cultural, and technological elements (Young, 2013). It encompasses hard law (binding), such as treaties and other international legal instruments (for example, UNCLOS, UNFSA or the proposed BBNJ agreement), soft-law (non-binding) agreements (for example, the 1992 'Rio Principles' on Sustainable Development, SDGs) and the activities of various international institutions (for example, United Nations General Assembly, Global Environment Facility, UNFAO, RFMOs) that may influence the behaviour of states and other actors that use the oceans (Haward & Vince, 2008).

Governance of human activities on the high seas has the 1982 UNCLOS as its foundation, which provides the basic legal framework for all ocean governance (Fig. 1.3). One of the dominant factors shaping the UNCLOS legal framework for the high seas was the historic customary international law principle of 'freedom of the seas' (Allison, 2001; Rayfuse & Warner, 2008). The concept was articulated by the famous Dutch jurist Hugo Grotius, who in 1609 published his seminal book, *Mare Liberum* (or *The Freedom of the Seas*). Grotius argued that, due to the vastness of the oceans and their importance for international trade, they cannot be subject to national sovereignty claims, which would restrict their use by all nations (Rayfuse & Warner, 2008). Under this historic principle of freedom of the seas, every coastal and landlocked state has a right to fish, to free passage of navigation for ships and to conduct scientific research (United Nations, 1982, Article 87). UNCLOS does impose some restrictions to the freedom of the seas, however. The territorial sea created under UNCLOS provides sovereign rights to coastal states in the area from the baseline (usually the low water mark of the coast)

out to 12 nautical miles from the coast (United Nations, 1982, Art.3). The exclusive economic zone (EEZ) created under UNCLOS also provides coastal states with resource extraction rights out to 200 nautical miles from the baseline (United Nations, 1982, Art. 56).

In terms of fisheries management, UNCLOS requires states to cooperate with each other in conservation and management of living resources in the high seas and to establish sub-regional and regional fisheries organisations (United Nations, 1982, Art. 118). The status of RFMOs was further strengthened by the adoption of the 1995 United Nations Fish Stocks Agreement (UNFSA), which entered into force in 2001. The object of UNFSA is the conservation and management of straddling fish stocks and highly migratory fish stocks (United Nations, 1995). This was a significant development, as many highly economic important species, such as tuna species, either straddle national and high seas areas or are highly migratory species.

Overall, more than 100 multilateral, regional and bilateral instruments, both binding and non-binding, support UNCLOS (Allison, 2001). While the UNFSA, for example, is legally binding, the 1995 UN Food and Agriculture Organization's Code of Conduct for Responsible Fisheries is a non-binding instrument whereby international organisations (such as RFMOs) and states are encouraged, but not forced, to adopt its provisions (Allison, 2001). These differences between binding and non-binding measures complicate governance of the ocean. Further obstacles in governing the ocean are governance and regulatory gaps, especially related to new marine industrial activities such as industrial fishing, which may undermine conservation efforts and sustainable use of the high seas (Gjerde, 2012; Gjerde et al., 2008). Moreover, the structural focus of ocean governance is arguably skewed towards the economic value of ocean use and underplays the conservation obligations within UNCLOS (Lobo & Jacques, 2017a). The management of ocean resources is separated into different sectors, geographical areas and high seas components, which makes it complicated to use marine resources in a sustainable manner (Mengerink et al., 2014). Important organisations besides RFMOs are, for example, the International Maritime Organization (IMO), which regulates shipping throughout the world, or the International Labour Organization (ILO), which addresses issues concerning employees such as crew safety and standards. Communication between the different organisations is lacking and overlapping mandates result in conflicts, which reduces the effectiveness of governance and enhances non-compliance behaviour of member states (Ban et al., 2014). The key organisations for international fisheries management are RFMOs, which are described in more detail in the following sub-section.

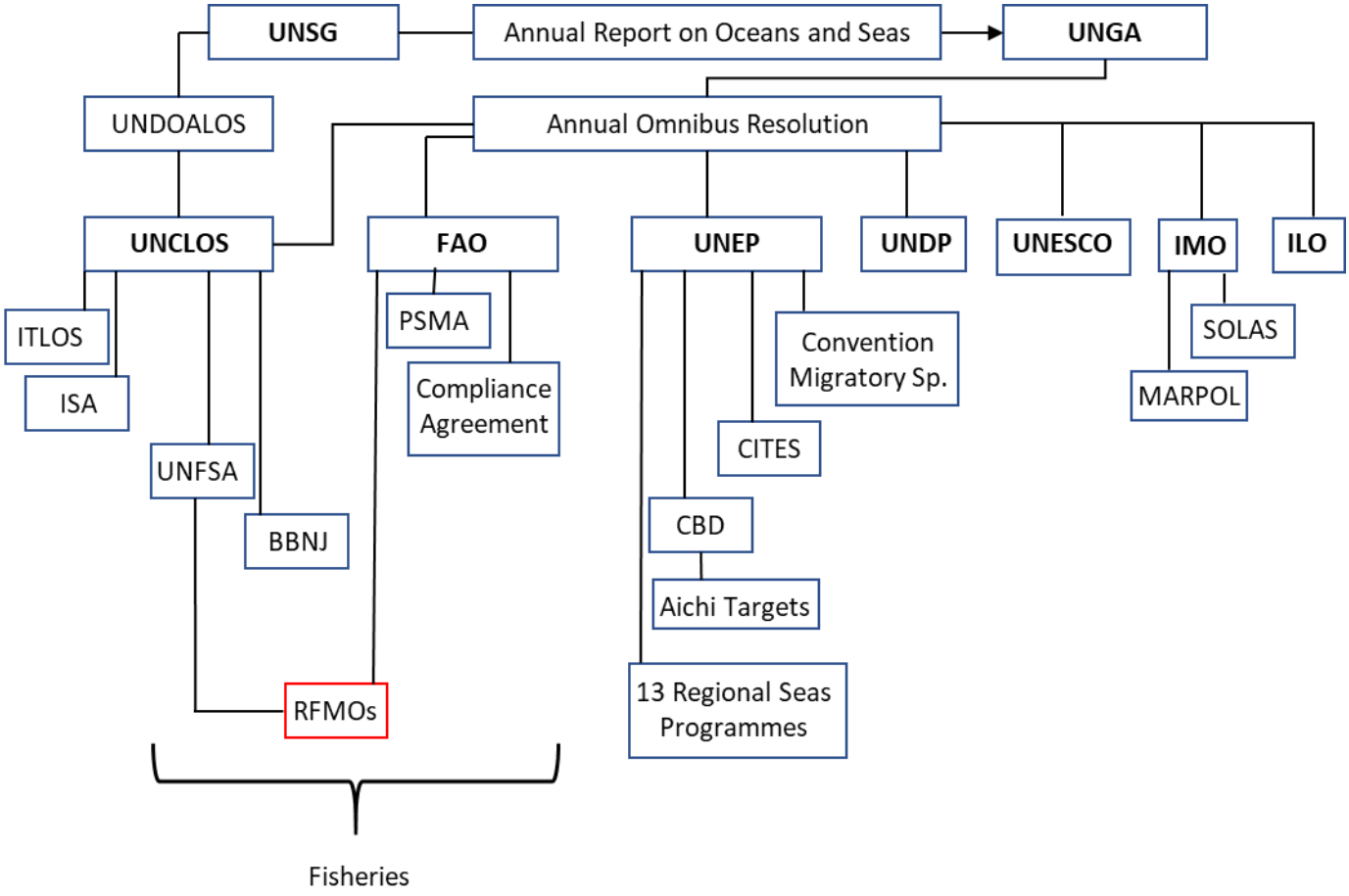


Figure 1.3: Schematic overview of the different organizations and agreements of ocean governance. This graph is based on (Degnarain & Stone, 2017).

1.6.2. International fisheries management – Regional Fisheries Management Organizations

RFMOs are bodies which have a direct or indirect responsibility to manage fisheries primarily on the high seas, but also to influence the management of fisheries of member states in waters under their national jurisdiction. As international organizations, RFMOs depend on the resources contributed by member states, however, to function autonomously RFMOs have the ability to raise issues independently of their members (Blokker, 2004). Thus, while RFMOs are bound by their mandate, which has been determined by its convention, and mainly act on behalf of their members, these organizations can also submit working papers on their own to their member states. The first RFMO was the Inter-American Tropical Tuna Commission (IATTC), established in 1949. Today, there are 13 RFMOs, which have the ability to enforce legally binding measures on their members and to manage high seas areas (FAO, 2019b) (Table 1.1). RFMOs can be seen as the interface between the goals of global agreements and the interests of states (Hoel, 2010). Each RFMO manages a specific geographical area and specific species. Generally, they can be divided into general RFMOs which manage non-highly

migratory and straddling species, and tuna RFMOs, which manage tuna and tuna-like species (highly migratory species) (Figure 1.4).

Table 1.1: Regional Fisheries Management Organizations

(Year of entry into force, acronyms, and full names in alphabetic order).

		General RFMOs
1952	GFCM	General Fisheries Commission for the Mediterranean
1982	CCAMLR[2]	Commission for the Conservation of Antarctic Marine Living Resources
1979	NAFO[3]	Northwest Atlantic Fisheries Organization
1982	NEAFC[4]	North East Atlantic Fisheries Commission
2015	NPFC	North Pacific Fisheries Commission
2004	SEAFO	South East Atlantic Fisheries Organization
2012	SIOFA	South Indian Ocean Fisheries Agreement
2012	SPRFMO	South Pacific Regional Fisheries Management Organization
		Tuna RFMOs
1994	CCSBT	Commission for the Conservation of Southern Bluefin Tuna
1949	IATTC	Inter-American Tropical Tuna Commission
1969	ICCAT	International Commission for the Conservation of Atlantic Tunas
1998	IOTC	Indian Ocean Tuna Commission
2004	WCPFC	Western and Central Pacific Fisheries Commission

[2] CCAMLR has been described as 'a conservation body with the attributes of a regional fisheries management organisation'. See *Report of the Commission for the Convention on the Conservation of Antarctic Marine Living Resources CCAMLR-XXI-2002* para 15.2:88

[3] The predecessor of NAFO, the International Commission for the Northwest Atlantic Fisheries (ICNAF) was also established in 1949.

[4] NEAFC was preceded by the 1959 North East Atlantic Fisheries Convention.

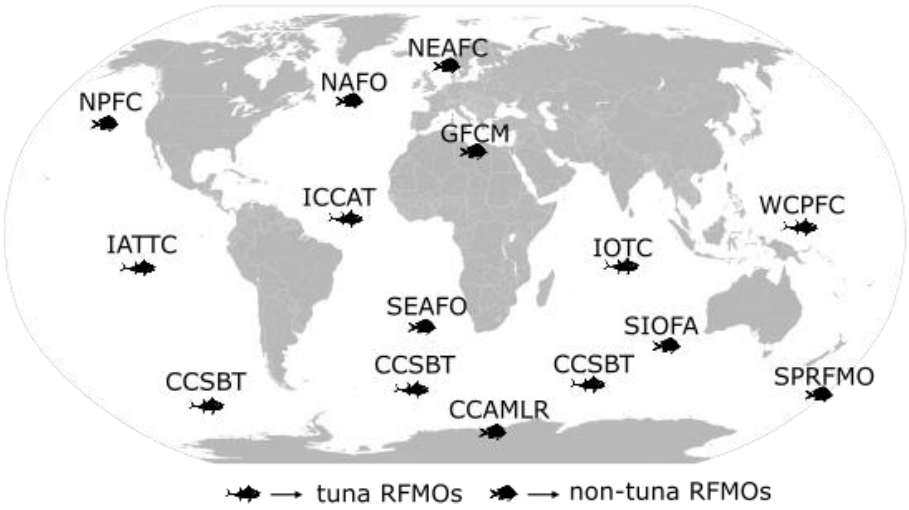


Figure 1.4: Geographical distribution of the RFMOs.

RFMOs are different from regional fisheries bodies due to their ability to enforce legally binding measures on their members (FAO, 2019b) (see Appendix A for a list of all member states). Most RFMOs share a similar structure, with a Commission, a Scientific Committee, and various subsidiary bodies such as a technical compliance committee, and in most cases a secretariat body. The role and framework of these bodies are laid out in the convention text of the organisations. The Commission consists of the member states and has the task of managing the fish stocks under their responsibility. They must also establish guidelines concerning issues related to their fisheries, such as conducting fishing for scientific advice or collection of data and have to supervise and coordinate existing conservation and management measures (NAFO, 2019a).

The Scientific Committee provides the Commission with scientific advice on several issues of relevance to the RFMO; for example, the status of fish stocks and the ecosystem. Furthermore, it collects and maintains data, statistics and other information regarding the fisheries and environmental and ecological factors (NAFO, 2019c). Generally, there have been three models of Scientific Committees identified (Willock & Lack, 2006). One of the most common models (used, for example, in the IOTC, ICCAT, CCSBT, NAFO, GFCM and CCAMLR) is the 'national scientist model', where the advice for the Committee is provided by scientists of member states, who normally meet for one to two weeks each year. Some RFMOs have also established a sub-committee which complete stock assessments (for example, CCSBT, CCAMLR, GFCM) (Willock & Lack, 2006). Other models are to have scientists permanently employed ('scientific staff model', IATTC) or to have an independent organisation which provides the RFMOs with scientific advice ('independent scientist model', WCPFC, NEAFC) (Willock & Lack, 2006).

The Commission, the scientific body and other subsidiary bodies are represented by a chairperson, who ensures that these bodies function properly. These chairpersons provide leadership in these bodies. The arrangements around the chairperson may differ slightly between the RFMOs; however, in most of the RFMOs, the chairperson is elected for two years (CCSBT, 2009). Generally, the chairperson works closely with their respective secretariat, which deals with administrative issues related to the organisations. Each secretariat has an executive secretary who is appointed by the Commission. Duties of the secretariat include, *inter alia*, organising the Commission and Scientific Committee meetings, preparing the draft agendas, or performing other functions assigned by the Commission (NAFO, 2019b). Even though the members of the RFMOs determine the performance of these organisations, the secretariat has the task of supporting the parties to meet their commitments (Sandford, 1996).

The structure described above can be found in almost every RFMO; however, despite several similarities, each RFMO is distinctive. The characteristics of each of the 13 organisations are described in the next sub-section.

1.6.3. The management network – description of the 13 organisations

For this research, thirteen RFMOs have been identified, based on their ability to manage high sea areas and adopt legally binding measures, and having an active Commission in place. Some key features are common to all the RFMOs, but each is unique due to different member compositions and management areas. A summary is provided for each of the RFMOs.

CCAMLR

CCAMLR entered into force in 1982 with a strong precautionary and ecosystem-based management mandate (Barnes, 1982; CCAMLR, 2000). CCAMLR is not, per its own norms, a fisheries management organisation but a conservation organisation with fisheries responsibilities (Constable et al., 2000). CCAMLR has been described as ‘a conservation body with the attributes of an RFMO’ (CCAMLR, 2002, p.88). When CCAMLR entered into force, established fishing interests formed a minority of CCAMLR members; however, now approximately half of its members are active in fishing in the Southern Ocean. CCAMLR manages key fisheries including Antarctic krill (*Euphausia superba)*, the world’s largest under-exploited marine resource stock and a key species in the Southern Ocean ecosystem (Nicol et al., 2012). CCAMLR has been the engine room for a number of key developments in high seas fisheries management. It was the originator of the concept of IUU fishing (Edeson, 1999), that led to the FAO-supported International Plan of Action to Prevent, Deter and Eliminate Illegal Unreported and Unregulated Fishing (IPOA-IUU). It was also the first organisation to implement conservation measures to address incidental catches of seabirds in long-line fisheries (again being

transferred through the FAO processes to an IPOA), and it has developed strong trade and market tools to support its compliance regime (Edeson, 1999).

GFCM

The GFCM was established in 1952 within the framework of the FAO. It is the second oldest RFMO. Most of its member states are coastal states, with Japan the only distant water fishing nation. The Mediterranean is a semi-enclosed ecosystem and most of the Mediterranean states have not claimed an exclusive economic zone (EEZ) due to difficulties in delimitation and the desire to have fisheries access to all Mediterranean basins (Chevalier, 2005). The high sea in the Mediterranean is, therefore, much closer to the coast than in other coastal areas (Chevalier, 2005). Managing the Mediterranean area is a difficult task, due to complex geopolitical tensions, political instability in some nearby states (for example, Egypt or Turkey) and major gaps in development between the different regions (GFCM, 2016). In 1997, the GFCM adopted the non-binding FAO Code of Conduct for Responsible Fisheries, which had entered into force 1995 and 'provides principles and standard applications to the conservation, management and development of fisheries' (FAO, 1995, Art. 1(3)). This led to further modernisations such as the establishment of a Scientific Advisory Committee and the opening of the membership for regional economic integration organisations. As a result, in 2004, 53 years after its establishment, the GFCM finally had the power to adopt binding management decisions (Vielmini et al., 2017).

NAFO

NAFO was established in 1979 as a successor to the International Commission of the Northwest Atlantic Fisheries. The history of NAFO is characterised by significant declines of the ground-fish stocks, especially the northern cod stock in the Grand Bank east of the Newfoundland coast, for which reason the fishery was closed by Canada in 1992. In 2007, NAFO amended its convention and started to develop a process to implement the ecosystem approach for fisheries. A study in 2019 examined the progress for the implementation of the ecosystem approach and found that important steps have been taken, but that some challenges still need to be solved (Koen-Alonso et al., 2019).

NEAFC

Similar to NAFO, NEAFC is a successor of a previous organisation, the North-East Atlantic Fisheries Convention 1959. The current organisation entered into force in 1982. NEAFC is the smallest RFMO with only five members: the European Union; Denmark, on behalf of the Faeroe Islands and Greenland; Iceland; Norway; and the Russian Federation. In contrast to the other RFMOs, the management of the target species is done in two steps, where coastal states must decide on total allowable catch and allocations before it is forwarded to NEAFC (NEAFC, 2014). This procedure adds some serious problems to the management framework of NEAFC, such as enforcing management measures for

straddling stocks (NEAFC, 2014). However, besides these issues, NEAFC is actively engaged in establishing area closures. In 2008, NEAFC signed an MoU with the OPSAR Convention, the Convention for the Protection of the Marine Environment of the North-East Atlantic, to establish marine protected areas (Wright et al., 2015a).

NPFC

The NPFC is the youngest RFMO and was established in 2015 to fill the fishery management gap in the North Pacific. Eight states are currently members of the NPFC, with Vanuatu as the only developing state. A report by Global Fishing Watch showed that most of the fishing occurs in the north-west and targets small pelagic fish and squid (Miller, 2018). Due to the youth of this organisation, less information could be obtained.

SEAFO

SEAFO was the first RFMO to enter into force after the establishment of the UNFSA (entered into force 2004). Because of that, parties were aware that SEAFO would set international standards concerning the management of straddling fish stocks (Jackson, 2000). The negotiations for this RFMO were unique due, in part, to the low fishing interests in this region and also the lack of adequate knowledge about the status of the stocks (Sydnes, 2001). Moreover, due to the low level of interest in the fisheries, states concentrated rather on the principles of the management than on the actual fisheries (Sydnes, 2001). The main states which participated in the negotiations were the coastal states' coalition with Angola, South Africa, Namibia, and the UK, the US, the EU and Japan (Sydnes, 2001). At the time of writing, SEAFO has undergone two performance reviews, which positively highlighted SEAFO as a management organisation; however, even more than 15 years after entering into force, the fishing effort is low, linked to low commercial interests (SEAFO, 2016).

SIOFA

SIOFA was established in 2012 under the FAO; however, the first meetings of its Scientific Committee only took place in 2016. This delayed the establishment of important aspects related to fisheries management, such as the development of stock assessments. Moreover, the South Indian Ocean is characterised by a long history of unregulated fishing, due to the lack of a management organisation for a long time (van der Geest, 2017). Large regions in the northern Indian Ocean are still unmanaged since they are not covered by SIOFA (van der Geest, 2017). As with GFCM, SIOFA is established under the FAO, which excludes important fishing nations from becoming members to SIOFA, limiting the impact of the enforced management measures (van der Geest, 2017).

SPRFMO

Like SIOFA, SPRFMO was established in 2012 and 15 parties have signed this agreement so far. One of the key challenges in SPRFMO is the management of the demersal orange roughy (*Hoplostethus atlanticus*), the pelagic Chilean jack mackerel (*Trachurus murphyi*), and of squids. Other demersal fish species include oreos, alfonsino, and bluenose (SPRFMO, 2019b). A further important conservation aspect is the protection of seamounts and ridges, which are the primary harvest areas for the orange roughy. In the SPRFMO area, the major harvester of orange roughy is New Zealand, represented through the Sealord Corporation. This corporation, half-owned by New Zealand's indigenous Maori population, heavily influences New Zealand's position in SPRFMO, especially in debates about orange roughy (Schiffman, 2012).

CCSBT

Unlike all the other RFMOs, the CCSBT is not limited to a convention area. The convention applies to southern bluefin tuna (SBT) throughout its range, and this species is managed by a global total allowable catch (TAC) and fishing quotas for each member state. The CCSBT was established in 1994. Previously, the SBT had been managed through an informal tripartite agreement involving Australia, Japan and New Zealand (CCSBT, 2020b), which are still key players in the CCSBT. The history of the SBT fishery is characterised by the disputes between Australia and New Zealand on the one hand and Japan on the other hand, which started with the discussions on a sustainable catch limit (Schiffman & MacPhee, 2014). In 2020, CCSBT is still a very small RFMO with only eight members: namely, Australia; the European Union; the Fishing Entity of Taiwan; Indonesia; Japan; Republic of Korea; New Zealand; and South Africa. Based on the history of the dispute between three member states and the utilisation of inaccurate data through significant under-reporting of catches (Schiffman & MacPhee, 2014), CCSBT started to develop a management procedure in 2000 (CCSBT, 2000). A management procedure is a pre-agreed set of rules which manages the TAC (CCSBT, 2001). This management procedure is used as a rebuilding plan for the SBT stock (Hillary et al., 2016), which is still overfished, although no overfishing is now occurring (CCSBT, 2017).

IATTC

Founded in 1949, the IATTC is the oldest RFMO. In 2010, the IATTC renewed its convention and adopted the Antigua Convention, which takes into account ecosystem considerations such as the precautionary approach (IATTC, 2018). In relation to its secretariat, with over 50 permanent staff, ICCAT has a low number of members (21) (IATTC, 2019). The secretariat has numerous tasks and coordinates research, planning, execution, analysis and delivery of scientific advice (Willock & Lack, 2006). The IATTC has two separate scientific programmes, with one addressing tuna and billfish and the other tuna and dolphins (Aranda et al., 2010). The tuna-dolphin programme has done a lot of work on gear technology research and bycatch mitigation developments (Aranda et al., 2010). Moreover, all

large purse seine vessels are covered by an observer programme (Aranda et al., 2010). Overall, the IATTC is said to be one of the strongest RFMOs in terms of their management measures (McCluney et al., 2019).

ICCAT

ICCAT was established in 1969 and is the largest organisation with 52 members, the majority of which are coastal states in the Atlantic region. In the past, ICCAT has received considerable criticism for the management of its stocks, especially for Atlantic bluefin tuna. The first independent performance review stated that ICCAT is an 'international disgrace' concerning its management (ICCAT, 2009, p.2). It was noted that ICCAT has a good framework for fisheries management but, due to the low compliance by its members and the lack of political will, ICCAT failed to meet its objectives (ICCAT, 2009). The management of bluefin tuna has improved in recent years and re-building plans for target species are in place (ICCAT, 2016). However, bluefin tuna is the highest-priced tuna species (Galland et al., 2016; McKinney et al., 2020), which makes it particularly attractive for IUU fishing. Despite the importance of Atlantic bluefin tuna, the members failed to implement stricter measures regarding the illegal trade of Atlantic bluefin tuna at the Commission meeting in 2018 (WWF, 2018).

IOTC

The IOTC manages the second most valuable tuna fishing region in the world (Galland et al., 2016; McKinney et al., 2020). It entered into force 1998 and was established under the FAO. The FAO framework influences the decisions of the members and also other aspects of the IOTC, such as financial regulations. Similar to SIOFA, important fishing nations, such as Chinese Taipei, are not part of the IOTC. Another distinguishing factor is that 40 to 50 per cent of the landings in the IOTC convention area are from small-scale fisheries, which makes it the highest proportion of all RFMOs. (McCluney et al., 2019). However, this makes the management quite complicated, since fewer data are available for small-scale fisheries (Gillett, 2011).

WCPFC

The WCPFC manages highly migratory species in the Western and Central Pacific, which is the world's most valuable tuna fishery (FAO, 2011; SPC-OFP, 2020). The WCPFC was the first tuna RFMO established after the enforcement of UNFSA. Thus, it has broader ecosystem perspectives, such as the precautionary approach, built into its convention (WCPFC, 2004, Article 6). Overall, 26 states are members of the WCPFC; more than half of these are Small Island Developing States (SIDS). This makes the WCPFC unique and the special requirements for developing states have been recognised in the convention, Article 30 (WCPFC, 2004, Article 30). Besides Article 30, the fact that the SIDS are well-organised brings them into a position where they are able to influence debates and decisions (Morin, 2015). The 14 SIDS member states are members of the Forum Fisheries Agency (FFA), which

supports their participation in the WPCFC meetings with advice, expertise and technical assistance. Another sub-group in the WCPFC is the Parties to the Nauru Agreement (PNA), consisting of eight small island states, which regulate purse seining in the convention area (McCluney et al., 2019). The strength of the SIDS often leads to tensions with distant water fishing nations, due to competing interests (Morin, 2015).

1.7.Development of Performance Reviews

An important concept of this study are performance reviews, thus, this section will provide an introduction and provide some background information. The first call to assess the performance of RFMOs came in the early 2000s from environmental non-governmental organisations (eNGOs), such as the World Wildlife Fund (WWF) and the International Union for Conservation of Nature (IUCN) (Hoel, 2010). This was mostly driven by eNGOs' desire to be part of the resource management decisions of RFMOs (Hoel, 2010). Even though eNGOs have been strong advocates for performance reviews of RFMOs, they have rarely been part of the review process. eNGOs have only been involved in one PR of the five assessed RFMOs: for the first and second PR of IOTC (FAO, 2015; IOTC-PRIOTC01, 2009; IOTC-PRIOTC02, 2016).

In addition to eNGOs, states have been the primary drivers of the RFMO reviews. States have been a driver for many aspects of resources management. For example, Australia and Norway took the lead on IUU fishing in 1999, which resulted in the International Plan of Action for IUU fishing (Haward, 2004). In 2006, the Ministerially led Task Force on IUU Fishing on the High Seas (led by the United Kingdom with Ministers from Australia, Chile, Namibia and New Zealand) recommended assessing the performance of RFMOs (High Seas Task Force, 2006). This was followed by the 2006 UNGA debate that urged states to strengthen and modernise RFMOs and to undertake performance reviews in a transparent manner and develop guidelines for best practice (UNGA, 2007b). In 2007, Chatham House produced a report titled 'Recommended Best Practices for Regional Fisheries Management Organizations' (Lodge et al., 2007). This was supported by the call from the 2006 UNGA resolution for PRs for RFMOs (Lodge, 2010; UNGA, 2007b). A further important step in establishing PRs on the international fisheries management agenda was the first Joint Meeting of Tuna RFMOs organised by the Food and Agriculture of the United Nations (FAO) in Kobe, Japan, in 2007. At this meeting, it was agreed that the five tuna RFMOs (ICCAT, CCSBT, IATTC, IOTC and WCPFC) would conduct PRs based on common criteria and elements of the tuna RFMO charters (Tuna-org, 2007).

However, as described in the next section, conducting performance reviews is not easy and requires significant resources.

1.7.1. Conducting performance reviews

The process of conducting PRs is complex and time-consuming. Each PR takes approximately one year to complete. It is also expensive; for instance, the budget for the second PR of CCSBT was US$75,000 (CCSBT, 2013). RFMOs must decide if the PR should be carried out by an internal panel, external panel or mixed panel of reviewers. While expert knowledge regarding the organisation is one of the advantages of the internal or mixed model, the external model may benefit from an independent and more objective viewpoint (Hoel, 2010). The UNGA (UNGA, 2006) and FAO (FAO, 2007a) emphasise the importance of transparency in PRs. Experts nominated from external institutions help to address this criterion (Ceo et al., 2012). RFMOs usually request the FAO and the United Nations Division for Ocean Affairs and the Law of the Sea (UNDOALOS) to nominate experts who will be part of the PR panel (FAO, 2015). Three of the five selected RFMOs in this study chose an independent panel of reviewers for their second PR: namely, CCSBT, ICCAT and NEAFC (Garcia & Koehler, 2014; ICCAT, 2016; NEAFC, 2014). IOTC and SEAFO chose a mixed panel to assess their performance (IOTC-PRIOTC02, 2016; SEAFO, 2016).

Another important aspect of PRs is the choice and scope of the assessment criteria. The categories generally used for a PR are: '(a) legal analysis of the Agreement; (b) conservation and management; (c) compliance and enforcement; (d) decision-making and dispute settlement; (e) international cooperation; and (f) financial and administrative issues' (Ceo et al., 2012, p.10). These categories are relevant to a best practice framework and have been influential in almost all PRs (Garcia & Koehler, 2014; ICCAT, 2009). To assess these criteria, PR panels rely on official documents, interviews and questionnaires (FAO, 2015). These criteria are also used in the 'Balton list', a list of criteria used to assess the tuna RFMOs (IATTC, 2008), and which provides the basis for many PRs for other RFMOs. Former US Ambassador David Balton established this list after the Kobe meeting, in consultation with the UNFSA, and suggested that these criteria should be used to assess the performance of RFMOs (IATTC, 2008).

PRs summarise the current weaknesses and strengths of an RFMO, and the recommendations can help the organisation deal with these issues that might otherwise remain unresolved. RFMOs have shown different ways of addressing the recommendations from PRs. For example, the CCSBT established a tracking system to follow the progress of implementing the recommendations of their first PR (Garcia & Koehler, 2014). The ICCAT established an internal working group to address the panel's recommendations (ICCAT, 2016) and the IOTC adopted a resolution, (Resolution 09/01 – *On the performance review follow-up*), to establish a process to implement the recommendations from the first PR (IOTC-PRIOTC02, 2016).

1.8. Description of this research

The aim of this research is to understand how RFMOs can contribute to meeting the objective and targets of SDG 14. The SDGs were released in 2015; therefore, little research has so far been done to analyse the contribution of specific actors towards the SDGs. Given the role of RFMOs, this project focuses on how they can contribute to SDG 14, and what factors influence RFMOs' contribution to SDG 14. While RFMOs are an important element in international fisheries management more broadly, understanding of their input to achieving international initiatives such as SDG 14 is currently limited. This research also extends the analysis of the performance of RFMOs and how such performance can be improved, with SDG 14 as an example of an external driver of change. This project provides a valuable contribution to the literature on this point and also enhances understanding of the behaviour of state and non-state actors within RFMOs, their perceptions of SDG 14 and the underlying dynamics and organisational aspects of RFMOs. As most of the targets of SDG 14 were due in 2020 (Fig. 1.2), this will be of relevance for the long-term to achieve sustainable oceans. It is acknowledged that all institutions and organisations have arisen in a specific context and have their own features and nuances. It is therefore important to not assume that the results of analysis of one subset of institutions can be easily extrapolated to explain the performance and possibilities of other institutions. Having said this, RFMOs will offer some useful hypotheses to facilitate the analysis of other ocean governance institutions in terms of their relationship with the SDGs and goals-based governance more broadly. For instance, due to similarities in institutional design, member states and jurisdiction, we believe that the results of this thesis maybe relevant to other organizations, such as the various Regional Seas Conventions (RSCs)."It is important to note, however, that the findings have been obtained from studying organisations that manage resource extraction. As a result, they might be less relevant to other organisations which, for example, manage marine traffic or the prevention of pollution.

As RFMOs are important actors in promoting sustainable fisheries, their work will be important to achieve SDG 14. The first part of this thesis analyses the meeting reports of the Commission and the Scientific Committee of the RFMOs and the conservation and management measures and resolutions these organisations put in place (Chapter 4). This work analyses the links between different measures of these bodies and the targets of SDG 14. This demonstrates the potential of the RFMOs' activities towards achieving SDG 14. The second part aims to better understand the hurdles and implications which impact RFMOs' engagement with the targets of SDG 14, by interviewing various stakeholders. While meeting reports and other official documents provide information concerning the work of RFMOs, especially in the context of SDG 14, these reports do not identify the reasons that hinder or support these organisations' engagement with SDG 14. Through stakeholder interviews, valuable information has been gathered to analyse the RFMOs' limitations and strengths in their engagement with the SDGs. The findings of the interviews are supported by participant observations at two Commission meetings (the South Pacific Regional Fisheries Management Organisation, and the

Western and Central Pacific Fisheries Commission), which provide a deeper understanding of the dynamics of RFMOs.

1.9. Scope and limitations of the research

This research addresses the relationship between goal-based governance approaches and actors which have the potential to influence the achievement of these goals. To gain important information regarding the RFMOs' potential contribution towards SDG 14, the official views of RFMOs (document analysis) have been triangulated with stakeholders' perspectives and opinions (interviews) and supported with meeting observations. To my knowledge, such a comprehensive analysis of RFMOs and their relationship to SDG 14 has not been done before. The results of this research address the important issue of how to promote a common goal among existing actors and how to align their work towards goals (that is, the SDGs) which are outside their agenda. This research might be of interest to the different stakeholders participating in the RFMOs, members of state delegations or the RFMOs' secretariat itself. The information gained can help to address issues which have so far received little attention and which might help the participants in RFMOs to improve their performance, but also members of the UN and the FAO in terms of integrating RFMOs into the work with new international environmental agreements and initiatives.

Generally, the current and potential contribution of RFMOs to meeting SDG 14 targets has not received detailed attention in the peer-reviewed literature, which makes this research, combined with a qualitative approach, salient and timely. Notable work has been done on the link between the SDGs and the ocean (e.g. Covert, 2017; Le Blanc et al., 2017; Neumann et al., 2017; Nippon Foundation-Nereus Program, 2017; Visbeck et al., 2014), although less work has directly linked fisheries with the SDGs (Brooker et al., 2016; Fleming et al., 2017). While RFMOs and their performance have received considerable attention in the literature (e.g. Barkin & DeSombre, 2013; Cullis-Suzuki & Pauly, 2010; de Bruyn et al., 2013; Leroy & Morin, 2018; Lodge et al., 2007; Willock & Lack, 2006), this thesis provides new insights concerning the performance of RFMOs. Overall, no existing work was found which analyses the RFMOs' relationship towards SDG 14 and their potential contribution.

For this research, 13 RFMOs have been identified based on two core characteristics: (i) the ability to manage high seas areas; and (ii) the existence of an active commission (adapted from Pentz et al. (2018)). At this point, it is important to note that the Commission for the Conservation of Antarctic Marine Living Resources (CCAMLR) is not a traditional RFMO, but rather a conservation organisation with fisheries responsibilities (Constable et al., 2000). CCAMLR has been included as it meets the core characteristics mentioned above. Due to the availability of resources and capacity, some of the analysis used only a subset of the 13 RFMOs. For the analysis in Chapter 4 concerning the potential influence

of performance reviews on RFMOs, only five RFMOs have been examined. This analysis studied the progress these RFMOs have made since their first review, based on the recommendations made in the second review. Thus, only RFMOs which have already conducted two performance reviews are included in this subset. For the interview analysis, a subset of four RFMOs – CCAMLR, CCSBT, SPRMFO and the WCPFC – was used. These four organisations were chosen due to the researchers access to experts working in these four RFMOs and the geographic location of the secretariats of these RFMOs, as all are located in Australia, New Zealand or surrounding countries, and, thus, in proximity to the researcher. Furthermore, these four RFMOs present a good sample, as they contain a broad range of different attributes. For example, the WCPFC is a tuna RFMO, and many members states are developing states or small island developing states and the need to protect their interests is a key issue in the WCPFC. While the CCSBT is also a tuna RFMO, it only targets South Pacific bluefin tuna (*Thunnus orientalis*) and is not restricted to geographical boundaries. SPRFMO and CCAMLR are general RFMOs, even though CCAMLR identifies itself as a conservation organization rather than an RFMO. Even though it could be argued that four RFMOs do not present a complete picture of all existing RFMOs, these four organisations cover many views relevant to other similar organisations, since all RFMOs follow a similar design and are based on the United Nations Law of the Sea and the United Nations Fish Stocks Agreement (United Nations, 1982, 1995). For the observation analysis, a subset of two RFMOs was used, as only the Commission meetings of the WCPFC and SPRFMO were attended. These two RFMOs were chosen to maintain consistency as they are also part of the subset of the interview analysis. Another limiting factor was the availability of funding and the capacity of the researcher to participate in these meetings as part of the Australian delegation.

It is also relevant to draw attention to the limitations of this study related to the goal-setting framework of the SDGs. While this research concentrates on the industrial fisheries sector, it is important to note that, in order to successfully achieve SDG 14, other marine sectors will also need to contribute to the targets of SDG 14. Furthermore, the analysis has mostly studied SDG 14 in isolation from the other goals, even though SDG 14 is highly interconnected with other SDGs and is essential to achieving many of the goals (Singh et al., 2017).

1.10. Research methods

To answer the research questions regarding the potential contribution of the RFMOs to meeting the targets of SDG 14, a qualitative approach has been used. This approach entailed a desktop analysis, interview analysis and observation. The use of qualitative research in natural resource management has increased in recent years with the recognition of the importance of human dimensions and other social aspects (Charnley et al., 2017). Scientists have emphasised the key role of humans and human behaviour in fisheries management (Fulton et al., 2011). However, in the past, fisheries management was primarily

dominated by quantitative research and social aspects were rarely included in management (Barclay et al., 2017). Jentoft (2006) argues that social sciences should be integrated into fisheries management and that one of the best solutions would be an interdisciplinary approach. The usefulness of qualitative social research to inform fisheries management has been demonstrated by various researchers; for example, Allison and Ellis (2001) and Bradshaw (2001). Thus, qualitative research methods are increasingly implemented in the research of fisheries management.

The use of the three research methods - desktop analysis, interviews, and observation - helps validate the qualitative findings. I used a desktop analysis to assess RFMOs current performance, the conservation and management measures currently in place, and how this might contribute to the different targets of SDG 14. However, there are significant informal governance activities within RFMOs that cannot be fully understood from official reports. I, therefore, also conducted semi-structured interviews with 39 participants, including stakeholders from the fishing industry, government, non-governmental organisations, scientists, and RFMO secretariats, to get insights into these informal activities in RFMOs. Assessing the perspectives of different stakeholders allowed me to gather insights into RFMOs capabilities and limitations. The literature review and interviews were further supplemented by participant observation. I participated in two RFMO Commission meetings (i.e. 16th regular session of the Commission of the WCPFC and the 8th meeting of the SPRFMO Commission) as part of the Australian Government delegation. Participating in these meetings allowed me to observe unspoken rules, power dynamics and the complex social networks underpinning how RFMOs function, the various roles of different member states, and the interpersonal relationships between the different member states' delegations. Each method is described in detail in Chapter 2, research design.

1.11. Chapter overview

The thesis consists of four core chapters that address different elements of the primary research question of how RFMOs are contributing to SDG 14. These core chapters are supported by a discussion of the research design (Chapter 2), discussion of findings (Chapter 7) and a conclusion (Chapter 8).

The first of the core chapters, Chapter 3 introduces the institutional framework of international fisheries management and the role of RFMOs and provides a short description of the 13 RFMOs. As a goal-based governance strategy, the SDGs rely on existing institutions and organisations (Underdal & Kim, 2017; Young, 2017a), which need to adapt their objectives to the SDGs (Bernstein, 2017). In this research, there is an implicit assumption that, for RFMOs to effectively engage with the objectives of the SDGs, they need to perform well. Therefore, Chapter 3 provides a comprehensive literature review of research articles, summarising issues which have been highlighted in the peer-reviewed literature as

impacting the performance of RFMOs. Achieving SDG 14 will partly rely on the performance of RFMOs; addressing their current problems, which have been identified in Chapter 3, is the first step towards more sustainably managed marine resources. Chapter 3 also provides a general overview of the potential of the SDGs to impact the RFMOs, and of the new agreement for biodiversity beyond national jurisdiction (BBNJ), since this agreement, if implemented successfully, will provide an important framework to further implement the work of SDG 14.

Where Chapter 3 provides an overview of issues impacting the performance of RFMOs, Chapter 4 examines how RFMOs can address these issues and how the conservation and management measures and resolutions RFMOs have in place might support the realisation of SDG 14. Performance reviews have been identified as one driver which has the ability to foster improvements in RFMOs (Ceo et al., 2012). Chapter 4, therefore, analyses in detail the influence of performance reviews on the performance of RFMOs and the potential to foster improvement. During these reviews, RFMOs are assessed against five categories and 29 criteria, although this number can vary between performance reviews. The topics of these categories are also addressed by the targets of SDG 14, thereby encouraging RFMOs to improve their performance in these categories and to implement stricter measures is a valuable contribution to SDG 14 and its targets. As conservation and management measures and resolutions are important aspects of RFMOs' performance, Chapter 4 also examines how the work currently done by RFMOs might support SDG 14. As previously mentioned, to achieve the SDGs, it is important that existing organisations align their objectives with the SDGs (Bernstein, 2017). The main objective of RFMOs is the long-term conservation and sustainable use of marine resources in their convention area, which is similar to the objective of SDG 14. Thus, the conservation and management measures and resolutions RFMOs have in place are largely aligned with the targets of SDG 14.

The data for Chapters 3 and 4 were obtained from publicly available sources and might therefore provide only one side of this topic. Chapter 5 is based on 39 interviews with a diverse group of stakeholders. This chapter analyses the stakeholders' perceptions regarding the RFMOs' potential contribution to SDG 14While the stakeholders' perceptions are subjective (Costa & Menichini, 2013; Munhall, 2012), they provide unique information which cannot be gained by analysing reports and scientific papers. The interview questions were designed to obtain information concerning the consideration of SDG 14 in RFMO meetings and the potential influence of SDG 14 on RFMOs. Similar questions were asked regarding climate change; for example, in which way do you think climate change will affect the organisation. The last part of the interview addressed the future of RFMOs and the potential influence of the BBNJ agreement, which is currently under negotiation. These insights provide an important understanding of the RFMOs' capacity to deal with emerging topics such as SDG 14, climate change, and new agreements. Knowing the hurdles RFMOs encounter is not only important to support the successful realisation of SDG 14, but also to end overfishing and to manage fisheries more sustainably.

Information presented in the final data chapter (Chapter 6) was enhanced by my attendance at the 16th regular session of the Commission of the Western and Central Pacific Fisheries Commission and the 8th meeting of the South Pacific Regional Fisheries Management Organization's Commission. These personal participant observations underline the results of the earlier chapters and help to understand the underlying dynamics of RFMOs, as well as the human interactions between the member states. Chapter 6 provides an alternative perspective on the potential contribution of these two RFMOs towards SDG 14 and identifies issues which potentially limit the scope of RFMOs to engage with SDG 14. RFMOs are steered by their member states (FAO, 2007b; Pons et al., 2018; UNGA, 2006) and these member states need to acknowledge the role of RFMOs in realising SDG 14 (see Underdal & Kim, 2017). However, the respective agendas of these states are set by their national priorities. The ability to achieve change in RFMOs is also limited due to their consensus-based decision-making approach.

Chapter 2

Research design

2.1. Introduction

This chapter describes the research design, methods and approaches I have used in this thesis to explore the potential contribution of Regional Fisheries Management Organizations (RFMOs) towards meeting the United Nations Sustainable Development Goal (SDG) 14 – Life Below Water. This chapter provides an explanation of the framework of analysis, including consideration of the premises and underlying assumptions which frame my key research questions.

Chapter 2 is divided into three sections: the first outlines the conceptual framework of this research; the second introduces the different methods and approaches; and the third section describes the three applied methods in detail.

2.2. Conceptual framework

To answer the research question regarding the contribution of RFMOs towards meeting targets of SDG 14, a qualitative approach was applied. To address the many challenges the oceans are facing, different disciplines must provide their expertise to address these problems (McKinley et al., 2020). Even though the use of qualitative research in the field of fisheries management has increased in recent years (Bradshaw, 2001; Charnley et al., 2017; McKinley et al., 2020), its potential contribution, with some significant exceptions (e.g. Bennett, 2019; Brooker et al., 2016; Fleming et al., 2020), is far from fully realised. Qualitative research allows the analysis of multiple views (Denzin, 1978) as it does not 'seek a single or generalizable truth, but rather uncovers multiple perspectives and interpretations' (Charnley et al., 2017, p.82). The use of multiple sources and a qualitative approach provides opportunities to engage deeply and richly with different perspectives on the responses to the SDGs by RFMOs and, thus, how goal-based governance approaches are approached by existing organizations.

In studying the potential contribution of RFMOs to the implementation of the SDGs, I have followed a broad interpretivist, qualitative approach, based on social constructivism and utilising grounded theory (Charmaz, 2006). Grounded theory is commonly used in social science research, as it emphasises the connection between theoretical development and data collection and analysis. This allows theory about attitudes towards the SDGs and the potential for RFMOs to contribute to their implementation to be inductively derived from data collected from participants, whether institutions or individuals (Predebon et al., 2007). Following this approach, I developed the theory after a thorough assessment of the data

and not prior to the data (Mason, 2018). To gain a richer understanding of the issue, it is important to incorporate several data sources to explore all the different perspectives regarding RFMOs' responses to the SDGs (Starks & Brown Trinidad, 2007). This approach, called triangulation, uses different approaches to answering the same question, which is an important concept in qualitative research (Denzin, 1978). While it is impossible to gain an exhaustive understanding of multiple perspectives in qualitative research, triangulation allows bringing together different views to confirm ideas, to get more confidence in the applied theories and potentially to make the findings more generalisable (Finfgeld-Connett, 2010).

The approach of social constructivism acknowledges the role of the researcher in constructing the research, from defining the research question to the actual analysis (Charmaz, 2006). An important aspect of social constructivism is how participants' ideas are treated. This approach views me (the researcher) and the participants as equals, which means that participants' ideas are valued as much as my ideas (Mills et al., 2006). This plays an important role in the research design, especially for the interviews (Mills et al., 2006). To develop an equal position, the time and location for the interview were determined by the participants (O'Connor, 2001). Moreover, a key was to listen openly to what each participant had to say and to accept all their ideas as valid, subjective understandings. I also needed to be aware of, and reflect on, my own underlying assumptions as a researcher (Mills et al., 2006). Reflecting on how these factors influence the interpretation of the data and stories from the interviews is an important aspect of this research.

Generally, reflexivity is a process where researchers analyse their own values, perceptions or behaviour and how these can influence the interpretation of their data (Parahoo, 2006). Using three different methods, instead of one, provides different types of insights regarding RFMOs, for example, the official and unofficial relationships between different RFMOs and the processes involved in reaching different outcomes. These different insights strengthen the end results, as it allows the results to be validated and understood from different perspectives. As all qualitative research is to an extent subjective, it is important to be reflexive about personal assumptions (Boström et al., 2017). Reflexivity has been achieved throughout the research by careful consideration of my own position in the research and potential biases (for example in framing the research questions and design and in constructing the interview questions and in the interview analysis). While other researchers may have asked slightly different questions or come up with slightly different codes, by being transparent about the logic for my choices, I have demonstrated the sequential steps of my approach, which others can choose to reproduce. Others may reach different conclusions from similar research, because understanding people and their behaviour includes a great deal of complexity of experience and context. Temporal and personal differences can add different insights, and multiple interpretations are beneficial to

understanding the richness of human behaviour. How others' insights compare with my own will become clear as this field of inquiry grows.

This research also aligns with an interpretivist approach, which means that there are not necessarily any right or wrong answers to research questions, but rather varying ideas and interpretations (Blaikie, 2011). Hence, it is important to reflect on why I have interpreted the data in a particular way and what I might have left out, as there are multiple ways to analyse this information. Overall, constructivism provides the overarching theory for this work and the interpretivist approach determines how I have carried out the analysis. Grounded theory fits well within these two theories as a methodological approach (Charmaz, 2006) because it acknowledges that the analysis could always be done differently and therefore it steps through coding and theory development to build legitimacy through transparency.

To link the different aspects of the research together, 'governance by goal-setting' was used as an analytical framework, which allows for a better understanding of the results. As introduced in Chapter 1, goal-setting governance tools, such as the SDGs, rely on the support of existing organisations and initiatives. In this research, I argue that the performance of these respective organisations plays an essential role in effectively contributing to the SDGs. Well-performing organisations have a greater capacity to align their objectives with the SDGs. Even if these organisations do not acknowledge their role in supporting the SDGs, achieving their own goals will indirectly support the SDGs. For example, the objective of RFMOs is the sustainable use of marine resources, which aligns with the objective of SDG 14. Thus, even when RFMOs are not officially contributing to SDG 14, their work will indirectly benefit the aims of SDG 14. Furthermore, analysing the response of RFMOs to the SDGs and the potential hurdles these organisations face allows for important insights into the relationship between existing fisheries organisations and goal-setting initiatives.

Perception describes 'how we see things' and, thus, influences the opinions and viewpoints of individuals (Munhall, 2012). Interviews with stakeholders provide insights into the links between RFMOs and SDG 14, which cannot otherwise be gained from the analysis of the scientific literature and official meeting reports. Stakeholders – defined as 'any group or individual who can affect or is affected by the achievement of an organization's objectives' (Freeman, 1984, p. 46) – play an important role in RFMOs and their perceptions of SDG 14 regarding the framework of RFMOs. The analysis of stakeholder perceptions of RFMOs and the SDGs presented in this research is a novel contribution to the literature. People perceive and value things differently and their opinions and viewpoints can strongly influence their behaviour. Understanding these different interests, values and views is an important contribution to understanding the potential for supporting action by identifying barriers and opportunities (Fleming et al. 2020). Interviews with stakeholders provide novel insights into the links among RFMOs and the implementation of SDG 14, which otherwise cannot be gained by the analysis of the scientific literature and official meeting reports; for example, attitudes of member states,

administrative issues or instrumental barriers. Stakeholders, defined as 'any group or individual who can affect or is affected by the achievement of an organization's objectives' (Freeman, 1984, p. 46), play an important role in RFMOs and their perceptions of SDG 14 regarding the framework of RFMOs. Understanding issues which hinder the RFMOs' engagement with SDG 14, but also with other agreements and topics such as climate change (SDG 13), is an important aspect to improve the performance of RFMOs. Overall, this research has been designed to understand the capacity of specific regional actors to contribute to global goals, by using a qualitative approach which will be explained in more details in the next section.

2.3 Research methods

Following the conceptual framework outlined above, three different qualitative research methods have been used (Figure 2.1). The first part of the analysis was a desktop analysis of documents, which used and analysed information from already existing resources, such as RFMO meeting reports. Analysing and interpreting existing documents helped me to gain a better understating of the research topic (Bowen, 2009). As will be described in the upcoming section, I used different methods, such as a keyword search or content analysis, to extract results from the meeting reports and conservation and management measures. Thus, this analysis provided important information regarding the performance of the RFMOs. To make an effective contribution to SDG 14, these organisations must perform well at providing sustainable management for fisheries. The desktop analysis was conducted to answer the research question concerning the RFMOs' current performance and their potential contribution to SDG 14. For this purpose, the analysis was divided into three more detailed sub-questions:

1) How RFMOs are currently performing?

2) What is the potential of performance reviews to help RFMOs increase their performance?

3) What are the existing conservation and management measures of RFMOs and their potential for contribution to SDG 14?

This research was designed to understand multiple perspectives on the performance and work of RFMOs and to identify opportunities and barriers impacting the successful implementation of the SDG framework. This included conducting semi-structured interviews to provide insights into stakeholder perspectives about the work of RFMOs, and their potential to contribute to the implementation of SDG 14. Data was also collected through the participatory observation of two RFMO Commission meetings. Participatory observation describes a qualitative research method where the researcher participates in an event and observes it (Platt, 2004). However, it is important to note that the differences between participant and non-participant observations are opaque as they involve participation ranging from small

social gatherings to large crowds where participants remain anonymous (Platt, 2004). My attendance at two RFMO Commission meetings adds a third view concerning the RFMOs' contribution to SDG 14. RFMOs consists of member states; thus, attending these meetings allowed me to observe the dynamics between the member states. Generally, observation as a data collection tool allows for examining the verbal and nonverbal behaviours of various stakeholders participating in those meetings (Bottorff, 2011).

Participatory observations allow for paying closer attention to emotions, body language and debates which were all linked to my own reflection, which, as noted earlier, is an important component of qualitative research (Bottorff, 2011). Emotions and body language are important human factors in negotiations, and depending on how they are received by other parties, it makes them more, or less, willing to engage in discussions and negotiations (Martinovski, 2010). Participant observation of these factors provides important insights into the receptivity of member states regarding new topics, such as the SDGs as well as insights into how factors such as personal charisma, historical relationships between member states and coalitions of shared values impact negotiations. These insights are not available from other methods, such as desk-top analysis of meeting documents. Generally, the participatory observation verified the results from the previous studies and provided insights into how RFMOs function and member states interact, which play an important role in achieving consensus for new CMMs. Confirming the results of the desktop analysis and interviews, by using a different method, is of triangulation (Fig.2.1). It is important to note that my insights are contextual and may not be the same for all RFMOs. However, these insights will be broadly useful and will help to explain current views, opportunities and barriers for action faced by stakeholders when working towards the realisation of goal-setting initiatives.

To better understand how these different methods were used, the next two sections provide more information concerning the data collection and analysis.

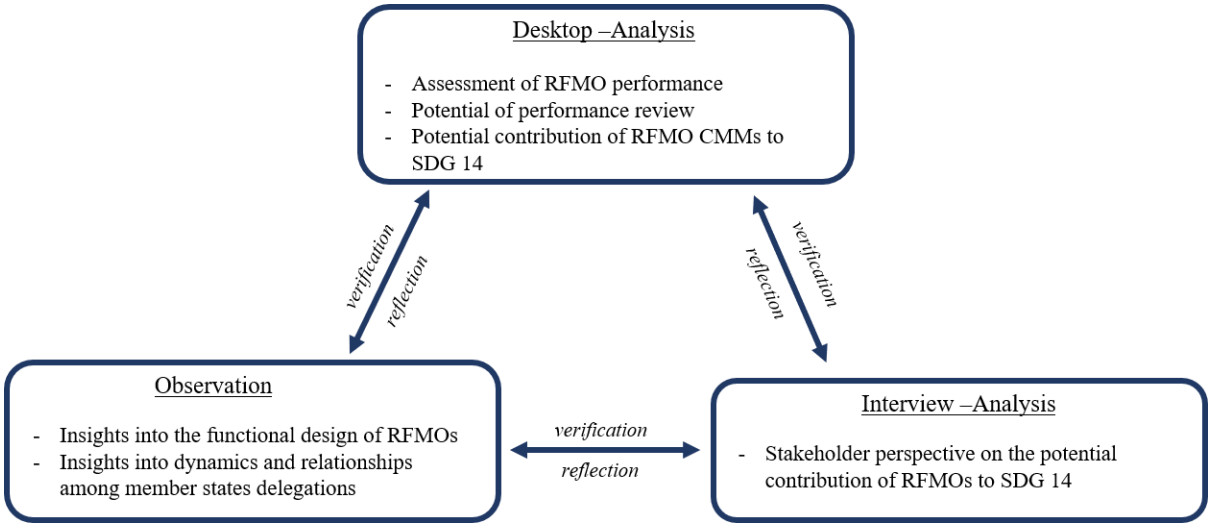


Figure 2.1: Overview of triangulation.

2.3.1. Data

This section provides details concerning the data collection for each of the three methods as well as which RFMOs have been used as case studies. Due to the availability of information and material, not all 13 RFMOs have been used for all studies (Tab. 2.1)

Table 2.1. Overview concerning which RFMO has been used for which part of the study.

RFMO	PR analysis (Chapter 4)	Contribution to SDG 14 (Chapter 4)	Interviews (Chapter 5)	Observation (Chapter 6)
CCAMLR		X	X	
CCSBT	X	X		
GFCM		X	X	
IATTC		X		
ICCAT	X	X		
IOTC	X	X		
NAFO		X		
NEAFC	X	X		
NPFC		X		
SEAFO	X	X		
SIOFA		X		
SPRFMO		X	X	X
WCPFC		X	X	X

Desktop analysis

For the desktop analysis, publicly available data and peer-reviewed literature have been used to examine RFMOs. Meeting reports and reports related to RFMOs are publicly available on their respective websites and represent official statements of these organisations. As indicated, the desktop analysis is

divided into three parts: (i) current performance of RFMOs; (ii) approaches to improve the performance; and (iii) existing conservation and management measures (CMMs) and resolutions. Chapter 3 addresses the question regarding the RFMOs' current performance and contains a systematic review of the peer-reviewed literature. To gain a comprehensive understanding of the existing literature, a scoping exercise using the keywords 'regional fisheries management organizations' and 'RFMO' was performed to search the two databases, Scopus and Google Scholar.

Chapter 4 discusses the potential of performance reviews (PR) to increase the RFMOs' performance, as well as how existing CMMs and resolutions have the potential to contribute to the different targets of SDG 14. To assess the potential influence of PR on RFMOs, the progress of five RFMOs in the period from their first PR until their second PR was examined. The five selected RFMOs are the Commission for the Conservation of Southern Bluefin Tuna (CCSBT), the International Commission for the Conservation of Atlantic Tuna (ICCAT), the Indian Ocean Tuna Commission (IOTC), the North-East Atlantic Fisheries Commission (NEAFC) and the South-East Atlantic Fisheries Organization (SEAFO). These RFMOs were selected as case studies because they have already undergone a second PR (Table 2.2). They thereby offer rich, publicly available data on the actions that were undertaken after their first PR. These five RFMOs provide diversity in terms of species coverage, number of participating parties, number of developing country members, and geographical range. These results may therefore also be useful for other RFMOs.

Table 2.2: Summary of performance reviews for each RFMO.

RFMO	Year of 1st PR	Year of 2nd PR
CCAMLR	2008	2017*
CCSBT	2008	2014
GFCM	2011	2019*
IATTC	2016	
ICCAT	2009	2016
IOTC	2009	2016
NAFO	2011	
NEAFC	2006	2014
NPFC	2019	
SEAFO	2010	2016
SIOFA	X	X
SPRFMO	2018	
WCPFC	2012	

*Format was not applicable, or second performance review was not accessible.

To assess the progress of the five selected RFMOs since their first PR, I looked at the recommendations made at the time of their second PR. These recommendations are good indicators of progress made since the first review and of the impact of PRs in effecting change. In particular, to assess the progress since the first PR, this analysis draws on objectives in the second PR included by each of the five RFMOs. In this way, this analysis provides useful early cross-comparisons and learnings from the PR

process across a range of RFMOs. The sections of the PR are divided into five overall categories, which were supported by criteria for which the panel gave recommendations (Table 2.3).

Table 2.3: Overview of all categories and criteria used by the different PRs of the five RFMOs.

Categories	Criteria
Conservation and management	Status of living marine resources
	Data collection and sharing
	Quality and provision of scientific advice
	Adoption of conservation measures
	Capacity management
	Compatibility of management measures
	Fishing allocations and opportunities
	Non-target species
	Ecosystem approach
Compliance and enforcement	Flag state duties
	Port state measures
	Monitoring, control and surveillance
	Follow-up in infringements
	Cooperative mechanisms to detect and deter non-compliance
	Market-related measures
	Reporting requirements
Decision-making and dispute settlement	Decision-making
	Transparency
	Dispute settlement
	Confidentiality
International cooperation	Relationship to cooperating non-members
	Relationship to non-cooperating non-members

	Cooperation with other organisations
	Special requirements of developing states
	Participation and capacity building
Financial and administrative issues	Availability of resources of RFMO activities
	Efficiency and cost-effectiveness
	Financial and administrative issues
	Staff regulations and staff remuneration

To assess the extent to which all 13 RFMOs are engaging with SDG 14, I count how often the keywords 'SDGs' and 'Sustainable Development Goals' were mentioned in the meeting reports of their respective Commissions and the Scientific Committees from 2014 (the year before the SDGs were agreed) until 2018, and then qualitatively assessed in what context they were referred to. Overall, 117 meeting reports were examined, which are publicly available on the respective RFMO websites. For various reasons, not all RFMOs had meeting reports available for all five years from 2014; for example, the NPFC only entered into force in 2015. Furthermore, I closely examined the CMMs and resolutions these organisations have implemented. As cooperation is an important aspect of the SDGs, I also assessed the extent to which RFMOs cooperate and analysed how many Memorandums of Understanding (MoUs) were signed between RFMOs and other organisations. The information regarding the MoUs between these organisations is accessible on their websites.

Interviews

The second method was conducting interviews with different stakeholders (Chapter 5), which were approved under the University of Tasmanian Social Sciences Human Research Ethics Approval Ref No: H0017184. Interview participants were selected using a purposive sampling approach, where researchers specifically choose participants due to their experience and knowledge in international fisheries management (Bernard, 2002; Lewis & Sheppard, 2006). The participants were selected for their expertise regarding RFMOs and their participation in meetings of four organisations – namely, the Commission for the Conservation of Antarctic Marine Living Resources (CCAMLR), the Commission for the Conservation of Southern Bluefin Tuna (CCSBT), the Western and Central Pacific Fisheries Commission (WCPFC) and the South Pacific Regional Fisheries Management Organization (SPRFMO) – rather than for their expertise regarding the SDGs. While most of the participants were familiar with SDG 14 – Life Below Water and SDG 13 – Climate Action, they were less familiar with the other SDGs. These four organisations were chosen due to their important role in international fisheries management in the Southern hemisphere, which is an area of increasing geopolitical interests,

as described below (Reilly, 2015). As described in Chapter 1, further criteria were that the RFMO secretariats were located in close proximity to the researcher, as well as the access and ability to engage with experts working in these four RFMOs. The WCPFC manages the most valuable fishery globally, which is economically important for many Small Island Developing States (SIDS) but also for distant water fishing nations, such as the EU and the USA. The WCPFC and SPRFMO are both regarded as rather new organisations, which has allowed them to be more forward-thinking regarding ecosystem considerations. In contrast to the other RFMOs, the CCSBT manages only a single species, the southern bluefin tuna (*Thunnus maccoyii)*. CCAMLR has a very strong conservation focus, and thus has a broader ecosystem consideration than any of the other organisations. To gain a better geographical balance, I also contacted the executive secretariats of the nine other RFMOs; however, for various reasons (for example, confidentiality), only five executive secretaries were able to participate. Of these, three were based in the Northern hemisphere. Moreover, the headquarters of the four selected RFMOs are located in Australia, New Zealand and the Federated States of Micronesia, which coincided with the geographical location of the researcher (Australia). Generally, all RFMOs follow a similar institutional design and are based on the United Nations Law of the Sea (UNCLOS) and the United Nations Fish Stocks Agreement (UNFSA) (United Nations, 1982, 1995). Participants also shared their knowledge concerning other organisations, which enhanced the results of this analysis.

The selection process was combined with a snowballing technique, which provided a greater range of different views regarding the RFMOs. Snowballing describes an approach where contact information is provided by another participant (Noy, 2008); it often follows a purposive sampling approach (Brown, 2006; Tran & Perry, 2003). To avoid false interpretation of the results, a variety of stakeholders was interviewed to get a comprehensive range of perceptions. Moreover, as previously mentioned, it is important that the researcher be aware of their own perceptions to keep the research trustworthy (Starks & Brown Trinidad, 2007) and to avoid overinterpretation (Nutt Williams & Morrow, 2009). To address these problems, the data have been constantly compared with each other, throughout the research, and with the scientific literature (Corbin & Strauss, 1998), and reflection has been an important component at all research stages.

Overall, 41 stakeholders were interviewed, resulting in 39 interviews (as three stakeholders chose to be interviewed together). The interviews covered different stakeholders, including scientists, government officials, industry, environmental non-government organisations and employees of the RFMO secretariats (Tab. 2.4).: 22 interviews were conducted face-to-face and 17 were conducted via Skype or telephone. On average, 15 questions were asked during the interviews, which were tested in two pilot interviews held with colleagues (Table 2.5). The interviews lasted between 15 and 45 minutes, depending on the participants' engagement with the topic. They were conducted between October 2018 and August 2019. With the approval of the participants, the interviews were audio-recorded, as approved under the University of Tasmanian Social Sciences Human Research Ethics Approval Ref

No: H0017184. These audio-recordings were transcribed by the researcher, which gave me a high familiarity with the data.

Table 2.4: Summary of the interviewed stakeholders.

Stakeholder	Nr of participants
RFMO secretariat	9
Government	15
Consultant	7
NGO	6
Researcher	3
Industry	2

Table 2.5: Interview questions

Overview questions
1. Which international agreement do you consider to be most important for guiding the work of the organisations?
2. What do you think drives differences among RFMOs?
SDG specific questions
3. How do you think the SDGs could or should influence RFMOs?
4. Which of the RFMOs has considered the SDGs?
5. Why do you think they were not considered?
6. Which goals, in particular, are important for RFMOs?
7. Do you think that the RFMOs have measures in place which equate to the SDGs?
Climate change specific questions
8. In which way do you think climate change will affect the organisation?
9. Does climate change already play a role in the organisation's management or in the scientific advice?
10. How was climate change introduced in the meetings/ discussions of the RFMOs?
11. Has climate change already led to changes in the organisations?
12. Do you see differences among the RFMOs concerning responses to climate change?
Concluding questions
13. Are there any other important issues concerning the implementation of the SDGs and climate change I have not asked about?
14. How do you think the BBNJ agreement will impact RFMOs?
15. Would you like to make any other comments about the future of the RFMOs?

Participatory observation

I participated, as part of the Australian delegation, in the 16th regular session of the Commission of the WCPFC in Port Moresby, Papua New Guinea, and the 8th meeting of the SPRFMO Commission in Port Vila, Vanuatu. These two meetings convened over six and five days, respectively. During these meetings, I took notes to capture the interpersonal interactions and also to keep track of which proposals concerning new measures, amendments and resolutions were accepted. The different proposals were publicly available at the RFMOs' websites. I also took notes about how the discussions during the meeting generally related to the SDGs, and provided a general reflection of the Commission meeting. While reading the report gives me a formal perspective of these meetings, attending them allowed me to gain deeper insights into how the meetings function, as well as a better understanding of the importance of interpersonal relationships. Participating in these meetings also helped me to get a better contextual understanding of the collected data from the desktop analysis and stakeholder interviews (Guest et al., 2013). Participant observation has been criticised for a lack of objectivity, as the researcher is not an independent observer (Iacono et al., 2009). Even though my objective was to analyse the topics which were addressed during the meeting, rather than observing the participants, it is important to be aware of the limitations of participant observations. To counteract this issue, I frequently reflected on my actions, cross-checked my findings with the literature and the findings of the other methods, and clearly stated my personal reflections and reported them back to others (Iacono et al., 2009).

This has section provided an overview of how the data was collected; the next section describes the analysis and interpretation.

2.3.2. Analysis

In this section, each of the three data analysis methods is described separately.

Desktop analysis

In the first part of the desktop analysis, the literature review, the Scopus search found 231 articles for the term 'regional fisheries management organizations' and 76 articles for the term 'RFMO', where these terms appeared in the title, abstract or as a keyword. Since Google Scholar search resulted in 1870 entries, I limited the queries to the title, resulting in 23 results for 'regional fisheries management organization' and 35 for 'RFMO'. Papers which have not studied the performance of RFMOs in general or for a certain topic were excluded, reducing the number of papers to 34 (Figure 2.2.). These papers were examined, and all the issues which were stated as impacting the RFMOs' performance have been listed in Appendix A – A1.

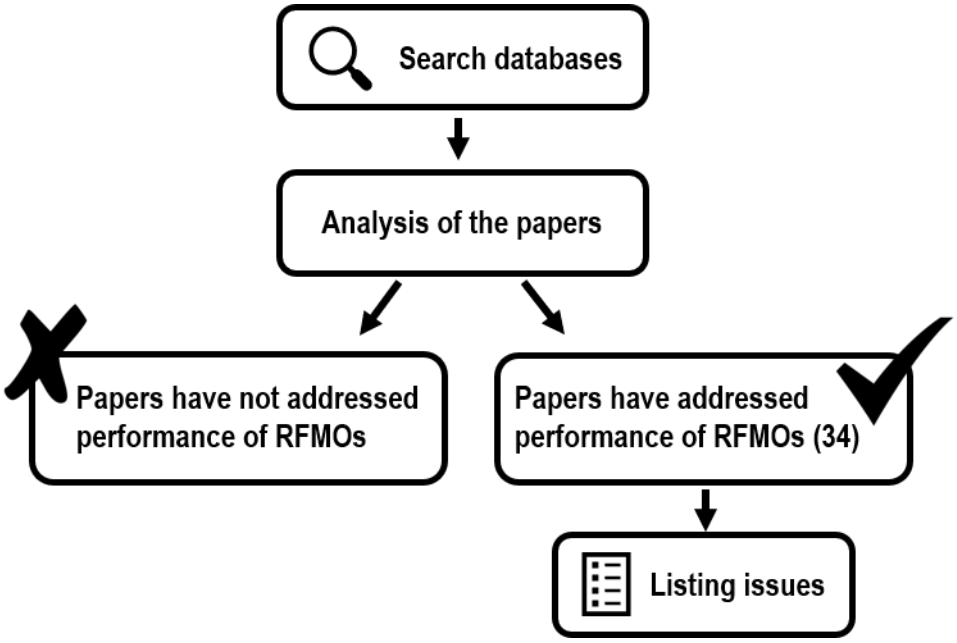


Figure 2.2: Summary of steps taken to conduct the literature review.

Some papers examined the overall performance of RFMOs (e.g. Cullis-Suzuki & Pauly, 2010; Lodge et al., 2007), while others addressed a particular issue such as the precautionary approach and ecosystem approach for fisheries management (e.g. Juan-Jordá et al., 2017), decision-making (e.g. McDorman, 2005; Pentz & Klenk, 2017) or transparency (Clark et al., 2015). However, even when a paper focused on a particular issue, it also mentioned other issues which influence the RFMOs' performance. Most of the papers analysed RFMOs of all kinds (19). Only a few concentrated on tuna RFMOs (5), general RFMOs (3) or case studies (8).

To analyse the influence of PR on RFMOs, I developed a scoring system to compare the progress of the five RFMOs. The scoring system is based on Garcia and Koehler (2014), who scored the evolution of CCSBT management system ('none' – 'basic' – 'improving' – 'advanced'). For this analysis, I have added a fifth category, 'fulfilled', to better capture the state of progress (Table 2.6).

Table 2.6: Scoring system used to analyse the progress since the first PR.

Scoring system	Description
None	No progress. The RFMO has not even started to address the recommendation.
Basic	The RFMO has started to deal with this recommendation, mostly in the form of discussions, but no concrete measures have been adopted so far.

Improving	The RFMO has already invested a lot of time on this recommendation and has implemented actions to address the problem. However, there is still more that can be done.
Advanced	The recommendation is almost fulfilled, but a few more things could be done to address the issues.
Fulfilled	The recommendation has been fully addressed.

To apply the different scores, I analysed the recommendations and the actions (for example, implementing new measures) taken by the RFMO for each category and criterion. I also analysed criteria which were not part of the first PR, where the second PR panel stated the progress of these 'new' criteria since the first PR. However, criteria which were only used for the first PR were not considered, since no in-depth analyses regarding the progress of their implementation were provided. The aim of this analysis was to provide an overview of the progress RFMOs have made since their first PR. The results were then further linked to the number of new or updated CMMs and resolutions and the status of the managed stocks. I acknowledge, however, that a number of factors could influence these results, such as variations in the use of language, the structure of the PR and the type of panel (independent or mixed).

The third part of the desktop analysis examined the measures RFMOs have in place and their contribution to the potential implementation of SDG 14. Through assessing the meeting reports, I have identified key areas for RFMOs' contributions to the main targets of SDG 14 and established criteria which are linked to the specific targets of SDG 14. These criteria target CMMs and resolutions which would provide valuable contributions (Table 2.7). I also analysed the academic literature and websites of the RFMOs for relevant information on the assessment criteria (see Appendix B – B1). Following the framework developed by Cullis-Suzuki and Pauly (2010) and Pentz et al. (2018), each criterion could be answered with a 'yes' or 'no' response, which is discrete and not overlapping. To assess how much work the organisations have already carried out towards implementing the different targets, I calculated the overall percentages of measures in place for each target and RFMO.

Table 2.7: Assessment criteria for the targets of SDG 14.

14.1 By 2025 prevent and significantly reduce marine pollution of all kinds, in particular from land-based activities, including marine debris and nutrient pollution.	**Yes**	**No**
Mentioned in convention and/or is a resolution in place?		
Convention mandates monitoring or controlling ALDFG** (Gilman, 2015)?		

Logbook and/or observer data collection protocols call for reporting ALDG (Gilman & Kingma, 2013)?		
At least one measure related to monitoring or controlling ALDFG (Gilman, 2015)?		
14.2 By 2020, sustainably manage and protect marine and coastal ecosystems to avoid significant adverse impacts, including by strengthening their resilience and take action for their restoration in order to achieve healthy and productive oceans.		
Precautionary approach		
Mentioned in convention and/or is a resolution in place?		
Are they applying a precautionary approach (de Bruyn et al., 2013)?		
Do they have a resolution on best scientific advice?		
Are they considering new and exploratory fisheries?		
Have they implemented Management Strategy Evaluations (Nakatsuka, 2017b)?		
Does the RFMO acknowledge climate change (Pentz et al., 2018)?		
Ecosystem approach		
Mentioned in the convention and/or is a resolution in place?		
Are they applying an ecosystem approach (Juan-Jordá et al., 2017)?		
Do they have general bycatch measures?		
Do they have resolutions for non-target species?		
Do they have measures for seabirds?		
Do they have measures for marine mammals?		
Do they have measures for turtles?		
Do they have measures for sharks?		
Do they have measures for certain types of fishing (e.g. bottom fishing, driftnet fishing, FADs)?		
14.3 Minimise and address the impacts of ocean acidification, including through enhanced scientific cooperation at all levels.	**Yes**	**No**
14.4 By 2020, effectively regulate harvesting, and end overfishing, illegal, unreported and unregulated (IUU) fishing and destructive fishing practices implement science-based		

management plans, in order to restore fish stocks in the shortest time feasible, at least to levels that can produce maximum sustainable yield as determined by their biological characteristics.		
Mentioned in the convention and/or is a resolution in place about IUU fishing?		
Do they have an IUU vessel list?		
Do they have vessels on their IUU vessel list?		
Do they have links to the IUU lists of other RFMOs?		
Do they have port state measures in place?		
Do they have trade measures?		
Do they have measures on a catch documentation scheme or a video monitoring system?		
Do they have a resolution on trans-shipment (Ewell et al., 2017)?		
14.5 By 2020, conserve at least 10 per cent of coastal and marine areas, consistent with national and international law and based on the best available scientific information.		
Mentioned in the convention and/or is a resolution in pace?		
Have any closures been installed (Pentz et al., 2018)?		
Do they have MPAs (Pentz et al., 2018)?		
Have no-take MPAs been established (Pentz et al., 2018)?		
Are they committed to a representative system?		
Do they have VMEs?		
Do they have general habitat protection measures?		
14.6 By 2020, prohibit certain forms of fisheries subsidies which contribute to overcapacity and overfishing, and eliminate subsidies that contribute to IUU fishing and refrain from introducing new such subsidies, recognising that appropriate and effective special and differential treatment for developing and least developed countries should be an integral part of the World Trade Organization fisheries subsidies negotiation.		
14.7 By 2030, increase the economic benefits to Small Island Developing States and least developed countries from the sustainable use of marine resources, including through sustainable management of fisheries, aquaculture, and tourism.	**Yes**	**No**
Mentioned in the convention and/or is a resolution in place?		

Do they have a special fund for developing countries (Pentz et al., 2018)?		
Is there a process to aid developing states financially (Pentz et al., 2018)?		
Are they taking developing countries' interests into account in any way?		
Are they considering special requirements?		
Is there a noted difference in allocation or fees between developing and developed countries (Pentz et al., 2018)?		
Is there a special allocation for developing countries (Pentz et al., 2018)?		

It is important to recognise that RFMOs' ability to deal with the targets varied considerably and therefore the number of criteria that could be applied was different for each target. For example, while there were only four potential criteria for target 14.1 (marine pollution), target 14.4 (sustainable fisheries) had eight. To provide a clearer picture regarding the measures RFMOs have in place, I divided target 14.2 (sustainable management) into criteria which are related to the precautionary approach for fisheries management and the ecosystem approach for fisheries management. Another change was made concerning target 14.7, which relates to small island developing states and least developed countries. To make it more applicable to all RFMOs in this study, I assessed their measures regarding developing countries in general. I excluded target 14.3 (ocean acidification) and 14.6 (subsidies) since RFMOs do not have any measures in place which relate to these two targets. Ocean acidification is directly linked to climate change and to address these impacts it is important to have a robust management framework in place that is able to respond to these uncertainties (Cheung, 2018; Cheung et al., 2017; Pentz & Klenk, 2017). Management considerations are addressed by target 14.2 (sustainable management) and 14.4 (sustainable fisheries). In the context of subsidies, it is important to note that this topic has been addressed by the World Trade Organization. Moreover, subsidies are a national matter and thus are difficult to address in a regional setting.

Regarding the assessment of the MoUs, the different MoU partners were divided into five groups: conservation; intergovernmental; science; NGO; and others. 'Others' included groups which did not fit the description of the first four groups, such as regional fisheries bodies. It is important to note that not all cooperation was displayed on the RFMOs' websites, which potentially resulted in a lower observed number than is actually the case. I also analysed the objectives of these MoUs to understand the areas of cooperation.

Interviews

To analyse the interviews, I transcribed the audio-recordings and coded the data to increase my familiarity with the content. To code, analyse and generally manage the transcribed interviews, I used

the qualitative data analysis software QSR NVivo® (QSR international, version 11). The coding was done by identifying ideas and meanings in the data, applying a 'bottom-up' approach with iterative coding and thematic analysis (Terry et al., 2017). The codes were newly assessed after each round of coding, to assure consistency among the codes and with the research question concerning the links between RFMOs and SDG 14 and climate change. The end codes were gained through three rounds of coding (see Table 2.8). The final codes were analysed, divided and summarised under higher-level categories, where applicable, which are more abstract than the codes (Corbin & Strauss, 1998). These categories helped to better understand the data and to identify connection points. After grouping all the codes into different categories and sub-categories, the categories were summarised into different themes to get a greater overview of the potential topics which play an important role in RFMOs' day-to-day work and concerning their engagement with SDG 14 and climate change.

Table 2.8: End codes.

End codes	
Members signed agreements	Weak performance of RFMOs – BBNJ
Influence members	Need for biodiversity agreement – BBNJ
Guidance	Not excluding fisheries from BBNJ
Overarching goals	Potential impact – BBNJ
Support argumentation	Should impact RFMOs – BBNJ
BBNJ – Use BBNJ to get better protection	Should recognise existing institutions – BBNJ
Important – SDGs	Pressure on RFMOs – BBNJ
Potential to influence – SDGs	Strengthen RFMOs – BBNJ
Less impact – SDGs	Complementary agreement – BBNJ
Negative impact – SDGs	Need to manage at regional level not global level – BBNJ
No acknowledgement of SDGs	Nothing will change – BBNJ
Nothing will change – SDGs	Should not impact RFMOs – BBNJ
Will not influence – SDGs	Issues that needs to be addressed
Consideration – SDGs	Possible climate change actions
Reference to SDGs	Match contribution – SDGs
No action – SDGs	Reporting – SDGs
No consideration – SDGs	Change is slow
No involvement – SDGs	More cooperation with other RFMOs
Segmented uptake in industry – SDGs	More cooperation with different institutions

Already to that – SDGs	Cooperation in the context of BBNJ
Equitable measures – SDGs	More cooperation between stakeholders
Harvest strategies – SDGs	Avoided getting involved
Not explicitly addressed – SDGs	Poor governance
Would do it without SDGs	RFMOs are influenced by major companies
Baseline is development – SDGs	Relationship to the UN
Complementary – SDGs	Weak measures
Process of repatching without change – SDGs	Distribution of allocations
Too broad and unclear – SDGs	Issue of accountability
Acknowledgement of impact – climate change	Dangerous culture
Concerned about impact – climate change	Difficult organisations
Important – climate change	Focus on fisheries management
Need to respond to climate change	RFMOs are not dealing with economic aspirations
Adaptation not mitigation – climate change	Economic impact
Climate change too unprecise	Impact on other species
Dealing with climate change in other fora	New emerging issues
Do not think there is any consideration – climate change	Difficult to manage fisheries
Not an immediate issue – climate change	Issues of developing countries
Unclear what organisations can do – climate change	More important for developing countries – SDGs
Climate change is important in science	More important for WCPFC – SDGs
CCAMLR more aware – climate change	Strength of SIDS – SDGs
Different importance for RFMOs – climate change	More work towards developing countries – SDGs
Important for SIDS – climate change	SDGs should support developing countries
Climate change – more consideration in WCPFC	Support by developed countries
More fundamental questions to address – climate change	Delegation
No action – climate change	Developed vs developing
No consideration – climate change	Distant fishing nations vs coastal nations
No recommendation on climate change	Key players

Wait and see approach – climate change	UNGA
Agenda item – climate change	RFMOs products of relationships and time
Consideration – climate change	Different reasons to create an RFMO
Consideration in science – climate change	Narrow mandate
Inclusion of broader environmental effects – climate change	Need to update convention
Increasing consideration – climate change	No time
Industry reaction – climate change	Too much work
Making management better – climate change	Lack of resources
Not always explicit stated – climate change	Differences among organisations
Reference to climate change	Economic value
Scientific advice – climate change	Way to get resources – BBNJ
Slow responses – climate change	More resources needed
Work done on climate change	Issue of decision-making
Difficult issue – climate change	Decision-making
Lacking understanding – climate change	Influenced by decision making
Unknowns – climate change	Difficult to get members to agree

Participatory observations

To assess the contribution of the two Commission meetings towards the SDGs, the adopted CMMs and resolutions were linked to the respective targets of SDG 14 and other SDGs. The potential contribution of the CMMs and resolutions has been described in detail for each of the SDGs. While analysing this information, institutional and geographical differences were taken into account. For example, the Pacific Islands are severely impacted by climate change, so this topic received considerable attention at the WCPFC meeting. SPRFMO has only two Pacific Island members, so the issue of climate change was not of high importance in this meeting. Member composition also played an important role as each member follows its own political and economic agenda. The WCPFC, for example, is dominated by SIDS and their relationship with distant water fishing nations, whereas in SPRFMO South American countries such as Peru and Chile are a strong force.

Besides the contribution to the SDGs, I also noted general observations of the Commission meetings. It is important to acknowledge that there are many different aspects of the meetings which could have been noticed; however, the observations described in Chapter 6 are based on what I perceived to be important and how I interpreted the respective situations. These observations were based on the question

of what factors are influencing the RFMOs' performance. Thus, I tried to concentrate on aspects which might steer or hinder discussions and negotiations, such as how members communicate during the discussions and negotiations. Moreover, I tried to capture aspects, such as the importance of leadership quality and championship by the executive secretary, as all these factors play an important role in successfully steering Commission meetings.

To sum up

Each of the three methods – desktop analysis, interviews and participatory observations – has provided important insights in addressing the research question on the potential contribution of RFMOs to achieving SDG 14. While the desktop analysis presented official RFMO statements and an assessment of the peer-reviewed literature, this method does not provide insights on the dynamics within an RFMO, the inter-relationships between matters of concern to members, or the position of individual members prior to the 'consensus' statements contained in meeting reports. Document analyses do not necessarily indicate why or how RFMOs are engaging (or not engaging) with SDG 14. This information can be gained by analysing stakeholder views and perspectives. Interviews provided important insights into RFMOs through the comments of key participants which cannot be extracted from meeting reports and papers. Observing two RMFO Commission meetings provided insights into meeting dynamics and complemented the data and information obtained through interviews and desktop analysis. Attending Commission meetings allowed me to confirm the validity of the data. Moreover, the observations allowed me to establish a deeper understanding of the RFMO working environment, which has important implications regarding the contribution of RFMOs to the SDGs. For example, the interview analysis revealed that participants in RFMO meetings do not have the time to address issues such as the SDGs; attending the RFMO Commission meetings confirmed this statement. Furthermore, I could observe how discussions and negotiations are conducted, providing important insights into the decision-making process of RFMOs.

2.4. Conclusion

This chapter has described the research design, as well as the applied approach and methods used to analyse the potential contribution of RFMOs towards SDG 14. I have used a qualitative approach to address different perspectives and interpretations concerning this research topic. Triangulation, the use of three different methods to answer the same questions, has allowed for important insights regarding the potential contribution of RFMOs to SDG 14. A desktop analysis was used to assess the RFMOs' performance and how the existing framework of RFMOs can potentially contribute to SDG 14. The use of semi-structured interviews summarised important insights from stakeholder perspectives concerning RFMOs and SDG 14. Participating at two RFMO Commission meetings as part of the Australian

delegation allowed me to develop a deeper understanding of how these meetings are structured. The description of the methods allows for repetition by others, although the results might differ from the findings represented in the following chapters, as they are subject to the researcher's interpretation and different temporal and contextual considerations.

This chapter has described the research design and the different methods; Chapters 3, 4 and 5 present the results of the analyses. Next, Chapter 3 provides background information for the different RFMOs and summarises the results of the literature review.

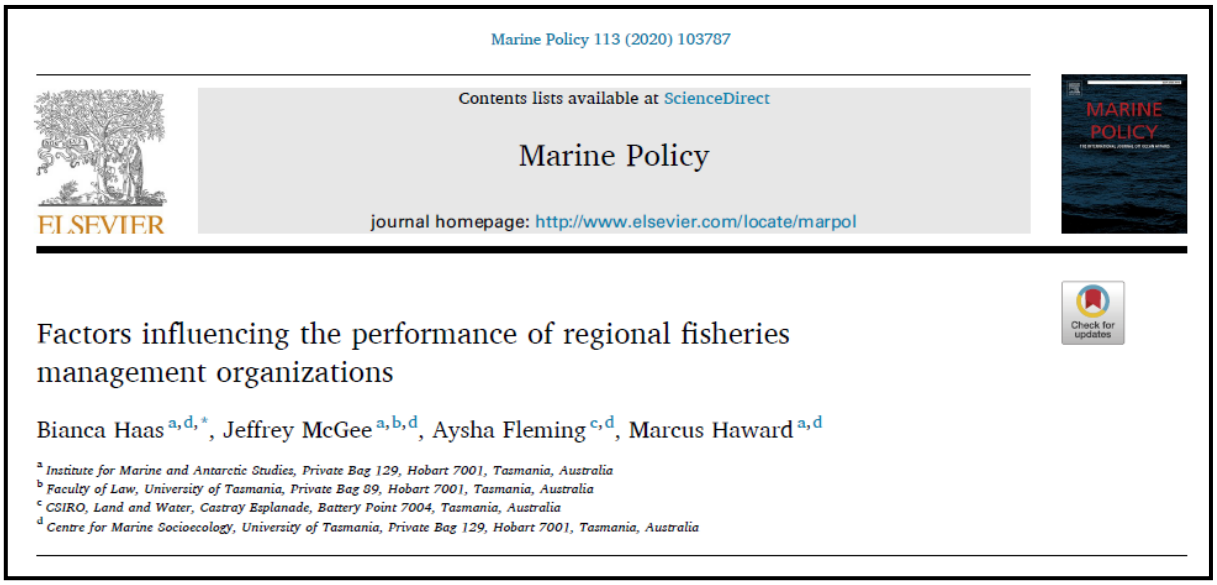
Chapter 3

RFMOs: Current architecture and issues

Part of the research contained within this chapter has been published as:

Haas, B., McGee, J., Fleming, A., & Haward, M. (2020). Factors influencing the performance of regional fisheries management organizations. *Marine Policy*, 113, 103787. doi: 10.1016/j.marpol.2019.103787

See Appendix C for the abstract of the published article. Note that this chapter is based on, and extends the published paper and has been reformatted for this thesis.



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Factors influencing the performance of regional fisheries management organizations

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3.1. Introduction

This chapter presents the results of the literature reviews. The following sections are going to present and discuss the issues, which had been identified through an extensive review of the current literature.

3. 2. A glance behind the curtain – a descriptive analysis of internal issues

Following the approach described in Chapter 2, section 2.3.2., the literature review identified seventeen issues highlighted in the research as being important for RFMOs' performance. Most of the authors mentioned the need for a precautionary and ecosystem approach for fisheries management, including topics such as the implementation of vulnerable marine ecosystems (VMEs) or fisheries bycatch, and the impact of decision-making (18) (Figure 3.1). These two issues were followed by the impact of members, the need for transparency and the need to follow the scientific advice and collect data (9). Other issues mentioned included the need to cooperate (5), lack of political will (4), overcapacity (3), clearer management objectives (1) and trans-shipment (1). It is important to note that this list is not exhaustive, but only mirrors themes described in the peer-reviewed literature. These identified issues might have been extensively researched on their own or in another context, however, these results only present the views which have been expressed in the context of RFMOs.

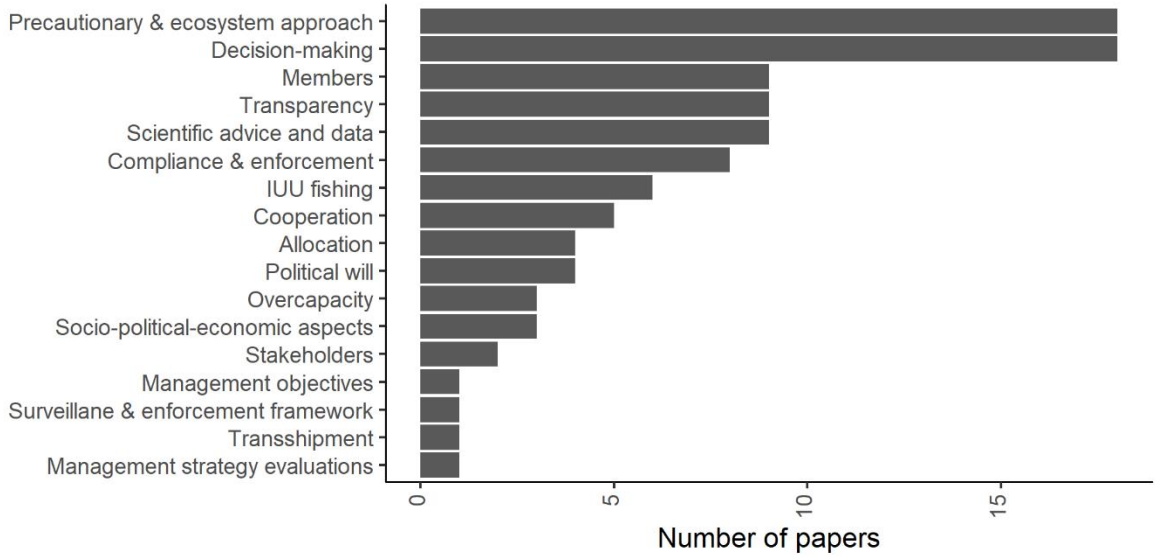

Figure 3.1: Summary of identified issues which had been highlighted in the research as being important for RFMOs' performance.

Most of these issues influence each other; for example, decision-making was frequently mentioned as hindering the application of the precautionary approach (e.g. Barkin et al., 2018; Gilman et al., 2014; Juan-Jordá et al., 2017) or making it difficult to establish sound regulations for trans-shipment at sea

(Ewell et al., 2017). Moreover, aspects such as the precautionary and ecosystem approach or transparency can only be achieved when members agree, support the proposals for conservation and management measures, and follow the scientific advice. Generally, all the identified issues influence each other. The next sub-sections describe the five most frequently occurring issues in more detail.

Precautionary and ecosystem approach

The precautionary and ecosystem approach to fisheries management is an important component of modern fisheries management. Many articles highlight the role of the precautionary and ecosystem approach in the management of RFMOs (de Bruyn et al., 2013; Gilman et al., 2014; Juan-Jordá et al., 2017; Lodge et al., 2007; McDorman, 2005; Scanlon, 2018; Schiffman, 2013; Willock & Lack, 2006; Wright et al., 2015a). The two most important instruments in this regard are the UNFSA (a binding agreement) and the FAO Code of Conduct (a voluntary instrument), which task RFMOs with managing fisheries in a sustainable way and with taking a precautionary and ecosystem approach to fisheries management (FAO, 1995; United Nations, 1995). RFMOs that have entered into force after the negotiation of UNFSA often include the precautionary and ecosystem approach in their convention texts; for example, SPRFMO and NPFC (de Bruyn et al., 2013; Scanlon, 2018). The conventions of older RFMOs are often incompatible with the UNFSA as they lack important features, such as the precautionary approach or ecosystem considerations (Gilman et al., 2014). However, some of these RFMOs, such as the IATTC and GFCM, have adapted to new environmental norms, such as long-term sustainability of fisheries and ecosystems, and have re-established their convention to address areas such as the precautionary approach or ecosystem-based approach (GFCM, 2019; IATTC, 2018).

Another way for RFMOs to modernise their approach, without adopting a new convention, is by broadening the interpretation of their treaties. A good example is the WCPFC, that interpreted its treaty text as having the competence to adopt marine environmental protection measures, without having this specifically stated in the founding agreement (Scanlon, 2018). It is important to note that even though WCPFC has been implemented after the enforcement of UNFSA, only the most recent organizations, such as SPRFMO and NPFC, have included the need to protect ecosystems in their treaty texts (Scanlon, 2018). The use of performance reviews and implementing the recommendations of such reviews, as discussed in Chapter 4, has been important in ‘modernising’ RFMOs. Many different factors are impacting treaty discussions, thus it is not possible to make a statement concerning the reasons why the WCPFC, as a modern RFMO, has no environmental protection provisions in its founding agreements.

The precautionary and ecosystem approach is an important aspect of sustainable management, and RFMOs work hard to adapt their management. Juan-Jordá et al. (2017) analysed the implementation of the ecosystem approach in tuna RFMOs and found that they made noticeable progress in integrating the ecosystem approach into their management. However, their study also found that, even though these organisations have integrated the ecosystem approach, they have not done a good job of it. For example,

most of the organisations did not have proper implementation plans in place, and those that were in place were ad hoc and short term (Juan-Jordá et al., 2017). A study found similar results in the area of deep-sea bottom fishing, which showed that RFMOs made improvements, such as the increased implementation of several United Nations General Assembly resolutions on bottom trawling, but there are still issues which urgently need attention (Gianni et al., 2016); for example, the implementation of adequate impact assessments or cumulative impact assessments, and the current lack of information on stock status for deep-sea species (Gianni et al., 2016)

Many organisations have implemented area closures to protect vulnerable marine ecosystems, which are important components of the ecosystem approach. However, in many RFMOs the conservation aspects of those area closures are not fully implemented as no cumulative impact assessments are available and bottom fishing is still allowed (Gianni et al., 2016). RFMOs often use an approach of 'freezing the footprint', which means that areas, where no fishing occurs, are closed in order to prevent vessels from starting to fish in these areas (Wright et al., 2015a). Members often request more information before adopting closures, which is inconsistent with the precautionary approach, which requires members to act on suspicion of potential impact without having all the information on the scale of this impact (Wright et al., 2015a). However, there are also positive examples which show that RFMOs can improve their conservation capacity. For example, NEAFC established an MoU with OSPAR, the Convention for the Protection of the Marine Environment of the North-East Atlantic, to establish Marine Protected Areas in the Northeast Atlantic (Wright et al., 2015a). Another aspect of the ecosystem approach which has gained some attention is the area of bycatch. While many RFMOs have included assessments of seabirds, sea turtles, marine mammals and elasmobranchs, hardly any of the RFMOs have taken the broader marine ecosystem into account in their management approach (Gilman et al., 2014). Therefore, even though RFMOs have started to implement the precautionary and ecosystem approach to fisheries management, much more work is needed, especially in the area of broader ecosystem components such as vulnerable marine ecosystems or bycatch species.

Decision-making

One of the most criticised aspects of RFMOs is how the decision-making process works, especially the possibility of objecting to conservation and management measures (Barkin & DeSombre, 2013; de Bruyn et al., 2013; Gilman et al., 2014; Juan-Jordá et al., 2017; Leroy & Morin, 2018; Lodge et al., 2007; McDorman, 2005; Schiffman, 2013; Willock & Lack, 2006). The Commission makes decisions in one of three ways: (i) consensus; (ii) voting (simple majority, three-quarters or two-thirds majority); and (iii) a mixture of mandatory consensus and voting (Willock & Lack, 2006). CCAMLR, CCSBT, SEAFO, SIOFA and IATTC make decisions by consensus, whereas ICCAT, GFCM, IOTC, NEAFC, NAFO, WCPFC and SPRFMO apply majority voting with the right to object (Leroy & Morin, 2018).

The right to object and opt out, which exempts members from the obligation to implement the agreed measure, is an important aspect of the decision-making process and one of the core problems of RFMOs. Consensus-based decision-making and the ability to opt out or not agree are likely to result in the lowest common denominator agreement (Underdal, 1980) and weak or ineffective measures which are not able to address the particular problem (Barkin & DeSombre, 2013; McDorman, 2005; Willock & Lack, 2006). In the case of consensus-based decision-making, states can simply block the whole negotiation. Arguably, this makes the consensus-based model the least favourable, since it is harder to get members to agree on more progressive reforms (Pentz & Klenk, 2017). While in other decision-making models, such as majority voting where members can object to the established measures, it is more likely that members will be encouraged to seek fairer compromises. Even if a member is willing to take stronger measures, consensus-based decision-making mostly ends in measures which are weaker due to the need to reach an agreement (Leroy & Morin, 2018).

Three organisations, the WCPFC, NAFO, and SPRFMO, have enhanced the opt-out procedure and made it more efficient; for example, they established a review panel which resolves the dispute in a transparent manner (Leroy & Morin, 2018). SPRFMO, in particular, which is one of the newest organisations, has addressed this issue in a way which is considered to be 'best practice' (Leroy & Morin, 2018). SPRFMO parties are required to explain in detail the reasons for their objections to a proposed measure (Schiffman, 2013) and must implement alternative measures that have the same effect as the decision that was the focus of the objection (SPRFMO, 2015). This procedure limits any kind of discrimination and ensures that decisions are consistent with UNCLOS and the SPRFMO convention. Since entering into force, NAFO, NEAFC, IATTC and GFCM have revised their decision-making processes; however, none has followed the example of SPRFMO (Leroy & Morin, 2018). Generally, decision-making is evolving, but many of the organisations are still resistant to implementing greater changes (Leroy & Morin, 2018).

Members

RFMOs play an important role in managing fisheries; however, this role is highly influenced by the interests and attitudes of their member states (FAO, 2007b; Pons et al., 2018; UNGA, 2006) and often also by the lack of political will of members (Barkin & DeSombre, 2013; McDorman, 2005). These states bring different cultural and economic perspectives to the RFMO meetings. For example, the way states manage their national fisheries also impacts their behaviour in international settings, such as RFMOs (Barkin et al., 2018). Some members are more led by their economic interests, while others apply a more conservationist approach, which can lead to tensions during the meeting process. Those different interests also play an important role in what members put forward during the Commission meetings and which topics are addressed or not.

RFMOs are also influenced by the economic diversity of their states and their economic dependence on marine resources (Pons et al., 2018). The performance of an RFMO with many developing states as members and states who are highly dependent on these resources is on average poorer compared with organisations with many developed states as members (Pons et al., 2018). Most of the developing states lack the capacity to implement the required measures (Pons et al., 2018). The number of developing states present in the RFMO also influences the way it addresses certain issues. For example, addressing overcapacity in convention areas often conflicts with the aspiration of developing states to expand their fleets, which can lead to tensions between developed and developing states (Aranda et al., 2012). This is especially problematic because one of the proposed solutions is to transfer vessel capacity from developed to developing states (Penas Lado, 2011). Generally, RFMO management approaches, such as basing total allowable catch on historical catch quota might lead to inequitable outcomes, as this approach favours developed countries and often leads to a divide between developed and developing countries (Abolhassani, 2018; Sinan & Bailey, 2020). Moreover, not only the composition of the member states but also the number of states involved influences RFMOs. This aspect is especially important for decision-making since it is harder to achieve consensus with more members, who have different economic interests (ICCAT, 2009).

Transparency

The next issue that is often mentioned as an important factor in managing marine resources is the transparency of the meetings and processes of RFMOs. The need for transparency refers to documentation of events, access to the documentation, the involvement of independent experts in performance reviews, and the participation of non-governmental stakeholders (Clark et al., 2015; Gilman et al., 2014; Lodge et al., 2007; Schiffman, 2013; Wright et al., 2015a).

While transparency plays a relevant role in fisheries management, it is only one aspect of sustainable management (Clark et al., 2015). The results of the study by Clark et al. (2015) show that, individually, each of the RFMOs had good practices in place on aspects such as availability of data and information or participation in decision-making; however, the authors of the study intentionally set the bar rather low (for example, does the organization have a website?) and still none of the RFMOs had adopted the full range of measures. To increase their transparency, RFMOs could learn from each other and adopt each other's examples of best practice (Clark et al., 2015). One model organisation in the aspect of transparency is SEAFO, and their improvement in transparency was highlighted in their second performance review (SEAFO, 2016). Overall, the secretariats of the organisations are working on improving transparency, for example by making more information publicly available, while non-governmental organisations are increasingly pushing RFMOs to become more transparent (Clark et al., 2015).

Scientific advice and data

The last issue is scientific advice and data. This issue addresses factors such as the need to follow the scientific advice and the quality of the advice, but also the lack and quality of data. Moreover, it is closely linked with other aspects mentioned in this chapter, such as decision-making and the precautionary approach. For example, how well policy-makers follow the scientific advice is a good indicator of how effective the measures concerning the precautionary and ecosystem approach will be (Lodge et al., 2007). Generally, establishing the scientific advice is quite complex (Galland et al., 2018) and how the scientific advice is structured is, *inter alia*, influenced by the institutional and operational framework of the RFMOs (Willock & Lack, 2006). Scientists prepare advice on several issues that are important to the Commission members and, ideally, the Commission members follow these suggestions. However, sometimes members do not follow the advice, or they adopt measures which are less effective than those suggested by the scientists (Galland et al., 2018). In some organisations, Commission members have a poor record for following the scientific advice (Galland et al., 2018). While this is often linked to a lack of political will among member states, Galland et al. (2018) showed that in some cases the advice was written in a vague language, which led to unintended consequences when policy-makers either misinterpreted or misunderstood the advice. Furthermore, it is important to note that some states may lack the required scientific expertise, which hinders them from engaging effectively with the process (Lodge et al., 2007).

The quality of the scientific advice relies on the data submitted by the member states of the RFMOs, which often depend on the support of their fishing industry; for example, to obtain catch data (Lodge et al., 2007). However, data submission is not always timely and in some cases is incomplete, thereby missing important data for the implementation of the precautionary and ecosystem approach (Aranda et al., 2010). In many RFMOs, long-term data collection and monitoring programmes which address important aspects of the ecosystem approach do not exist (Juan-Jordá et al., 2017). This is especially true for data on bycatch and ecosystem impacts (Juan-Jordá et al., 2017; Small, 2005). However, it is not only the availability of data that is relevant, but also its quality; for example, ICCAT and its member states work hard to improve this aspect of their data collection and monitoring (Nakatsuka, 2017a). Again, this aspect is often influenced by the resources of the respective state (Pons et al., 2018). Thus, there is a strong connection between the availability of data and the quality of the scientific advice provided to members of the respective RFMOs.

This section has explained the five most frequently mentioned issues in the peer-reviewed literature. While these issues are mostly linked with the RFMOs' framework or their members, RFMOs are also impacted by external factors. These are described in the following section.

3.3. What does the future hold for RFMOs?

Sustainably managing marine resources is imperative as overfishing has far-reaching consequences for food and job security for billions of people (Sumaila et al., 2016). Moreover, most states have joined UNCLOS and the UNFSA and thus also have a legal obligation to conserve and protect marine resources (United Nations, 1982, 1995). RFMOs play an important role in managing fisheries on the high seas but also in the EEZs of coastal states. In this chapter, I have analysed 17 issues, that are interdependent and cannot be solved in isolation. This chapter has shown that RFMOs have started to address frequently criticised aspects such as transparency or precautionary approach and some of the best practice examples mentioned in the peer-reviewed literature are highlighted in Table 3.1. Addressing these issues will not only be important to achieve sustainable oceans, but also contribute to the targets of SDG 14, as will be described in more detail in the next chapter.

Table 3.1: Best practice examples of RFMOs, that had been highlighted in the literature.

	Decision-making	
SPRFMO	Parties are required to explain in great detail the reasons for their objection and implement alternative measures.	(Schiffman, 2013)
	Precautionary and ecosystem approach	
IATTC, GFCM	Revised whole convention to include new issues such as the precautionary and ecosystem approach.	(GFCM, 2019; IATTC, 2018)
NEAFC	Cooperation with OSPAR to establish MPAs in the northeast Atlantic.	(Wright et al., 2015b)
NEAFC, NAFO, SEAFO	Closed important areas to bottom fishing.	(Gianni et al., 2016)
CCAMLR	Prohibited bottom trawling in their convention area.	(Gianni et al., 2016)
CCAMLR	Adopted binding measures related to managing discharge.	(Gilman et al., 2014)
IOTC	Developed and adopted stock-specific interim limit and target reference points associated with the biomass and fishing mortality rate indicators for all its target species.	(Juan-Jordá et al., 2017)
CCSBT	Adopted a management procedure.	(Juan-Jordá et al., 2017)
ICCAT	Adopted objectives with associated state indicators and limits, and has an established management response in place when limits are exceeded for dolphins in the eastern Pacific Ocean.	(Juan-Jordá et al., 2017)
NAFO	Amended its convention mandate to include the ecosystem approach to fisheries.	(Scanlon, 2018)
ICCAT	Adopted a resolution, which requires the application of an ecosystem-based approach in its recommendations.	(Scanlon, 2018)
CCAMLR	Developed a quick procedure concerning the protection of VMEs and following up on VMEs encounters.	(Wright et al., 2015a)

IATTC	Focuses specifically on understanding the impact of climate change and ocean acidification on the population status and dynamics of managed species.	(Rayfuse, 2019)
CCAMLR	Takes climate change into consideration in its research and research question.	(Rayfuse, 2019)
	Transparency	
SEAFO	Makes transparent website and papers and reports available to observers and members.	(SEAFO, 2016)
WCPFC	Provides open access to amalgamated data records of spatial resolutions.	(Gilman et al., 2014)
	Allocation	
SEAFO, WCPFC	Included guidance on allocations in their constituent instrument.	(Lodge et al., 2007)
	Scientific advice and data	
ICCAT	Developed multiple research programmes and training workshops to improve data collection and analysis in developing states.	(Pons et al., 2018)
	Trans-shipment	
SEAFO	Banned trans-shipment at sea for all vessels.	(Ewell et al., 2017)
	IUU fishing	
SPRFMO	Formally recognises all other RFMOs' IUU vessel lists.	(Hutniczak, 2019)

The two most frequently mentioned issues in the literature are the precautionary and ecosystem approach and decision-making. The way RFMOs make decisions heavily influences their ability to implement the precautionary and ecosystem approach (e.g. Barkin et al., 2018; Gilman et al., 2014; Juan-Jordá et al., 2017). Another relevant issue is members – and it is important to acknowledge that it is members who are making the decisions. In the consensus-based model, states which are not willing to take stricter measures because they might have short-term economic impacts can block progress (Juan-Jordá et al., 2017). These states, who might not be following the rules, impose a potential risk to the agreed measures and to the whole ecosystem. Moreover, it is not only the political will of member states that influences the RFMOs' ability to agree on certain issues; the political side of RFMOs also interferes with the scientific process (Polacheck, 2012).

3.4. Conclusion

This chapter has introduced the 13 RFMOs which are relevant throughout this research by providing a basic understanding of ocean governance and the international fisheries management framework. Moreover, a descriptive analysis of internal issues that RFMOs deal with has been presented. This information is relevant to understanding the RFMOs' capacity and potential pathways to contribute to the targets of SDG 14. The literature review has highlighted 17 issues which are frequently mentioned as influencing the RFMOs' performance and, thus, their ability to address SDG 14. The five most frequently mentioned issues were: precautionary and ecosystem approach; decision-making; members; transparency; and scientific advice and data. All the identified issues are inter-related; for example, decision-making is frequently mentioned in the literature as hindering RFMOs from addressing important areas, such as transparency, overcapacity or socio-political-economic aspects. Therefore, it is important to acknowledge that these problems cannot be solved in isolation.

Contrary to the common discourse of RFMOs failing their mandate to sustainably manage marine resources, the results of this literature review show that, even though RFMOs face several issues which are impacting their performance and thus their ability to address the SDGs, these organisations are improving. They are also tackling important areas, such as precautionary and ecosystem approach for fisheries. In this chapter, best practice examples have been displayed (Table 3.2), such as the decision-making approach in SPRFMO, which requires parties to provide a detailed statement for their reason to object to a new conservation and management measure and to implement a measure of similar impact. Another example includes NEAFC, which cooperated with OSPAR, the Convention for the Protection of the Marine Environment of the North-East Atlantic, to establish marine protected areas; or SEAFO, which takes a lead role in transparency.

Overall, many of the targets of SDG 14 overlap with the objectives of RFMOs, which, recalling the goal-based management approach introduced in Chapter 1, indicates that existing organizations play an

important role in contributing to the established goals. As a result, identifying issues of concerns in RFMOs and highlighting best practice examples is an important step to support RFMOs to address the SDGs and other international instruments, such as the BBNJ agreement. RFMOs are learning from each other about applying best practice; however, it is necessary that they speed up their progress in applying sustainable management practices. The next chapter expands on the findings of the literature review. It explores further the potential contribution of RFMOs to the SDGs as a goal-based governances initiative, by assessing the potential of performance reviews to foster change in RFMOs and by analysing the current contribution of RFMOs to achieving the targets of SDG 14.

Chapter 4

Bottom-up: the link between the RFMOs and the SDGs

Research contained within this chapter has been published as:

Haas, B., Haward, M., McGee., & Fleming, A. (2019). The influence of performance reviews on regional fisheries management organizations. *ICES Journal of Marine Science*, 76, 2082-2089. doi: 10.1093/icesjms/fsz088

Haas, B., Haward, M., McGee, J., & Fleming, A. (2020). Explicit targets and cooperation: regional fisheries management organizations and the sustainable development goals. *International Environmental Agreements: Politics, Law and Economics.* doi: 10.1007/s10784-020-09491-7

See Appendix C for the abstracts of the published articles. Note that this chapter is based on, and extends the published papers and has been reformatted for this thesis.

4.1. Introduction

This chapter extends the material and findings presented in Chapter 3, which explored RFMOs' current architecture and the key issues they face. While Chapter 3 set the context in which RFMOs operate and has identified 17 issues which impact their performance, in this chapter I present and analyse one crucial way for RFMOs to track their performance. This chapter provides an in-depth analysis of the influence of performance reviews on RFMOs. This provides a potential means to incorporate and address the SDGs' goals and targets, particularly those associated with SDG 14. Following this point, this chapter assesses the potential contribution to SDG 14 by RFMOs and their work in this area. Finally, it identifies RFMOs' collaborative networks and analyses current cooperative actions. It is important to note that the aim of this research was to present the status quo, thus these findings do not provide any information on the effectiveness of the PR, measures or the signed MoUs. It is important to note that there is a risk of conflating quantity with quality and to over interpret the results. Thus, findings were cross checked with the existing literature, but should be interpreted cautiously.

The first sections introduce the concept of performance reviews and present the results of the analysis conducted performance reviews. This is followed by the analysis of conservation and management measures and their potential contribution to the different targets of SDG 14.

4.2. The need to perform better

As discussed in Chapter 3, the performance of RFMOs has frequently been questioned. They have been criticised for weakness in constraining catches and fishing effort, and for ineffective monitoring, control and surveillance. These issues are often the consequence of the organisations' decision-making approaches, membership structure and composition. In 2006, due to criticisms over the performance of RFMOs, the United Nations General Assembly (UNGA) called for all RFMOs to undertake performance reviews (PRs) – systematic assessments of current performance against certain criteria (UNGA, 2007b). PRs emerged from experiences in domestic, state-centred administrative reforms that address expectations concerning the operation of public organisations and which were then increasingly applied in response to growing critiques of international organisations (Geri, 2001; Hoel, 2010; Victor et al., 1998).

By 2016, all RFMOs that had entered into force before 2012 had undergone at least one PR process (SPRFMO, 2017). RFMOs formed since 2012, such as the SPRFMO, also included performance requirements in their treaty texts (SPRFMO, 2015. Art. 30). The idea behind the PR process is that, through a systematic review of current activity, organisational learning on 'best practice' in fisheries management will occur (Hoel, 2010). PRs may provide concrete results on important issues, such as the precautionary approach or ecosystem-based approach, which can be adopted and implemented by

organisations (FAO, 2007a), thereby encouraging the improvement of conservation and management standards within RFMOs.

To successfully meet the expectations of the SDGs, existing organisations, such as RFMOs, need to support the goals and targets which align with their objectives (Bernstein, 2017). Even if these organisations are not officially addressing SDG 14, their performance impacts the achievement of SDG 14 since fisheries have an enormous impact on the whole marine ecosystem. Moreover, contemporary RFMOs not only manage fisheries, but also increasingly address marine ecosystem protection from fishing activities (Scanlon, 2018). Therefore, RFMOs are useful in facilitating the implementation of SDG 14 and providing a framework for fishing industry engagement with SDG 14. However, RFMOs have to cooperate with each other and also with other institutions to coordinate their work (Bernstein, 2017). Formal cooperative agreements among different institutes, managing different ocean activities, would strengthen ocean governance and might minimise existing governance and regulatory gaps.

While this section briefly explained the reason behind the call for performance reviews, the following section will provide the results of the analysis of the PRs.

4.3. Results of the Performance Reviews

To analyse the potential of PRs to support RFMOs to enhance their performance, the progress towards more sustainable management practices of five selected RFMOs since their first PR has been assessed (Appendix B – B1). To analyse the potential of PRs to support RFMOs to enhance their performance, the progress towards more sustainable management practices of five selected RFMOs since their first PR has been assessed this assessment used using five categories; ‘compliance and enforcement’, ‘conservation and management’, ‘decision-making and dispute settlement’, ‘financial and administrative issues’, and ‘international cooperation’ each subdivided into several criteria, see Appendix B – B1. The following section tabulates how these five RFMOs have strengthened and enhanced their management and institutional practices since their first PR. While there is a risk that recommendations from one RFMO are more comprehensive than recommendations for another RMFO, generally, as shown in Chapter 2, the structure and the topics assessed in the PR are very similar. These similarities allow the comparison of the different PR, even though the effectiveness of these recommendations have not been evaluated. Overall, the scoring category ‘improving’ had the highest number of recommendations among all five RFMOs (n=79), followed by ‘fulfilled’ (n=32) and ‘basic’ (n=31). ‘Improving’ had the highest count by all RFMOs except SEAFO, which had most recommendations listed under ‘fulfilled’ (n=8) (Figure 4.1). This figure shows the overall number of recommendations for each of the RFMOs under the respective scoring category. As these RFMOs had a different overall number of recommendations, it was not possible to compare RFMOs with each other.

The scoring category with the lowest overall count was ‘none’, with only 12 recommendations among all RFMOs.

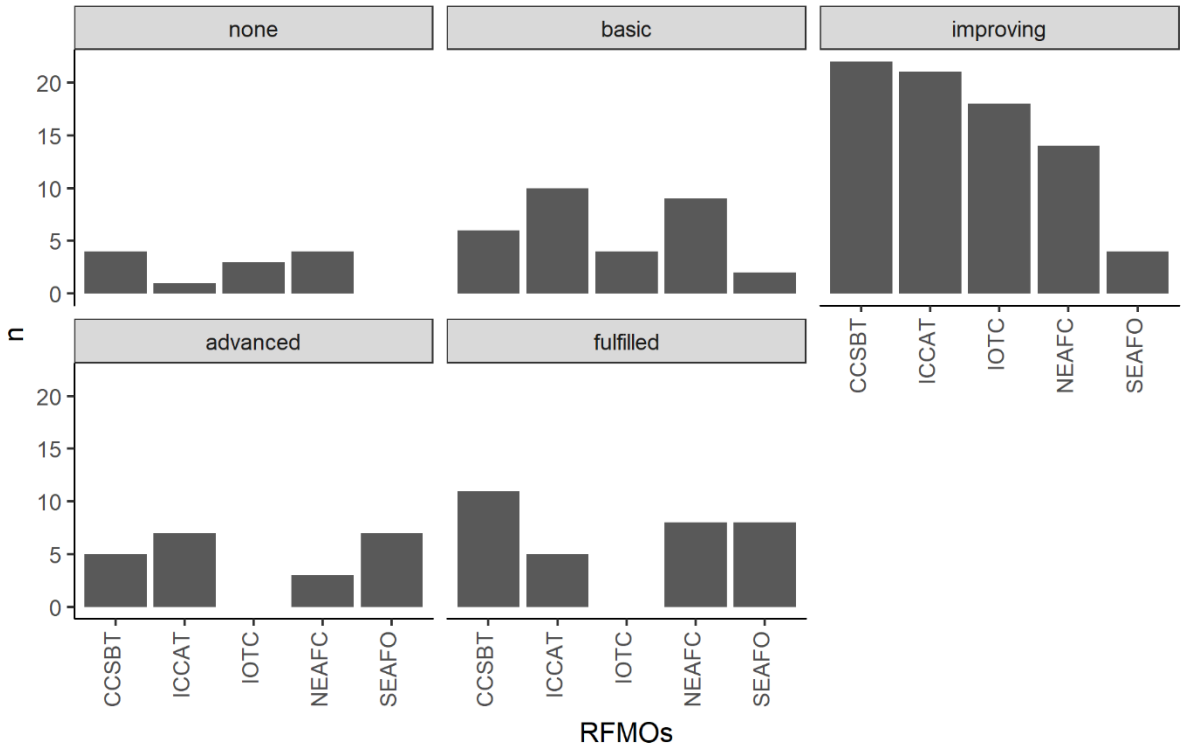

Figure 4.1: Summary of scoring categories among all RFMOs, with n as the number of recommendations listed under the specific scoring category.

Each of the five categories, ‘compliance and enforcement’, ‘conservation and management’, ‘decision-making and dispute settlement’, ‘financial and administrative issues’, and ‘international cooperation’, had several criteria, which differed among the RFMOs. The category ‘conservation and management’ had the highest number of criteria, while ‘financial and administrative issues’ and ‘decision-making and dispute settlement’ had the lowest number of criteria (on average, 2) (Figure 4.2), leading to the differences of n in Figure 4.2. Most of the RFMOs’ recommendations were listed under ‘improving’, except for two categories, ‘decision-making and dispute settlement’ and ‘financial and administrative issues’. As described in the previous paragraph, due to the differences in the overall number of recommendations among RFMOs, no inter-RFMO comparison has been conducted.

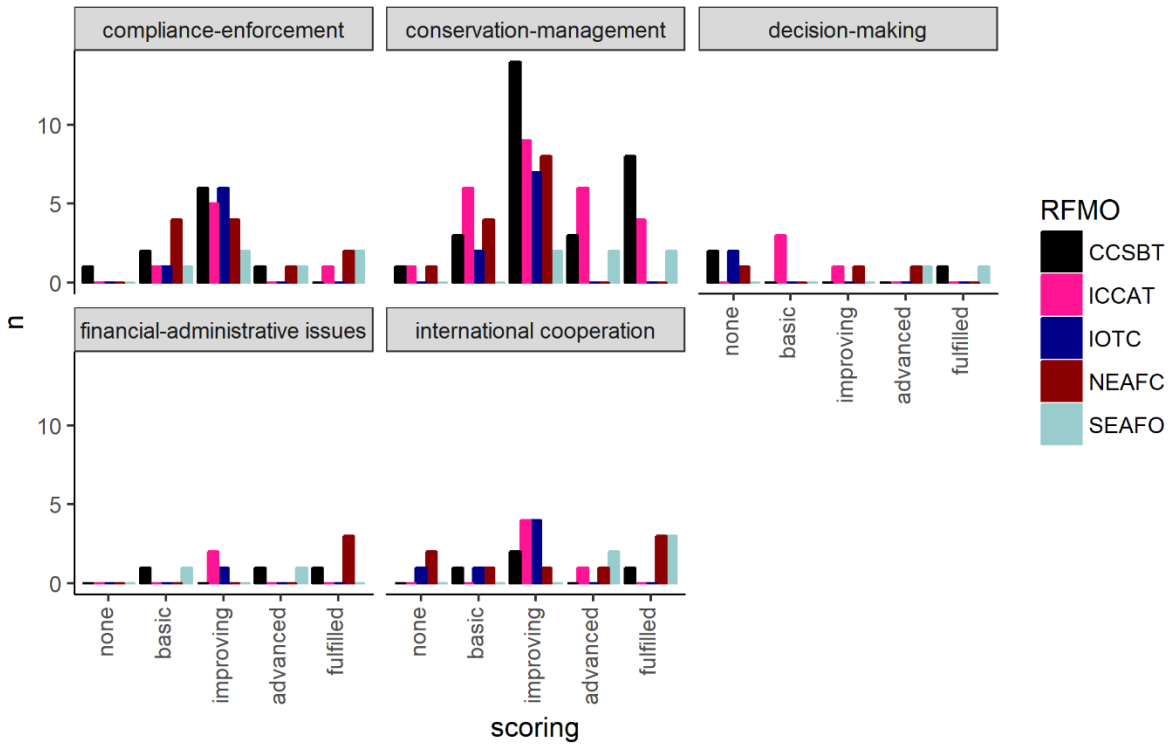

Figure 4.2: The number of recommendations (*n*) for each scoring category and each performance process category.

The high number of recommendations showing improvement is also underpinned by the number of new or updated conservation measures and resolutions. Of all five analysed RFMOs, IOTC had the highest number of new or updated measures since the first PR (21 measures since the first PR and 26 measures since the second PR) (Table 4.1), followed by NEAFC with an overall of 40 new measures. However, only three measures were updated or newly implemented after the first PR, whereas 37 measures were counted after the second PR. SEAFO had the lowest number of newly enforced or updated conservation measures, namely, 'Total Allowable Catches – 2017 [CM32-16]', 'Measure on Bottom Fishing Activities and VMEs in the SEAFO CA [CM30-15]', and 'Reducing Incidental By-catch of Seabirds [CM25-12]' (SEAFO, 2019). The measures implemented by the IOTC covered a broad spectrum of different topics, with key issues such as the regulation of catching devices, trans-shipment, harvest control roles, or the conservation of target and non-target species (IOTC, 2019a). The same applied to the NEAFC, which targeted areas such as amending the NEAFC Scheme and the conservation of target and non-target species (NEAFC, 2011).

Table 4.1: Number of new or updated measures and resolutions since the first and second PR.

RFMO	New or updated measures and resolutions since first PR	New or updated measures and resolutions since second PR
CCSBT	6	12
ICCAT	15	0
IOTC	21	26
NEAFC	3	37
SEAFO	3	0

Since the first PR, several stocks have improved, and the fishing mortality has declined, notably for species such as the southern bluefin tuna (under the management of CCSBT). However, the health of other stocks such as haddock (under the management of NEAFC) has declined (Appendix B – B2). Overall, the number of stock assessments available for different species has increased since the first PR.

Generally, the results show that PRs have the potential to increase the performance of RFMOs, which is supported by the increasing number of new or updated CMMs and resolutions. These CMMs and resolutions can be seen as a direct output of the RFMOs' work. The next section assesses the CMMS and resolutions RFMOs have put in place and analyses their contribution to the different targets of SDG 14.

4.4. Revealing the contribution

The previous section introduced PRs as one way for RFMOs to increase their performance. This section analyses the work done by all 13 RFMOs and how it aligns with the targets of SDG 14. In this thesis, I argue that the performance of RFMOs and the measures and MoUs they have in place are important to support the achievement of SDG 14. As discussed in Chapter 2, to assess the contribution of RFMOs to SDG 14, their measures, resolutions and meeting records have been assessed. It is evident from the analysis of the meeting records that, of the 13 RFMOs examined, only seven mentioned the SDGs, either in the Commission meeting reports or the reports from the Scientific Committee (CCAMLR, GFCM, IOTC, NAFO, NEAFC, SIOFA and WCPFC). This shows a distinct lack of engagement from RFMOs to specifically pursue the SDGs. However, the work RFMOs are already doing and the measures these organisations have in place can be matched to the targets of SDG14 (see Appendix B – B3). Most of the measures in place relate to issues relevant to target 14.4 – sustainable fisheries (70.2%),

followed by target 14.2 – ecosystem approach (64.7%) and 14.7 – developing countries (61.5%). The target assessed as having the lowest value was 14.5 – area protection (35.7 %) (see Figure 4.3).

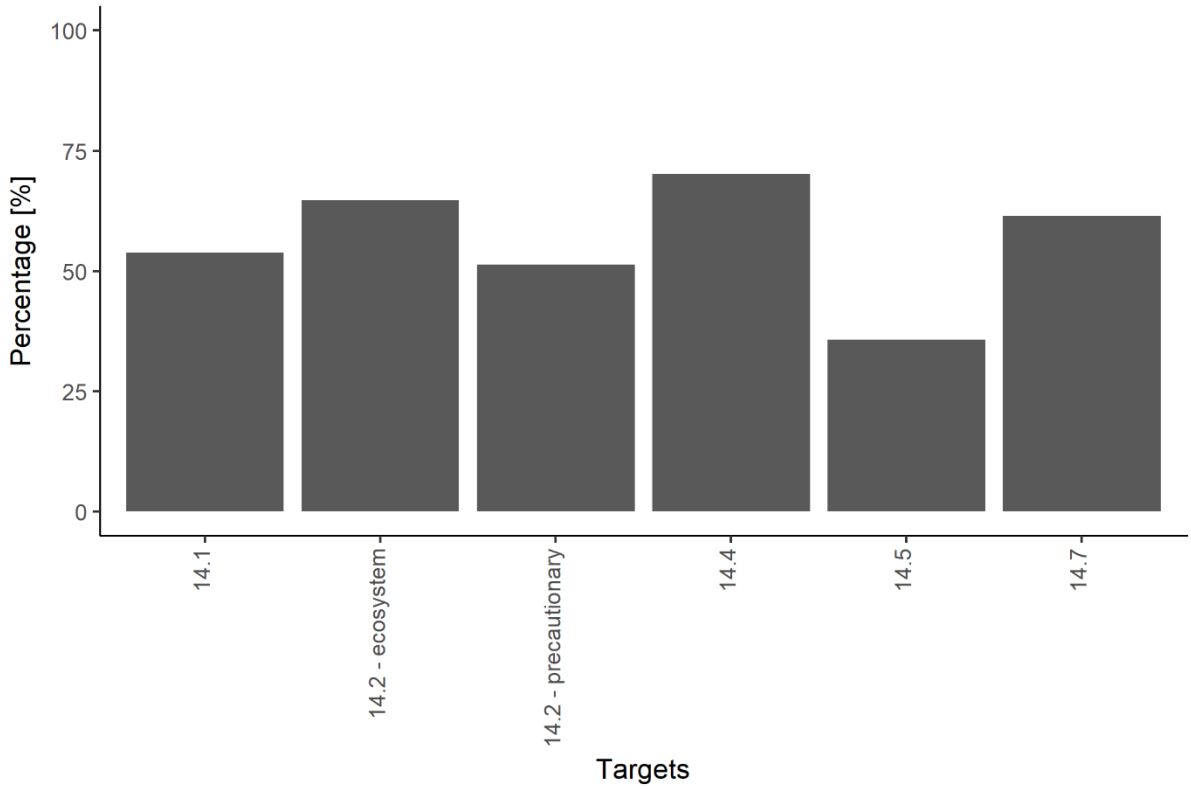

Figure 4.3: Percentage of measures in place for each of the targets over the five analyzed RFMOs. Target 14.2 is divided into precautionary approach and ecosystem approach. Target 14.1 deals with marine pollution, target 14.2 with sustainable management, target 14.4. with sustainable fisheries, target 14.5 with MPAs, and target 14.7 with developing countries.

There are also differences among the RFMOs regarding their contribution to the different targets of SDG 14. While general RFMOs and tuna RFMOs have, on average, almost the same number of measures for target 14.1 – marine pollution, 14.2 – precautionary approach, and 14.7 – developing countries, there were greater differences to observe for the three remaining targets (Figure 4.4). The greatest difference between tuna and general RFMOs was for target 14.5 – marine protected areas. While general RFMOs had, on average, 46.43% of measures in place, the tuna RFMOs had only 11.43% (Figure 4.4). For target 14.2 – ecosystem, the tuna RFMOs had more measures in place than the general RFMOs, with 77.78% and 55.56% respectively.

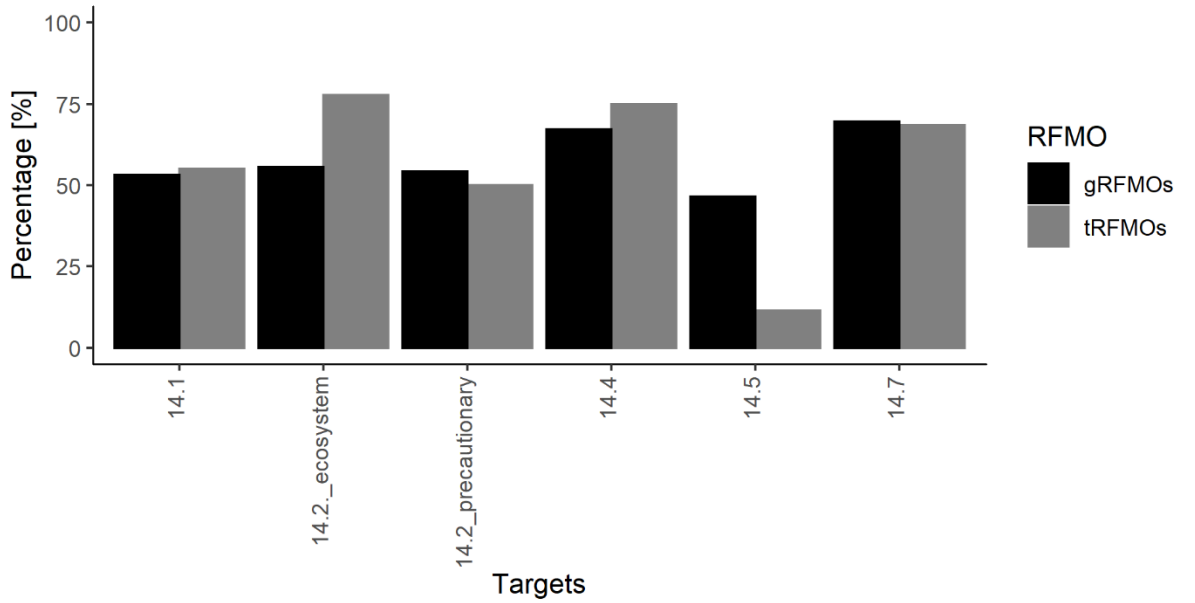

Figure 4.4: Average percentage of measures in place for the targets, divided into general RFMOs (gRFMOs) and tuna RFMOs (tRFMOs).

Of the 41 criteria, only two criteria were represented across all RFMOs, namely, 'Are the RFMOs applying an ecosystem approach?' and 'Do they have an IUU vessel list?' (see Appendix B – B3). The lowest number of fulfilled criteria over all the RFMOs were found for target 14.5 – marine protected areas, for which only two criteria were addressed by the tuna RFMOs. These two criteria deal with general habitat closures and habitat protection measures. Besides target 14.5, the tuna RFMOs did not officially acknowledge climate change, while none of the general RFMOs had trade measures established.

Most of the MoUs in place are between multiple RFMOs or other fisheries-related organisations, such as scientific institutions which provide data and knowledge to these organisations, or conservation organisations which focus on species impacted by fisheries; for example, seabirds or turtles. As mentioned at the beginning of this chapter, this research does not discuss the effectiveness of the existing MoUs and some MoU might exist on paper, but less work had done to actually fulfil the set tasks. The organisation with the most agreements was WCPFC, followed by CCAMLR, with 10 and 6 MoUs respectively (Figure 4.5). By contrast, the organisations with the fewest MoUs in place were NAFO and ICCAT (1 each). More than half (8) of the RFMOs had signed an MoU with the Agreement for the Conservation of Albatrosses and Petrels (ACAP); the only RFMOs which did not have an MoU in place with ACAP were RFMOs located in the north (NAFO, NEAFC and NPFC) and ICCAT. The three RFMOs in the north and GFCM were also the only RFMOs which had no contract for cooperation with other RFMOs. Moreover, GFCM was the only organisation which had MoUs with NGOs (namely,

OceanCare and WWF) (Figure 4.5). The tuna RFMOs had, on average, slightly more MoUs than the general RFMOs (3.25 and 4.8 respectively) (see Appendix B – B5).

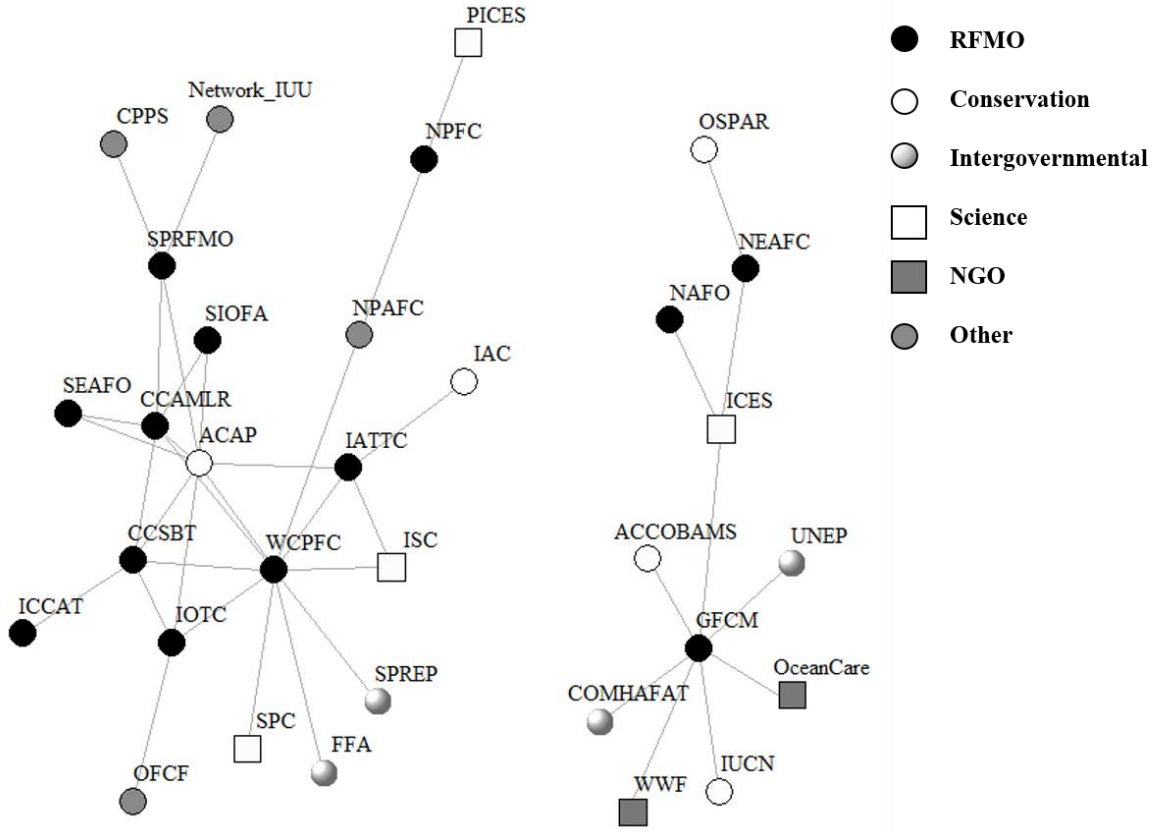

Figure 4.5: Network of organisations which have signed a Memorandum of Understanding (see Appendix B – B4 for acronyms).

My analysis of the objectives of these MoUs has identified seven themes (see Figure 4.6). The theme which appeared most was *sharing activities* (26), including, for example, the exchange of information, data, expertise or technology. The next most frequent theme was *educational activities* (15), describing activities such as the implementation of education and awareness programmes which was one objective in MoUs among RFMOs but also between RFMOs and conservation programmes. The theme *research activities* (12) included areas such as collaboration on research efforts, as well as MoUs with institutions which act as science providers for RFMOs. Science providers such as the International Council for the Exploration of the Sea provide RFMOs (for example, NEAFC) with stock assessment or other scientific information, if requested. The theme *bycatch mitigation activities* (9) grouped objectives which were mostly used in MoUs between RFMOs and conservation organisations such as the Agreement on the Conservation of Albatrosses and Petrels (ACAP) or the Inter-American Sea Turtle Convention (IAC). The three remaining themes – *harmonising conservation and management measures*, *theme specific*, and *management improvement activities* – were less frequently used (six, five and four times,

respectively). The theme *harmonising conservation and management measures* was often applied to an MoU between two RFMOs, while the theme *theme specific* included MoUs established for a certain purpose; for example, the fight against IUU fishing (that is, GFCM and the Ministerial Conference on Fisheries Cooperation among African States bordering the Atlantic Ocean (COMHAFAT)) or trans-shipment at sea (for example, MoU between CCSBT and ICCAT). The last theme, *management improvement activities*, described aspects directly related to fisheries management; for example, the establishment of management plans based on the ecosystem approach (for example, between GFCM and the World Wildlife Fund (WWF)).

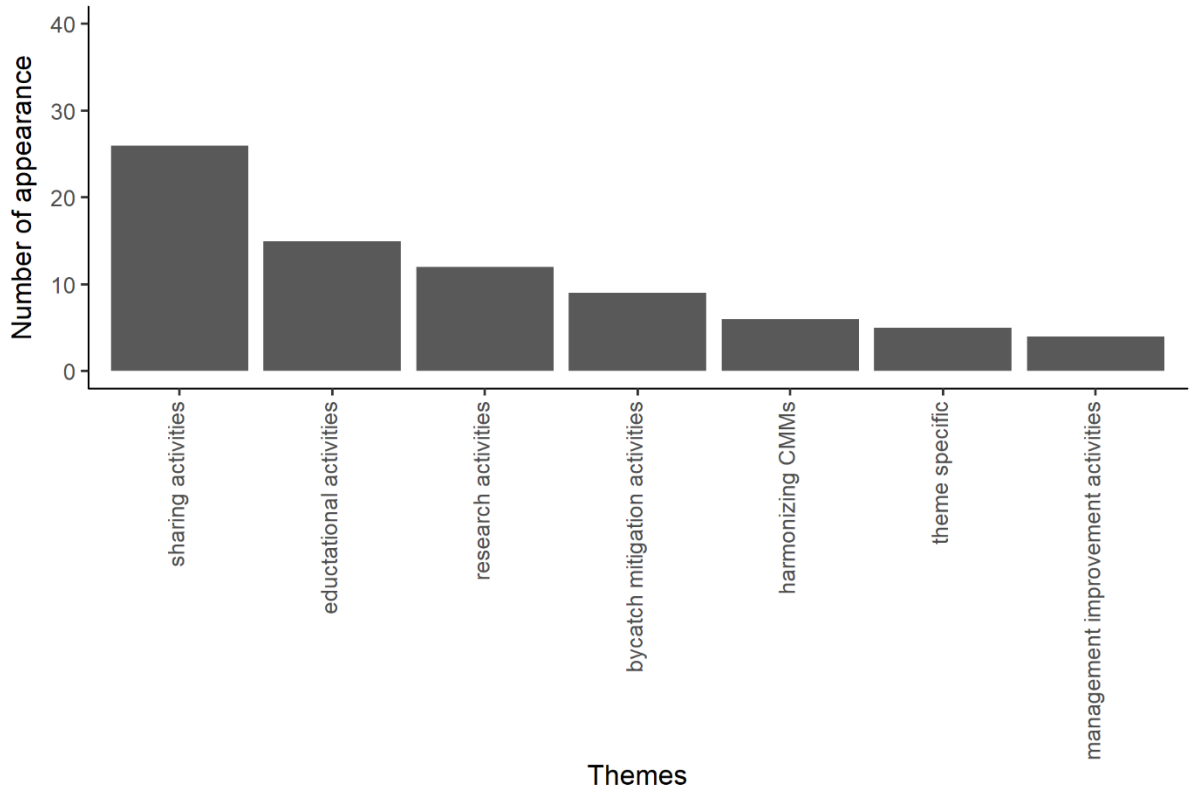

Figure 4.6: Themes which summarise the objectives of MoUs. Most of the objectives share several themes, so the number does not align with the total number of MoUs.

4.5. Putting results in context

The previous section presented the results of the PR analysis and the analysis of the contribution of CMMs and resolution to SDG 14. This next section discusses the results of each analysis.

4.5.1. Performance review analysis

The performance of RFMOs plays an important role in the sustainable management of marine resources on the high seas and the achievement of SDG 14. Generally, PRs have the potential to positively influence RFMO performance, but only if the subsequent recommendations are implemented within the organisation (Ceo et al., 2012). Section 4.1. of this chapter analysed the progress regarding the recommendations of five RFMOs (CCSBT, ICCAT, IOTC, NEAFC and SEAFO) since their first PR. The results showed that these organisations have done considerable work to implement the recommendations of the first PR. All analysed RFMOs, except SEAFO, had the highest number of recommendations under the scoring category 'improving', meaning that they have already been working on the recommendations (Figure 4.1). Compared with the other four RFMOs, SEAFO had the greatest share of its recommendations already 'fulfilled' (n=8) or at an 'advanced' level (n=7) (Figure 4.1). The results of SEAFO might be linked to the low fishing effort (only Patagonian toothfish and deep-sea red crabs are targeted) and low commercial interests (SEAFO, 2016). Overall, the scoring category 'none' had the lowest number of linked recommendations, meaning that the RFMOs have, at a certain level, addressed almost all recommendations.

In three out of five categories, the five RFMOs had the highest number of recommendations listed under 'improving' (Figure 4.1). These three categories were 'compliance and enforcement', 'conservation and management' and 'international cooperation'. The remaining two categories were 'decision-making and dispute settlement' and 'financial and administrative issues'. Most of the RFMOs had only two criteria under these categories, leading to greater variety in scoring. Furthermore, the category 'decision-making and dispute settlement' had the highest number of scores under 'none', despite the small number of criteria. The CCSBT had the highest number of 'fulfilled' recommendations in the category 'conservation and management'; however, it had also the highest number of criteria under this category. The low variety of scores in the categories 'decision-making and dispute settlement' and 'financial and administrative issues' might be due to the fact that most of the decisions in RFMOs are made by consensus and it is difficult to reach consensus on fundamental changes (Pentz & Klenk, 2017).

Generally, the five categories cover important issues for RFMOs, such as 'data collection and sharing strategies' or 'transparency' (Table 4.2). For example, the CCSBT, which had a history of using inaccurate data through significant under-reporting of catches (Schiffman & MacPhee, 2014), made notable progress since the first PR in this criterion and had almost fulfilled the first recommendation (Garcia & Koehler, 2014). Also, transparency plays an important role for RFMOs and should become standard practice, especially to scientific and observer data (Clark et al., 2015; Willock & Lack, 2006). SEAFO had the highest number of 'fulfilled' recommendations under this criterion. The panel particularly highlighted the work done by SEAFO and noted that 'transparency is a hallmark of this organization' (SEAFO, 2016, p.48).

The progress made by RFMOs since the first PR is also reflected in the number of new or updated conservation measures and/or resolutions. IOTC and NEAFC had the highest number of new or updated measures, while SEAFO had the lowest number, with only three newly established measures (Table 4.3). This might be linked to the age of the RFMOs. Cullis-Suzuki and Pauly (2010) found, for example, that newer RFMOs often perform better than older bodies. The IOTC and NEAFC are considerably older than SEAFO, with the IOTC convention entering into force in 1998 and the NEAFC convention in 1982. SEAFO was the only RFMO in this study to be established after the enforcement of the 1995 United Nations Fish Stocks Agreement and thus its objectives and general principles are based on the requirements of this agreement (SEAFO, 2016). However, there might be also other reasons affecting performance. Established in 1969, ICCAT was one of the older RFMOs in this analysis. It had implemented only 15 new or updated measures since its first PR and no measures since its second. While it's age might be the obvious reason for the low number of measures, it is more likely to be linked to the number of members. ICCAT has 50 members states, which could make it difficult to reach consensus on the establishment of new measures (Pons et al., 2018).

Since their first PR, all RFMOs made progress to establish stock assessments for different species, which form the basis of their management (Appendix B – B2). SEAFO conducted only one stock assessment, for the species southern boarfish. Following low fishing effort and low commercial interests (SEAFO, 2016), limited data are available for the managed stocks. Thus, it is not possible to conduct stock assessments. The same might apply for NEAFC, which also had a high number of stocks where no stock assessments were available. Unlike the other RFMOs, the NEAFC does not conduct its own assessments. Instead, it requests assessments from the International Council for the Exploration of the Sea (ICES).

Generally, the management of important species such as the southern bluefin tuna had improved and overfishing had been stopped in the period since the first PR. However, the stock is still overfished, albeit with declining fishing mortality. The same was observed at the management of Atlantic bluefin tuna, where the fishing mortality declined under F_{MSY}[5]. However, other species such as bigeye tuna or haddock have changed to an overfished status. Many different factors influence the RFMOs' ability to manage species and to enforce measures; for example, the number of member states, the number of authorised vessels, and the economic dependency on fisheries (Pons et al., 2018). Besides internal factors, Pons et al. (2018) have stated that external biological and economic variables highly influence the status of stocks.

PRs can provide a great opportunity for RFMOs to address new and emerging issues, such as SDG 14 – Life Below Water, which aims to achieve sustainable management of all marine resources. The SDGs

[5] F_{MSY} describes a fishing pressures which provides a maximum sustainable yield in the long term (Nordic Marine Think Tank, 2020)

were adopted in 2015; thus, since two of the PRs were conducted prior to and three of them shortly after, none of the five organisations considered the SDGs in their PR. Although SDG 14 was not mentioned during the PRs, the assessment criteria address areas which are important for achieving SDG 14. For example, the criteria of the category 'conservation and management' support target 14.2 of SDG 14, which calls for sustainable management and the protection of the marine ecosystems (United Nations, 2018b). Addressing all the recommendations of this category not only helps to achieve SDG 14, but also supports the resilience of marine ecosystem against climate change. Thus, even if SDG 14 was not mentioned in PR protocols, PR processes can be used as vehicles to address emerging issues and increase awareness of new agreements that are relevant to fisheries organisations. If the categories indirectly address SDG 14, it is necessary that these issues be addressed officially through RMFOs developing their own criteria for SDG 14 (Pentz et al., 2018).

These results show that the RFMOs took their first PR seriously and have begun to address recommendations and proposed actions. ICCAT's second PR highlighted the progress made, especially in establishing rebuilding plans for target species and for the actions taken regarding the management of the Atlantic bluefin tuna (ICCAT, 2016). Pentz et al. (2018) have also shown that RFMOs made progress in recent years. Overall, well-performing RFMOs are a major key to achieving sustainably managed fisheries resources in areas beyond national jurisdiction. PRs are mechanisms for RFMOs to continually evolve to address emerging issues and conform to best practice. Recommendations of the PRs have often resulted in new or updated conservation and management measures (Haas et al., 2019). The value of conservation and management measures for achieving the targets of SDG 14 has been shown in section 4.4 Revealing the contribution. The next section analyses the potential contribution of these management measures to achieving the targets of SDG 14.

4.5.2. Potential contribution of RFMOs to SDG 14

This section discusses the potential contribution of RFMOs to the targets of SDG 14. The results showed that RFMOs have measures in place which might assist in meeting the different targets. As previously noted, it is important to note that it is not the intent of this study to assess the effectiveness of these measures and the MoUs. Most of the measures have been linked to target 14.4 – sustainable fisheries. Using fisheries resources in a sustainable way is stated as part of the objectives in the convention of many RFMOs. One part of target 14.4 aims to end overfishing and illegal, unreported and unregulated (IUU) fishing. Ending IUU fishing is on the agenda of all RFMOs and all RFMOs have established an IUU vessel list which is mostly linked to lists of other RFMOs and publicly accessible. Constraining IUU fishing is imperative for a sustainably managed ocean: IUU can have major impacts on the whole marine ecosystem and weaken management measures and compliance (Lindley & Techera, 2017; Ortuño Crespo & Dunn, 2017), so this contribution depends fundamentally on cooperation between the

RFMOs. Another important aspect of IUU fishing is trans-shipment, which allows vessels to bypass monitoring and control enforcement since they do not have to go back to port for resupply (Ewell et al., 2017). Except for three organisations (NAFO, NEAFC and SIOFA), all RFMOs have implemented a measure on trans-shipment. These measures require members to have, for example, an observer to monitor the trans-shipment activity (SPRFMO, 2018) or to trans-ship only in ports, with an exception for large-scale tuna vessels (IOTC, 2019b).

The RFMOs also had a large number of measures in place which addressed the ecosystem approach for fisheries management (14.2 – ecosystem). Target 14.2 – ecosystem deals with the impact of fishing on the marine environment and especially with bycatch of species such as seabirds and sharks. New environmental issues are constantly emerging and many RFMOs have either updated their conventions, adopted new measures or updated old measures (FAO, 2018). For example, the two oldest RFMOs, IATTC and GFCM, established in 1949 and 1952 respectively, updated and modernised their conventions to implement new issues, such as the precautionary or ecosystem approach, which are key aspects for a sustainable fisheries management (de Bruyn et al., 2013; FAO, 2019a). The organisations which had measures in place for the greatest number of criteria were CCAMLR and WCPFC. Generally, CCAMLR is said to be one of the model organisations in the area of the precautionary and ecosystem approach (Hanchet et al., 2015). However, other organisations have also made progress concerning the implementation of the precautionary approach (Miller & SIicer, 2014).

The target with the lowest contribution was 14.5 – area protection. While almost all RFMOs (10 of 13) have installed one kind of closure, only five have installed an MPA (CCAMLR, GFCM, NAFO, NEAFC, and SEAFO). CCAMLR was the only one to establish no-take zones (Pentz et al., 2018) and commit to a representative system of MPAs (CCAMLR, 2019). Generally, it is important to acknowledge that the mandate of RFMOs is restricted to fisheries and the water column (Scanlon, 2018), while the seabed is managed by the International Seabed Authority. Contrary to the other RFMOs, CCAMLR has a much broader mandate with a greater focus on the conservation of the whole marine ecosystem (CCAMLR, 1982). However, the other RFMOs still have the power to close areas to fisheries and to ban destructive fishing practices. The topic of area-based management tools, such as fisheries closures, and MPAs has received considerable attention at the ongoing negotiations for a new international, legally binding agreement on biodiversity beyond national jurisdiction (Wright et al., 2015b). While the outcome is uncertain at this point in time, having a treaty that is open to all United Nations member states might change the way area-based management tools and MPAs are implemented.

Responses to target 14.5 revealed the greatest difference between tuna RFMOs and general RFMOs. The tuna RFMOs had measures in place for only two of seven criteria. This might be due to the different fishing methods and different target species. Tuna fisheries fish primarily pelagic species, while general

RFMOs also engage with demersal fish species and use gear such as midwater and bottom trawling that can have a greater impact on the ecosystem (Pusceddu, 2014), leading to the designation of many 'vulnerable marine ecosystems' (VMEs) by these RFMOs (Wright et al., 2015a). However, gaps remain due, for example, to inconsistencies between impact assessments and FAO Guidelines and UNGA resolutions, lack of use of cumulative impact assessments, lack of information on the status of stocks, and unwillingness of member states to close identified areas to bottom fishing (Gianni et al., 2016).

Another target which showed some differences between general and tuna RFMOs was 14.2 – ecosystem approach. Overall, tuna RFMOs had more measures in place which address the impact of fisheries on species such as mammals or seabirds. However, even though tuna RFMOs have measures in place to mitigate the impact of fishing on bycatch species, Juan-Jordá et al. (2017) have shown that these measures lack important features, such as pre-agreed operational objectives and indicators or pre-established reference points and performance standards.

To achieve the SDGs, existing institutions will have to cooperate and coordinate their work (Bernstein, 2017). Currently, RFMOs are mainly cooperating only with other RFMOs or fisheries-related organisations (Figure 4.5). None of the RFMOs had an MoU or any kind of cooperation with institutions which deal with other ocean-related activities, such as the International Seabed Authority, the International Maritime Organizations, or the International Labour Organization. The results also showed that the RFMOs in the southern area are much better connected than organisations in the northern areas.

To achieve the SDGs, it is important that the RFMOs enter new areas of cooperation, especially with other actors in the ocean. Several institutions manage activities on the ocean, and it is imperative to increase communication between them and to align their mandates. Otherwise, the effectiveness of ocean governance will be affected and non-compliance behaviour of member states will increase (Ban et al., 2014). Generally, cooperating with different stakeholders is an important aspect of sustainable fisheries management (Beddington et al., 2007; Bundy et al., 2017; Jentoft & McCay, 1995; Pomeroy et al., 2001). RFMOs not only need to make a greater effort to cooperate with non-fisheries related organisations, but also to expand the objectives of cooperation. Most of the MoUs relate to sharing information, data, technology or expertise. While this is important, for example, for the fight against IUU fishing (Hutniczak, 2019), real actions are missing. Only a few MoUs include activities such as implementing bycatch mitigation measures or the adaptation of management plans which are based on the ecosystem approach.

It is important that RFMOs enhance the objectives of the MoUs and include actions which are directly linked to emerging issues. One example is climate change, especially the aspect of shifting species due to warming water (Cheung et al., 2010; FAO, 2016a; Pecl et al., 2017). Species will be found in different jurisdictional areas; therefore, RFMOs need to address this issue as soon as possible. The lack of an

agreement can lead to international conflicts, as happened between the EU, Norway, the Faeroe Islands and Iceland because of the change in the geographical distribution of the northeast Atlantic mackerel stock (Spijkers & Boonstra, 2017). Achieving the SDGs will require more of the RFMOs than just sharing information and data.

4.6. Conclusion

The SDGs are a goal-setting strategy to achieve socially, economically and ecologically sustainable development. To achieve them, it is important that existing institutions support targets and goals which are linked to their mandate. They must also increase their performance standards. RFMOs play an important role in achieving sustainable fisheries management on the high seas; however, their performance in terms of meeting their mandates has been questioned. In 2006, the UNGA called for PRs of RFMOs; now, almost all RFMOs have conducted at least on PR. The results of my analysis of the five RFMOs' progress since their first PR show that these RFMOs have done notable work to address the recommendations of the PR. Important categories such as 'conservation and management' or 'international cooperation' showed high numbers of recommendations under the scoring category 'improving'. It would be useful to include this scoring system in future PRs to give an overview of the progress made by an RFMO since their previous PR. It will, however, be necessary to establish a standardised procedure to conduct PRs, including creating opportunities to address broader issues such as SDG 14. Not only would this help RFMOs to better compare the outcomes of PRs between different organisations, but would also ensure that RFMOs are responsive to emergent issues, such as SDG14.

RFMOs are an important platform to support the achievement of SDG 14, to provide guidance for the fishing industry, and to increase the awareness among their member states. As described in Chapter 1, RFMOs function autonomously, which allows them to also raise issues. Despite occasional references to the SDGs in the meeting reports, RFMOs and their members are yet to directly address them. I have analysed the established measures of these organisations and linked them to the main targets of SDG 14. This list could be used by RFMOs to start their proactive engagement with SDG 14. Furthermore, I have mapped a network of institutional links between the different organisations, based on the existence of MoUs, and analysed the MoUs' objectives. The results show that the framework of RFMOs provides an important contribution to several targets of SDG 14, especially sustainable fisheries. These organisations also cooperate with other organisations (albeit, primarily with other RFMOs) or fisheries-related organisations, and the pattern of cooperation noted mostly relates to information-sharing or establishing educational programmes. This chapter contributes to the scholarly debate concerning the implementation of the SDGs as little work has been done so far to assess how existing fisheries organisations could engage with and contribute to these global goals. Overall, the results show that, even though RFMOs do not officially address SDG 14, the measures these organisations have in place

can be linked to the specific targets of SDG 14. The list (see Appendix B – B1) developed to link the RFMOs work with the targets of SDG 14 could be used by RFMOs to start their proactive engagement with the SDGs and could also support the reporting towards the achievement of SDG 14.

In summary, the performance of RFMOs is moving towards more sustainable management practices, which supports the achievement of a sustainably managed ocean. Performance reviews play an important role in enhancing RFMOs' management and their capacity to deal with issues that are also addressed by SDG 14, such as precautionary and ecosystem approach or sustainable fisheries management. Although the RFMOs do not mention the SDGs in their meeting reports, the work RFMOs do can be linked to several targets of SDG 14. However, some gaps remain and RFMOs need to address issues which hinder them from engaging effectively with SDG 14. An analysis of stakeholder perceptions regarding the RFMOs' engagement with SDG 14 and of issues which hinder RFMOs effective engagement is provided in the next chapter.

Chapter 5

Insights from stakeholders

All of the research contained within this chapter has been published as:

Haas, B., Fleming, A., McGee, J., & Haward, M. (2020). Regional fisheries organizations and sustainable development goals 13 and 14: Insights from stakeholders. *Fisheries Research*, 226, 105529. doi: 10.1016/j.fishres.2020.105529

See Appendix C for the abstract of the published article. Note that this chapter is based on, and extends the published paper and has been reformatted for this thesis.

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Regional fisheries organizations and sustainable development goals 13 and 14: Insights from stakeholders

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This aspect of the research was conducted under approval from the University of Tasmania Social Science Human Research Ethics Committee (H0017184).

5.1. Introduction

In this chapter, we add further insight and validation to the desk top analysis by analysing stakeholder interviews, which provide a detailed assessment of the perception of different stakeholders, including scientists, government officials, industry, environmental non-government organisations and employees of secretariats, for four case study organisations – CCSBT, WCPFC, SPRFMO and CCAMLR – concerning SDG 14 – Life Below Water As described in Chapter 2, these RFMOs have been chosen due to their accessibility for the researcher (see Tab.2.1. to see the respective RFMOs for each of the studies). Chapter 4 described the performance of RFMOs in relation to SDG 14 and found that RFMOs have not directly addressed its targets. This desktop analysis also found that the meeting reports contain no information about why this is the case. Meeting reports are officially released documents and cannot give insights into why initiatives such as the SDGs do not receive much attention in these fora. The perceptions of meeting attendees are, therefore, an important source for understanding the underlying reasons for this, especially since the SDGs rely on uptake by existing institutions and organisations and their members to be successfully implemented (Underdal & Kim, 2017). Even though the analysis of perceptions provides valuable knowledge, it is important to keep in mind that the perception of the different stakeholders are interpretations and, thus, subjective.

This chapter provides insight into discussions concerning the potential contribution of RFMOs to SDG 14 by exploring stakeholder perceptions of institutional performance linked to four case studies. The up-coming section presents the results of the interview analysis and presents the collected perceptions of the different stakeholders.

5.2. Digging deep – a descriptive analysis of the themes and categories

As described in Chapter 2, I have conducted 39 interviews, which I transcribed and analysed by coding. See Tab. 2.8. for an overview of all the final codes. After grouping all the codes into different categories and sub-categories, the categories were summarised into six themes to gain a greater overview of the potential topics which play an important role in RFMOs' day-to-day work and their engagement with SDG 14 and climate change. In the beginning, codes were grouped into four overall groups: 'existing frameworks'; 'SDGs'; and 'future outlooks'. These groups were established to simplify the analysis since some codes were redundant and were applied separately for climate change and SDG 14. For example, the code 'no time' was assigned in the group 'SDG' and 'existing frameworks'. This way of grouping the codes into four overall groups in the beginning supported the hierarchical structuring of the codes. Codes which did not fall under the four overall groups were grouped based on other commonalities. For example, the theme 'need for progress and changes' contains several categories and

codes, which describe the areas where RFMOs need to improve, such as the way they manage their resources or how these organisations approach climate change.

These six themes identify issues which potentially impact the linkages between the RFMOs and SDG 14, climate change, and also the proposed BBNJ agreement. The theme with the highest number of references (519) (see Figure. 5.1) is *external drivers*. This theme summarises the opinion of the different stakeholders concerning SDG 14 (category 'perception of the impact of external factors'), which formed the basis of the interviews and thus was mentioned in all of them (100%) (see Figure 5.1). This theme gives insights into how the participants perceive these two issues in the context of RFMOs, and also addresses the potential impact of other international agreements on these organisations. The second theme, *need for progress and change*, highlights the need for these organisations to change and to perform better. Generally, fisheries management occurs in a dynamic environment; however, it takes most of the RFMOs several years to adapt to new circumstances. One exception is the CCSBT which adopted a management procedure – a pre-agreed set of rules that can specify changes to the total allowable catch based on updated data – which takes environmental fluctuations into account (CCSBT, 2020a). This theme highlights that the people working in these organisations, or collaborating with them, are aware of their flaws and problems, but do not feel capable of changing them.

Some of these flaws and problems are explicitly addressed in the four remaining themes. For example, the theme *impact of values* and *convention and mandate* shows how the institutional setup and member composition restrict the RFMOs' ability to make more impactful changes. The themes *pressurised workload* and *decision-making* highlight aspects which were frequently mentioned during the interviews; for example, participants stated that these organisations already have a heavy workload and do not have the time to address SDG 14. The decision-making models applied by RFMOs also make it difficult to address issues which might not be of high priority for the members. While these themes and categories might not be the only aspects, they stood out for stakeholders as most important. Figure 5.1 presents the themes and categories. The following sections provide a description of each theme and its associated categories.

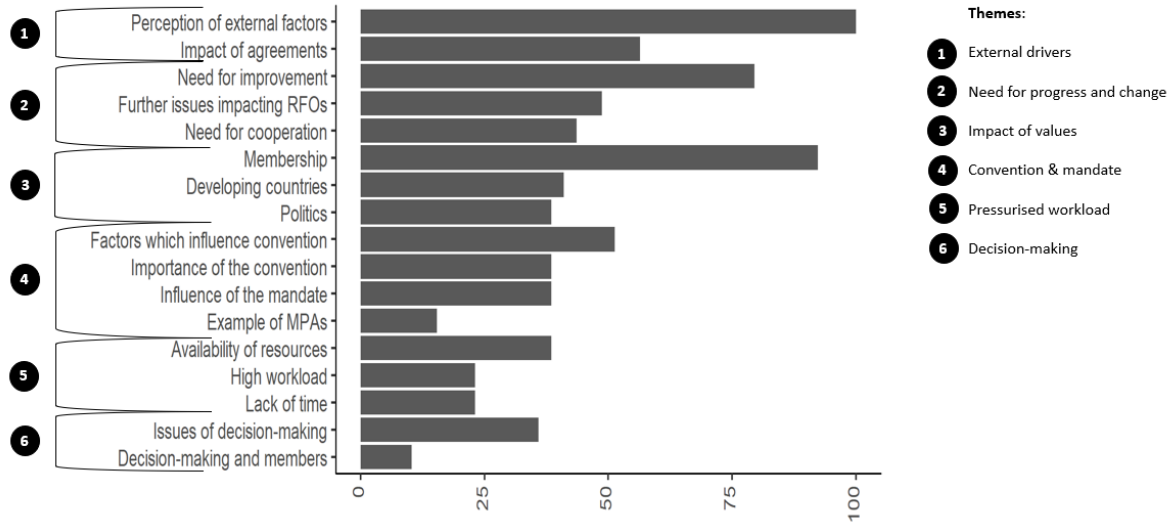

Figure 5.1: Percentage of mentions of each category during the interviews. The categories were ordered in their different themes, which are listed on the right side.

External drivers

The theme with the highest number of references was *external drivers* (519) (see Figure 5.1). The two categories, 'perception of the impact of external factors' and 'impact of agreements', address the stakeholder's perception concerning the impact of international environmental agreements and, in more detail, of SDG 14. The category 'impact of agreements' describes the potential of international governance initiatives such as the United Nations Convention on the Law of the Sea (UNCLOS), United Nations Fish Stocks Agreements (UNFSA), United Nations General Assembly (UNGA) resolutions, several agreements from the Food and Agriculture Organizations (FAO), the SDGs in general and, eventually, the BBNJ agreement to impact members of these RFMOs. Even when an organisation does not mention these agreements in their founding convention, or does not officially refer to them during meetings, most of the members have signed those agreements (code 'Members signed agreements') and, for example, most of the member states have agreed to the SDGs and have them on their national agendas. In the long term, this has the potential to influence these member states, their policy and the way they approach fisheries management (code 'influence members'). Participants also said that SDG 14 or the BBNJ agreement, for example, can be used as guidance (code 'guidance'), which might help the members of RFMOs to prioritise important issues. As described by one of the participants:

> *They [SDGs] are available as broader contextual policy guidance.* (Participant 30)

SDG 14 can be used as an overarching goal and to increase awareness within society about issues related to the ocean (code 'overarching goals'). Interview responses highlighted that SDG 14 and other agreements, such as the FAO Code of Conduct, can be used to support arguments for new conservation

and management measures, for example, since most of the member states have agreed to them and need to achieve their objectives (code ‘support argumentation’). The same was said in the context of the new BBNJ agreement, which could be used to get members to agree to area protection measures (code ‘Use BBNJ to get better protection’).

The second category was ‘perception of the impact of external drivers’, which addresses stakeholders’ perceptions concerning the links between the RFMOs and SDG 14. Almost all participants stated that there is no consideration, involvement or action concerning SDG 14 (codes ‘no consideration’, ‘no action’ and ‘no involvement’). One participant said that there will only be segmented uptake of SDG 14 in the fishing industry (code ‘segmented uptake in industry’). However, interviewees also indicated that these organisations are already doing work related to SDG 14 (if for other reasons) and participants explained that the different targets of SDG 14, such as sustainable management and fisheries, are part of the basic work of these organisations (Participant 13, code ‘already do that’). It was also mentioned that most of the RFMOs’ work that relates to SDG 14 had been already done before the SDGs were adopted and that it would also be done without SDG 14 (code ‘would do it without SDGs’). It was argued that the measures RFMOs have in place equate to SDG 14 (code ‘equitable measures’) and that the accordance with the targets of SDG 14 has just not been explicitly highlighted (code ‘not explicitly addressed’).

Contrary to these findings, 20 participants thought that SDG 14 has the potential to positively influence RFMOs (code ‘potential to influence’) and that these organisations could play an important role in achieving SDG 14. Participants mentioned that SDG 14 might influence the decisions made by members (code ‘important’). This opinion was not shared by everyone (‘will not influence’, ‘nothing will change’ or ‘no acknowledgement of SDGs’) and one participant even mentioned that, for example, the general discourse of food security relating to SDG 2 – Zero Hunger might be used to justify higher catch quotas (code ‘negative impact’; Participant 12). Moreover, participants mentioned that the low uptake of SDG 14 in RFMO meetings might be due to the broad and unclear nature of the SDGs in general (code ‘too broad and unclear’) or due to the inaccuracy of the goals and lack of accordance with the clear objective of RFMOs (Participant 12). Participants remarked that the RFMOs might not be the right venue for discussions on SDG 14 and that the member states deal with SDG 14 at the country level (code ‘SDGs are dealt with at country level’). At the same time, it was mentioned that membership in RFMOs is one way for countries to acknowledge their responsibilities regarding SDG 14.

> *So, in one way the countries are able to demonstrate that they are applying sustainable fisheries practices, I suppose, through their membership with an RFMO.* (Participant 2)

Another impacting factor was that the underlying principle of all the SDGs is the development of the planet for humans and that values which do not directly benefit humans are not well represented in the SDGs; therefore, conservation aspects are not as strongly represented as potentially needed (code

'baseline is development'). Participants even compared SDG 14 to the 'blue economy' and stated that the term 'blue economy' was quite popular without leading to actual change (code 'process of repatching everything').

Need for progress and change

The category 'need for improvement', one of the three categories listed under this theme, describes areas and issues which need to change, according to interviewees. It was generally acknowledged that RFMOs need to perform better, especially in the way they manage fisheries and that they need to do more in relation to SDG 14 and climate change (code 'need to do more'). This aspect was also frequently criticised in the scientific literature (see for example Cullis-Suzuki & Pauly, 2010). In the context of climate change, it was stated that RFMOs can and need to do more. Climate change is a serious problem which needs to be addressed by RFMOs and their member states but also by other organisations. Participant 35 summarised that climate change is an issue which requires long term actions.

> *So, these are all issues which everyone, it is pretty much status quo management at the moment and no one is really thinking more than a few years ahead. But in the longer term, there need to be more sort of consideration, more engagement and probably more focused research in that area too.* (Participant 35)

To address enhance the performance of RFMOs, these organisations need to be more transparent (code 'more transparency') and consistent (code 'needs some consistency') so that they are able to respond to international pressures (code 'enhanced governance by RFMO').

To reduce the potential impacts of climate change on the fish stocks, a good management system is needed (code 'need good management'). For example, a management framework, management procedures or harvest control rules are needed to make fisheries management more stable. It was emphasised that stocks need to be rebuilt to make them more resilient to biophysical changes driven by climate change. RFMOs need to start acting on the precautionary and ecosystem approach, which means, for example, that members need to act on much less evidence of an impact than they would usually require, especially in the context of climate change (code 'need precautionary and ecosystem approach'). Generally, these organisations need to take the broader ecosystem and non-target species into account (codes 'more ecosystem consideration' and 'consideration of other species'). A good management system is based on good data and research, which are especially needed to address climate change (codes 'need more research' and 'data collection'). Climate change needs to be taken into account for the development of the Total Allowable Catch (TAC) and general management actions (code 'possible climate action'). Due to the changing environment, these organisations should start considering a wider range of issues. For example, due to changing sea ice conditions in the Antarctic, safety regulations for vessels need to be updated and enhanced (Participant 6, code 'issues that need to be addressed'). RFMOs play an important role in the reporting procedure against SDG 14, which was

criticised by the participants, *inter alia*, for not being transparent (code 'transparent'). In relation to SDG 14, participants mentioned the need to match the RFMOs' contribution to the particular targets of SDG 14 and assess whether more needs to be done (code 'match contribution'). Overall, those organisations are changing over time; however, due to the problems mentioned above it takes often several years to address identified issues (code 'change is slow').

Besides the need to improve their management approaches, there is also an increasing need for more cooperation (category 'need for cooperation'), especially with other RFMOs to deal with issues such as species redistribution due to climate change (code 'more cooperation with other RFMOs'), which is likely to have consequences for existing rules and boundaries. There is a growing need to increase cooperation between RFMOs but also with other institutions. Topics such as labour safety are attracting more attention from the members of RFMOs; thus, it is relevant to start working together with the International Labour Organization (code 'more cooperation with different institutions'). Other institutions and frameworks such as the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) and the Convention on Migratory Species might become important for RFMOs as well, to tackle problems related to sharks and seabird bycatch. A few participants mentioned that the BBNJ agreement could be used as a tool to increase cooperation among different institutions (code 'cooperation in the context of BBNJ'). However, other stakeholders, such as the industry or NGOs, play a relevant role in the international arena as well and need to be better integrated into the discussions in RFMOs (code 'more cooperation between stakeholders'). The integration of industry stakeholders at higher levels, such as the UN, might be one way to link the international arena with regional organisations. One participant suggested meeting with industrial and NGO stakeholders before the official RFMO committee meeting to discuss important issues and to increase compliance with agreed measures.

The last category, 'further issues impacting RFMOs', combines several problems which were raised by participants during the interviews. For example, participants stated that, in the past, RFMOs avoided getting involved in any international discussions (code 'avoided getting involved') and mentioned the relationship between these organisations and the UN (code 'relationship to the UN'), which was described as 'tense' by one participant. While CCAMLR does see itself as separate from the UN system and thus does not officially deal with UN-related initiatives such as the SDGs, four participants stated that there is a lack of trust between the UN and the other RFMOs. This is important as it may be linked to the lack of consideration of SDG 14 in these organisations. However, it was also stated that RFMOs are frustrating bodies to work with, and one participant explicitly said that their culture might have a negative impact on their performance (code 'dangerous culture'). In the context of all the SDGs, RFMOs are only focusing on managing their resources and are not considering other areas such as industry sustainability or livelihood sustainability (Participant 36).

Impact of values

The theme *impact of values* is made up of three categories: 'membership'; 'developing countries'; and 'politics'. In general, this theme emphasises the key role of member states in RFMOs. The category 'membership' deals with all the various aspects of membership, such as the differences between members and their respective influence on RFMOs; for example, the CCSBT has a much smaller membership (8 members) than the WCPFC (26 members), which also has a high proportion of SIDS (14). Codes also relate to an often-tense relationship between developed countries and developing countries and distant water fishing nations and coastal nations (codes 'developed vs developing' and 'distant water fishing nations vs coastal nations'). Another important influence in these organisations are the key players, such as the EU in SPRFMO or Australia and Japan in the CCSBT. All those different constellations make each organisation unique. This is further enhanced by the different interests of those member states and their reasons for engaging with an RFMO (code 'different reasons and interests'). For example, the EU is a key marketplace for marine resources and is part of all RFMOs, whereas Japan is a market state for tuna, and Thailand, despite not fishing for tuna, is one of the most important states concerned with processing canned tuna (Participant 27). Generally, the members bring different cultural values and economic interests to the table, which makes it difficult to agree on a common view.

The member states are key players in RFMOs and thus exert significant influence on how these organisations deal with SDG 14 or climate change (category 'the influence of members on RFMOs'). Depending on the interest and economic value of a specific fishery, these members adapt their behaviour (code 'behaviour of member states'). Some members are led more by their economic interests, while others apply a more conservative approach during the discussions, for example, of new conservation measures of the total allowable catch. Those different interests play an important role in what members put forward during the Commission meetings and which topics are addressed or not (code 'members putting things forward'). This was especially highlighted by Participant 30, who emphasised the role of members in these organisations.

> *So, if there is a sense that RFMOs could and should be doing more in either relating to the SDG goals or climate change, the way to do that would be in encouraging members to build that into how they are thinking about the RFMOs and build that in the priorities they take into the RFMOs.* (Participant 30)

To summarise, the member states determine which issues will be addressed or not. For example, an interviewee noted that if SDG 14 is going to be addressed in RFMOs, it has to be introduced by a member state (code 'needs support from member states'). In the context of climate change, members value the importance of climate change differently (code 'different importance among countries'). While climate change was mainly introduced by members, the Scientific Committee and NGOs also play an important role in alerting members to important issues (codes 'role of SC' and 'role of NGOs').

Several participants also suggested that member states should start to address climate change individually (code ‘members states should address CC’).

An important part of membership is the role of developing countries (category ‘developing countries’). For developing countries, SIDS and LDCs, fish is an important resource for livelihoods and economic aspirations. However, due to the lack of money, knowledge and technology, these countries struggle to participate in RFMOs and in some cases it is difficult for them to implement the basic principles of fisheries management (code ‘issues of developing countries’). During the interviews, participants pointed out that SDG 14 is more important for developing countries than for developed countries, due to the higher dependence on fish for food, the economy and livelihoods (code ‘more important for developing countries’). Eight participants stated that SDG 14 is therefore also more important for the WCPFC than for other organisations (code ‘more important for WCPFC’) since the WCPFC has the highest participation of SIDS of all RFMOs. One participant remarked that this might also be due to the strength of SIDS in the WCPFC and that the SIDS members drive many changes (code ‘strength of SIDS’). The Pacific islands played a significant role in developing SDG 14 (Quirk & Hanich, 2015), and they might also need to take a leadership role in increasing awareness of the SDGs among RFMOs. However, it was also mentioned that more work needs to be done towards the development aspirations of those countries (code ‘more work towards developing countries’) and the need for support by developed countries; for example, by sponsoring workshops (code ‘support by developed countries’).

The last category under the theme *impact of values* is ‘politics’. An important aspect in analysing RFMOs is considering how the underlying national and industrial agendas direct member states’ behaviour. Participants emphasised the political impact in those organisations (for example, code ‘lack of political will’ or code ‘internal impact’) and the importance of understanding the political background of those members. The political nature of RFMOs can either stagnate processes or drive change. However, those political influences are not only coming from their interests in fisheries but also from unrelated geopolitical events, such as elections or the relationship between states, which impact decisions in RFMOs (code ‘external impact’). Furthermore, participants described that the lack of political will is one reason those organisations are not addressing relevant issues, especially in the context of climate change. Political will refers to the will of members states to address a certain issue; however, in many cases, other factors such as the cost of those actions influence the decisions, as stated by one participant:

> *It goes back again to the challenge or the impediment of all of this, which is political will. And that goes back to, how much is it going to cost me as a politician.* (Participant 8)

Another aspect mentioned in the context of climate change was the problem that climate change is far too politicised for a topic which urgently needs to be addressed to maintain ecosystem functions all over the globe and for which ample scientific evidence is available (code ‘too politicised’). Another

important observation was the missing nexus between politics and science and the implementation side of fisheries management (code 'missing nexus'). Politicians and scientists are having difficulties providing each other with the necessary information and understanding in relation to climate change.

Convention and mandate

Another theme was *convention and mandate*, which comprises four categories. The convention of an RFMO plays an important role and can profoundly influence the RFMO's framework (code 'importance of convention'). The convention determines the RFMO's mandate, which influences its ability to tackle certain issues such as establishing MPAs, for example (categories 'influence of the mandate' and 'example of mandate'). Mandate considerations and discussions are often used by members to influence the outcome of certain discussions. The mandate also influences the way RFMOs deal with new and emerging areas such as SDG 14. For example, ten participants stated that the influence of SDG 14 on the RFMOs depends on the mandate of those organisations (codes 'SDGs – discussions concerning mandate' and 'SDGs – influence depends on mandate'). Depending on their mandate, which is determined by their convention, the members of an RFMO feel more or less able to address SDG 14 or climate change. For example, discussions concerning its ability to establish MPAs are often linked to mandate considerations (code 'competence considerations'). MPAs were often brought up during the interviews due to their importance in addressing climate change and increasing the resilience of the ecosystems (code 'MPAs important against CC'). However, at the same time, it was acknowledged that it is difficult to establish MPAs ('CC – difficult to establish MPAs'). In relation to establishing MPAs, participants stated that the BBNJ agreement might play an important role (code 'CC – BBNJ might play an important role').

Overall, RFMOs are a product of relationships, time and the circumstances of their foundation (codes 'RFMOs products of relationships and time' and 'different reasons to found an RFMO'). Therefore, the age of a convention is related to the ability of RFMOs to tackle new and emerging issues such as the precautionary approach (code 'age'). While the mandate of older RFMOs, such as the CCSBT, is quite loosely worded around the issue of bycatch species, newer RFMOs such as SPRFMO clearly state their mandate concerning ecosystem consideration and protection in their convention. Agreements also influence the RFMOs, and their convention texts reference the most important agreements in force at the time they were established. The relative importance of the different agreements depends on the organisation (code 'different agreements depending on fishery'); however, most of the participants mentioned UNCLOS and UNFSA as the most important agreements for their organisations. Participants also highlighted the UNGA resolutions (especially UNGA resolution 61/105 on the management of deep-sea fisheries on the high seas) as being important for non-tuna RFMOs. At the same time, non-binding agreements adopted by the FAO might also play a role. One participant stated that the most contemporary agreement has the biggest influence (code 'contemporary agreement'). However, as

mentioned earlier, the conventions and thus the mandates are a product of time. Two participants highlighted the need to update those conventions to make them more modern and to integrate important fisheries management aspects such as the precautionary approach (code 'need to update convention').

Pressurised workload

Another theme that emerged during the interviews was *pressurised workload*. This theme comprises three categories – 'availability of resources', 'high workload' and 'lack of time' – which capture three key constraints facing RFMOs in their ability to deal with SDG 14 and climate change. For example, participants mentioned that these organisations have insufficient resources to address SDG 14 or climate change (code 'lack of resources'). Some of the RFMOs have only a small secretariat and many developing countries as members which influences the availability of funding. Participants stated that the value of the fisheries plays an important role in RFMOs (code 'economic value') and also influences the availability of money (code 'differences among organisations'). For example, the value of tuna fisheries is much higher than the value of other stocks, so that WCPFC has one of the most valuable fisheries; however, it has also a large number of SIDS as members. Generally, for an effective management system, more resources need to be available (code 'more resources needed'). In this context, one participant stated that the BBNJ might be a way for RFMOs to get resources (code 'way to get resources').

The two other categories 'high workload' and 'lack of time' describe two constraints which make it hard for RFMOs to deal with new challenges. The staff of a country's delegation already have a high workload and do not have the capacity to tackle other issues outside their routine work. In addition, RFMOs meet for only a few weeks a year and already have full agendas. In summary, participants stated that RFMOs do not have sufficient time or capacity to address SDG 14.

Decision-making

The last theme, *decision-making*, is made up of two categories: 'issues of decision-making' and 'decision-making and members'. Issues around decision-making, especially problems linked to the decision-making models were mentioned by almost half the participants. Participants agreed that the consensus-based model makes it hard to get members to agree on certain topics (code 'difficult to get members to agree on things'). It was stated that, due to the decision-making rules, these organisations are difficult places to implement measures. One participant noted, for example, that even when a majority model is in place, these organisations still work towards a consensus.

> *And international agreements tend to always, even if they have capacity to vote, so they have majority, they still tend to want to have consensus. And that is very much a case globally with any form of international agreement, they are always looking for consensus rather than a vote.* (Participant 36)

Combined with the role of members and political influences, underpinned by different values and interests (identified in the theme *impact of values*), the way RFMOs make decisions by consensus negatively influences their ability to address SDG 14.

SDG-specific categories and codes

The next section includes categories and codes specifically related to the SDGs. Overall, the SDGs consist of 17 interdependent goals. Participants agreed that, besides SDG 14, other goals are also relevant for RFMOs (code 'other goals are also relevant'). However, it was frequently stated that SDG 14 is the most important goal for these organisations (code 'SDG 14 most important'), as highlighted by one of the participants:

> *Obviously in an abstract way, yes* [referring to other goals], *but the reality is that SDG 14 already sums that up in a way that it refers to developing* [of SIDS] *and fisheries.* (Participant 16)

Participants frequently referred to another goal, SDG 2 – Zero Hunger (code 'SDG 2'), particularly in relation to how RFMOs might contribute to food security. While SDG 2 was seen as a relevant goal, some participants doubted that RFMOs are the appropriate fora to deal with this topic. Other goals mentioned by participants were SDG 1 – Poverty Reduction, SDG5 – Gender Equality, SDG 8 – Decent Work and Economic Growth, SDG 10 – Reduced Inequalities and SDG 15 – Life On Land. In terms of SDG 1, participants underlined the importance of tuna for SIDS. There is also a connection between fisheries and human rights (Participant 19) and with SDG 8, as working conditions on fishing vessels are often quite poor (Participants 27 and 33).

Participants also talked about other aspects related to the SDGs, such as the disconnect between the SDGs and the regional level (code 'disconnect between global SDGs and regional implementation'), and described the SDGs as a UN initiative which is separated from regional fisheries management.

> *It's just, they* [SDGs] *are very ambitious and when it comes to implementing that at a regional level, there are obvious challenges, the challenges of institutions, the human factor, it is just people speak different languages*. (Participant 32)

Another aspect mentioned as influencing the impact of SDG 14 is the monetary value of the fisheries (code 'importance of money'). Fisheries play an important economic role for many member states and thus influence the selection of topics during the meetings (Participant 18). One of the participants shared his personal view concerning the SDGs and stated that they 'exclude the elephant in the room', referring to an increasing human population (Participant 16, code 'excluding important issues'). Generally, the SDGs are a result of negotiations (code 'SDGs – result of negotiations), the indicators are not meaningful at the level of implementation (code 'indicators not good') and states might have a different understanding of sustainability (code 'meaning of sustainability'). Furthermore, it was indicated that

RFMOs have different priorities and, depending what the priorities are, they might be more, or less, aligned with SDG 14 (code 'RFMOs have different priorities'). Overall, the perception concerning SDG 14 was that the goals are more important at the Committee level of RFMOs than in the Scientific Commission (code 'plays a bigger role for Commission than for SC').

The future

The last three questions dealt with future outlooks, with participants asked how they see the future of RFMOs. Overall, the participants' perceptions concerning the future of RFMOs were positive (category 'perception of RFMOs'). It was highlighted, for example, that RFMOs are a 'positive example internationally of shared governance of shared resources' (Participant 30). Participants shared the opinion that RFMOs are important frameworks for fisheries management on the high seas (code 'important framework'). It was stated that these organisations are gradually changing the way they manage stocks and are including new strategies, such as harvest control rules, to manage their stocks sustainably (code 'changing management'). It was noted, for example, that despite all the critiques concerning RFMOs, there currently is no better model for managing fisheries on the high seas (code 'no better model').

> *RFMOs are just a multilateral construct and you can say they are good, you can say they are bad, but there really is no other recipe but some sort of multilateral construct*. (Participant 26)

Overall, these organisations are evolving, enhancing their management strategies and learning from each other (code 'learning from each other'). For example, when one organisation applies a new approach and implements certain measures, other organisations are likely to follow suit, since they are paying attention to what other RFMOs are doing and most states are a member of more than one organisation (Participant 34). It was also mentioned that performance reviews are changing how these organisations work (Participant 3, code 'performance reviews'). Over the next few years, with increasing interest in fish as a resource, the importance of RFMOs will rise and more states will probably become members of RFMOs (code 'increasing importance'). In short, RFMOs are improving their performance and are still the best mechanism available for managing the high seas.

This section has presented the results of the interview analysis. The next section discusses these findings in the context of the existing literature.

5.3. 'So what?' – linking the findings with the broader picture

RFMOs are key organisations to support the achievement of SDG 14; however, little has been done to understand their position or to support them. Moreover, as already described, a critical view of the performance of RFMOs concerning fisheries management is prevalent in the scientific literature (see,

for example, Cullis-Suzuki and Pauly (2010). This chapter aims to increase our understanding of RFMOs' perception of their ability to address external factors by highlighting barriers to RFMOs engaging with SDG 14. Interviews with 39 stakeholders revealed 6 themes as shaping and influencing RFMOs' ability to engage with SDG 14 and climate change. These themes cover topics which are related to the RFMOs' framework, such as the convention and their mandate, but also administrative and logistical aspects. It is important to acknowledge that all themes are interrelated, even though they have been described separately. Although participants emphasised that each RFMO is unique due to their own geographical area, species and fisheries managed, and frameworks, similar themes might be applicable to other organisations. Generally, this research does not aim to be generalisable, but insights are still broadly relevant and may form strong hypotheses for testing in future analysis of these organizations.

Generally, participants shared the opinion that SDG 14 are important topics which should be considered in RFMOs (theme *external drivers*). RFMOs have been influenced by international agreements; for example, by the FAO Code of Conduct for Responsible Fisheries or the Agreement to Promote Compliance with International Conservation and Management Measures by Fishing Vessels on the High Seas. However, the impact of these agreements also depends on the age of the RFMO, which agreements exist at the time it was established, and how its convention was set up. The convention text guides an RFMOs and thus impacts its ability to deal with certain issues (theme *convention and mandate*). One of the categories was 'factors which influence convention', which deals, for example, with the age of the convention. It was noted that, depending on the age of the RFMO, different aspects are included in the convention text. While older conventions do not mention the precautionary and ecosystem approach, this is clearly articulated in newer RFMOs, such as SPRFMO. Generally, it is acknowledged that newer RFMOs react better to newer governance approaches, such as ecosystem approaches (Cullis-Suzuki & Pauly, 2010) and that there is a general need to update the conventions of the RFMOs to adjust to current international ocean governance and emerging issues (Rochette et al., 2015b). Even though two RFMOs, the General Fisheries Commission of the Mediterranean and the Inter-American Tropical Tuna Commission, have adopted a new convention which includes a broader environment focus (GFCM, 2019; IATTC, 2018), it is time-consuming and difficult to adopt a new convention. Therefore, it is important that members and other stakeholders acknowledge and consider the influence of the convention text and adapt their treaty interpretation to current and future problems. The way RFMOs make decisions and operate needs to change and members need to think more widely about issues, rather than being constrained by narrow interpretations of the conventions.

Another theme which summarised the barriers RFMOs are facing was *pressurised workload*. Even though the three categories listed under this theme were not mentioned as frequently as other categories (30.4%, on average), they highlight an important topic which has not received much attention in the peer-reviewed literature. The categories 'lack of time' and 'high workload' summarised the restrictions

on addressing new problems at the yearly meetings of the Committee and the Scientific Commission. This problem is complicated since more and longer meetings also require more resources, which leads to the last category, 'availability of resources', and also impacts RFMOs' capacity to address new issues or to support SDG 14. McCluney et al. (2019) found that the economic revenue member states gain from their catch is influenced by the end market; for example, tuna sold at local markets has a lower value than tuna sold on the international market. In the end, this influence, *inter alia*, the availability of resources in RFMOs. The number of developed, industrialised fishing nations also impacts the funding of RFMOs, since, for example, the EU can afford to provide more resources than a developing country (McCluney et al., 2019). The lack of resources (for example, for the RFMOs' secretariats) is one of many challenges these organisations face, and it is critical to have a sustainable funding mechanism in place (Rochette et al., 2015b).

The availability of resources and the capacity to drive change are highly influenced by the member states since they are the key actors in RFMOs. Each RFMO is composed of various types of member states, each of which will have different objectives to meet through participating in these organisations. As highlighted by one participant, if there is a perception that RFMOs need to do more, it is actually the member states that need to do more. States can introduce new topics in the meetings and add topics which are important for them to the agenda. This leads to the conclusion that the states do not currently see SDG 14 as a topic which need to be addressed in these fora. Achieving SDG 14 relies on the actions taken by existing institutions but, as shown in the context of RFMOs, most of the members of such institutions do not acknowledge their role but focus instead on their own agenda and the reasons the institute was established (Underdal & Kim, 2017).

Achieving SDG 14 will not only benefit the marine ecosystem, but also the people who are dependent on these resources. Developing countries are often more dependent on marine resources than developed countries, and are thus more impacted by overfishing. Small islands in the Indian and the Pacific Oceans are especially reliant on fish as a source of food and nutrients and economic revenue (Golden et al., 2016; Tidd et al., 2018). Moreover, developing countries often do not have sufficient capacity to implement measures adopted by RFMOs (Pons et al., 2018), while organisations with higher participation by SIDS, such as in the WCPFC, are already challenged to manage fisheries in an equitable and sustainable way (Weng et al., 2015).

The need for progress is linked to the need for more cooperation between RFMOs (category 'need for cooperation'). RFMOs cooperate, for example, via Memorandums of Understanding (MoUs) (see Chapter 4; Rochette et al., 2015a), such as the renewed MoU between the CCAMLR and SPRFMO. The need for cooperation also includes different stakeholders, which play an important role in sustainable fisheries management (Beddington et al., 2007; Bundy et al., 2017; Jentoft & McCay, 1995; Pomeroy et al., 2001). Generally, industry and companies are well presented in RFMOs, while civil

society organisations are not (Petersson et al., 2019). In the future, more engagement by civil society may be one way to drive forward broader social issues. Generally, RFMOs need to become more progressive in the way they manage fisheries and engage with other institutions and organisations. All these factors not only impact the way RFMOs are dealing with SDG 14, but also how they are dealing with the BBNJ agreements. The current negotiations for the BBNJ agreement are a great opportunity for RFMOs to contribute to this new agreement and to present their view, especially since the outcomes of the agreement are very likely to affect RFMOs through the implementation of tools such as area-based management (Barnes, 2016).

5.4. Conclusion

This chapter aimed to increase our understanding of RFMOs' ability to address new and emerging goal-based initiatives, such as SDG 14 through a timely qualitative analysis of stakeholder views. I analysed the perceptions of 39 stakeholders regarding factors which hinder engagement with SDG 14. Six themes were identified, describing several factors which influence RFMOs and their engagement. Participants mentioned the importance of member composition (for example, the number of developing countries), but also areas such as time pressure and the lack of resources. Even though most of the participants thought that SDG 14 is important, they considered that RFMOS have done limited, direct work on those topics.

The results of this study might help some RFMOs to address areas which currently hinder RFMOs from engaging effectively with SDG 14, but will also provide insights how international organizations are interacting with global goal-based initiatives. However, these findings also emphasise the key role of the RFMOs' member states in engaging with SDG 14. Even though most of the participants agreed that the work of RFMOs is already aligned with SDG 14, I argue that it will be important for RFMOs to officially acknowledge SDG 14 to better align their work towards the specific targets of SDG 14. The member states must be willing to engage with these topics and to provide adequate resources to do so. These member states must also acknowledge that there is a pressing need for fundamental changes in how RFMOs make decisions. In summary, there are several factors which hinder the RFMOs from engaging effectively with SDG 14. Addressing these issues might help some RFMOs to make changes which are needed for more sustainable fisheries management in an uncertain environment.

The next chapter adds more depth to the results presented in Chapter 4 and 5. Chapter 6 provides additional perspectives from participatory observation of two Commission meetings, which have allowed me to validate and contextualise the information collected.

Chapter 6

Collective decision-making in action

Disclosure – funding to attend the two Commission meetings was provided by the Marine Stewardship Council scholarship programme

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See Appendix C for the abstract of the published article. Note that this chapter is based on, and extends the published paper and has been reformatted for this thesis.

This aspect of the research was conducted under approval from the University of Tasmania Social Science Human Research Ethics Committee (H0017184).

6.1. Introduction

While the previous chapters analysed the drivers of RFMO performance, how RFMOs could potentially contribute to SDG 14 and what hurdles for potential engagement RFMOs are currently facing regarding the engagement with this goal-based initiative, this chapter provides an additional perspective based on the participatory observations of the 16th regular session of the Commission of the WCPFC in Port Moresby, Papua New Guinea, and the 8th meeting of the SPRFMO Commission in Port Vila, Vanuatu. As described in Chapter 2, I attended these Commission meetings as part of the Australian delegation and took notes of the discussions and negotiations during the meetings. Attending these two meetings provided me with a better understanding of the meeting structures of RFMOs, as well as the human interactions between the member states. Observing these meetings provided information concerning interpersonal relationships and interactions, negotiations and discussion processes, and leadership. This chapter aims to highlight areas regarding the functional aspects of RFMOs which have received limited attention in the peer-reviewed literature. While many peer-reviewed papers draw conclusions between the status of the fish stocks and the management effectiveness of RFMOs at RFMO meetings, few address issues such as the time pressure, inter-personal relationship or the championship from member states and the Chairperson. While these aspects of RFMOs are often overlooked in the broader picture, they play an important role in the RFMOs ability to achieve progress or to find compromises to agree on new CMMs. This chapter also links the topics discussed during those meetings to the respective targets of SDG 14, and also other SDGs. The first section of this chapter summarises the characteristics and differences of the two RFMOs. This is followed by a description of the WCPFC and SPRFMO meeting, while the final section reflects on some of the observed aspects of these meetings.

6.2. Comparison between WCPFC and SPRFMO

The framework of each RFMO is based on UNCLOS and UNFSA and, thus, their institutional structure is very similar. However, as described in Chapter 3, due to the different member states' compositions, target species and their economic value, the dynamics in these RFMOs are very different and the WCPFC and SPRFMO are no exception (see Table.6.1). While the WCPFC manages the tuna fisheries in the Western and Central Pacific, which is the most valuable fisheries in the world (FAO, 2011; SPC-OFP, 2020), SPRFMO manages primarily jack mackerel (*Trachurus murphyi*), flying jumbo squid (*Dosidicus gigas*) and deep-water species in the south Pacific, which are of lower economic value. Besides the economic value of the fisheries they manage, the number of member states also differs between these two RFMOs, with the WCPFC having almost double the number of members as SPRFMO (26 and 15, respectively). An important characteristic of the WCPFC is the high participation of small island developing states (SIDS), which are less represented in SPRFMO. Moreover, the number

of observers attending the two Commission meetings varied. More than six different observer groups – among them important global NGOs, such as the WWF or the Pew Charitable Trust – attended the 16th session of the WCPFC Commission, while only three observer groups attended the 8th session of the SPFMO commission: two industry groups and one NGO (Deep Sea Conservation Coalition – DSCC). The high number of observers at the WCPFC Commission meeting might be due to the global importance of this fishery and the potential ecological impact on, for example, bycatch species such as sharks. All these differences considerably impact the dynamics in these meetings.

Table 6.1 : Summary of key distinguishing factors between WCPFC and SPRFMO

	WCPFC	**SPRFMO**
Main target species	Skipjack tuna (*Katsuwonus pelamis)* Yellowfin tuna (*Thunnus albacares)* Bigeye tuna (*Thunnus obesus)* Albacore (*Thunnus alalunga)* Billfish species	Jack mackerel (*Trachurus murphyi*) Jumbo squid (*Dosidicus gigas*) Deep-water species (e.g. Orange Roughy (*Hoplostethus atlanticus)*, Alfonsino (*Beryx splendens)*)
Economic value	High global value; high regional value	Low global value; high regional value
Nr. member states	26	15
Nr. of SIDS	14	3
Nr of observers	>6	3

The following section summarises the observation of the WCPFC Commission meeting and how the proposed CMMs might contribute to SDG 14.

6.3. Tuna management in action – WCPFC

From 5-11 December 2019, the 16th regular session of the Commission of the WCPFC took place in Port Moresby, Papua New Guinea. Established in 2004, the WCPFC is one of five tuna RFMOs and manages tuna and tuna-like species. The WCPFC is unique among RFMOs in that more than half its members are SIDS. In an effort to better coordinate their interests, most are also members of the Pacific

Islands Forum Fisheries Agency (FFA)[6] and the Parties to the Nauru Agreement (PNA).[7] This changes the power relationship between distant water fishing nations, such as the EU, Japan and China, and the coastal states. Tuna is an important source of income and economic revenue in this region. In 2019, around 2,997,309 tonnes were caught in the convention area, accounting for 81 per cent of the whole Pacific Ocean and 55 per cent of the total global tuna catch (SPC-OFP, 2020). The largest component of the catch was skipjack tuna (68% of the total catch), followed by yellowfin (23% of the total catch), bigeye (5% of the total catch), and albacore (4% of the total catch) (SPC-OFP, 2020). Moreover, most of the fish were caught by purse seiners, even though there was an increase in long-line catch and effort (SPC-OFP, 2020). At this stage, all four species are in good condition and neither overfished nor is overfishing occurring (SPC-OFP, 2020).

Overall, these species are of economic and ecological importance for this region. Thus, managing these species sustainably is not only important for achieving SDG 14, but also for the economies of all the Pacific coastal states. The next section presents the results of the participatory observation and how the proposed measures could contribute to the different targets of SDG 14.

6.3.1. WCPFC's contribution to the SDGs

Even though the importance of tuna for the development of SIDS was frequently mentioned, the SDGs themselves were only mentioned twice at this meeting. The Prime Minister of Papua New Guinea mentioned the SDGs during his opening speech and the Federated States of Micronesia, on behalf of the FFA members, noted the importance of tuna management for the SDGs. However, even though the SDGs were not explicitly mentioned during the discussions and negotiations, the work the WCPFC has done is well aligned with the targets and sub-targets of SDG 14 – Life Below Water, and also SDG 8 – Decent Work and Economic Growth and SDG 13 – Climate Action. The following paragraphs describe in more detail how the WCPFC indirectly contributes to SDG 14, SDG 8 and SDG 13, supported by the respective delegation papers (DP) (see Table 6.2) which are available on the WCPFC website[8]. Table 6.2. provides a summary of the CMMs and resolutions adopted, the Delegation paper from which they were developed, and to which SDG target they contribute.

[6] FFA members: Australia, Cook Islands, Fiji, Kiribati, Marshall Islands, Federated States of Micronesia, Nauru, New Zealand, Niue, Palau, Papua New Guinea, Samoa, Solomon Islands, Tokelau, Tonga, Tuvalu and Vanuatu.
[7] PNA members: Federated States of Micronesia, Kiribati, Marshall Islands, Nauru, Palau, Papua New Guinea, Solomon Islands and Tuvalu.
[8] https://www.wcpfc.int/meetings/wcpfc16

Table 6.2: Summary of the adopted CMMs and resolutions at WCPFC 16

SDGs	Adopted CMMs and resolutions
SDG 14 – 14.2	Proposal for Conservation and Management Measures on Mobulid and Manta Rays caught in association with fisheries in the WCPFC Convention Area (DP 02)
	Proposal on guidelines for the safe handling and release of seabirds (DP 07)
	Conservation and Management Measures for sharks and rays.
SDG 14 – 14.4	Extension for two years of the Conservation and Management Measure 2018-07 (Compliance and Monitoring Scheme) under section IX (DP 03)
	Rebuilding plan for North Pacific Striped Marlin (DP 12)
	Revised harvest strategy workplan
SDG 13	Draft Resolution on Climate Change (DP 04)

SDG 14.2 – Management and protection of marine and coastal ecosystems

Three proposals related to target 14.2, which addresses the protection of bycatch and non-associated species and the avoidance of adverse impacts on the ecosystem. At WCPFC16, the member states adopted voluntary guidelines for the safe handling of seabirds (Delegation Paper 07) and a conservation and management measure (CMM) for mobulid and manta rays which are caught in association with fisheries in the WCPFC convention area (Delegation Paper 02). This proposal sought, for example, to prohibit the target fishing, retention or landing of mobulid rays and to provide safe handling guidelines. Moreover, the Commission adopted a CMM specifically for sharks and rays, which combines all the existing measures, prohibits finning, and also provides alternative measures to achieve the full utilisation of sharks.

SDG 14.4 – Sustainable fisheries

This target deals with the regulations for harvesting and to end overfishing. Thus, most of the measures in place could potentially contribute to this target. An important element of sustainable fisheries are harvest strategies. These received much attention during this year's meeting, including target reference points (TRPs), an important component of harvest strategies. Many discussions related to the TRP for skipjack tuna and, while some members stated that they need more time to consider the information provided, others stressed the importance of adopting TRPs for skipjack tuna, noting that the TRP should not be amended again. During the meeting, member states discussed the eligibility of a 42 per cent TRP for skipjack tuna and some members were concerned with the associated increase in fishing effort. Moreover, there was a distinct view on who should address this issue, the Scientific Committee or the Commission. After lengthy negotiations, the member states maintained the TRP of 50 per cent for

skipjack tuna. Members also discussed the TRP for yellowfin and bigeye tuna. During the discussions concerning an appropriate TRP for target species, some members stressed the inclusion of economic aspects in the TRP.

At this meeting, the FFA members put forward a proposal (Delegation Paper 06) concerning purse seine limits on the high seas and allocations in the tropical tuna CMM, which would be an important step towards more effective harvesting since it protects access rights and provides greater certainty to industry. Moreover, it supports monitoring compliance with total allowable catches. Although members did not adopt this proposal, due to discrepancies in the scope and data issues, they agreed to allocate two days to this topic during the 17th Commission meeting in 2020. One of the biggest discrepancies was the need for data on the high seas and the economic exclusive zones (EEZs). While distant water fishing nations argued that the proposed quotas should apply to the whole convention area, SIDS would like to see the EEZs excluded from any allocation decision. In addition to purse seine limits, members discussed longline limits for bigeye tuna and the management of fish aggregating devices (FADs) (Delegation Paper 09/10/16). Even though the management of FADs is an important issue, members were not able to reach agreement on the proposals and will continue working on it at the meeting in 2020.

Other important elements which support the effective regulation of harvesting and thus help to end overfishing are harvest control rules and a management strategy evaluation; work on these elements will continue. The implementation of a management strategy evaluation is an important aspect for the harvest strategy and, in the long term, the Commission plans to switch from a single-species approach to a mixed fishery and multi-species approach in the harvest strategy.

Another topic included in target 14.4 is the need to stop illegal, unreported and unregulated (IUU) fishing; this topic was also on the agenda of WCPFC 16. Despite the relevance of this topic, the members were unable to adopt the EU's proposal (Delegation Paper 08) regarding cross-listing the WCPFC IUU vessel list with the IUU vessel lists of other RFMOs. While most members supported the proposal, some had concerns regarding the administrative burden, the potential impact on the integrity of the WCFPC due to lack of information concerning the listing process, and the lack of the SIDS assessment (WCPFC, 2013a) for this proposal.

SDG 14.7 – SIDS

Agenda Item 5 dealt with the special requirements of SIDS, which are aligned with target 14.7 – increase economic benefits to SIDS and least developed countries. In the WCPFC, the rights and needs of developing states are addressed in Article 30 of the convention, which calls for recognition of the special requirements of developing states (WCPFC, 2004). In 2013, the Commission adopted CMM 2013-07, which called for special requirements of SIDS and territories, and encouraged members to consider the rights and needs of SIDS in their proposals for new CMMs (WCPFC, 2013b). During the meeting, FFA

members highlighted the need to consider the special requirements of SIDS in every discussion and acknowledged that it would be helpful to have standardised reporting requirements regarding this issue. Member states were encouraged to contact directly and to involve FFA members as early as possible when preparing a proposal for the Commission meeting. Another member state suggested that CMM 2013-07 should be improved and that more specific tasks should be incorporated. Funding for SIDS is provided, *inter alia*, by Australia, the EU, Japan, New Zealand and the United States. The Commission recognised the importance of Article 30 and CMM 2013-07 and, in the course of the meeting, it was mentioned that a page on the WCPFC website details the organisation's commitment to the implementation of Article 30[9].

SDG 14.A – Scientific knowledge

The WCPFC indirectly supports sub-target 14.A, which aims to increase scientific knowledge. The availability of scientific information is the basis for decisions made in RFMOs and the WCPFC has an agreement with an external science provider (SPC-Pacific Community) to conduct research and conduct stock assessments for the target species. However, the WCPFC also engages with other research projects, such as the FAO Areas Beyond National Jurisdiction project, the Pacific tuna tagging project, the WCPFC tissue ban, and the Western Pacific East Asian project.

SDG 8 – Decent work and economic growth

Economic considerations were frequently mentioned during the meeting; for example, FFA members highlighted the lack of performance indicators to measure the economic impact of the management objectives on SIDS. Members were encouraged to collect and provide economic data to the science provider. Moreover, Indonesia submitted information about labour issues (Delegation Paper 23) which specifically addressed the issue of unpaid salary disputes on fishing vessels. Members expressed their support for this issue and highlighted the need for stronger action.

SDG 13 – Climate action

Climate change has not been a high priority in previous Commission meetings; this year, members emphasised the importance of addressing climate change. Five of the eight members stated that they are prioritising work on climate change and also the science provider's report on the status of the tuna and billfish stock, noted that climate change will impact the tuna fishery. Thus, this year the Commission was able to adopt a resolution on climate change (Delegation Paper 04) submitted by the FFA members.

This section has summarised the different proposals which were submitted to WCPFC 16. The next section provides the results of the SPFMO meeting.

[9] https://www.wcpfc.int/implementation-article-30-convention

6.4. The management of jack mackerel, squid, and deep-water species – SPRFMO

From 14-18 February 2020, the 8th annual meeting of the SPRFMO Commission took place in Port Vila, Vanuatu. In comparison to the WCPFC's 26 members, SPRFMO is rather smaller, with only 15 members. This organisation is characterised by the strong influence of Latin American member states (Chile, Cuba, Ecuador and Peru) and their relationship with distant water fishing nations, such as the EU. Due to COVID-19 travel restrictions, delegation members from China and Chinese Taipei were unable to attend the meeting. Representatives of their respective embassies attended in their stead, and this changed the dynamics of the discussions. Other member states took into account the restricted ability of these two member states to participate effectively in the meeting.

At this year's meeting, the two main discussion points were the management of jack mackerel and squid, the two main target species of SPRFMO (after deep-water species, such as orange roughy). The jack mackerel stock is in a healthy condition and the Scientific Committee recommended a 15 per cent increase in 2020 catches (SPRFMO, 2019a). No conservation and management measure (CMM) for squid has so far been established.

The next section summarises the proposals and their contribution to the different targets of SDG 14.

6.4.1. SPRFMO's contribution to the SDGs

The SDGs were mentioned only once in the meeting, when members discussed the potential attendance of the SPRFMO executive secretary at global meetings, such as the Intergovernmental Conference for a new agreement for Marine Biodiversity of Areas Beyond National Jurisdiction (BBNJ). In contrast to the WCPFC, where the SDGs received some attention during the opening remarks. However, members did discuss, for example, the management of jack mackerel and squid, which could be seen as a potential contribution to target 14.4 – sustainable fisheries. SDG 14.4 aims, *inter alia*, to promote effective harvest regulations and end overfishing. All but one proposal at the meeting related to target 14.4 (see Table 6.3). The following paragraphs describe these proposals in more detail.

Table 6.3: Summary of the adopted CMMs and resolutions at SPRFMO 8

SDGs	Adopted CMMs and resolutions
SDG 14 – 14.2	Proposal to amend CMM 03 Bottom Fishing (Proposal 07)
SDG 14 – 14.4	Proposal to amend CMM 01-2019 on Jack Mackerel (COMM8-WP22)*
	Proposal to amend CMM 02 Data Standards (Proposal 06)

Proposal to amend CMM 03a Deepwater Species (Proposal 08)

Proposal to amend CMM 04 IUU Vessel List (Proposal 09)

Proposal to amend CMM 12 Trans-shipment (Proposal 12)

New CMM for an Exploratory Potting Fisheries (Working Paper 02)

New CMM for an Exploratory Toothfish Fishery (Proposal 13)

New CMM for Effort Limitation on Squid (Proposal 14)

***** Incorporating elements of Proposal 01-05

SDG 14.2 – Management and protection of marine and coastal ecosystems

The proposal on the amendment for the Bottom Fishing Conservation and Management Measure (CMM 03-2019) was the only one related to this target (Proposal 07). This proposal aimed to make bottom fishing more precautionary in relation to Vulnerable Marine Ecosystems (VMEs) (SPRFMO, 2020). One item of this proposal, the suggestion of lowering the threshold limit for stony corals, received considerable attention during the meeting. As outlined in CMM 03-2019 on the management of bottom fishing, bottom fisheries which encounter VMEs indicator taxa (for example, stony corals) above the threshold limit in their trawls must immediately stop fishing in this area and the area is closed (SPRFMO, 2019c). Extensive negotiations took place regarding the threshold limit for stony corals and, in the end, the threshold limit was set at 80 kg, reduced from 250 kg. While the Deep Sea Conservation Coalition highlighted the need for precautionary action and noted that 80 kg was still too high, the industrial High Seas Fisheries Group took the view that the organisation already applied a hyper-precautionary approach. While many members did not appear particularly happy with this proposal, none blocked consensus, requesting instead that their concerns be noted.

SDG 14.4 – Sustainable fisheries

Most of the discussion during the Commission meeting revolved around target 14.4 – sustainable fishing. One of the biggest issues related to the CMM on jack mackerel (CMM 01-2019). Five proposals have been submitted to amend CMM 01-2019. These cover topics such as the harmonisation of catches in national jurisdiction and the convention area to avoid breaching the fishery-wide total allowable catch (Proposal 02), and a request by Ecuador to have additional quota assigned to develop a jack mackerel fishery in the convention area and to include their EEZ into the convention area (Proposal 03). Solving these issues was of particular importance and a working group was established to discuss these problems. During the discussions and negotiations, member states struggled to agree on the different proposals and, given the need to resolve this issue, the Chairperson of the Commission introduced a working paper which combined the five existing proposals. One state objected strongly to the working

paper and the existing proposals, providing a good example of the influence of domestic interests in international negotiations (Barkin et al., 2018). With member states unable to achieve consensus on this important issue, the Chairperson referred to Article 16.b of the Convention, which states that, 'If the Chairperson considers that all efforts to reach a decision by consensus have been exhausted: decisions on question of substance shall be taken by a three-fourths majority of the members of the Commission casting affirmative or negative votes' (SPRFMO, 2015). The result of this vote counted 13 affirmative votes, 1 negative vote and 1 abstention. (SPRFMO, 2020).

At the 2020 meeting, members were able to resolve a longstanding issue: as recommended by the performance review panel, the Commission established a CMM for the management of squid fisheries. Some member states expressed concern that the new measure does not address all the performance review's points but, in light of the urgency of introducing a measure for squid, they agreed to the new CMM. It was noted that this CMM is an important step in the right direction and that, over the next few years, members can work on improving this measure. This CMM received strong support from the industry group, Calamasur (the committee for the sustainable management of the southern Pacific jumbo flying squid). Calamasur stressed the need to have a squid measure in place and noted that they had provided financial support for a workshop related to squid fisheries. The other proposals were related to deep-water species (Proposal 08), IUU fishing (Proposals 09 and 12) and exploratory fisheries (Working paper 02. Together, the amendments to existing measures and the new measure on squid fisheries ensure that fisheries are sustainably managed, which mirrors the objective of SDG 14.4.

The previous sections summarised the contributions of the WCPFC and SPRFMO to the targets of SDG 14. While the observation of introduced proposals and the reaction from the member states to these proposals was the main objective of this method, further observations related to the structure and dynamics of these meetings were made. The next section presents my reflections on these two Commission meetings.

6.5. Reflections on these two Commission meetings

In addition to observing how the various proposals link to the targets of SDG 14 or other SDGs, I also observed a range of factors that influence the Commission meetings indirectly, such as communication among members. This information cannot be gained by reading official reports; thus, participant observation provides important insights into the meeting dynamics of RFMOs and triangulation of the results from the interview and desktop analysis. For example, as described in Chapter 5, time constraints limit RFMOs' capacity to engage with topics outside their agenda (such as SDG 14), so this year the WCPFC Commission convened for six days instead of the usual five. The Commission meetings are structured into plenary sessions, where the Commission discusses progress on the various agenda items and small working group meetings. At the end of the Commission meeting, member states take

decisions concerning new resolutions, measures and proposals in the plenary. During these plenary sessions, members of the different delegations are in constant contact with each other, via different messaging platforms, to exchange viewpoints and opinions. The core negotiations are mainly done in small working groups and unofficial meetings at the margins during breaks and free times, such as breakfast, lunch or dinner. Thus, members of the delegations work hard to find compromises and to drive topics which are important for the country they represent. In the WCPFC, during the plenary discussions and negotiations in the working groups, I observed that, in many cases, two groups formed: the FFA members and SIDS on the one hand, and the distant water fishing nations on the other. This often led to heated negotiations concerning certain topics. The strong, coordinated presence of SIDS in the WCPFC is unique among RFMOs and leads to a different negotiation dynamic.

Like the WCPFC, SPRFMO does not officially acknowledge the SDGs but the work of this Commission is aligned with the targets of SDG 14, particularly target 14.4. Other issues, such as economic aspirations and food security (linked to SDG 1 and SDG 2, respectively) influenced the decisions of some members at the Commission. For example, one member state used food security to justify their decisions and to deflect on compatibility duties. As outlined in Article 4 of the Convention, members are required to ensure the compatibility of CMMs for target stocks under the national jurisdiction of a coastal state contracting party (SPRFMO, 2015). Matters of finance and administration also need to be considered during the Commission meetings, thereby restricting time for discussion on CMMs. At the SPRFMO meeting, I was able to witness discussions around the budget, highlighting the importance of financial resources for these organisations. Financial capacity is linked to the capacity of the secretariat to deal with the day-to-day work of SPRFMO.

Progress during these meetings relies to a significant degree on the leadership capacity and quality of the Chairperson, who is responsible for moving discussions forward and coordinating negotiations. At the SPRFMO meeting, the Chairperson's work and decision to use a three-quarters majority vote instead of consensus were important factors in resolving the issue around jack mackerel. At the WCPFC 16, I observed that the new Chairperson of the WCPFC showed great leadership abilities, and was frequently able to find compromises and lead negotiations constructively.

6.6. Conclusion

In summary, many aspects, such as time availability and member states championing an issue, influence the negotiation dynamics in RFMOs. However, my attendance at the WCPFC 16 and the SPRFMO 8 led to the observation that, even though member states are following their own agendas, those members work together to find compromises concerning important topics such as climate change, the sustainable management of tuna fisheries, the management of squid or the allocation of quotas. SDG 14 has not been part of any member's agenda in the WCPFC or the SPRFMO, but the work done by those two

RFMOs could potentially contribute to SDG 14, as well as to elements of other SDGs. However, the first targets of SDG 14 have already been due in 2020 (for example, target 14.2 – protection of marine ecosystems, or 14.4 – ending overfishing, see Fig.1.2 in Chapter 1) and none of them were achieved. Thus, while the role of RFMOs towards achieving targets of SDG 14 was insignificant , in the long run, the work of RFMOs will be important to achieve more sustainable fisheries.

Chapters 4 to 6 have concentrated on the SDGs. The next chapter addresses the negotiations for the BBNJ agreement. This agreement not only has the potential to impact RFMOs, but probably will also play an important role in supporting the targets of SDG 14. Thus, this agreement will be an important step towards a more sustainably managed ocean.

Chapter 7

The future of international fisheries management

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See Appendix C for the abstract of the published article. Note that this chapter is based on, and extends the published paper and has been reformatted for this thesis.

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Regional fisheries management organizations and the new biodiversity agreement: Challenge or opportunity?

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7.1. Introduction

This research assesses the potential contribution of RFMOs to a goal-based governance strategy – the United Nations Sustainable Development Goals – in particular, SDG 14. While this research focuses on the RMFO's engagement and potential contribution to SDG 14, this chapter will discuss the negotiations for a new legally binding instrument for the protection of marine biodiversity of areas beyond national jurisdiction (BBNJ). This is important as this agreement is likely to influence and impact RFMOs as it provides a reinforcement of conservation measures in management of ocean spaces and aligns with the key elements of SDGs. The exclusion of fish from the negotiations has constrained opportunities for the global community to explore ways to advance high seas fisheries management, with Ortuño Crespo et al. (2019) noting that around 95 per cent of high seas fish biodiversity is currently not under the management of any international agreement.

As described in Chapter 1, human activities in areas beyond national jurisdiction (ABNJ) are primarily governed by the 1982 United Nations Convention on the Law of the Sea (UNCLOS) and the related 1995 United Nations Fish Stocks Agreement (UNFSA). The UNFSA builds on UNCLOS and promotes important elements of sustainable fisheries management and conservation, including the precautionary approach (United Nations, 1995, Article 6), as well as reinforcing the functions of RFMOs (United Nations, 1995, Article 10). However, the UNFSA concentrates on highly migratory and straddling fish stocks (that is, stocks that move between EEZs and high seas areas) (United Nations, 1995). This leads to a gap in the management of discrete or non-migratory high seas fish stocks (that is, fish stocks found only in high seas areas) (Munro et al., 2004). Moreover, this management framework is compromised by the failure of important fishing countries (such as the United States of America and Peru) to ratify UNCLOS and by the emergence of new issues, such as the exploitation of Marine Genetic Resources (MGRs) since its entry into force in 1994 (Tiller et al., 2019). The ABNJ are also at the intersection of many sectorally (for example, fishing, shipping and mining) and geographically divided organisations, resulting in a 'fundamentally disjunctive and fragmentary system for the conservation and sustainable use of biodiversity in ABNJ' (Warner, 2015, p. 218).

This chapter explores the potential impact on RFMOs of an agreement on biodiversity beyond national jurisdiction (BBNJ). I argue that, even though fisheries have been excluded from the BBNJ discussions, RFMOs are likely to be significantly impacted by, and also to have an influence on, the implementation of any agreement due to overlapping areas of interest and despite commitments that the agreement will 'not undermine' existing arrangements. Moreover, the BBNJ agreement is likely to contribute to SDG 14, especially ecosystem considerations. The first section of this chapter provides a short overview of existing agreements and initiatives regarding the conservation of marine ecosystems. This is followed by a detailed description of the BBNJ agreement. The final section summarises potential outcomes and their impacts on RFMOs.

7.2. Setting the scene

In 2015, to address existing gaps in ocean governance and increasing threats to biodiversity in ABNJ, including the high seas (that is, the water column) and the seabed (the 'area'), the United Nations General Assembly (UNGA) adopted a resolution to develop an international legally binding instrument under UNCLOS on the conservation and sustainable use of marine biological diversity in areas beyond national jurisdiction (UNGA, 2015a). Negotiations for this new instrument began in 2018; the fourth and final intergovernmental conference on BBNJ was scheduled for late March 2020. Due to the global COVID-19 pandemic, however, this conference has been postponed to a date to be determined by the UNGA (UNGA, 2020b). The current negotiations exclude fisheries, under a key negotiating principle not to undermine existing instruments, frameworks and bodies (Marciniak, 2017; UNGA, 2017).

The performance of RFMOs has been widely criticised. However, as the results of Chapter 3 and 4 show, these organisations are improving, and best practice examples related to areas such as decision-making approaches do now exist. Furthermore, performance reviews are addressing areas such as improved data collection, increased transparency in decision-making, and the implementation of rebuilding plans for target species reviews (see Chapter 4). Reducing the impact of fishing on bycatch species has been on the agenda of all RFMOs, and most have implemented measures concerning the reduction of adverse impacts of fishing on species such as sharks and marine mammals and on the marine ecosystem (see Chapter 4). More, however, needs to be done; for example, existing measures need to be enhanced to fully implement an ecosystem-based fisheries management approach (Juan-Jordá et al., 2017). This is a key area of action, as fishing has been identified as one of the major threats to marine biodiversity conservation. These examples provide some evidence to suggest RFMOs will be able to meet the challenges and opportunities posed by the BBNJ agreement.

The agreement on biodiversity beyond national jurisdiction (BBNJ) will join numerous international agreements, organisations and initiatives that address issues related to the ocean. In addition to UNCLOS and the UNFSA, many non-binding agreements have enhanced the way fisheries are managed. The 1995 UN Food and Agriculture Organization's Code of Conduct for Responsible Fisheries and the UNGA Resolutions (for example, UNGA Resolution 61/105 on adverse impacts of deep-sea fisheries) are examples of the broadening and deepening of international engagement over fisheries in ABNJ. In 2015, the UN launched a further initiative: the SDGs. Achieving SDG 14 will positively reinforce the achievement of other SDGs, such as SDG 1 – No Poverty and SDG 2 – Zero Hunger (Singh et al., 2017), and will also reduce the impacts of climate change (SDG 13 – Climate Action) (Laffoley et al., 2019). In contrast to other initiatives, the SDGs rely not only on the support of nation-states, but also on existing intergovernmental organisations, NGOs and industry (Gupta & Nilsson, 2017; Kanie et al., 2019). To achieve SDG 14, a coherent 'areas beyond national jurisdiction' (ABNJ) governance framework needs to be in place (UNGA, 2015b). The BBNJ agreement is

especially relevant for SDG 14.2 – the protection and conservation of marine and coastal ecosystems, and SDG 14.5 – the conservation of at least 10 per cent of the marine and coastal ecosystem. This new agreement is seen as a way to set the direction for the conservation and sustainable use of the oceans. Thus, it is an important step to support the implementation of the targets of SDG 14 (Gjerde et al., 2019).

7.3. The BBNJ agreement

This section provides more detailed information on the BBNJ agreement. It introduces the four main elements of the BBNJ agreement and how they relate to RFMOs. It also describes the issue of 'not undermining' and identifies the potential consequences for the ocean governance regime.

7.3.1. The 'package'

Although the BBNJ negotiations are yet to be concluded, speculation regarding potential impacts of a new agreement on the current structure of marine resource management abounds. The Ad Hoc Open-Ended Working Groups and Intergovernmental Conferences to form a BBNJ agreement have focused on a negotiation 'package' of four issues: (i) use of marine genetic resources (MGRs), including access and benefit-sharing; (ii) area-based management tools (ABMTs), including marine protected areas (MPAs); (iii) environmental impact assessments (EIAs) for activities on the high seas; and (iv) capacity building and technology transfer for developing countries (Wright et al., 2015b). As all four issues in the BBNJ negotiation package might impact fisheries, I describe their potential overlap in more detail below. (Note that the need for capacity building and the transfer of marine technology plays an important role across the first three issue areas, so this is integrated broadly into the discussion, rather than being addressed separately.)

The use of MGRs has been one of the most contested topics in the negotiations for the BBNJ agreement. On this issue, a clear political divide has been observed between developing countries and a group of developed countries (De Santo et al., 2020). The most common definition for MGRs is provided by the 1992 Convention on Biological Diversity (CBD): 'marine genetic resources refers to genetic material of marine plant, marine animal, microbial or other origin containing functional units of heredity which have an actual or potential value' (CBD, 1992, Art. 2). UNCLOS provides little guidance on access and benefit-sharing directed towards MGRs, as it was not an issue during its negotiation. At the BBNJ Intergovernmental Conferences, states considered whether or not to include fish as an MGR (Barnes, 2019). While the CBD's definition of MGRs is perhaps wide enough to include fish ('marine animal'), a distinction might be drawn between fish as a genetic resource and as a commodity (Marciniak, 2017). Some states, such as Israel, would like to see this distinction included in the draft BBNJ text (UNGA,

2020a). Discussion around the inclusion of fish as an MGR and the potential management implications of such decisions are ongoing. However, Indonesia and Iceland have proposed that it be noted in the treaty text that the management of fisheries is an issue separate from the BBNJ agreement (UNGA, 2020a). Thus, the BBNJ agreement would not interfere with the management of fish, but would only cover the genetic information of individual fish species (Marciniak, 2017).

One of the most important topics of the BBNJ negotiations concerning fisheries management is area-based management tools (ABMTs), including MPAs. Similar to MGRs, members are struggling to agree on a definition for these tools and how they might be implemented (De Santo et al., 2020). Currently, ABMTs (including MPAs) are implemented by different regional and global organisations – for example, fisheries closures by RFMOs (Marciniak, 2017) – so it is important to take these arrangements into account during the BBNJ negotiations (Mendenhall et al., 2019). For example, the UNGA Resolution 61/105 on sustainable fisheries is directed to the impact of bottom trawling and calls on states to identify vulnerable marine ecosystems (VMEs), which if encountered, should lead to a halt of bottom fishing in the area (UNGA, 2007b). During the BBNJ discussions, three potential versions for implementation of ABMTs have been proposed: (i) utilising existing organisations to implement these tools; (ii) creating a new global organisation for the implementation of ABMTs, including MPAs; and, (iii) using a hybrid model, which would divide ABMT competence between states or regional organisations and a global authority (Mendenhall et al., 2019; Tiller et al., 2019). For the last option, the new treaty could oversee the implementation of ABMTs by sharing best practices and thereby supporting existing organisations to apply a coherent management approach (Tiller et al., 2019). Having an independent organisation might also help to overcome the *pacta tertiis* problem (that is, only states which have joined treaties are bound by them), which exempts non-member states from conservation and management measures taken by the respective organisation (such as RFMOs) (Marciniak, 2017). However, at this stage, important questions about how to establish ABMTs and MPAs (when relevant instruments already exist) and how coordination between various scales of governance might work remain unresolved (De Santo et al., 2020).

The final topic in the BBNJ negotiations that might overlap with the activities of RFMOs is environmental impact assessments (EIAs). UNCLOS addresses EIAs only indirectly and does not require fisheries to conduct EIAs (Barnes, 2016). The BBNJ discussions on EIAs primarily concern issues relating to who should conduct the assessments (that is, a scientific or technical body, or states themselves) and whether EIA processes need to be prescribed or simply be subject to broad guidelines (De Santo et al., 2020). It is still unclear if activities such as fishing might need an EIA, but the UNGA resolution concerning VMEs could act as a guide concerning EIAs for fisheries, as they require an assessment of whether bottom fishing activities adversely impact the respective ecosystems (Marciniak, 2017).

7.3.2. The issue of 'not undermining'

Fishing has been excluded from the BBNJ discussions to avoid undermining existing fisheries management organisations. The exact meaning of 'not undermining' has not been defined (Scanlon, 2018) and this ambiguity has allowed negotiations to progress (Mendenhall et al., 2019). At the BBNJ conferences, states have frequently referred to 'not undermining', albeit in different contexts, when discussing the four package elements outlined above (De Santo et al., 2020; Mendenhall et al., 2019). 'Not undermining' is therefore open to interpretation, and has attracted considerable attention and debate in the peer-reviewed literature (see for example Barnes, 2019; Friedman, 2019; Gjerde et al., 2019).

The term 'undermining' already appears in the UNFSA, where it refers to the need to not undermine the effectiveness of existing organisations and regulations (Gjerde et al., 2019). Gjerde et al. (2019) suggest using the UNFSA as guidance for the new BBNJ agreement to address the uncertainties relating to this term and to strengthen existing organisations. However, Barnes (2019) argues that in the BBNJ agreement 'not undermining' refers to compliance, rather than institutional effectiveness, so the UNFSA definition should not be applied(Barnes, 2019). There are several options for how the term 'not undermining' could be put into practice. For example, the term could be used to refer only to the rules and mandates of existing organisations, so that the new agreement would fill in where governance gaps have been identified (Barnes, 2019). While the various interpretations of 'undermining' have their advantages and disadvantages, Barnes (2019) warns that a strong definition and application of this term may well 'perpetuate the existing fragmented nature of ocean governance' (p. 11).

This section has introduced the important elements of the BBNJ agreement. The next section analyses the potential implications for RFMOs.

7.4. Implications for future fisheries management

While fisheries have been excluded from the discussions, RFMOs will nonetheless be impacted by the outcomes of the BBNJ agreement, due to the package of elements within the agreement, such as ABMTs and EIAs (Marciniak, 2017). RFMOs are, therefore, paying close attention to the BBNJ negotiations and some have attended the Intergovernmental Conferences as observers. The new BBNJ agreement might indirectly strengthen the performance of the RFMOs, due to the need to reduce the impact of fisheries on marine biodiversity. RFMOs are working towards improving their performance in areas such as harvest control rules and limiting catch of bycatch species such as sharks and rays (see Chapter 3); however, their ability to address issues is influenced by the interests and political will of their constituent members.

Depending on the final content of the BBNJ agreement, member states could use RFMOs as a platform to comply with their duties under the BBNJ agreement and to protect marine biodiversity. Several interviews with key stakeholders revealed that, even when RFMOs do not expressly acknowledge or address an international agreement, it might still indirectly influence RFMOs where member states have signed that agreement (see Chapter 5). The successful implementation of an effective BBNJ agreement will rely on the support of regional and sectoral organisations, such as RFMOs, to establish a robust governance framework (Thomson et al., 2020).

The BBNJ agreement has significant potential to increase cooperation between existing marine governance organisations. While the mandate of most RFMOs is restricted to the conservation and sustainable use of their target stocks, the new BBNJ agreement could complement the conservation aspect of RFMOs; for example, by strengthening the ecosystem-based approach for fisheries management, or by providing a common and consistent framework for states to follow (Ortuño Crespo et al., 2019). Although, due to the principle of 'not undermining' existing organisations, the BBNJ agreement cannot impose any direct controls on fishing activities (De Santo et al., 2020), RFMOs and the BBNJ agreement could form an MoU, a form of non-binding agreement that has previously been used in cooperation between RFMOs and other international organisations (Rochette et al., 2015a; Scanlon, 2018). An MoU could overcome mandate limitations and thereby lead to increased protection of marine ecosystems, as demonstrated by the MoU between OSPAR (the Convention for the Protection of the Marine Environment of the North-East Atlantic) and NEAFC (the North-East Atlantic Fisheries Commission) which resulted in MPAs in the North-East Atlantic. An MoU could determine the exact interaction with RFMOs and the BBNJ agreement and outline areas of future cooperation; for example, the sharing of data and scientific information, which will be imperative to successfully manage biodiversity in the high seas (Ortuño Crespo et al., 2019). Sharing data and scientific information, via a specially designated committee with the ability to collect and distribute data, would also reduce the costs for the member states.

7.5. Conclusion

This chapter has provided an overview of the intersection between regional fisheries management and the negotiations over the proposed agreement on biodiversity beyond national jurisdiction (BBNJ). While the BBNJ negotiations are yet to be finalised, it is that clear the BBNJ agreement is likely to have significant implications for RFMOs, because of their common areas of interest, and for SDG 14, because of its potential contribution to ecosystem protection. Fisheries have been excluded from the discussions through the 'not undermining' principle, but the four topics in the package of issues on the table at the BBNJ negotiation sessions have significant intersections with the mandates and activities of RFMOs as existing organisations, institutions and arrangements. One option to secure RFMOs'

engagement with the outcomes of BBNJ negotiations might be to develop a subsidiary statement such as an MoU. Where the proposed treaty text for the BBNJ agreement concentrates on broad governance issues, the MoU could focus on RFMOs' mandates to protect marine biodiversity. This might address challenges arising in the implementation of the BBNJ agreement in terms of ABMTs (especially the use of MPAs) and EIAs. The phrase 'not undermine' will ultimately shape the relationship between the BBNJ agreement and RFMOs, and the new agreement is likely to face the difficult task of conserving marine biodiversity without addressing fishing activities. This highlights the influence of RFMOs, which, though protected by the 'not undermine' principle in the BBNJ agreement, will have the potential to constrain or undermine the BBNJ agreement's ability to advance attention to biodiversity issues in fisheries management. Building strong institutional linkages with RFMOs is therefore likely to be an important step in managing the future of high seas marine resources.

The final chapter summarises the findings presented in this thesis and provides a Conclusion to this research.

Chapter 8

Conclusion

This thesis centres on the interaction between Regional Fisheries Management Organizations (RFMOs) and the United Nations Sustainable Development Goals (SDGs), with particular focus on SDG 14 – Life Below Water. The research aimed to analyse the relationship between goal-based governance approaches and actors which have the potential to influence the achievement of these goals. Goal based governance approaches rely on voluntary contribution to established goals and targets. Due to the importance of RFMOs in international fisheries management and their ability to provide a platform for states with similar interests to address important fisheries related issues, this research focused on RFMOs and their potential contribution to the targets of SDG 14. Using a qualitative approach has highlighted how RFMOs' current performance and work could potentially contribute to SDG 14. It has also provided new insights into the perspective of various stakeholders on the work of RFMOs and the issues hindering RFMOs' engagement with the SDGs. The goal-setting approach is a tool for achieving desired outcomes through behavioural change in the relevant actors (Young, 2017a). Current research has shown that goal-setting tools such as the SDGs rely on the contribution and support of existing organisations which have the ability to work towards their achievement (Bernstein, 2017; Fukuda-Parr, 2013; Kanie et al., 2019). However, not all organisations which have a mandate that overlaps with the objectives of certain goals currently acknowledge their role in supporting the achievement of the respective SDGs (Bernstein, 2017). Moreover, due to the broad and universal nature of the SDGs (Allen et al., 2016), many organisations, including RFMOs are not necessarily aware of how they could contribute to these goals and associated targets.

Goal-setting tools, such as the SDGs or the Paris Agreement on Climate Change, are increasingly used in global governance (Andresen & Iguchi, 2017; Haas & Stevens, 2017; Yamada, 2017). Thus, more applied research in this field is needed. It is important to increase our understanding of how national and regional organisations, industries and NGOs can contribute effectively to these globally agreed goals. The present research has studied the potential contribution of RFMOs to SDG 14; however, more research is needed to include additional marine-related sectors such as oil and gas, which is the biggest ocean-based industry (OECD, 2016). Further research is also needed to examine how goals are prioritised and where trade-offs are made between the various SDGs (Singh et al., 2017), both of which have potentially harmful implications for the attainment of the SDGs (Forestier & Kim, 2020). As highlighted by this research, many of these organisations are already dealing with an onerous workload (see Chapter 5). Thus, future recommendations on how these organisations can successfully contribute to initiatives outside their day-to-day work must take into account their capacity, including funding and

other resources. This will become especially important as the significance of the ocean and relevant institutions is increasingly acknowledged.

The year 2020 has been titled 'Ocean Super Year' (Rochette et al., 2020), with important political events planned to discuss the sustainability of our oceans. While these events have been cancelled or postponed due to the COVID-19 pandemic, it will be important to maintain this momentum. As 2020 passed, it is clear that most of the SDG 14 targets were not achieved, and as shown in the previous chapters, the contribution of RFMOs might be seen as insignificant. However, RFMOs can still play a key role in taking the next steps towards better-managed oceans and to continue working towards the targets outlined in SDG 14, via setting a precedent for other organizations, businesses and individuals, and indeed other global initiatives. This thesis shows that the work done by RFMOs overlaps with globally determined agreements, such as the SDGs. RFMOs also have the potential to play a relevant role in the BBNJ agreement currently under negotiation. Even though the BBNJ negotiations were based on the principle of 'not undermining' existing organisations, and thus do not address fisheries management per se, key topics within the negotiations (such as area-based management, marine protected areas and environmental impact assessments) are likely to have direct impacts on RFMOs (see Chapter 7). Generally, the work of RFMOs is important for ocean-related initiatives.

To achieve SDG 14, sustainably managed fisheries are imperative. Thus, the performance and contribution of RFMOs is an important aspect of achieving the targets of SDG 14. However, RFMOs have frequently been criticised for, among other things, their flawed decision-making approach; weak management measures that fail to fully address issues such as ecosystem impacts; and the lack of political will to enforce compliance with management measures (e.g. Cullis-Suzuki & Pauly, 2010; Juan-Jordá et al., 2017; Pentz & Klenk, 2017). Contrary to the common discourse of RFMOs failing their management objectives, the present research highlights bright spots concerning RFMOs' management approach. A comprehensive literature review (see Chapter 3) has shown that, although RFMOs still underperform in certain areas, such as addressing climate change impacts (Pentz et al., 2018), these organisations are improving and best practice examples are available. The results of the literature review revealed 17 frequently mentioned issues that, if addressed, would increase the RFMOs' capacity to engage proactively with the SDGs, as well as the emerging BBNJ agreement (see Chapter 3). Generally, it is important that RFMOs learn from each other about applying 'best practice' and enhance progress towards sustainable management practices (see Chapter 3), as active fisheries management is essential for healthy fish stocks (FAO, 2020; Hilborn et al., 2020).

The research presented in this thesis shows that RFMOs are capable of improvement and that it is important that member states recognise RFMOs as important platforms for working towards globally agreed goals. For RFMOs to fulfil their mandate – namely, the sustainable management of marine resources – they must become more proactive and address frequently highlighted issues, such as their

decision-making approach and administrative issues. This is not only important to achieve SDG 14, but also to secure a sustainably managed ocean for the future. The SDGs expired in 2030. They were never meant to be an end-goal but, rather, a path guiding us to a sustainable future. Thus, existing organisations such as the RFMOs must continue their work – which might be supported by the BBNJ agreement, which will be an important driver for the conservation and sustainable use of the oceans (Gjerde et al., 2019).

Performance reviews (PRs) are one tool that can help RFMOs to further improve their performance, by highlighting important issues and providing recommendations. My analysis of the progress of five RFMOs since their first PR shows that these organisations have done notable work to address the recommendations provided by the PR panel. As outlined in Chapter 4, PRs have contributed to RFMOs improving in areas such as conservation and management and international cooperation. It would be useful to standardise the PR process and use PRs as an opportunity to encourage RFMOs to orient activities towards initiatives such as the SDGs. Generally, the results of the desktop analysis in Chapter 4 demonstrate that the work done by RFMOs overlaps with most of the targets of SDG 14, especially target 14.4 – sustainable fisheries and target 14.2 – marine ecosystem conservation and protection. Thus, by analysing the performance of RFMOs and how the current framework of RFMOs has the potential to contribute to SDG 14, this research provides a pathway for RFMOs and their member states to align their work with the SDGs.

The successful implementation of the SDGs might be constrained by a lack of support for such initiatives from existing organisations and their members (Bernstein, 2017). The results of the desktop analysis in Chapter 4 reveal that RFMOs have not yet paid attention to the SDGs, even though their work indirectly makes a valuable contribution to SDG 14. It is important to understand the reasons for RFMOs' lack of engagement with the SDGs. Analysing the perspectives of several stakeholders allows us to identify several issues which impact the RFMOs' ability to engage with the SDGs or with other emerging issues, such as climate change. Chapter 5 shows that RFMOs are profoundly shaped by their members' interests and their composition; for example, the number of developing countries or distant-water fishing states. Member states drive the discussions in RFMOs and determine which topics are addressed and which are not; this is influenced by cultural perspectives and economic aspirations (Axelrod, 2011). Thus, it is important to keep in mind that, when RFMOs are perceived as not doing enough, it is actually their member states which are not doing enough.

To enhance discussions of SDG 14 in RFMO meetings, member states need to acknowledge the importance of RFMOs in contributing to SDG 14 and provide adequate resources for them to do so. In addition to the role of member states (FAO, 2007b; Pons et al., 2018; UNGA, 2006), other issues which hinder the engagement with SDG 14 include a lack of resources and capacity. Many RFMOs do not have the financial resources or sufficient time and staff to address issues that are outside their day-to-

day work. As noted in Chapter 5, member states are already struggling to address their existing agendas, leaving little or no time to discuss the SDGs at the meetings. Although these factors hinder an RFMO's ability to officially support the attainment of SDG 14, most of the stakeholders held the view that RFMOs are already contributing to SDG 14 and that no official declaration related to this initiative is necessary.

RFMOs have often been described as complicated organisations that are highly impacted by the economic aspirations of their member states (Axelrod, 2011). Considerable research has been undertaken to study the performance of RFMOs, either in general or regarding a specific topic (e.g. Cullis-Suzuki & Pauly, 2010; Gilman, 2015; Pentz et al., 2018), and most of this research has been based on official documents, published management measures, and other web-based information. To get a better understanding of the dynamics in RFMOs, I attended two RFMO Commission meetings as a participatory observer within the Australian delegation. Participation in these meetings allowed me an opportunity to gain deeper insights on how the meetings function and provided a better understanding of the importance of interpersonal relationships in the meetings. Attending these meetings also helped me to get a better contextual understanding of previously collected data (Guest et al., 2013). As highlighted by the interviews (see Chapter 5), lack of time is a serious issue in these meetings as most of the agenda items require thorough discussions and negotiations. While new proposals, measures or resolutions can be introduced and approved or rejected in the plenary sessions, the core negotiations are happening in smaller working groups and unofficial meetings at the margin (see Chapter 6). Member states decide which topics are discussed by submitting proposals for new resolutions or measures, or for amendments to existing measures and resolutions. However, even though member states follow their own agendas, it is important to acknowledge that those members work together to find compromises and to agree on measures related to sustainable fisheries and quota allocation. 'Champion' states play an important role in taking the lead to introduce new issues; for example, the FFA members introduced a proposal on climate change at the 16th regular session of the Commission of the WCPFC that was later adopted. Besides the role of states in taking on responsibility for a certain issue, another important aspect of those meetings is the leadership ability of the Chairperson to steer and coordinate negotiations.

This research highlights the impacts and influence of external organisations and institutions on the work of RFMOs. Besides sector- and region-specific organisations, UN-specific agencies have increased the importance of ocean governance in tackling issues such as climate change. One of those bodies, the United Nations General Assembly (UNGA), is becoming increasingly significant in ocean governance. The UNGA developed the resolutions for bottom trawling and the protections of VMEs (UNGA, 2007a), which play an important role in general RFMOs, such as SPRFMO. Moreover, this organisation played a key role in promoting PRs for RFMOS (UNGA, 2007b) and developing the BBNJ agreement (UNGA, 2015a). This shift in the importance of the more specialised agencies in the UN creates new opportunities but must be cautiously observed by different stakeholders as these fora are strongly driven

by the interventions of single states. Whether the UNGA opens new pathways for other actors to engage with global instruments, such as the SDGs, remains to be determined.

These findings suggest that to address global, interlinked issues, such as climate change and fisheries, more interdisciplinary research is needed. Current research is generally siloed and characterised by a lack of communication between different disciplines. Conserving the marine ecosystem and addressing complex issues linked to climate change will require more solution-oriented, interdisciplinary research, with cooperation between academia, industry and policymakers. Therefore, guidelines on how the work of the fishing industry and management organisations can support the achievement of SDG 14 are needed. This is especially important, as SDG 14 is positively linked to other SDGs such as reduction of poverty and hunger, SDG 1 and SDG 2, respectively (Singh et al., 2017). Generally, to better understand how researchers can effectively support the SDGs, it is important to change the narrative and, as emphasised by Singh (2020), start to assess how research can help to achieve sustainability.

The results of this research provide new perspectives on RFMOs and the role of a specific actor in attaining the targets of SDG 14. The findings make an important contribution to the peer-reviewed literature as work on this topic is limited. Yet, for someone working in the policy field, these results might not be surprising but, rather, confirm what they already know. Translating this knowledge from the individual to the institutional level remains a challenge. Furthermore, as explained in Chapter 1, the SDGs lack a hierarchical structure, so there is a risk they might foster (rather than minimise) the existing fragmentation in global governance (Underdal & Kim, 2017). It could also be argued that this research reinforces the fragmented nature of the SDGs, and especially of ocean governance, because of its focus on RFMOs. However, it is important to emphasise that this research was not intended to provide an analysis of the whole of ocean and fisheries governance, but rather to demonstrate one actor's potential for achieving a goal which shows the greatest overlap with their current work.

Goal-based governance strategies are increasingly popular. However, as this research shows, existing actors do not currently recognise or acknowledge their role in contributing towards such strategies. Due to their consensus-based decision-making approach. important issues are often referred to the following year's meeting.. While the findings of this research show that the work done by RFMOs makes a valuable contribution to the targets of SDG 14 , the overall contribution of RFMOs is insignificant to the targets due in 2020, but is still potentially important for future targets. While the RFMOs' direct contribution to achieving SDG 14 might be small, their work is imperative if the world is to achieve and maintain sustainably managed fisheries in the long term. This research recognises that understanding the issues that impact RFMOs' performance and ability to address topics outside their day-to-day work is an important step in understanding the dynamics between existing organisations and goal-based initiatives.

This research provides an important contribution to the literature and discourse around RFMOs due to its comprehensive approach and novel insights into the RFMO framework. Moreover, these findings are relevant to the goal-based management literature, as they highlight both the potential and limitations of one regional actor's contributions to achieving globally agreed goals. Based on the results of this thesis, more research is needed on how to better streamline global goals to make them more approachable for regional and national actors. Regarding RFMOs, future research needs to concentrate on how best to support these organisations by addressing the identified issues (Chapter 3), taking into account their limitations, such as lack of financial capacity and political will (Chapter 5).

In summary, RFMOs play a fundamental role in international fisheries management and their work makes an important contribution to the targets of SDG 14, especially, 14.4 – sustainable fisheries management. However, it is important that member states acknowledge the role of RFMOs in ocean governance and start acting more cohesively. This is especially important in a changing climate which not only threatens the livelihood of millions of people, but will also require RFMOs to become more flexible due to moving stocks. Moreover, the environment of ocean governance is changing with the negotiations for the BBNJ agreement, and I argue that it is important that member states start seeing the importance to include RFMOs in the discussions to achieve sustainable oceans..

Appendix A – Chapter 1 Supplementary

A1 – List of member states of the respective RFMO

RFMO	Member states
CCAMLR	Argentina Australia Belgium Brazil Chile China European Union France Germany India Italy Japan Republic of Korea Namibia Netherlands New Zealand Norway Poland Russian Federation South Africa Spain Sweden Ukraine United Kingdom United States of America Uruguay
CCSBT	Australia European Union Chinese Taipei Indonesia Japan Korea, Rep. New Zealand South Africa
GFCM	Albania Algeria Bulgaria Croatia Cyprus Egypt European Union France Greece Israel Italy Lebanon Libya Malta

	Monaco
	Montenegro
	Morocco
	Romania
	Slovenia
	Spain
	Syria
	Tunisia
	Turkey
IATTC	Belize
	Canada
	China
	Colombia
	Costa Rica
	Ecuador
	El Salvador
	European Union
	France
	Guatemala
	Japan
	Kiribati
	Korea, Rep.
	Mexico
	Nicaragua
	Panama
	Peru
	Chinese Taipei
	United States of America
	Vanuatu
	Venezuela
ICCAT	Albania
	Algeria
	Angola
	Barbados
	Belize
	Brazil
	Canada
	Cape Verde
	China
	Curaçao
	Egypt
	El Salvador
	Equatorial Guinea
	European Union
	France
	Gabon
	Gambia
	Ghana
	Grenada
	Guatemala
	Guinea, Rep
	Guinea-Bissau, Rep.
	Honduras
	Iceland
	Ivory Coast

	Japan
	Korea, Rep.
	Liberia
	Libya
	Mauritania
	Mexico
	Morocco
	Namibia
	Nicaragua
	Nigeria
	Norway
	Panama
	Philippines
	Russia
	São Tomé and Príncipe
	Senegal
	Sierra Leone
	South Africa
	St. Vincent & the Grenadiers
	Syria
	Trinidad & Tobago
	Tunisia
	Turkey
	United Kingdom
	United States of America
	Uruguay
	Venezuela
IOTC	Australia
	Bangladesh
	China
	Comoros
	Eritrea
	European Union
	France
	India
	Indonesia
	Iran
	Japan
	Kenya
	Korea, Rep.
	Madagascar
	Malaysia
	Maldives
	Mauritius
	Mozambique
	Oman
	Pakistan
	Philippines
	Seychelles
	Somalia
	Sri Lanka
	South Africa
	Sudan
	Tanzania
	Thailand

	United Kingdom
	Yemen
NAFO	Canada
	Cuba
	Denmark
	European Union
	France
	Iceland
	Japan
	Norway
	Korea, Rep.
	Russian Federation
	Ukraine
	United Kingdom
	United States of America
NEAFC	Denmark
	European Union
	Iceland
	Norway
	Russian Federation
	United Kingdom
NPFC	Canada
	China
	Japan
	Korea, Rep.
	Russian Federation
	Chinese Taipei
	United States of America
	Vanuatu
SEAFO	Angola
	European Union
	Japan
	Korea, Rep.
	Namibia
	Norway
	South Africa
SIOFA	Australia
	China
	Chinese Taipei
	Cook Islands
	European Union
	France
	Japan
	Korea, Rep.
	Mauritius
	Seychelles
	Thailand
SPRFMO	Australia
	Chile
	China
	Chinese Taipei
	Cook Islands
	Cuba
	Ecuador

	European Union
	Denmark
	Korea, Rep.
	New Zealand
	Peru
	Russian Federation
	United States of America
	Vanuatu
WCPFC	Australia
	China
	Cook Islands
	European Union
	Federate States of Micronesia
	Fiji
	France
	Indonesia
	Japan
	Kiribati
	Korea, Rep,
	Rep. of Marshall Islands
	Nauru
	New Zealand
	Niue
	Palau
	Papua New Guinea
	Philippines
	Samoa
	Solomon Islands
	Chinese Taipei
	Tonga
	Tuvalu
	United States of America
	Vanuatu

Appendix B – Chapter 3 Supplementary

B1 – List of papers

Issue	Nr of paper	Papers
Overcapacity	3	(Aranda et al., 2012; de Bruyn et al., 2013; Schiffman, 2013)
Members	9	(Aranda et al., 2012; Barkin et al., 2018; Cullis-Suzuki & Pauly, 2010; Lodge et al., 2007; Pentz & Klenk, 2019; Pentz et al., 2018; Pons et al., 2018; Small, 2005; Willock & Lack, 2006)
Decision-making	18	(Barkin & DeSombre, 2013; Barkin et al., 2018; de Bruyn et al., 2013; Ewell et al., 2017; Gilman et al., 2014; Juan-Jordá et al., 2017; Leroy & Morin, 2018; Lodge et al., 2007; McDorman, 2005; Mooney-Seus & Rosenberg, 2007; Nakatsuka, 2017b; Pentz & Klenk, 2017, 2019; Rayfuse, 2019; Scanlon, 2018; Schiffman, 2013; Small, 2005; Willock & Lack, 2006)
Lack of compliance and enforcement	8	(Barkin & DeSombre, 2013; Barkin et al., 2018; de Bruyn et al., 2013; Lodge et al., 2007; Mooney-Seus & Rosenberg, 2007; Pentz et al., 2018; Sumaila et al., 2016; Willock & Lack, 2006)
Lack of socio-political-economic aspects	3	(Aranda et al., 2010; Barkin & DeSombre, 2013; Mooney-Seus & Rosenberg, 2007)
Lack of political will	3	(Barkin & DeSombre, 2013; Gilman et al., 2014; Small, 2005)
Need for precautionary and ecosystem approach	18	(Aranda et al., 2010; Barkin et al., 2018; Bell et al., 2019; de Bruyn et al., 2013; Gianni et al., 2016; Gilman et al., 2014; Juan-Jordá et al., 2017; Lodge et al., 2007; McDorman, 2005; Miller, 2013; Mooney-Seus & Rosenberg, 2007; Pentz & Klenk, 2019; Rayfuse, 2019; Scanlon, 2018; Schiffman, 2013; Small, 2005; Willock & Lack, 2006; Wright et al., 2015a)
Transparency	9	(Clark et al., 2015; Gilman & Kingma, 2013; Gilman et al., 2014; Lodge et al., 2007; Nakatsuka, 2017a; Pons et al., 2018; Schiffman, 2013; Small, 2005; Willock & Lack, 2006)
Allocation	4	(Cullis-Suzuki & Pauly, 2010; Lodge et al., 2007; McDorman, 2005; Willock & Lack, 2006)
IUU fishing	6	(Cullis-Suzuki & Pauly, 2010; Hutniczak, 2019; Schiffman, 2013; Small, 2005; Sumaila et al., 2016; Swan, 2016)
Lack of clear management objectives	1	(de Bruyn et al., 2013)

Need for better surveillance and enforcement frameworks	1	(Gilman et al., 2014)
Scientific advice and data	9	(Aranda et al., 2010; Galland et al., 2018; Juan-Jordá et al., 2017; Lodge et al., 2007; Mooney-Seus & Rosenberg, 2007; Nakatsuka, 2017a; Pons et al., 2018; Small, 2005; Willock & Lack, 2006)
Need to cooperate	5	(Aranda et al., 2010; Lodge et al., 2007; Scanlon, 2018; Willock & Lack, 2006; Wright et al., 2015a)
Transhipment	1	(Ewell et al., 2017)
Management strategy evaluations	1	(Nakatsuka, 2017b)
Stakeholders	2	(Nakatsuka, 2017b; Small, 2005)

Appendix C – Chapter 4 Supplementary

C1 – Scores for each of the RFMOs and the criteria

CCSBT

	Scoring	Number
Conservation and management – Status of living marine resources		**2.4**
SA-2008-1: SBT catch and CPUE data	Improving	2
PR-2008-1: Robust SBT stock assessment methodology	Improving	2
PR-2008-2: Precautionary approach to SBT management	Advanced	3
PR-2008-3: SBT stock rebuilding strategy	Improving	2
SA-2008-2: Sustain the research programme	Improving	2
SA-2008-3: ERS risk assessment	Improving	2
SA-2008-4: Decision-making process	Fulfilled	4
Conservation and management – Data collection and sharing		
SA-2008-5: SBT data collection and sharing strategy	Fulfilled	4
SA-2008-6: Data specification	Advanced	3
SA-2008-7: Parties' compliance	Fulfilled	4
SA-2008-8: Data confidentiality	Improving	2
SAWG-2010 Recommendations	Improving	2

Conservation and management – Quality and provision of scientific advice		
SA-2008-9: Balancing SBT and ERS scientific work	Basic	1
SA-2008-10: Science oversight: ESC and independent panels	Fulfilled	4
SA-2008-11: Scientific skills required	Improving	2
SA-2008-12: Management procedure	Fulfilled	4
Kobe III-1: Management strategy evaluation (no recommendation has been formulated at PR1)	Improving	2
Bycatch policy and management strategy (no recommendation has been formulated at PR1)	None	0
Conservation and management – Adoption of conservation and management measures		
SA-2008-13: Scientific foundations of management measures	Fulfilled	4
SA-2008-14: Meeting UNFSA standards	Improving	2
SA-2008-15: Modernize the convention to UNFSA standards	Improving	2
SA-2008-16: Develop a strategic and a SBT management plan	Improving	2
SA-2008-17: Determination of national allocations	Fulfilled	4
Kobe-1: Ecologically related species (no recommendation has been formulated at PR1)	Basic	1
PR-2008-4: Application of the precautionary approach	Advanced	3
Kobe-2: The ecosystem approach (no recommendation has been formulated at PR1)	Improving	2
Conservation and management – Capacity management		
PR-2008-5: Management of capacity	Basic	1

Conservation and management – Compatibility of management measures		
SA-2008-18: Compatibility of management measures	Improving	2
Conservation and management – Fishing allocations and opportunities		
SA-2008-19: Separation of TAC determination from national allocations	Fulfilled	4
Compliance and enforcement – Flag state duties		
SA-2008-20: Action to ensure compliance	Improving	2
Compliance and enforcement – Port state measure		
SA-2008-21: Port state measures	Improving	2
Compliance and enforcement – Monitoring, control and surveillance (MCS)		
SA-2008-22: Harmonization, integration and implementation of MCS measures	Improving	2
SA-2008-23: Harmonization of observer programs	Basic	1
PR-2008-6: Integrated VMS system	Improving	2
Trans-shipment at sea (no recommendation has been formulated at PR1)	Basic	1
High seas boarding and inspection (no recommendation has been formulated at PR1)	None	0
Compliance and enforcement – Follow-up on infringements		
SA-2008-24: Responses to non-compliance and infringements	Improving	2
Compliance and enforcement – Cooperative mechanisms to detect and deter non-compliance		
SA-2008-25: Cooperative mechanisms to monitor compliance	Improving	2
Compliance and enforcement – Market-related measures		

SA-2008-26: Catch and trade documentation	Advanced	3
Decision-making and dispute settlement- Decision-making and transparency		
SA-2008-27: Decision-making	Basic	1
SA-2008-28: Transparency	Fulfilled	4
Decision-making and dispute settlement – Decision-making and dispute settlement		
Kobe-4: Dispute settlement (no recommendation has been formulated at PR1)	None	0
International cooperation – Relationship to cooperating non-members		
Kobe-5: Cooperating with non-members (no recommendation has been formulated at PR1)	Fulfilled	4
International cooperation – Relationship to non-cooperating non-members		
Kobe-6: Non-cooperating non-members (no recommendation has been formulated at PR1)	Improving	2
International cooperation – Cooperation with other RFMOs		
SA-2008-29: Cooperation with other RFMOs	Basic	1
International cooperation – Special requirements of developing states		
SA-2008-30: Special requirements of developing states	Improving	2
Financial and administrative issues – Availability of resources for RFMO activities		
SA-2008-31: Policy & management advice	Fulfilled	4
Financial resources (no recommendation has been formulated at PR1)	Advanced	3
Financial and administrative issues – Efficiency and cost-effectiveness		
SA-2008-32: Secretariat efficiency and effectiveness (no recommendation has been formulated at PR1)	Basic	1

ICCAT

	Scoring	Number
Conservation and management – Status of living marine resources		
Status of major fish stocks	Improving	2
Trends in status of stocks	Improving	2
Status of non-target species	Basic	1
Trends in the status of non-target species	Improving	2
Conservation and management – Data collection and sharing	Improving	2
Conservation and management – Adoption and management measures		
Introduction on conservation and management measures by species- Eastern Bluefin	Advanced	3
Introduction on conservation and management measures by species- Western Bluefin	Fulfilled	4
Introduction on conservation and management measures by species- Bigeye	Basic	1
Introduction on conservation and management measures by species- Yellowfin	Advanced	3
Introduction on conservation and management measures by species- Skipjack	Advanced	3
Introduction on conservation and management measures by species- NA swordfish	Advanced	3
Introduction on conservation and management measures by species- SA swordfish	Advanced	3
Introduction on conservation and management measures by species- Mediterranean swordfish	Basic	1
Introduction on conservation and management measures by species- northern albacore	Fulfilled	4
Introduction on conservation and management measures by species- southern albacore	Improving	2

Introduction on conservation and management measures by species- Mediterranean albacore	None	0
Introduction on conservation and management measures by species- Blue and white marlins	Basic	1
Introduction on conservation and management measures by species- Sharks	Improving	2
Precautionary approach	Basic	1
Rebuilding plans	Improving	2
Marine biological diversity (Score is mean value from the subcategories)		2.5
Sea turtles	*Advanced*	*3*
Seabirds	*Improving*	*2*
Pollution, waste and discarded gears (no recommendation has been formulated at PR1)	Improving	2
Previously unregulated fisheries	Basic	1
Conservation and management – Capacity management	Fulfilled	2
Conservation and management – Compatibility of management measures	Fulfilled	2
Conservation and management – Fishing allocations and opportunities	Advanced	3
Monitoring, control and surveillance – Port state measures	Improving	2
Monitoring, control and surveillance – Integrated MCS measures	Improving	2
Compliance and enforcement – Flag state duties	Fulfilled	4
Compliance and enforcement – Cooperative mechanisms to detect and deter non-compliance	Improving	2
Compliance and enforcement – Follow-up on infringements (no recommendation has been formulated at PR1)	Improving	2

Compliance and enforcement – Market-related measures	Improving	2
Compliance and enforcement – Reporting requirements (no recommendation has been formulated at PR1)	Basic	1
Governance – Decision-making	Basic	1
Governance – Dispute settlement	Basic	1
Governance – Transparency	Basic	1
Governance – Confidentiality (no recommendation has been formulated at PR1)	Improving	2
Governance – Relationship to cooperating non-members	Improving	2
Governance – Relationship to non-cooperating non-members (no recommendation has been formulated at PR1)	Advanced	3
Governance – Cooperation with other RFMOs and Relevant international organizations	Improving	2
Governance – Participation and capacity building	Improving	2
Governance – Special requirements of developing states	Improving	2
Science – Quality and Provision of scientific advice		
Best scientific advice	Improving	2
Presentation scientific advice (no recommendation has been formulated at PR1)	Improving	2
Adequacy SRCS and secretariat (no recommendation has been formulated at PR1)	None	1
Science – Participations and capacity building		
Active participation	Basic	1
Capacity building initiatives (no recommendation has been formulated at PR1)	None	0

Science – Long-term planning and research		
SCRS long-term strategy (no recommendation has been formulated at PR1)	None	1
Alignment research (no recommendation has been formulated at PR1)	Improving	2
Science – Best available science		
Implementation Res 11-17 (no recommendation has been formulated at PR1)	Basic	1
Total quality management process (no recommendation has been formulated at PR1))	Basic	1
Financial and administrative issues – Availability of resources for RFMO activities (no recommendation has been formulated at PR1)	Improving	2
Financial and administrative issues – Efficiency and effectiveness (no recommendation has been formulated at PR1)	Improving	2

IOTC

	Scoring	**Number**
Conservation and management – Status of living marine resources	Improving	2
Conservation and management – Data collection and reporting	Improving	2
Conservation and management – Compliance with data collection and reporting requirements (no recommendation has been formulated at PR1)	Improving	2
Conservation and management – Capacity building	Improving	2
Conservation and management – Non-target species	Improving	2
Conservation and management – Quality and provision of scientific advice	Improving	2
Conservation and management – Adoption of conservation and management measures	Improving	2

Conservation and management – Fishing capacity management	Basic	1
Conservation and management – Compatibility of management measures	Improving	2
Conservation and management – Fishing allocation and opportunities	Basic	1
Compliance and enforcement – Flag state duties	Improving	2
Compliance and enforcement – Port state measures	Improving	2
Compliance and enforcement – Monitoring, control and surveillance (MCS)	Improving	2
Compliance and enforcement – Follow-up on infringements	Improving	2
Compliance and enforcement – Cooperative mechanisms to detects and deter non-compliance	Improving	2
Compliance and enforcement – Market-related measures	Basic	1
Compliance and enforcement – Fishing capacity	Improving	2
Decision-making and dispute settlement – Decision-making	None	0
Decision-making and dispute settlement – Dispute settlement	None	0
International cooperation – Transparency	Improving	2
International cooperation – Relationship to cooperating non-contracting parties	None	0
International cooperation – Relationship to non-cooperating non-members	Improving	2
International cooperation – Cooperation with other RFMOs	Improving	2
International cooperation – Special requirements of developing states	Improving	2
International cooperation – Participations	Basic	1
Financial and administrative issues – Availability of resources for IOTC activities & Efficiency and cost-effectiveness	Improving	2

NEAFC

	Scoring	Number
Conservation and management – Status of living marine resources	Improving	2
Conservation and management – Ecosystem approach (no recommendation has been formulated at PR1)	Improving	2
Conservation and management – Data collection and sharing	Basic	1
Conservation and management – Quality and provision of scientific advice	Improving	2
Conservation and management – Adoption of conservation and management measures		
Extent to which NEAFC had adopted conservation and management measures based on the best scientific advice available to ensure the long-term conservation and sustainable use of living marine resources	Basic	1
Extent to which NEAFC has applied a precautionary approach as set forth in Article 6 of the 1995 UN Fish Stock Agreement, including the application of precautionary reference points	Basic	1
Extent who which consistent/compatible management measures have been adopted as set out in Article 7 of the 1995 UN Fish Stock Agreement	Improving	2
Extent to which NEAFC successfully allocates fishing opportunities consistent with the NEAFC Convention and Article 11 1995 UN Fish Stock Agreement	Improving	2
Extent to which NEAFC has moved toward the adoption of conservation and management measures for previously unregulated fisheries, including new and exploratory fisheries (no recommendation has been formulated at PR1)	Improving	2
Extent to which NEAFC has taken due account of the need to conserve marine biological diversity and minimize harmful impacts of fishing activities and research on living marine resources and marine ecosystems.	Improving	2

Extent to which NEAFC has adopted measure to minimise pollution, waste, discards, catch by lost or abandoned gear, catch of non-target living marine resources, and impacts on associated or dependent species through measures including, to the extent practicable, the development and use of selective, environmentally sage and cost-effective fishing gear and techniques.	Improving	2
Extent to which NEAFC has adopted and is implementing effective rebuilding plans for depleted or overfished stocks including guidance for stocks under moratoria (no recommendation has been formulated at PR1)	Basic	2
Conservation and management – Capacity management (no recommendation has been formulated at PR1)	None	0
Compliance and enforcement – Flag State duties		
Extent to which NEAFC has established flag State duties as set out in international instruments, including, inter alia, the 1982 Law of the Sea Convention, 1995 UN Fish Stocks Agreement and the 1993 FAO Compliance Agreement, as applicable (no recommendation has been formulated at PR1)	Improving	3
Extent to which these measures are effectively implemented	Basic	1
Compliance and enforcement – Port State measures		
Extent to which NEAFC has adopted measures relating to the exercise of the right and duties of its Contracting Parties as port States, as reflected in the 2009 FAO Port State Measures Agreement. (no recommendation has been formulated at PR1)	Advanced	3
Extent to which these measures are effectively implemented	Fulfilled	4
Compliance and enforcement – Monitoring, control and surveillance (MCS)		
Extent to which NEAFC has adopted integrated MCS measures. (no recommendation has been formulated at PR1)	Improving	2
Extent to which these measures are effectively implemented	Improving	2

Compliance and enforcement – Follow up on infringements		
Extent to which NEAFC and its Contracting Parties follow-up on infringements to conservation and management measures (no recommendation has been formulated at PR1)	Basic	1
Compliance and enforcement – Cooperative mechanisms to detect and deter non-compliance		
Extent to which NEAFC has established adequate cooperative mechanisms to both monitor compliance and detect and deter non-compliance (no recommendation has been formulated at PR1)	Basic	1
Extent to which these measures are effectively implemented (no recommendation has been formulated at PR1)	Improving	2
Extent to which NEAFC has adopted measures relating to the exercise of the rights and duties of NEAFC Contracting Parties as market States for living marine resources under the purview of NEAFC, to combat IUU fishing (no recommendation has been formulated at PR1)	Fulfilled	4
Extent to which these measures are effectively implemented (no recommendation has been formulated at PR1)	Basic	1
Decision-making and dispute settlement – Decision making		
Efficiency of NEAFC meetings in addressing critical issues in a timely and effective manner	None	0
Extent to which NEAFC has transparent, consistent and adequate decision-making procedures that facilitate the adoption of conservation and management measures in a timely and effective manner	Improving	2
Decision-making and dispute settlement – Dispute settlement		
Extent to which NEAFC has established adequate mechanisms for resolving disputes	Advanced	3

International cooperation – Transparency		
Extent to which NEAFC is operating in a transparent manner, taking into account, inter alia, Article 12 of the 1995 UN Fish Stock Agreement	Fulfilled	4
Extent to which NEAFC decisions, meeting reports, scientific advice upon which decisions are made, and other relevant materials are made publicly available in a timely fashion (no recommendation has been formulated at PR1)	Fulfilled	4
International cooperation – Relationship with non-Contracting Parties		
Extent to which non-Contracting Parties have undertaken fishing activities in the NEAFC Regulatory Area	Fulfilled	4
Extent to which NEAFC facilitates cooperation with non-Contracting Parties, including encouraging non-Contracting Parties to become Contracting Parties or to implement NEAFC conservation and management measures voluntarily	None	0
Extent to which NEAFC provides for action in accordance with international law against non-Contracting Parties undermining the objective of the Convention, as well as measures to deter such activities.	Improving	2
International cooperation – Cooperation with other international organizations		
Extent to which NEAFC cooperates with regional fisheries management organizations and other relevant international organizations	Advanced	3
International cooperation – Special requirements of developing States		
Extent to which NEAFC recognizes the special needs of developing States and cooperates with developing States, taking into account Part VII of the 1995 UN Fish Stocks Agreement. (no recommendation has been formulated at PR1)	None	0
Extent to which NEAFC provides relevant assistance to developing States as reflected in Article 26 of the 1995 UN Fish Stocks Agreement (no recommendation has been formulated at PR1)	Basic	1

Financial and administrative Issues – Availability of resources for activities		
Extent to which financial and other resources are made available to achieve the aims of NEAFC and to implement NEAFC's decisions (no recommendation has been formulated at PR1)	Fulfilled	4
Financial and administrative issues – Efficiency and cost effectiveness		
Extent to which NEAFC is efficiency and effectively managing its human and financial resources, including those of the Secretariat (no recommendation has been formulated at PR1)	Fulfilled	4
Extent to which the schedule and organizations of the meetings could be improved (no recommendation has been formulated at PR1)	Fulfilled	4

SEAFO

	Scoring	**Number**
Conservation and management – Status of living marine resources	Advanced	3
Conservation and management – Ecosystem approach	Improving	2
Conservation and management – Data collection and sharing	Fulfilled	4
Conservation and management – Quality and provision of scientific advice	Improving	2
Conservation and management – Adoption of conservation and management measures	Advanced	3
Conservation and management – Capacity management	Fulfilled	4
Compliance and enforcement – Flag state duties	Fulfilled	4
Compliance and enforcement – Port state measures	Advanced	3

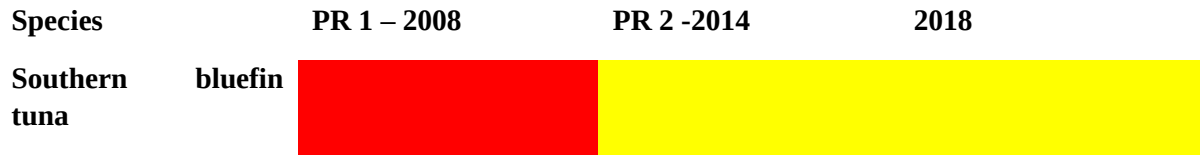
Compliance and enforcement – Monitoring, control and surveillance	Improving	2
Compliance and enforcement – Follow-up infringements	Basic	1
Compliance and enforcement – Cooperative mechanisms to detect and deter non-compliance	Improving	2
Compliance and enforcement – Market related measures	Fulfilled	4
Decision-making and dispute settlement – Decision-making	Advanced	3
Decision-making and dispute settlement – Dispute settlement	Fulfilled	4
International cooperation – Transparency	Fulfilled	4
International cooperation – Relationship to non-contracting parties cooperating with SEAFO	Advanced	3
International cooperation – Relationship to non-cooperating non-contracting parties	Advanced	3
International cooperation – Cooperation with other international organisations	Fulfilled	4
International cooperation – Special requirements of developing states	Fulfilled	4
Financial and administrative issues – Finance and administration issues	Advanced	3
Financial and administrative issues – Staff regulations and staff remuneration	Basic	1

C2 – Detailed analysis for each of the species under RFMO management.

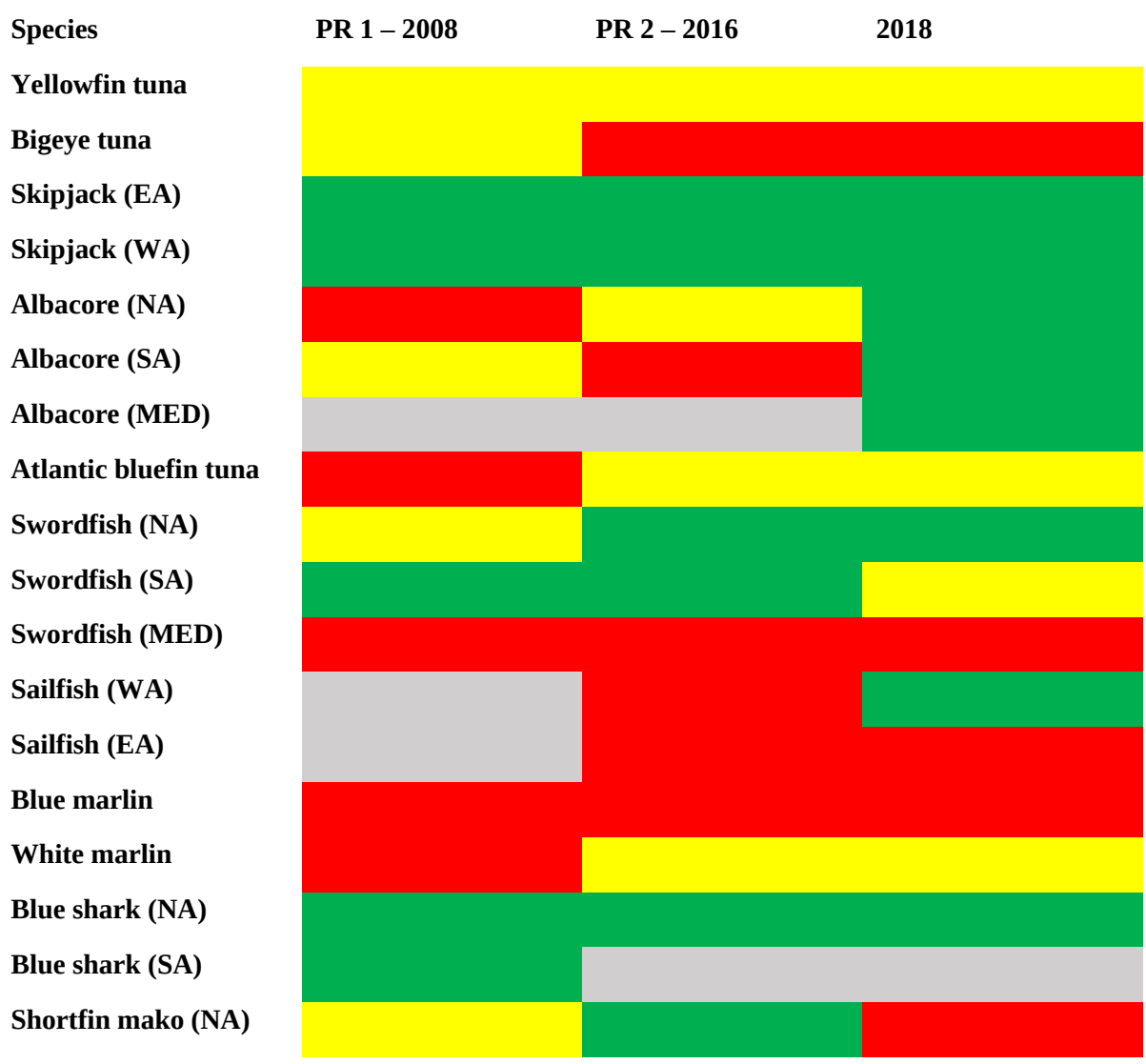
Colour key:

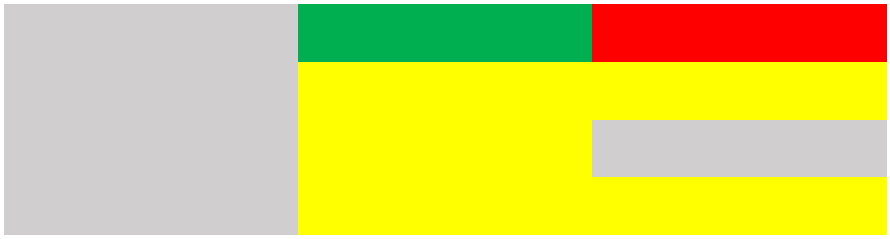
*template: IOTC stock status report

CCSBT



ICCAT

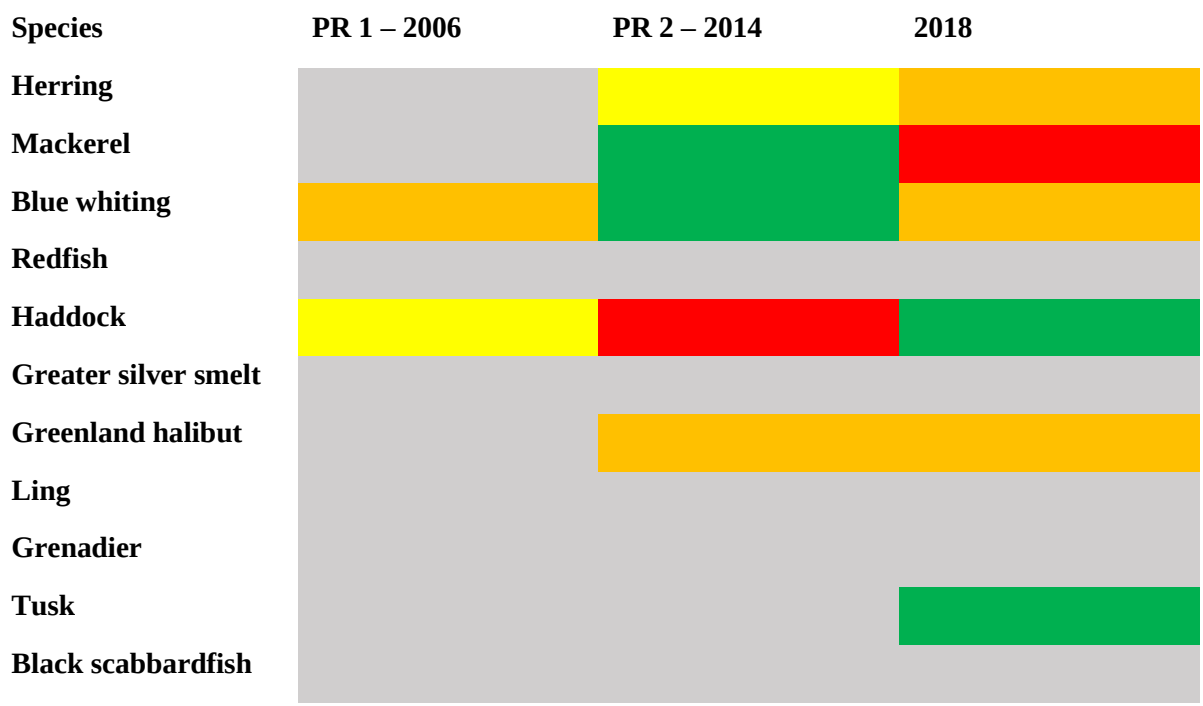



Shortfin mako (SA)
Porbeagle (NWA)
Porbeagle (SWA)
Porbeagle (NEA)

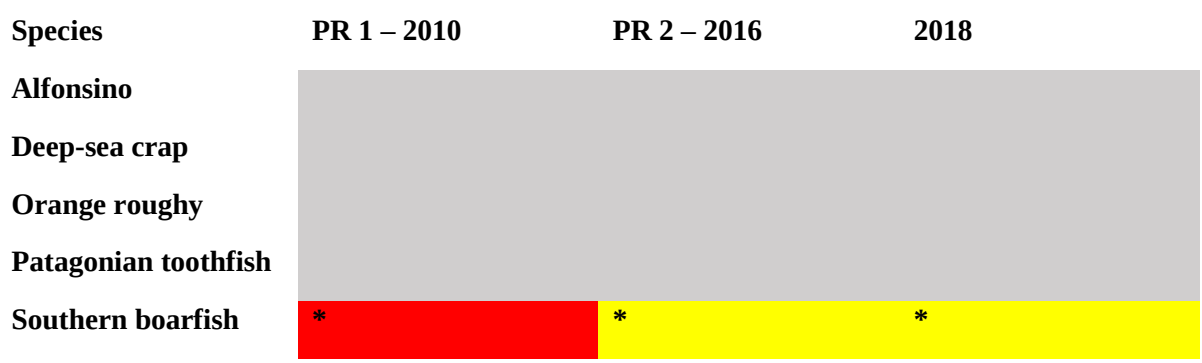
IOTC


Species
PR 1 – 2009
PR 2 – 2016
2018
Albacore
Bigeye
Skipjack tuna
Yellowfin tuna
Swordfish
Black marlin
Blue marlin
Striped marlin
Indo-pacific sailfish
Bullet tuna
Frigate tuna
Kawakawa
Longtail tuna
Indo-pacific king mackerel
Narrow-barred Spanish mackerel
Blue shark
Oceanic whitetip shark
Scalloped hammerhead shark
Shortfin mako shark
Silky shark
Bigeye thresher shark
Pelagic thresher shark

NEAFC



SEAFO



***linked with high uncertainties

C3 – Measures in place for each criterion, separated into the different RFMOs.

CCAMLR

14.1 By 2025 prevent and significantly reduce marine pollution of all kinds, in particular from land-based activities, including marine debris and nutrient pollution.	Yes	No
Mentioned in convention and/or is a resolution in place?	X	
Convention mandates monitoring or controlling ALDFG** (Gilman, 2015)?		X
Logbook and/or observer data collection protocols call for reporting ALDG (Gilman & Kingma, 2013)?	X	
At least one measure related to monitoring or controlling ALDFG (Gilman, 2015)?	X	
14.2 By 2020, sustainably manage and protect marine and coastal ecosystems to avoid significant adverse impacts, including by strengthening their resilience and take action for their restoration in order to achieve healthy and productive oceans.		
Precautionary approach		
Mentioned in convention and/or is a resolution in place?	X	
Are they applying a precautionary approach (de Bruyn et al., 2013)?	X	
Do they have a resolution on best scientific advice?	X	
Are they considering new and exploratory fisheries?	X	
Have they implemented Management Strategy Evaluations (Nakatsuka, 2017b)?		X
Does the RFMO acknowledge climate change (Pentz et al., 2018)?	X	
Ecosystem approach		
Mentioned in the convention and/or is a resolution in place?	X	
Are they applying an ecosystem approach(Juan-Jordá et al., 2017)?	X	
Do they have general bycatch measures?	X	
Do they have resolutions for non-target species?	X	
Do they have measures for seabird?	X	
Do they have measures for marine mammals?	X	
Do they have measures for turtles?	NA	NA
Do they have measures for sharks?	X	
Do they have measures for certain types of fishing (e.g. bottom fishing, driftnet fishing, FADs)?	X	
14.3 Minimize and address the impacts of ocean acidification, including through enhanced scientific cooperation at all levels.		
14.4 By 2020, effectively regulate harvesting, and end overfishing, illegal, unreported and unregulated (IUU) fishing and destructive fishing practices implement science-based management plans, in order to restore fish stocks in the shortest time feasible, at least to levels that can produce maximum sustainable yield as determined by their biological characteristics.		

Mentioned in the convention and/or is a resolution in place about IUU fishing?		X
Do they have an IUU vessel list?	X	
Do they have vessels on their IUU vessel list?	X	
Do they have links to the IUU lists of other RFMOs?		X
Do they have port state measures in place?	X	
Do they have trade measures?		X
Do they have measures on a catch documentation scheme or a video monitoring system?	X	
Do they have a resolution on transhipment (Ewell et al., 2017)?	X	
14.5 By 2020, conserve at least 10 percent of coastal and marine areas, consistent with national and international law and based on the best available scientific information.		
Mentioned in the convention and/or is a resolution in pace?	X	
Have any closures been installed (Pentz et al., 2018)?	X	
Do they have MPAs (Pentz et al., 2018)?	X	
Have no-take MPAs been established (Pentz et al., 2018)?	X	
Are they committed to a representative system?	X	
Do they have VMEs?	X	
Do they have general habitat protection measures?	X	
14.6 By 2020, prohibit certain forms of fisheries subsidies which contribute to overcapacity and overfishing, and eliminate subsidies that contribute to IUU fishing and refrain from introducing new such subsidies, recognizing that appropriate and effective special and differential treatment for developing and least developed countries should be an integral part of the World Trade Organization fisheries subsidies negotiation.		
14.7 By 2030, increase the economic benefits to Small Island Developing States and least developed countries from the sustainable use of marine resources, including through sustainable management of fisheries, aquaculture, and tourism.		
Mentioned in the convention and/or is a resolution in place?		X
Do they have a special fund for developing countries (Pentz et al., 2018)?	X	
Is there a process to aid developing states financially (Pentz et al., 2018)?	X	
Are they taking developing countries' interests into account in any way?	X	
Are they considering special requirements?	X	
Is there a noted difference in allocation or fees between developing and developed countries (Pentz et al., 2018)?	X	
Is there a special allocation for developing countries (Pentz et al., 2018)?		X

CCSBT

14.1 By 2025 prevent and significantly reduce marine pollution of all kinds, in particular from land-based activities, including marine debris and nutrient pollution.	Yes	No
Mentioned in convention and/or is a resolution in place?		X
Convention mandates monitoring or controlling ALDFG** (Gilman, 2015)?		X
Logbook and/or observer data collection protocols call for reporting ALDG (Gilman & Kingma, 2013)?		X
At least one measure related to monitoring or controlling ALDFG (Gilman, 2015)?		X
14.2 By 2020, sustainably manage and protect marine and coastal ecosystems to avoid significant adverse impacts, including by strengthening their resilience and take action for their restoration in order to achieve healthy and productive oceans.		
Precautionary approach		
Mentioned in convention and/or is a resolution in place?		X
Are they applying a precautionary approach (de Bruyn et al., 2013)?	X	
Do they have a resolution on best scientific advice?		X
Are they considering new and exploratory fisheries?	X	
Have they implemented Management Strategy Evaluations (Nakatsuka, 2017b)?	X	
Does the RFMO acknowledge climate change (Pentz et al., 2018)?		X
Ecosystem approach		
Mentioned in the convention and/or is a resolution in place?		X
Are they applying an ecosystem approach(Juan-Jordá et al., 2017)?	X	
Do they have general bycatch measures?	X	
Do they have resolutions for non-target species?	X	
Do they have measures for seabird?	X	
Do they have measures for marine mammals?		X
Do they have measures for turtles?		X
Do they have measures for sharks?		X
Do they have measures for certain types of fishing (e.g. bottom fishing, driftnet fishing, FADs)?	X	
14.3 Minimize and address the impacts of ocean acidification, including through enhanced scientific cooperation at all levels.		
14.4 By 2020, effectively regulate harvesting, and end overfishing, illegal, unreported and unregulated (IUU) fishing and destructive fishing practices implement science-based management plans, in order to restore fish stocks in the shortest time feasible, at least to levels that can produce maximum sustainable yield as determined by their biological characteristics.		
Mentioned in the convention and/or is a resolution in place about IUU fishing?		X

Do they have an IUU vessel list?	X	
Do they have vessels on their IUU vessel list?		X
Do they have links to the IUU lists of other RFMOs?	X	
Do they have port state measures in place?	X	
Do they have trade measures?		X
Do they have measures on a catch documentation scheme or a video monitoring system?	X	
Do they have a resolution on transhipment (Ewell et al., 2017)?	X	
14.5 By 2020, conserve at least 10 percent of coastal and marine areas, consistent with national and international law and based on the best available scientific information.		
Mentioned in the convention and/or is a resolution in pace?	NA	NA
Have any closures been installed (Pentz et al., 2018)?	NA	NA
Do they have MPAs (Pentz et al., 2018)?	NA	NA
Have no-take MPAs been established (Pentz et al., 2018)?	NA	NA
Are they committed to a representative system?	NA	NA
Do they have VMEs?	NA	NA
Do they have general habitat protection measures?	NA	NA
14.6 By 2020, prohibit certain forms of fisheries subsidies which contribute to overcapacity and overfishing, and eliminate subsidies that contribute to IUU fishing and refrain from introducing new such subsidies, recognizing that appropriate and effective special and differential treatment for developing and least developed countries should be an integral part of the World Trade Organization fisheries subsidies negotiation.		
14.7 By 2030, increase the economic benefits to Small Island Developing States and least developed countries from the sustainable use of marine resources, including through sustainable management of fisheries, aquaculture, and tourism.		
Mentioned in the convention and/or is a resolution in place?		X
Do they have a special fund for developing countries (Pentz et al., 2018)?		X
Is there a process to aid developing states financially (Pentz et al., 2018)?	X	
Are they taking developing countries' interests into account in any way?		X
Are they considering special requirements?	X	
Is there a noted difference in allocation or fees between developing and developed countries (Pentz et al., 2018)?	X	
Is there a special allocation for developing countries (Pentz et al., 2018)?		X

GFCM

14.1 By 2025 prevent and significantly reduce marine pollution of all kinds, in particular from land-based activities, including marine debris and nutrient pollution.	Yes	No
Mentioned in convention and/or is a resolution in place?		X
Convention mandates monitoring or controlling ALDFG** (Gilman, 2015)?		X
Logbook and/or observer data collection protocols call for reporting ALDG (Gilman & Kingma, 2013)?		X
At least one measure related to monitoring or controlling ALDFG (Gilman, 2015)?	X	
14.2 By 2020, sustainably manage and protect marine and coastal ecosystems to avoid significant adverse impacts, including by strengthening their resilience and take action for their restoration in order to achieve healthy and productive oceans.		
Precautionary approach		
Mentioned in convention and/or is a resolution in place?	X	
Are they applying a precautionary approach (de Bruyn et al., 2013)?	X	
Do they have a resolution on best scientific advice?		X
Are they considering new and exploratory fisheries?		X
Have they implemented Management Strategy Evaluations (Nakatsuka, 2017b)?		X
Does the RFMO acknowledge climate change (Pentz et al., 2018)?	X	
Ecosystem approach		
Mentioned in the convention and/or is a resolution in place?	X	
Are they applying an ecosystem approach(Juan-Jordá et al., 2017)?	X	
Do they have general bycatch measures?		X
Do they have resolutions for non-target species?		X
Do they have measures for seabird?	X	
Do they have measures for marine mammals?	X	
Do they have measures for turtles?	X	
Do they have measures for sharks?	X	
Do they have measures for certain types of fishing (e.g. bottom fishing, driftnet fishing, FADs)?	X	
14.3 Minimize and address the impacts of ocean acidification, including through enhanced scientific cooperation at all levels.		
14.4 By 2020, effectively regulate harvesting, and end overfishing, illegal, unreported and unregulated (IUU) fishing and destructive fishing practices implement science-based management plans, in order to restore fish stocks in the shortest time feasible, at least to levels that can produce maximum sustainable yield as determined by their biological characteristics.		
Mentioned in the convention and/or is a resolution in place about IUU fishing?	X	

Do they have an IUU vessel list?	X	
Do they have vessels on their IUU vessel list?	X	
Do they have links to the IUU lists of other RFMOs?		X
Do they have port state measures in place?	X	
Do they have trade measures?		X
Do they have measures on a catch documentation scheme or a video monitoring system?	X	
Do they have a resolution on transhipment (Ewell et al., 2017)?	X	
14.5 By 2020, conserve at least 10 percent of coastal and marine areas, consistent with national and international law and based on the best available scientific information.		
Mentioned in the convention and/or is a resolution in pace?		X
Have any closures been installed (Pentz et al., 2018)?	X	
Do they have MPAs (Pentz et al., 2018)?	X	
Have no-take MPAs been established (Pentz et al., 2018)?		X
Are they committed to a representative system?		X
Do they have VMEs?	X	
Do they have general habitat protection measures?	X	
14.6 By 2020, prohibit certain forms of fisheries subsidies which contribute to overcapacity and overfishing, and eliminate subsidies that contribute to IUU fishing and refrain from introducing new such subsidies, recognizing that appropriate and effective special and differential treatment for developing and least developed countries should be an integral part of the World Trade Organization fisheries subsidies negotiation.		
14.7 By 2030, increase the economic benefits to Small Island Developing States and least developed countries from the sustainable use of marine resources, including through sustainable management of fisheries, aquaculture, and tourism.		
Mentioned in the convention and/or is a resolution in place?	X	
Do they have a special fund for developing countries (Pentz et al., 2018)?	X	
Is there a process to aid developing states financially (Pentz et al., 2018)?	X	
Are they taking developing countries' interests into account in any way?	X	
Are they considering special requirements?	X	
Is there a noted difference in allocation or fees between developing and developed countries (Pentz et al., 2018)?	X	
Is there a special allocation for developing countries (Pentz et al., 2018)?		X

IATTC

14.1 By 2025 prevent and significantly reduce marine pollution of all kinds, in particular from land-based activities, including marine debris and nutrient pollution.	Yes	No
Mentioned in convention and/or is a resolution in place?		X
Convention mandates monitoring or controlling ALDFG** (Gilman, 2015)?	X	
Logbook and/or observer data collection protocols call for reporting ALDG (Gilman & Kingma, 2013)?	X	
At least one measure related to monitoring or controlling ALDFG (Gilman, 2015)?		X
14.2 By 2020, sustainably manage and protect marine and coastal ecosystems to avoid significant adverse impacts, including by strengthening their resilience and take action for their restoration in order to achieve healthy and productive oceans.		
Precautionary approach		
Mentioned in convention and/or is a resolution in place?	X	
Are they applying a precautionary approach (de Bruyn et al., 2013)?	X	
Do they have a resolution on best scientific advice?	X	
Are they considering new and exploratory fisheries?		X
Have they implemented Management Strategy Evaluations (Nakatsuka, 2017b)?		X
Does the RFMO acknowledge climate change (Pentz et al., 2018)?		X
Ecosystem approach		
Mentioned in the convention and/or is a resolution in place?		X
Are they applying an ecosystem approach(Juan-Jordá et al., 2017)?	X	
Do they have general bycatch measures?	X	
Do they have resolutions for non-target species?	X	
Do they have measures for seabird?	X	
Do they have measures for marine mammals?	X	
Do they have measures for turtles?	X	
Do they have measures for sharks?	X	
Do they have measures for certain types of fishing (e.g. bottom fishing, driftnet fishing, FADs)?	X	
14.3 Minimize and address the impacts of ocean acidification, including through enhanced scientific cooperation at all levels.		
14.4 By 2020, effectively regulate harvesting, and end overfishing, illegal, unreported and unregulated (IUU) fishing and destructive fishing practices implement science-based management plans, in order to restore fish stocks in the shortest time feasible, at least to levels that can produce maximum sustainable yield as determined by their biological characteristics.		
Mentioned in the convention and/or is a resolution in place about IUU fishing?		X

Do they have an IUU vessel list?	X	
Do they have vessels on their IUU vessel list?	X	
Do they have links to the IUU lists of other RFMOs?		X
Do they have port state measures in place?		X
Do they have trade measures?	X	
Do they have measures on a catch documentation scheme or a video monitoring system?	X	
Do they have a resolution on transhipment (Ewell et al., 2017)?	X	
14.5 By 2020, conserve at least 10 percent of coastal and marine areas, consistent with national and international law and based on the best available scientific information.		
Mentioned in the convention and/or is a resolution in pace?		X
Have any closures been installed (Pentz et al., 2018)?	X	
Do they have MPAs (Pentz et al., 2018)?		X
Have no-take MPAs been established (Pentz et al., 2018)?		X
Are they committed to a representative system?		X
Do they have VMEs?		X
Do they have general habitat protection measures?		X
14.6 By 2020, prohibit certain forms of fisheries subsidies which contribute to overcapacity and overfishing, and eliminate subsidies that contribute to IUU fishing and refrain from introducing new such subsidies, recognizing that appropriate and effective special and differential treatment for developing and least developed countries should be an integral part of the World Trade Organization fisheries subsidies negotiation.		
14.7 By 2030, increase the economic benefits to Small Island Developing States and least developed countries from the sustainable use of marine resources, including through sustainable management of fisheries, aquaculture, and tourism.		
Mentioned in the convention and/or is a resolution in place?	X	
Do they have a special fund for developing countries (Pentz et al., 2018)?	X	
Is there a process to aid developing states financially (Pentz et al., 2018)?		X
Are they taking developing countries' interests into account in any way?	X	
Are they considering special requirements?	X	
Is there a noted difference in allocation or fees between developing and developed countries (Pentz et al., 2018)?		X
Is there a special allocation for developing countries (Pentz et al., 2018)?	X	

ICCAT

14.1 By 2025 prevent and significantly reduce marine pollution of all kinds, in particular from land-based activities, including marine debris and nutrient pollution.	Yes	No
Mentioned in convention and/or is a resolution in place?	X	
Convention mandates monitoring or controlling ALDFG** (Gilman, 2015)?		X
Logbook and/or observer data collection protocols call for reporting ALDG (Gilman & Kingma, 2013)?		X
At least one measure related to monitoring or controlling ALDFG (Gilman, 2015)?	X	
14.2 By 2020, sustainably manage and protect marine and coastal ecosystems to avoid significant adverse impacts, including by strengthening their resilience and take action for their restoration in order to achieve healthy and productive oceans.		
Precautionary approach		
Mentioned in convention and/or is a resolution in place?	X	
Are they applying a precautionary approach (de Bruyn et al., 2013)?	X	
Do they have a resolution on best scientific advice?		X
Are they considering new and exploratory fisheries?		X
Have they implemented Management Strategy Evaluations (Nakatsuka, 2017b)?		X
Does the RFMO acknowledge climate change (Pentz et al., 2018)?		X
Ecosystem approach		
Mentioned in the convention and/or is a resolution in place?	X	
Are they applying an ecosystem approach(Juan-Jordá et al., 2017)?	X	
Do they have general bycatch measures?	X	
Do they have resolutions for non-target species?	X	
Do they have measures for seabird?	X	
Do they have measures for marine mammals?		X
Do they have measures for turtles?	X	
Do they have measures for sharks?	X	
Do they have measures for certain types of fishing (e.g. bottom fishing, driftnet fishing, FADs)?		X
14.3 Minimize and address the impacts of ocean acidification, including through enhanced scientific cooperation at all levels.		
14.4 By 2020, effectively regulate harvesting, and end overfishing, illegal, unreported and unregulated (IUU) fishing and destructive fishing practices implement science-based management plans, in order to restore fish stocks in the shortest time feasible, at least to levels that can produce maximum sustainable yield as determined by their biological characteristics.		
Mentioned in the convention and/or is a resolution in place about IUU fishing?		X

Do they have an IUU vessel list?	X	
Do they have vessels on their IUU vessel list?	X	
Do they have links to the IUU lists of other RFMOs?	X	
Do they have port state measures in place?	X	
Do they have trade measures?	X	
Do they have measures on a catch documentation scheme or a video monitoring system?	X	
Do they have a resolution on transhipment (Ewell et al., 2017)?	X	
14.5 By 2020, conserve at least 10 percent of coastal and marine areas, consistent with national and international law and based on the best available scientific information.		
Mentioned in the convention and/or is a resolution in pace?		X
Have any closures been installed (Pentz et al., 2018)?	X	
Do they have MPAs (Pentz et al., 2018)?		X
Have no-take MPAs been established (Pentz et al., 2018)?		X
Are they committed to a representative system?		X
Do they have VMEs?		X
Do they have general habitat protection measures?		X
14.6 By 2020, prohibit certain forms of fisheries subsidies which contribute to overcapacity and overfishing, and eliminate subsidies that contribute to IUU fishing and refrain from introducing new such subsidies, recognizing that appropriate and effective special and differential treatment for developing and least developed countries should be an integral part of the World Trade Organization fisheries subsidies negotiation.		
14.7 By 2030, increase the economic benefits to Small Island Developing States and least developed countries from the sustainable use of marine resources, including through sustainable management of fisheries, aquaculture, and tourism.		
Mentioned in the convention and/or is a resolution in place?		X
Do they have a special fund for developing countries (Pentz et al., 2018)?	X	
Is there a process to aid developing states financially (Pentz et al., 2018)?	X	
Are they taking developing countries' interests into account in any way?	X	
Are they considering special requirements?		X
Is there a noted difference in allocation or fees between developing and developed countries (Pentz et al., 2018)?		X
Is there a special allocation for developing countries (Pentz et al., 2018)?		X

IOTC

14.1 By 2025 prevent and significantly reduce marine pollution of all kinds, in particular from land-based activities, including marine debris and nutrient pollution.	Yes	No
Mentioned in convention and/or is a resolution in place?	X	
Convention mandates monitoring or controlling ALDFG** (Gilman, 2015)?		X
Logbook and/or observer data collection protocols call for reporting ALDG (Gilman & Kingma, 2013)?	X	
At least one measure related to monitoring or controlling ALDFG (Gilman, 2015)?	X	
14.2 By 2020, sustainably manage and protect marine and coastal ecosystems to avoid significant adverse impacts, including by strengthening their resilience and take action for their restoration in order to achieve healthy and productive oceans.		
Precautionary approach		
Mentioned in convention and/or is a resolution in place?	X	
Are they applying a precautionary approach (de Bruyn et al., 2013)?	X	
Do they have a resolution on best scientific advice?	X	
Are they considering new and exploratory fisheries?		X
Have they implemented Management Strategy Evaluations (Nakatsuka, 2017b)?		X
Does the RFMO acknowledge climate change (Pentz et al., 2018)?		X
Ecosystem approach		
Mentioned in the convention and/or is a resolution in place?		X
Are they applying an ecosystem approach(Juan-Jordá et al., 2017)?	X	
Do they have general bycatch measures?		X
Do they have resolutions for non-target species?	X	
Do they have measures for seabird?	X	
Do they have measures for marine mammals?	X	
Do they have measures for turtles?	X	
Do they have measures for sharks?	X	
Do they have measures for certain types of fishing (e.g. bottom fishing, driftnet fishing, FADs)?	X	
14.3 Minimize and address the impacts of ocean acidification, including through enhanced scientific cooperation at all levels.		
14.4 By 2020, effectively regulate harvesting, and end overfishing, illegal, unreported and unregulated (IUU) fishing and destructive fishing practices implement science-based management plans, in order to restore fish stocks in the shortest time feasible, at least to levels that can produce maximum sustainable yield as determined by their biological characteristics.		
Mentioned in the convention and/or is a resolution in place about IUU fishing?		X

Do they have an IUU vessel list?	X	
Do they have vessels on their IUU vessel list?	X	
Do they have links to the IUU lists of other RFMOs?	X	
Do they have port state measures in place?	X	
Do they have trade measures?	X	
Do they have measures on a catch documentation scheme or a video monitoring system?	X	
Do they have a resolution on transhipment (Ewell et al., 2017)?	X	
14.5 By 2020, conserve at least 10 percent of coastal and marine areas, consistent with national and international law and based on the best available scientific information.		
Mentioned in the convention and/or is a resolution in pace?		X
Have any closures been installed (Pentz et al., 2018)?		X
Do they have MPAs (Pentz et al., 2018)?		X
Have no-take MPAs been established (Pentz et al., 2018)?		X
Are they committed to a representative system?		X
Do they have VMEs?		X
Do they have general habitat protection measures?		X
14.6 By 2020, prohibit certain forms of fisheries subsidies which contribute to overcapacity and overfishing, and eliminate subsidies that contribute to IUU fishing and refrain from introducing new such subsidies, recognizing that appropriate and effective special and differential treatment for developing and least developed countries should be an integral part of the World Trade Organization fisheries subsidies negotiation.		
14.7 By 2030, increase the economic benefits to Small Island Developing States and least developed countries from the sustainable use of marine resources, including through sustainable management of fisheries, aquaculture, and tourism.		
Mentioned in the convention and/or is a resolution in place?	X	
Do they have a special fund for developing countries (Pentz et al., 2018)?	X	
Is there a process to aid developing states financially (Pentz et al., 2018)?	X	
Are they taking developing countries' interests into account in any way?	X	
Are they considering special requirements?	X	
Is there a noted difference in allocation or fees between developing and developed countries (Pentz et al., 2018)?	X	
Is there a special allocation for developing countries (Pentz et al., 2018)?	X	

NAFO

14.1 By 2025 prevent and significantly reduce marine pollution of all kinds, in particular from land-based activities, including marine debris and nutrient pollution.	Yes	No
Mentioned in convention and/or is a resolution in place?		X
Convention mandates monitoring or controlling ALDFG** (Gilman, 2015)?	X	
Logbook and/or observer data collection protocols call for reporting ALDG (Gilman & Kingma, 2013)?	X	
At least one measure related to monitoring or controlling ALDFG (Gilman, 2015)?	X	
14.2 By 2020, sustainably manage and protect marine and coastal ecosystems to avoid significant adverse impacts, including by strengthening their resilience and take action for their restoration in order to achieve healthy and productive oceans.		
Precautionary approach		
Mentioned in convention and/or is a resolution in place?		X
Are they applying a precautionary approach (de Bruyn et al., 2013)?	X	
Do they have a resolution on best scientific advice?		X
Are they considering new and exploratory fisheries?	X	
Have they implemented Management Strategy Evaluations (Nakatsuka, 2017b)?	X	
Does the RFMO acknowledge climate change (Pentz et al., 2018)?	X	
Ecosystem approach		
Mentioned in the convention and/or is a resolution in place?		X
Are they applying an ecosystem approach(Juan-Jordá et al., 2017)?	X	
Do they have general bycatch measures?	X	X
Do they have resolutions for non-target species?		X
Do they have measures for seabird?		X
Do they have measures for marine mammals?		X
Do they have measures for turtles?		X
Do they have measures for sharks?	X	
Do they have measures for certain types of fishing (e.g. bottom fishing, driftnet fishing, FADs)?	X	
14.3 Minimize and address the impacts of ocean acidification, including through enhanced scientific cooperation at all levels.		
14.4 By 2020, effectively regulate harvesting, and end overfishing, illegal, unreported and unregulated (IUU) fishing and destructive fishing practices implement science-based management plans, in order to restore fish stocks in the shortest time feasible, at least to levels that can produce maximum sustainable yield as determined by their biological characteristics.		
Mentioned in the convention and/or is a resolution in place about IUU fishing?		X

Do they have an IUU vessel list?	X	
Do they have vessels on their IUU vessel list?	X	
Do they have links to the IUU lists of other RFMOs?	X	
Do they have port state measures in place?	X	
Do they have trade measures?		X
Do they have measures on a catch documentation scheme or a video monitoring system?	X	
Do they have a resolution on transhipment (Ewell et al., 2017)?		X
14.5 By 2020, conserve at least 10 percent of coastal and marine areas, consistent with national and international law and based on the best available scientific information.		
Mentioned in the convention and/or is a resolution in pace?		X
Have any closures been installed (Pentz et al., 2018)?	X	
Do they have MPAs (Pentz et al., 2018)?	X	
Have no-take MPAs been established (Pentz et al., 2018)?		X
Are they committed to a representative system?		X
Do they have VMEs?	X	
Do they have general habitat protection measures?		X
14.6 By 2020, prohibit certain forms of fisheries subsidies which contribute to overcapacity and overfishing, and eliminate subsidies that contribute to IUU fishing and refrain from introducing new such subsidies, recognizing that appropriate and effective special and differential treatment for developing and least developed countries should be an integral part of the World Trade Organization fisheries subsidies negotiation.		
14.7 By 2030, increase the economic benefits to Small Island Developing States and least developed countries from the sustainable use of marine resources, including through sustainable management of fisheries, aquaculture, and tourism.		
Mentioned in the convention and/or is a resolution in place?		X
Do they have a special fund for developing countries (Pentz et al., 2018)?		X
Is there a process to aid developing states financially (Pentz et al., 2018)?		X
Are they taking developing countries' interests into account in any way?	X	
Are they considering special requirements?		X
Is there a noted difference in allocation or fees between developing and developed countries (Pentz et al., 2018)?		X
Is there a special allocation for developing countries (Pentz et al., 2018)?		X

NEAFC

14.1 By 2025 prevent and significantly reduce marine pollution of all kinds, in particular from land-based activities, including marine debris and nutrient pollution.	Yes	No
Mentioned in convention and/or is a resolution in place?		X
Convention mandates monitoring or controlling ALDFG** (Gilman, 2015)?		X
Logbook and/or observer data collection protocols call for reporting ALDG (Gilman & Kingma, 2013)?	X	
At least one measure related to monitoring or controlling ALDFG (Gilman, 2015)?	X	
14.2 By 2020, sustainably manage and protect marine and coastal ecosystems to avoid significant adverse impacts, including by strengthening their resilience and take action for their restoration in order to achieve healthy and productive oceans.		
Precautionary approach		
Mentioned in convention and/or is a resolution in place?	X	
Are they applying a precautionary approach (de Bruyn et al., 2013)?	X	
Do they have a resolution on best scientific advice?		X
Are they considering new and exploratory fisheries?	X	
Have they implemented Management Strategy Evaluations (Nakatsuka, 2017b)?		X
Does the RFMO acknowledge climate change (Pentz et al., 2018)?		X
Ecosystem approach		
Mentioned in the convention and/or is a resolution in place?		X
Are they applying an ecosystem approach(Juan-Jordá et al., 2017)?	X	
Do they have general bycatch measures?		X
Do they have resolutions for non-target species?	X	
Do they have measures for seabird?		X
Do they have measures for marine mammals?		X
Do they have measures for turtles?		X
Do they have measures for sharks?	X	
Do they have measures for certain types of fishing (e.g. bottom fishing, driftnet fishing, FADs)?	X	
14.3 Minimize and address the impacts of ocean acidification, including through enhanced scientific cooperation at all levels.		
14.4 By 2020, effectively regulate harvesting, and end overfishing, illegal, unreported and unregulated (IUU) fishing and destructive fishing practices implement science-based management plans, in order to restore fish stocks in the shortest time feasible, at least to levels that can produce maximum sustainable yield as determined by their biological characteristics.		
Mentioned in the convention and/or is a resolution in place about IUU fishing?		X

Do they have an IUU vessel list?	X	
Do they have vessels on their IUU vessel list?	X	
Do they have links to the IUU lists of other RFMOs?		X
Do they have port state measures in place?	X	
Do they have trade measures?		X
Do they have measures on a catch documentation scheme or a video monitoring system?	X	
Do they have a resolution on transhipment (Ewell et al., 2017)?		X
14.5 By 2020, conserve at least 10 percent of coastal and marine areas, consistent with national and international law and based on the best available scientific information.		
Mentioned in the convention and/or is a resolution in pace?		X
Have any closures been installed (Pentz et al., 2018)?	X	
Do they have MPAs (Pentz et al., 2018)?	X	
Have no-take MPAs been established (Pentz et al., 2018)?		X
Are they committed to a representative system?		X
Do they have VMEs?	X	
Do they have general habitat protection measures?		X
14.6 By 2020, prohibit certain forms of fisheries subsidies which contribute to overcapacity and overfishing, and eliminate subsidies that contribute to IUU fishing and refrain from introducing new such subsidies, recognizing that appropriate and effective special and differential treatment for developing and least developed countries should be an integral part of the World Trade Organization fisheries subsidies negotiation.		
14.7 By 2030, increase the economic benefits to Small Island Developing States and least developed countries from the sustainable use of marine resources, including through sustainable management of fisheries, aquaculture, and tourism.		
Mentioned in the convention and/or is a resolution in place?		X
Do they have a special fund for developing countries (Pentz et al., 2018)?		X
Is there a process to aid developing states financially (Pentz et al., 2018)?		X
Are they taking developing countries' interests into account in any way?	X	
Are they considering special requirements?		X
Is there a noted difference in allocation or fees between developing and developed countries (Pentz et al., 2018)?		X
Is there a special allocation for developing countries (Pentz et al., 2018)?		X

NPFC

14.1 By 2025 prevent and significantly reduce marine pollution of all kinds, in particular from land-based activities, including marine debris and nutrient pollution.	Yes	No
Mentioned in convention and/or is a resolution in place?	X	
Convention mandates monitoring or controlling ALDFG** (Gilman, 2015)?	X	
Logbook and/or observer data collection protocols call for reporting ALDG (Gilman & Kingma, 2013)?		X
At least one measure related to monitoring or controlling ALDFG (Gilman, 2015)?		X
14.2 By 2020, sustainably manage and protect marine and coastal ecosystems to avoid significant adverse impacts, including by strengthening their resilience and take action for their restoration in order to achieve healthy and productive oceans.		
Precautionary approach		
Mentioned in convention and/or is a resolution in place?	X	
Are they applying a precautionary approach (de Bruyn et al., 2013)?	X	
Do they have a resolution on best scientific advice?		X
Are they considering new and exploratory fisheries?	X	
Have they implemented Management Strategy Evaluations (Nakatsuka, 2017b)?		X
Does the RFMO acknowledge climate change (Pentz et al., 2018)?		X
Ecosystem approach		
Mentioned in the convention and/or is a resolution in place?	X	
Are they applying an ecosystem approach(Juan-Jordá et al., 2017)?	X	
Do they have general bycatch measures?		X
Do they have resolutions for non-target species?		X
Do they have measures for seabird?		X
Do they have measures for marine mammals?		X
Do they have measures for turtles?		X
Do they have measures for sharks?		X
Do they have measures for certain types of fishing (e.g. bottom fishing, driftnet fishing, FADs)?	X	
14.3 Minimize and address the impacts of ocean acidification, including through enhanced scientific cooperation at all levels.		
14.4 By 2020, effectively regulate harvesting, and end overfishing, illegal, unreported and unregulated (IUU) fishing and destructive fishing practices implement science-based management plans, in order to restore fish stocks in the shortest time feasible, at least to levels that can produce maximum sustainable yield as determined by their biological characteristics.		
Mentioned in the convention and/or is a resolution in place about IUU fishing?	X	

Do they have an IUU vessel list?	X	
Do they have vessels on their IUU vessel list?	X	
Do they have links to the IUU lists of other RFMOs?	X	
Do they have port state measures in place?	X	
Do they have trade measures?		X
Do they have measures on a catch documentation scheme or a video monitoring system?		X
Do they have a resolution on transhipment (Ewell et al., 2017)?	X	
14.5 By 2020, conserve at least 10 percent of coastal and marine areas, consistent with national and international law and based on the best available scientific information.		
Mentioned in the convention and/or is a resolution in pace?		X
Have any closures been installed (Pentz et al., 2018)?	X	
Do they have MPAs (Pentz et al., 2018)?		X
Have no-take MPAs been established (Pentz et al., 2018)?		X
Are they committed to a representative system?		X
Do they have VMEs?	X	
Do they have general habitat protection measures?		X
14.6 By 2020, prohibit certain forms of fisheries subsidies which contribute to overcapacity and overfishing, and eliminate subsidies that contribute to IUU fishing and refrain from introducing new such subsidies, recognizing that appropriate and effective special and differential treatment for developing and least developed countries should be an integral part of the World Trade Organization fisheries subsidies negotiation.		
14.7 By 2030, increase the economic benefits to Small Island Developing States and least developed countries from the sustainable use of marine resources, including through sustainable management of fisheries, aquaculture, and tourism.		
Mentioned in the convention and/or is a resolution in place?	X	
Do they have a special fund for developing countries (Pentz et al., 2018)?	X	
Is there a process to aid developing states financially (Pentz et al., 2018)?	X	
Are they taking developing countries' interests into account in any way?	X	
Are they considering special requirements?	X	
Is there a noted difference in allocation or fees between developing and developed countries (Pentz et al., 2018)?	X	
Is there a special allocation for developing countries (Pentz et al., 2018)?	X	

SEAFO

14.1 By 2025 prevent and significantly reduce marine pollution of all kinds, in particular from land-based activities, including marine debris and nutrient pollution.	Yes	No
Mentioned in convention and/or is a resolution in place?		X
Convention mandates monitoring or controlling ALDFG** (Gilman, 2015)?		X
Logbook and/or observer data collection protocols call for reporting ALDG (Gilman & Kingma, 2013)?	X	
At least one measure related to monitoring or controlling ALDFG (Gilman, 2015)?	X	
14.2 By 2020, sustainably manage and protect marine and coastal ecosystems to avoid significant adverse impacts, including by strengthening their resilience and take action for their restoration in order to achieve healthy and productive oceans.		
Precautionary approach		
Mentioned in convention and/or is a resolution in place?	X	
Are they applying a precautionary approach (de Bruyn et al., 2013)?	X	
Do they have a resolution on best scientific advice?		X
Are they considering new and exploratory fisheries?	X	
Have they implemented Management Strategy Evaluations (Nakatsuka, 2017b)?		X
Does the RFMO acknowledge climate change (Pentz et al., 2018)?		X
Ecosystem approach		
Mentioned in the convention and/or is a resolution in place?		X
Are they applying an ecosystem approach(Juan-Jordá et al., 2017)?		X
Do they have general bycatch measures?		X
Do they have resolutions for non-target species?	X	
Do they have measures for seabird?	X	
Do they have measures for marine mammals?		X
Do they have measures for turtles?	X	
Do they have measures for sharks?	X	
Do they have measures for certain types of fishing (e.g. bottom fishing, driftnet fishing, FADs)?	X	
14.3 Minimize and address the impacts of ocean acidification, including through enhanced scientific cooperation at all levels.		
14.4 By 2020, effectively regulate harvesting, and end overfishing, illegal, unreported and unregulated (IUU) fishing and destructive fishing practices implement science-based management plans, in order to restore fish stocks in the shortest time feasible, at least to levels that can produce maximum sustainable yield as determined by their biological characteristics.		
Mentioned in the convention and/or is a resolution in place about IUU fishing?		X

Do they have an IUU vessel list?	X	
Do they have vessels on their IUU vessel list?	X	
Do they have links to the IUU lists of other RFMOs?	X	
Do they have port state measures in place?	X	
Do they have trade measures?		X
Do they have measures on a catch documentation scheme or a video monitoring system?		X
Do they have a resolution on transhipment (Ewell et al., 2017)?	X	
14.5 By 2020, conserve at least 10 percent of coastal and marine areas, consistent with national and international law and based on the best available scientific information.		
Mentioned in the convention and/or is a resolution in pace?		X
Have any closures been installed (Pentz et al., 2018)?	X	
Do they have MPAs (Pentz et al., 2018)?	X	
Have no-take MPAs been established (Pentz et al., 2018)?		X
Are they committed to a representative system?		X
Do they have VMEs?	X	
Do they have general habitat protection measures?		X
14.6 By 2020, prohibit certain forms of fisheries subsidies which contribute to overcapacity and overfishing, and eliminate subsidies that contribute to IUU fishing and refrain from introducing new such subsidies, recognizing that appropriate and effective special and differential treatment for developing and least developed countries should be an integral part of the World Trade Organization fisheries subsidies negotiation.		
14.7 By 2030, increase the economic benefits to Small Island Developing States and least developed countries from the sustainable use of marine resources, including through sustainable management of fisheries, aquaculture, and tourism.		
Mentioned in the convention and/or is a resolution in place?	X	
Do they have a special fund for developing countries (Pentz et al., 2018)?	X	
Is there a process to aid developing states financially (Pentz et al., 2018)?	X	
Are they taking developing countries' interests into account in any way?	X	
Are they considering special requirements?	X	
Is there a noted difference in allocation or fees between developing and developed countries (Pentz et al., 2018)?	X	
Is there a special allocation for developing countries (Pentz et al., 2018)?	X	

SIOFA

14.1 By 2025 prevent and significantly reduce marine pollution of all kinds, in particular from land-based activities, including marine debris and nutrient pollution.	Yes	No
Mentioned in convention and/or is a resolution in place?		X
Convention mandates monitoring or controlling ALDFG** (Gilman, 2015)?		X
Logbook and/or observer data collection protocols call for reporting ALDG (Gilman & Kingma, 2013)?		X
At least one measure related to monitoring or controlling ALDFG (Gilman, 2015)?		X
14.2 By 2020, sustainably manage and protect marine and coastal ecosystems to avoid significant adverse impacts, including by strengthening their resilience and take action for their restoration in order to achieve healthy and productive oceans.		
Precautionary approach		
Mentioned in convention and/or is a resolution in place?	X	
Are they applying a precautionary approach (de Bruyn et al., 2013)?	X	
Do they have a resolution on best scientific advice?		X
Are they considering new and exploratory fisheries?		X
Have they implemented Management Strategy Evaluations (Nakatsuka, 2017b)?		X
Does the RFMO acknowledge climate change (Pentz et al., 2018)?		X
Ecosystem approach		
Mentioned in the convention and/or is a resolution in place?	X	
Are they applying an ecosystem approach(Juan-Jordá et al., 2017)?	X	
Do they have general bycatch measures?		X
Do they have resolutions for non-target species?		X
Do they have measures for seabird?		X
Do they have measures for marine mammals?		X
Do they have measures for turtles?		X
Do they have measures for sharks?		X
Do they have measures for certain types of fishing (e.g. bottom fishing, driftnet fishing, FADs)?	X	
14.3 Minimize and address the impacts of ocean acidification, including through enhanced scientific cooperation at all levels.		
14.4 By 2020, effectively regulate harvesting, and end overfishing, illegal, unreported and unregulated (IUU) fishing and destructive fishing practices implement science-based management plans, in order to restore fish stocks in the shortest time feasible, at least to levels that can produce maximum sustainable yield as determined by their biological characteristics.		
Mentioned in the convention and/or is a resolution in place about IUU fishing?	X	

Do they have an IUU vessel list?	X	
Do they have vessels on their IUU vessel list?		X
Do they have links to the IUU lists of other RFMOs?	X	
Do they have port state measures in place?	X	
Do they have trade measures?		X
Do they have measures on a catch documentation scheme or a video monitoring system?	X	
Do they have a resolution on transhipment (Ewell et al., 2017)?		X
14.5 By 2020, conserve at least 10 percent of coastal and marine areas, consistent with national and international law and based on the best available scientific information.		
Mentioned in the convention and/or is a resolution in pace?		X
Have any closures been installed (Pentz et al., 2018)?	X	
Do they have MPAs (Pentz et al., 2018)?		X
Have no-take MPAs been established (Pentz et al., 2018)?		X
Are they committed to a representative system?		X
Do they have VMEs?		X
Do they have general habitat protection measures?		X
14.6 By 2020, prohibit certain forms of fisheries subsidies which contribute to overcapacity and overfishing, and eliminate subsidies that contribute to IUU fishing and refrain from introducing new such subsidies, recognizing that appropriate and effective special and differential treatment for developing and least developed countries should be an integral part of the World Trade Organization fisheries subsidies negotiation.		
14.7 By 2030, increase the economic benefits to Small Island Developing States and least developed countries from the sustainable use of marine resources, including through sustainable management of fisheries, aquaculture, and tourism.		
Mentioned in the convention and/or is a resolution in place?	X	
Do they have a special fund for developing countries (Pentz et al., 2018)?	X	
Is there a process to aid developing states financially (Pentz et al., 2018)?	X	
Are they taking developing countries' interests into account in any way?	X	
Are they considering special requirements?	X	
Is there a noted difference in allocation or fees between developing and developed countries (Pentz et al., 2018)?		X
Is there a special allocation for developing countries (Pentz et al., 2018)?		X

SPRFMO

14.1 By 2025 prevent and significantly reduce marine pollution of all kinds, in particular from land-based activities, including marine debris and nutrient pollution.	Yes	No
Mentioned in convention and/or is a resolution in place?	X	
Convention mandates monitoring or controlling ALDFG** (Gilman, 2015)?	X	
Logbook and/or observer data collection protocols call for reporting ALDG (Gilman & Kingma, 2013)?	X	
At least one measure related to monitoring or controlling ALDFG (Gilman, 2015)?	X	
14.2 By 2020, sustainably manage and protect marine and coastal ecosystems to avoid significant adverse impacts, including by strengthening their resilience and take action for their restoration in order to achieve healthy and productive oceans.		
Precautionary approach		
Mentioned in convention and/or is a resolution in place?	X	
Are they applying a precautionary approach (de Bruyn et al., 2013)?	X	
Do they have a resolution on best scientific advice?		X
Are they considering new and exploratory fisheries?	X	
Have they implemented Management Strategy Evaluations (Nakatsuka, 2017b)?		X
Does the RFMO acknowledge climate change (Pentz et al., 2018)?		X
Ecosystem approach		
Mentioned in the convention and/or is a resolution in place?	X	
Are they applying an ecosystem approach(Juan-Jordá et al., 2017)?	X	
Do they have general bycatch measures?		X
Do they have resolutions for non-target species?	X	
Do they have measures for seabird?	X	
Do they have measures for marine mammals?		X
Do they have measures for turtles?		X
Do they have measures for sharks?		X
Do they have measures for certain types of fishing (e.g. bottom fishing, driftnet fishing, FADs)?	X	
14.3 Minimize and address the impacts of ocean acidification, including through enhanced scientific cooperation at all levels.		
14.4 By 2020, effectively regulate harvesting, and end overfishing, illegal, unreported and unregulated (IUU) fishing and destructive fishing practices implement science-based management plans, in order to restore fish stocks in the shortest time feasible, at least to levels that can produce maximum sustainable yield as determined by their biological characteristics.		
Mentioned in the convention and/or is a resolution in place about IUU fishing?	X	

Do they have an IUU vessel list?	X	
Do they have vessels on their IUU vessel list?	X	
Do they have links to the IUU lists of other RFMOs?	X	
Do they have port state measures in place?	X	
Do they have trade measures?		X
Do they have measures on a catch documentation scheme or a video monitoring system?	X	
Do they have a resolution on transhipment (Ewell et al., 2017)?	X	
14.5 By 2020, conserve at least 10 percent of coastal and marine areas, consistent with national and international law and based on the best available scientific information.		
Mentioned in the convention and/or is a resolution in pace?	X	
Have any closures been installed (Pentz et al., 2018)?		X
Do they have MPAs (Pentz et al., 2018)?		X
Have no-take MPAs been established (Pentz et al., 2018)?		X
Are they committed to a representative system?		X
Do they have VMEs?	X	
Do they have general habitat protection measures?	X	
14.6 By 2020, prohibit certain forms of fisheries subsidies which contribute to overcapacity and overfishing, and eliminate subsidies that contribute to IUU fishing and refrain from introducing new such subsidies, recognizing that appropriate and effective special and differential treatment for developing and least developed countries should be an integral part of the World Trade Organization fisheries subsidies negotiation.		
14.7 By 2030, increase the economic benefits to Small Island Developing States and least developed countries from the sustainable use of marine resources, including through sustainable management of fisheries, aquaculture, and tourism.		
Mentioned in the convention and/or is a resolution in place?	X	
Do they have a special fund for developing countries (Pentz et al., 2018)?	X	
Is there a process to aid developing states financially (Pentz et al., 2018)?	X	
Are they taking developing countries' interests into account in any way?	X	
Are they considering special requirements?	X	
Is there a noted difference in allocation or fees between developing and developed countries (Pentz et al., 2018)?	X	
Is there a special allocation for developing countries (Pentz et al., 2018)?	X	

WCPFC

14.1 By 2025 prevent and significantly reduce marine pollution of all kinds, in particular from land-based activities, including marine debris and nutrient pollution.	Yes	No
Mentioned in convention and/or is a resolution in place?	X	
Convention mandates monitoring or controlling ALDFG** (Gilman, 2015)?	X	
Logbook and/or observer data collection protocols call for reporting ALDG (Gilman & Kingma, 2013)?	X	
At least one measure related to monitoring or controlling ALDFG (Gilman, 2015)?	X	
14.2 By 2020, sustainably manage and protect marine and coastal ecosystems to avoid significant adverse impacts, including by strengthening their resilience and take action for their restoration in order to achieve healthy and productive oceans.		
Precautionary approach		
Mentioned in convention and/or is a resolution in place?	X	
Are they applying a precautionary approach (de Bruyn et al., 2013)?	X	
Do they have a resolution on best scientific advice?	X	
Are they considering new and exploratory fisheries?	X	
Have they implemented Management Strategy Evaluations (Nakatsuka, 2017b)?		X
Does the RFMO acknowledge climate change (Pentz et al., 2018)?		X
Ecosystem approach		
Mentioned in the convention and/or is a resolution in place?	X	
Are they applying an ecosystem approach(Juan-Jordá et al., 2017)?	X	
Do they have general bycatch measures?	X	
Do they have resolutions for non-target species?	X	
Do they have measures for seabird?	X	
Do they have measures for marine mammals?	X	
Do they have measures for turtles?	X	
Do they have measures for sharks?	X	
Do they have measures for certain types of fishing (e.g. bottom fishing, driftnet fishing, FADs)?	X	
14.3 Minimize and address the impacts of ocean acidification, including through enhanced scientific cooperation at all levels.		
14.4 By 2020, effectively regulate harvesting, and end overfishing, illegal, unreported and unregulated (IUU) fishing and destructive fishing practices implement science-based management plans, in order to restore fish stocks in the shortest time feasible, at least to levels that can produce maximum sustainable yield as determined by their biological characteristics.		
Mentioned in the convention and/or is a resolution in place about IUU fishing?	X	

Do they have an IUU vessel list?	X	
Do they have vessels on their IUU vessel list?	X	
Do they have links to the IUU lists of other RFMOs?		X
Do they have port state measures in place?	X	
Do they have trade measures?		X
Do they have measures on a catch documentation scheme or a video monitoring system?	X	
Do they have a resolution on transhipment (Ewell et al., 2017)?	X	
14.5 By 2020, conserve at least 10 percent of coastal and marine areas, consistent with national and international law and based on the best available scientific information.		
Mentioned in the convention and/or is a resolution in pace?		X
Have any closures been installed (Pentz et al., 2018)?	X	
Do they have MPAs (Pentz et al., 2018)?		X
Have no-take MPAs been established (Pentz et al., 2018)?		X
Are they committed to a representative system?		X
Do they have VMEs?		X
Do they have general habitat protection measures?	X	
14.6 By 2020, prohibit certain forms of fisheries subsidies which contribute to overcapacity and overfishing, and eliminate subsidies that contribute to IUU fishing and refrain from introducing new such subsidies, recognizing that appropriate and effective special and differential treatment for developing and least developed countries should be an integral part of the World Trade Organization fisheries subsidies negotiation.		
14.7 By 2030, increase the economic benefits to Small Island Developing States and least developed countries from the sustainable use of marine resources, including through sustainable management of fisheries, aquaculture, and tourism.		
Mentioned in the convention and/or is a resolution in place?	X	
Do they have a special fund for developing countries (Pentz et al., 2018)?	X	
Is there a process to aid developing states financially (Pentz et al., 2018)?	X	
Are they taking developing countries' interests into account in any way?	X	
Are they considering special requirements?	X	
Is there a noted difference in allocation or fees between developing and developed countries (Pentz et al., 2018)?	X	
Is there a special allocation for developing countries (Pentz et al., 2018)?		X

C4 – This table summarizes the number of RFMOs which had measures in place for the respective criteria

14.1 By 2025 prevent and significantly reduce marine pollution of all kinds, in particular from land-based activities, including marine debris and nutrient pollution.	**Nr. RFMOs**	**Nr. gRFMOs (8)**	**Nr. tRFMOs (5)**
Mentioned in convention and/or is a resolution in place?	6	3	3
Convention mandates monitoring or controlling ALDFG** (Gilman, 2015)?	5	3	2
Logbook and/or observer data collection protocols call for reporting ALDG (Gilman & Kingma, 2013)?	8	5	3
At least one measure related to monitoring or controlling ALDFG (Gilman, 2015)?	9	6	3
14.2 By 2020, sustainably manage and protect marine and coastal ecosystems to avoid significant adverse impacts, including by strengthening their resilience and take action for their restoration in order to achieve healthy and productive oceans.			
Precautionary approach			
Mentioned in convention and/or is a resolution in place?	11	7	4
Are they applying a precautionary approach (de Bruyn et al., 2013)?	13	8	5
Do they have a resolution on best scientific advice?	4	1	3
Are they considering new and exploratory fisheries?	8	6	2
Have they implemented Management Strategy Evaluations (Nakatsuka, 2017b)?	2	1	1
Does the RFMO acknowledge climate change (Pentz et al., 2018)?	3	3	
Ecosystem approach			
Mentioned in the convention and/or is a resolution in place?	7	5	2
Are they applying an ecosystem approach(Juan-Jordá et al., 2017)?	12	7	5
Do they have general bycatch measures?	6	3	3
Do they have resolutions for non-target species?	9	4	5
Do they have measures for seabird?	9	4	5
Do they have measures for marine mammals?	5	2	3
Do they have measures for turtles?	6	2	4
Do they have measures for sharks?	9	5	4
Do they have measures for certain types of fishing (e.g. bottom fishing, driftnet fishing, FADs)?	12	8	4
14.3 Minimize and address the impacts of ocean acidification, including through enhanced scientific cooperation at all levels.			

14.4 By 2020, effectively regulate harvesting, and end overfishing, illegal, unreported and unregulated (IUU) fishing and destructive fishing practices implement science-based management plans, in order to restore fish stocks in the shortest time feasible, at least to levels that can produce maximum sustainable yield as determined by their biological characteristics.			
Mentioned in the convention and/or is a resolution in place about IUU fishing?	5	4	1
Do they have an IUU vessel list?	13	8	5
Do they have vessels on their IUU vessel list?	11	7	4
Do they have links to the IUU lists of other RFMOs?	8	5	3
Do they have port state measures in place?	12	8	4
Do they have trade measures?	3		3
Do they have measures on a catch documentation scheme or a video monitoring system?	11	6	5
Do they have a resolution on transhipment (Ewell et al., 2017)?	10	5	5
14.5 By 2020, conserve at least 10 percent of coastal and marine areas, consistent with national and international law and based on the best available scientific information.			
Mentioned in the convention and/or is a resolution in pace?	2	2	
Have any closures been installed (Pentz et al., 2018)?	10	7	3
Do they have MPAs (Pentz et al., 2018)?	5	5	
Have no-take MPAs been established (Pentz et al., 2018)?	1	1	
Are they committed to a representative system?	1	1	
Do they have VMEs?	7	7	
Do they have general habitat protection measures?	4	3	1
14.6 By 2020, prohibit certain forms of fisheries subsidies which contribute to overcapacity and overfishing, and eliminate subsidies that contribute to IUU fishing and refrain from introducing new such subsidies, recognizing that appropriate and effective special and differential treatment for developing and least developed countries should be an integral part of the World Trade Organization fisheries subsidies negotiation.			
14.7 By 2030, increase the economic benefits to Small Island Developing States and least developed countries from the sustainable use of marine resources, including through sustainable management of fisheries, aquaculture, and tourism.			
Mentioned in the convention and/or is a resolution in place?	8	5	3
Do they have a special fund for developing countries (Pentz et al., 2018)?	10	6	4
Is there a process to aid developing states financially (Pentz et al., 2018)?	10	6	4
Are they taking developing countries' interests into account in any way?	12	8	4

Are they considering special requirements?	10	6	4
Is there a noted difference in allocation or fees between developing and developed countries (Pentz et al., 2018)?	8	5	3
Is there a special allocation for developing countries (Pentz et al., 2018)?	5	3	2

C4 - This table shows the acronyms used in the network plot, their full name and the associated organisation type.

Acronym	Full name	Type
ACAP	Agreement for the Conservation of Albatrosses and Petrels	Conservation
ACCOBAMS	Agreement on the Conservation of Cetaceans of the Black Sea, Mediterranean Sea and Contiguous Atlantic Area	Conservation
IUCN	International Union for the Conservation of Nature	Conservation
IAC	Inter-American Sea Turtle Convention	Conservation
OSPAR	Convention for the Protection of the Marine Environment of the North-East Atlantic	Conservation
COMHAFAT	Ministerial Conference on Fisheries Cooperation among African States bordering the Atlantic Ocean	Intergovernmental
FFA	Pacific Island Forum Fisheries Agency	Intergovernmental
SPREP	Secretariat for the Pacific Regional Environment Programme	Intergovernmental
UNEP	United Nations Environment Programme	Intergovernmental
ICES	International Council for the Exploration of the Sea	Science
ISC	International Scientific Committee for Tuna and Tuna-like Species in the North Pacific Ocean	Science
PICES	North Pacific Marine Science Organization	Science
SPC	Secretariat for the Pacific Community	Science
WWF	World Wildlife Fund	NGO
CPPS	Permanent Commission for the South Pacific	Other
Network_IUU	Network for the Exchange of Information and Shared Experiences Between Latin American and Caribbean Countries to prevent, deter, and eliminated IUU fishing	Other
NPAFC	North Pacific Anadromous Fish Commission	Other
OFCF	Overseas Fisheries Cooperation Foundation of Japan	Other

C5 - This table shows the different organisations and the number of Memorandums of Understandings they have signed.

RFMOs	
CCAMLR	6
GFCM	7
NAFO	1
NEAFC	2
NPFC	2
SEAFO	2
SIOFA	2
SPRFMO	4
CCSBT	5
IATTC	4
ICCAT	1
IOTC	4
WCPFC	10
CONSERVATION	
ACAP	8
ACCOBAMS	1
IUCN	1
IAC	1
OSPAR	1
INTERGOVERNMENTAL	
COMHAFAT	1
FFA	1
SPREP	1
UNEP	1
SCIENCE	
ICES	3
ISC	2
PICES	1
SPC	1

OTHERS	
CPPS	1
Network_IUU	1
NPAFC	2
OFCF	1

Appendix D – Abstracts of published articles

Chapter 1:

Haas, B., Fleming, A., Haward, M., & McGee, J. (2019). Big fishing: the role of the large-scale commercial fishing industry in achieving Sustainable Development Goal 14. *Reviews in Fish Biology and Fisheries*, 29, 161-175. doi: 10.1007/s11160-018-09546-8

Abstract

United Nation's Sustainable Development Goal (SDG) 14 'life below water', is directed to the sustainable use and conservation of the oceans and marine resources. However, there is very limited information available on how the large-scale commercial fishing industry might contribute to the achievement of SDG 14. This paper shows engagement opportunities for the fishing industry, with a focus on fish harvesting, for the different targets of SDG 14. We find that the fish harvesting sector can contribute to almost all SDG 14 targets, except in the prohibition of certain forms of fishing subsidies. The fishing industry has the opportunity to implement practices that, for example, can help to reduce marine pollution or bycatch. More work is needed to provide specific reporting mechanisms for fisheries companies to assess their progress against the other SDGs.

Chapter 3:

Haas, B., McGee, J., Fleming, A., & Haward, M. (2020). Factors influencing the performance of regional fisheries management organizations. *Marine Policy*, 113, 103787. doi: 10.1016/j.marpol.2019.103787

Abstract

A key challenge for humanity is to conserve and sustainably use the earth's oceans and marine resources as millions of people rely on fish for food, income, and well-being. Regional fisheries management organizations (RFMOs) are key players in international fisheries management. However, despite their importance, the ability of these institutions to manage fisheries in a sustainable way and to prevent overfishing has often been questioned. This article aims to provide an overview of issues which impact the RFMOs performance. We conducted an extensive literature review to summarize issues which were mentioned in the peer-reviewed literature. Moreover, we also discuss the impact of new international agreements and processes, such as the Sustainable Development Goals and the currently negotiated agreement for biodiversity beyond national jurisdiction, due to the overlap of themes such as biodiversity protection and sustainable fisheries management. We identified 17 issues which were mentioned in the literature, with the most frequent ones being precautionary and ecosystem approach and decision-making. RFMOs are slowly making progress regarding these issues and some organizations are already applying good practices. This highlights the importance of RFMOs to learn from each other. While the agreement for biodiversity beyond national jurisdiction might potentially impact RFMOs and speed up to the process of applying best practices, the sustainable development goals are less likely to influence RFMOs.

Chapter 4:

Haas, B., Haward, M., McGee., & Fleming, A. (2019). The influence of performance reviews on regional fisheries management organizations. *ICES Journal of Marine Science*, 76, 2082-2089. doi: 10.1093/icesjms/fsz088

Abstract

Regional Fisheries Management Organizations (RFMOs) are key bodies responsible for managing fisheries on the high seas and also in areas of the ocean under national jurisdiction. The performance of RFMOs has, however, become the focus of broad-based criticism in the context of increasing fishing effort, the scale, and sophistication of illegal, unregulated and unreported fishing, and concerns over the wider environmental impacts of fishing activities. In response to these criticisms, the United Nations General Assembly (UNGA) has called on RFMOs to carry out performance reviews to assess their record in fisheries management. Performance reviews can provide the opportunity to assess the strengths and weaknesses of past actions by specific RFMOs. There is, however, limited information and analysis available on the progress made by RFMOs after performance reviews have been carried out. To fill this gap, this paper assesses the performance of five RFMOs that have undergone performance reviews on two occasions. The paper assesses the performance of these five RFMOs against a scoring system that analyses improvements made after the first performance review based on the recommendations made in the second performance review. This analysis is encouraging, as all five RFMOs demonstrated significant improvement in their performance in the period after their initial performance review, especially in 'conservation and management' and 'international cooperation' activities.

Haas, B., Haward, M., McGee, J., & Fleming, A. (2020). Explicit targets and cooperation: regional fisheries management organizations and the sustainable development goals. *International Environmental Agreements: Politics, Law and Economics.* doi: 10.1007/s10784-020-09491-7

Abstract

In 2015, the international community adopted the United Nations Sustainable Development Goals (SDGs), a goal-setting governance strategy that aims to achieve sustainable development across social, economic, and ecological areas. SDG 14 ("life below water") is directed to the sustainable use and conservation of the oceans and marine resources. Regional fisheries management organizations (RFMOs) are key institutions in managing international fisheries and thus have the potential to play a significant role in realizing the attainment of SDG 14. This paper aims to assess how RFMOs could contribute to SDG 14 by examining their treaty texts and implementation of conservation and management measures, or collaborative networks. The results of this paper highlighted the contribution of RFMOs to targets such as ending overfishing and indicated the need for further attention towards area protection. The findings of the network assessment showed that RFMOs mainly cooperate with other RFMOs or fisheries-related organizations, indicating a lack of cooperation with other maritime organizations. Moreover, the objective of most of these collaborations is sharing of information or data, while actions against problems such as the bycatch of non-target species are missing. Thus, this paper highlights how existing regional organisations have the potential to increase their contribution to SDG 14, by aligning more of their work to this goal. To support this process, we developed a list of considerations and actions.

Chapter 5:

Haas, B., Fleming, A., McGee, J., & Haward, M. (2020). Regional fisheries organizations and sustainable development goals 13 and 14: Insights from stakeholders. *Fisheries Research*, 226, 105529. doi: 10.1016/j.fishres.2020.105529

Abstract

The importance of the oceans is highlighted by the United Nations Sustainable Development Goals (SDGs) through SDG 14, that aims to conserve and sustainably use the oceans, seas and marine resources for sustainable use. Regional Fisheries Organizations (RFOs) play a key role in managing fisheries on the high seas and therefore are vital for supporting the successful implementation of SDG 14. SDG 14 is intrinsically linked with SDG 13 (the need to take urgent action to combat climate change and its impacts). As biophysical impacts arise from human-induced climate change affect oceans, and fisheries therein it is important that RFOs take account of such impacts on the management of fisheries. This paper examines the engagement of RFOs with SDG 14 and climate change through an analysis of interviews with 36 RFO stakeholders. The results show that even though there is consensus concerning the importance of climate change and SDG 14, most of the RFOs are not directly engaging with these two SDGs. However, it was stated that the work done by RFOs, to end overfishing, positively contributes to the realization of climate change and SDG 14, although the actions taken by RFOs need to increase in scale and speed if they are to fulfil their responsibility to effectively manage human impacts on ocean resources. Furthermore, member countries play a key role in supporting or resisting progress. This paper contributes to a gap in the literature concerning current perceptions of stakeholders of the issues RFOs are facing concerning the SDG 14 and climate change.

Chapter 6:

Haas, B. (2020). Tuna management in action: assessing the contribution of the WCPFC to the SDGs. *Australian Journal of Maritime & Ocean Affairs*, 12, 42-47. doi: 10.1080/18366503.2020.1726261

Abstract

The tuna fishery in the Western and Central Pacific ranks among the most valuable fisheries in the world and is an important source of income and livelihood in this region. This fishery is managed by the Western and Central Pacific Fisheries Commission (WCPFC), which has the important task to promote sustainable fisheries practices in this area. The sustainable use of marine resources is the objective of one of the 17 United Nations Sustainable Development Goals (SDGs), a global initiative which seeks to achieve a sustainable future. This commentary focuses on the 16th regular session of the Commission of the WCPFC, which convened in December 2019 and aims to link topics which were discussed at this meeting with the objectives of the SDGs

Chapter 7:

Haas, B., Haward, M., McGee, J., & Fleming, A. (2020). Regional Fisheries Management Organizations and the new biodiversity agreement: Challenge or opportunity? *Fish and Fisheries.* doi: 10.1111/faf.12511

Abstract

In 2018, the international community began formal intergovernmental negotiations over a new legally binding instrument for the protection of marine biodiversity of areas beyond national jurisdiction. Protecting marine biodiversity is imperative for a sustainable future and all the different organizations and agreements will have to work together to achieve this common goal. One of the first key principles to be agreed was to 'not undermine' the existing legal instruments or mandates of regional and sectoral marine governance organizations. While fisheries are not being discussed during the negotiations, a marine biodiversity agreement is likely to still impact regional fisheries management organizations, due to overlapping areas of interest. This article aims to firstly, assess the potential constraints posed by the commitment to 'not undermine'; secondly, consider how aspects of the biodiversity agreement, such as area-based management and environmental impact assessments, might enhance regional fisheries management organizations; and thirdly, suggest meaningful ways to ensure cooperation between regional fisheries management organizations and the marine biodiversity agreement.

Appendix E – Additional publications during the PhD

Haas, B., Phillipov, M., & Gale, F. (2020). Media representations of seafood certification in Australia: Mobilising sustainability standards to attack or defend the value of an industry. *Marine Policy.*120:104126. doi: 10.1016/j.marpol.2020.104126

Abstract

Certification schemes respond to increasing environmental and social concerns about sustainability by encouraging consumer demand for 'sustainable' products. Such schemes have been a focus of much media coverage and the seafood sector is no exception with many seafood sustainability issues, including those related to both fisheries and aquaculture management, being widely reported on. This paper analyses how the certification schemes of the two best-known seafood sustainability standards organizations, the Marine Stewardship Council (MSC) and the Aquaculture Stewardship Council (ASC) certification, were presented in news media coverage during a period of conflict surrounding the sustainable production and management of seafood in Australia. Employing a content analysis of Australian online and print news media published between 2015 and 2018, we find that the MSC label was used to highlight the sustainability of fisheries all around Australia, while the ASC label was mainly used in the context of the Tasmanian salmon aquaculture industry, with both labels presented as 'gold standards'. While we also find that ASC certification was used by ENGOs to attack the Tasmanian salmon industry and to question the validity of the ASC label, our data highlight that ASC and MSC certification was primarily used by industry as a tool to demonstrate its sustainability credentials, with the specifics of the certification schemes themselves receiving very little media attention.

Haas, B., Davis, R., & Hanich, Q. (2020). Regional fisheries management: Virtual decision making in a pandemic. *Marine Policy*, 104288. doi:10.1016/j.marpol.2020.104288

Abstract

The global COVID-19 pandemic is impacting on the fisheries sector and posing significant challenges for the management of transboundary fisheries. Due to travel bans and border closures, regional organizations are not able to hold face-to-face meetings. This commentary provides a summary of the meeting procedures of Regional Fisheries Management Organizations and Regional Organizations during the global pandemic. Most organizations have transitioned to online platforms and are holding virtual meetings. These online meetings impose significant challenges concerning sustainable fisheries management, such as limited discussions and negotiations on important issues. Thus, to continue their work effectively, these organizations need to develop new decision-making procedures that are more resilient in the upcoming future.

Haas B., Mackay, M., Novaglio, C., Fullbrook, L., Murunga, M., Sbrocchi, C., McDonald, J., McCormack, P.C., Alexander, K., Fudge, M., Goldsworthy, L., Boschetti, F., Dutton, I., Dutra, L., McGee, J., Rousseau, Y., Spain, E., Stephenson, R., Vince, J., Wilcox, C., & Haward, M. (2021). The future of ocean governance. *Review in Fish Biology and Fisheries*. doi: 10.1007/s11160-020-09631-x

Abstract

Ocean governance is complex and influenced by multiple drivers and actors with different worldviews and goals. While governance encompasses many elements, in this paper we focus on the processes that operate within and between states, civil society and local communities, and the market, including industry. Specifically, in this paper, we address the question of how to move towards more sustainable ocean governance aligning with the sustainable development goals and the UN Ocean Decade. We address three major risks to oceans that arise from governance-related issues: 1) the impacts of the overexploitation of marine resources; 2) inequitable distribution of access to and benefits from marine ecosystem services, and 3) inadequate or inappropriate adaptation to changing ocean conditions. The SDGs have been used as an underlying framework to develop these risks. We identify five drivers that may determine how ocean governance evolves, namely formal rules and institutions, evidence and knowledge-based decision-making, legitimacy of decision-making institutions, stakeholder engagement and participation, and empowering communities. These drivers were used to define two alternative futures by 2030: (a) 'Business as Usual' - a continuation of current trajectories and (b) 'More Sustainable Future' – optimistic, transformational, but technically achievable. We then identify what actions, as structured processes, can reduce the three major governance-related risks and lead to the More Sustainable Future. These actions relate to the process of co-creation and implementation of improved, comprehensive, and integrated management plans, enhancement of decision-making processes, and better anticipation and consideration of ambiguity and uncertainty

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