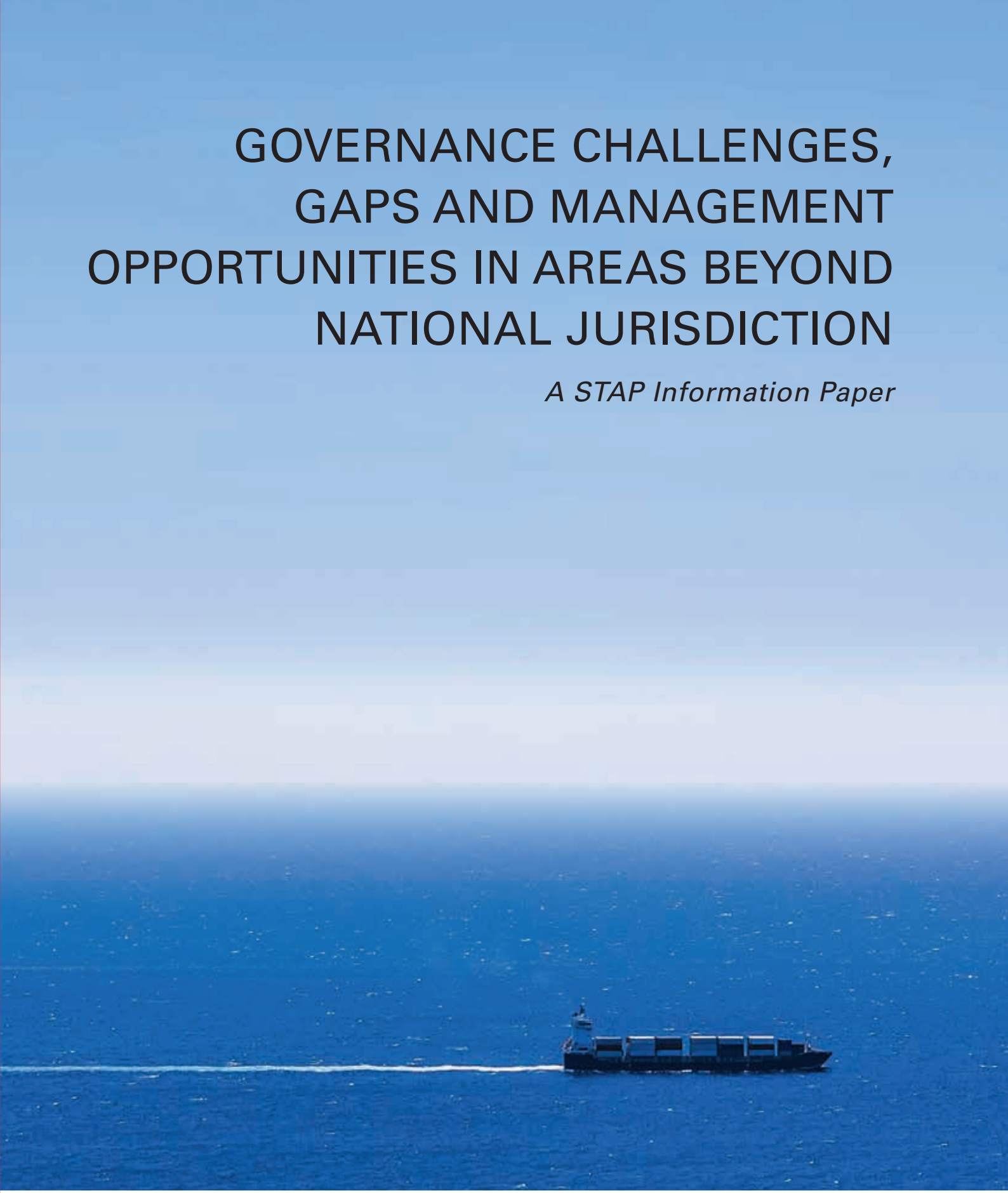
GOVERNANCE CHALLENGES, GAPS AND MANAGEMENT OPPORTUNITIES IN AREAS BEYOND NATIONAL JURISDICTION

A STAP Information Paper



STAP
SCIENTIFIC AND TECHNICAL ADVISORY PANEL
An independent group of scientists that advises the Global Environment Facility

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ACKNOWLEDGMENTS

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This STAP information paper has benefitted from an extensive peer review process engaging the GEF partnership and global marine experts for which the authors are thankful. The authors would like to acknowledge the contributions and reviews made by Dr Jakob Granit, STAP International Waters Panel Member, Dr Stephen B. Olsen, Coastal Resources Center, University of Rhode Island, Kristina Gjerde, Senior High Seas Advisor, IUCN Global Marine and Polar Programme, Dr Marjo Vierros, Adjunct Senior Fellow, United Nations University Institute of Advanced Studies, and Dr. Lev Neretin, Dr. Sarah Lebel, and Mr. Thomas Hammond of the GEF STAP Secretariat.

DISCLAIMER

The contents of this publication are believed, at the time of publication, to accurately reflect the state of the science and policy concerning the management and governance of marine Areas Beyond National Jurisdiction (ABNJ). This publication was prepared for the STAP by the authors serving as independent experts. The views and positions contained herein reflect the views of the authors and not necessarily their affiliated institutions.

CITATION

Ringbom H. and Henriksen, T. (2017). Governance Challenges, Gaps and Management Opportunities in Areas Beyond National Jurisdiction. Global Environment Facility – Scientific and Technical Advisory Panel, Washington, D.C.

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ABOUT STAP

The Scientific and Technical Advisory Panel (STAP) comprises seven expert advisors supported by a Secretariat, who are together responsible for connecting the Global Environment Facility to the most up to date, authoritative and globally representative science. http://www.stapgef.org

ABOUT GEF

The Global Environment Facility (GEF) was established on the eve of the 1992 Rio Earth Summit, to help tackle our planet's most pressing environmental problems. Since then, the GEF has provided $14.5 billion in grants and mobilized $75.4 billion in additional financing for almost 4,000 projects. The GEF has become an international partnership of 183 countries, international institutions, civil society organizations, and the private sector to address global environmental issues. http://www.thegef.org

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FOREWORD

GEF investments continue to be the largest source of multilateral finance to promote collective management for transboundary water systems and implementation of the full range of policy, legal and institutional reforms and investments contributing to sustainable use and maintenance of ecosystem services on a global scale. Yet the health of the world's ocean ecosystems (and transboundary freshwater ecosystems) continues to be compromised. Challenges in the open oceans include increasing development interests such as overfishing, increased levels of shipping, as well as sea bed mining and energy extraction activities contributing to global environmental changes such as ocean acidification, pollution and marine debris, and threats to food security.

This is particularly the situation in the open ocean "areas beyond national jurisdiction" (ABNJ) which refer to areas that are beyond the limits of the zones of national jurisdiction where flag states independently enforce global treaty rules governing the management of, and conduct within, these areas. These areas comprise 64% of the oceans' surface (or 43% of the world's surface) and represent a true global commons which contain ecosystems with marine resources and biodiversity of significant ecological, socioeconomic, and cultural importance. In these areas management and governance frameworks have been developed on a sector-by-sector basis, which is at times overlapping and often inadequate if we have the long term health of the world's oceans in mind.

For more than two decades the International Waters (IW) focal area of the Global Environment Facility (GEF) has supported countries working together to secure a wide range of political, economic and environmental benefits focusing on shared surface waters, groundwater, coastal areas, and Large Marine Ecosystems (LMEs). In open ocean areas beyond national jurisdiction, however, GEF investments have primarily addressed fisheries management issues. A more comprehensive programme of multi-sectoral investment activities to address the global environmental challenges outlined in this paper has yet to be developed.

This STAP information paper is designed to provide an overview of the regulatory landscape in ABNJ, with the objective to stimulate and support collective action to tackle the growing challenges in the open oceans and critical to the earth system as a whole. We hope this advice could be used to help inform future programming of the IW focal area in areas beyond national jurisdiction, including new integrated approaches building on the experience of current GEF investments in combined land and coastal areas and LMEs. Our intention was to write this report in a manner which provided a broad overview of the current legal and management regimes in ABNJ, and help to facilitate a conversation around possible intervention pathways for the GEF.

The five policy recommendations presented by STAP are intended to provide considerations as to how GEF investments can be scaled up to address renewed global interest in the health of the world's oceans and particularly in the delivery of Sustainable Development Goal 14 on the conservation and sustainable use of the oceans, seas and marine resources in the 2030 Agenda for Sustainable Development. The recommendations relevant for the GEF partnership emphasize the generation of knowledge of the ecosystems in ABNJ, capacity building amongst Small Islands Developing States and Least Developed Countries, and the development of innovative management and spatial planning frameworks for the open oceans beyond national jurisdiction supporting a blue economy.

We hope the implementation of these recommendations will assist in building a strong programme of work promoting sustainable oceans for the benefit of mankind in GEF-7 and beyond.

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Chair
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ABBREVIATIONS

ABNJ	Area(s) Beyond National Jurisdiction
ABS	Access and Benefit-Sharing
ACAP	Agreement on the Conservation of Albatrosses and Petrels
ACCOBAMS	Agreement on the Conservation of Cetaceans of the Black Sea, Mediterranean Sea and contiguous Atlantic area
ASCOBANS	Agreement on the Conservation of Small Cetaceans in the Baltic, North East Atlantic, Irish and North Seas
BBNJ	Biodiversity Beyond National Jurisdiction
CBD	Convention on Biological Diversity
CCSBT	Commission for the Conservation of Southern Bluefin Tuna
CCAMLR	Commission for the Conservation of Antarctic Marine Living Resources
CCBSP	Convention on the Conservation and Management of Pollock Resources in the Central Bering Sea
CECAF	Fishery Committee for the Eastern Central Atlantic,
CHM	Common Heritage of Mankind
CITES	Convention on International Trade in Endangered Species of Wild Flora and Fauna
CMS	Convention on Migratory Species
EAF	Ecosystem approach to fisheries
EEZ	Exclusive Economic Zone
EIA	Environmental Impact Assessment
EU	European Union
FAO	Food and Agriculture Organization of the United Nations
FSA	United Nations Agreement for the Implementation of the United Nations Convention on the Law of the Sea of 10 December 1982 relating to Straddling Fish Stocks and Highly Migratory Fish Stocks Fish Stocks Agreement
GEF	Global Environment Facility
GFCM	General Fisheries Commission for the Mediterranean
HELCOM	Baltic Marine Environment Protection Commission
IATTC	Inter-American Tropical Tuna Commission
ICCAT	International Commission for the Conservation of Atlantic Tunas
ICJ	International Court of Justice
ICRW	International Convention for the Regulation of Whaling
IMO	International Maritime Organization
IOC	Intergovernmental Oceanographic Commission
IOTC	Indian Ocean Tuna Commission
IPOA	International Plan of Action
IPOA-IUU	International Plan of Action to Prevent, Deter and Eliminate for Illegal Unreported and Unregulated Fishing
IPR	Intellectual Property Right
ISA	International Seabed Authority
ITLOS	International Tribunal for the Law of the Sea
ITPGRFA	International Treaty on Plant Genetic Resources for Food and Agriculture
IWC	International Whaling Commission

LC	1972 Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter
LME	Large marine ecosystems
LP	1996 Protocol to the Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter of 29 December 1972
MARPOL	International Convention for the Prevention of Marine Pollution from Ships
MoU	Memorandum of Understanding
MPA	Marine Protected Area
MSR	Marine Scientific Research
NAFO	North Atlantic Fisheries Organization
NAMMCO	North-Atlantic Marine Mammal Commission
NASCO	North Atlantic Salmon Conservation Organization
NEAFC	North-East Atlantic Fisheries Commission
NPFC	North Pacific Fisheries Commission
OSPAR	Convention for the Protection of the Marine Environment of the North-east Atlantic
PSC	Port State Control
PSSA	Particularly Sensitive Sea Area
RFB	Regional Fisheries Body
RFMO	Regional Fisheries Management Organization
SEAFO	South East Atlantic Fisheries Organization
SIOFA	South Indian Ocean Fisheries Agreement
SOLAS	International Convention on the Safety of Life at Sea
SPAMI	Specially Protected Area of Mediterranean Importance
SPRFMO	South Pacific Regional Fisheries Management Organisation
SRFC	Sub-Regional Fisheries Commission
STAP	Scientific and Technical Advisory Panel
TAC	Total Allowable Catch
UN	United Nations
UNCED	United Nations Conference on Environment and Development
UNCLOS	1982 UN Convention on the Law of the Sea
UNEP	United Nations Environment Program
UNFCCC	UN Framework Convention for Climate Change
UNGA	United Nations General Assembly
VME	Vulnerable Marine Ecosystems
WECAFC	Western Central Atlantic Fishery Commission

EXECUTIVE SUMMARY

AND KEY MESSAGES

BACKGROUND

The term 'areas beyond national jurisdiction' refers to areas which are beyond the boundaries of any single state. Marine areas beyond national jurisdiction (ABNJ), which comprise 64% of the oceans' surface (and 43% of the world's surface), essentially represent a global commons which contains ecosystems with rich marine resources and biodiversity of significant ecological, socioeconomic, and cultural importance. These areas – the high seas and the international seabed area - and their resources are subject to increasing impacts from ongoing anthropogenic activities (e.g. unsustainable and destructive fishing practices, illegal and unreported fishing, maritime transport and associated noise, ship strikes, pollution, and transport of invasive species, mineral extraction), emerging threats from the burgeoning carbon economy (e.g. ocean fertilization and carbon sequestration, offshore energy, aquaculture), global climate change, and their associated cumulative effects. These threats have serious implications for the health, productivity and resilience of the global oceans in ABNJ (Inniss et al. 2016) - and by extension to society.

In fact, biodiversity in the open ocean (most of which is located beyond national boundaries), provides numerous benefits to society, including food resources, regulation of the Earth's climate, and important genetic resources. Life in the open ocean has been found to play a fundamental role in global biogeochemical cycles, including nutrient regeneration and production of oxygen, as well as the maintenance of the Earth's climate through the global carbon cycle. The vast deep-sea realm constitutes the largest source of species and ecosystem diversity on Earth, with significant economic potential in the form of mineral, energy, and living resources. Yet, to date, only a fraction of the open ocean, which covers an area of 1.3 billion km^3, has been investigated in detail.

From a governance point of view, ocean areas beyond national jurisdiction present unique challenges. Even if the need for integrated approaches to address the multiple governance and environmental challenges in the open oceans is well understood, there is no state, organization or institution that bears the overall management responsibility for ABNJ. A number of legal instruments, along with global and regional institutions and initiatives, have been put in place to address and manage issues that are relevant to the protection and preservation of the seas, including in ABNJ. However, the majority of bodies involved in ocean governance typically address only a relatively narrow sectoral activity. Addressing one sector at a time is not effective as activities in ABNJ will almost inevitably have some impact on other ocean uses and activities, as well as on ecosystems and marine biodiversity, as has been stressed in the First World Ocean Assessment (Inniss et al. 2016):

> *National Governments and regional and global intergovernmental organizations all have their parts to play in regulating those activities. However, each of those many players tends to have a limited view of the ocean that is focused on their own sectoral interests. Without a sound framework in which to work, they may well fail to take into account the ways in which their decisions and actions interact with those of others. Such failures can add to the complexity of the manifold problems that exist.*

The governance of ABNJ is currently at a political crossroads, in view of the recently initiated UN General Assembly process to develop an international legally binding instrument under UNCLOS on the conservation and sustainable use of marine biological diversity in areas beyond national jurisdiction (BBNJ)[1]. This is a potentially very important step towards improving coherence, cooperation and coordination and filling certain substantive voids discussed in this report. At the same time, the UN has adopted the 2030 Agenda for Sustainable Development "Transforming Our World" with its 17 Sustainable Development Goals (SDGs), including Goal 14: Conserve and Sustainably Use the Oceans, Sea and Marine Resources for Sustainable Development. Taken together, these developments highlight a growing consensus that improved ocean governance is essential for biodiversity conservation, sustainable development and improved human and ecosystem resilience.

Despite this, capacity and technologies to manage human impacts in ABNJ in an integrated manner are still lacking, particularly in developing countries and Small Island Developing States (SIDS). Without adequate capacity, countries will not be able to fully participate in negotiating a new international

1 UN General Assembly A/69/780 at: http://www.un.org/ga/search/view_doc.asp?symbol=A/69/780

agreement, to implement and comply with its requirements or to achieve the targets for sustainable development in ABNJ. In addition, capacity building will be required for many countries to participate actively in marine scientific research and for the management of activities affecting marine ecosystems in ABNJ. Hence, the objective of this study is to provide a comprehensive mapping and description of the current regulatory landscape of the ocean areas beyond national jurisdiction (ABNJ), and to identify potential gaps and weaknesses in the system and its management.

APPROACH

The starting point of this exercise is the 1982 UN Convention on the Law of the Sea (UNCLOS), supplemented by a review of other key Conventions and institutions that have mandates in relation to activities in ABNJ. The study also provides an overview of global commitments to conservation and sustainable use of the ocean and marine ecosystems to identify opportunities to enhance their implementation through targeted action in ABNJ.

By increasing the understanding of the legal challenges related to ABNJ, the study seeks to support states and global institutions such as the Global Environment Facility (GEF) to identify and implement activities that can achieve an overall net benefit to the global environment from investments in ABNJ. The study seeks to support the GEF partnership, other organisations and states in identifying key opportunities for future conservation and sustainable utilization of ABNJ in the current GEF-6 and upcoming GEF-7 programs.

KEY MESSAGES FOR THE GEF PARTNERSHIP

This study points towards a number of key activities that the GEF partnership could consider going forward, in the context of conservation, management, and sustainable development of marine ecosystems and biodiversity in ABNJ. The points raised here are neither definitive nor exhaustive. Rather, they are intended to serve as a starting point for a more focused discussion on the GEF's potential role in ABNJ in GEF-7. In light of the recent UNFCCC Paris Agreement[2] on climate change, the UN 2030 Agenda for Sustainable Development[3] (e.g. Goal 14, 'Sustainable Use of the Oceans, Seas and Marine Resources'), and the beginning of the UN negotiations for a new international legally binding instrument for the conservation and sustainable use of marine biodiversity beyond national jurisdiction (BBNJ), new initiatives and collective action are needed to support these global goals, targets and commitments.

The current pursuit for a renewed governance framework for ABNJ offers an opportunity for the GEF Partnership, as a unique institution addressing the global environment, to support recipient countries to build capacities and shape global discussions and subsequent action. The GEF can assist in a number of ways, building on its partnerships and existing activities in Large Marine Ecosystems (LME), but also drawing on the efforts already undertaken by regional coalitions that have identified specific ABNJ ecosystem areas, ranging from the Arctic to the Costa Rica Thermal Dome, and from the Sargasso Sea to the South Pacific, Indian Ocean and many more. This report has therefore identified a need for further projects and programs that:

1. **Enhance knowledge about ABNJ**, *inter alia*, by enhancing the capacity for marine scientific research that can contribute to the study, conservation and sustainable use of marine biodiversity in ABNJ and by broadening the understanding of the interconnections between land-based activities and ABNJ (e.g. ocean acidification, marine litter) and their socio-ecological linkages (Granit et al. 2016). This capacity-building could be undertaken as part of existing and new initiatives to improve conservation and management of distinct areas in ABNJ. It could include financial support for technical assistance and training to: improve the ability to collect, exchange, and analyze key data relevant to ocean health, resilience, and productivity; to undertake marine

2 Adoption of the Paris Agreement. Proposal by the President, FCCC/CP/2015/L.9, 12 December 2015

3 Transforming our world: the 2030 Agenda for Sustainable Development, United Nations General Assembly resolution A/RES/70/1, 21 October 2015

scientific research; and monitor, control, and enforce environmental rules and regulations. Knowledge should be made accessible in a manner similar to the current IW:LEARN and LME LEARN[4] platforms.

2. **Support the collective identification of key environmental projects in ABNJ** such as ocean monitoring and observatory infrastructure and measures that reduce negative impacts of pollution in ABNJ from any land-based, vessel-based or off-shore sources. Measures should start from the perspective of the impact of pollution on ecosystems in ABNJ and hence be multi-sectoral in nature. Consideration could be given to a long-term ocean sustainability finance mechanism to provide a 'blue finance hub' for knowledge, skills and project preparation support that promote safe and sustainable use of resources in the high seas and the seabed taking into account cumulative environmental impacts.

3. **Support further development of innovative area-based tools for integrated ecosystem protection-based management and a blue economy in ABNJ**, in particular tools and approaches such as marine protected areas and large scale marine spatial planning processes to address the combined impacts of multiple stressors on marine biodiversity. In addition, enhance the capacity of relevant LME bodies, Regional Seas Conventions and Action Plans (RSCAPs), and Regional Fisheries Management Organisations (RFMOs) to act as platforms for integrated conservation and management of ABNJ that are adjacent to their existing regional mandates.

4. **Enhance the ability of flag states, coastal states and port states to implement their existing rights and obligations** under UNCLOS and other relevant international instruments, with a particular focus on protection of the marine environment and conservation of all living marine resources and biodiversity in ABNJ. The role of environmental principles in ABNJ could be particularly highlighted. Other jurisdictional bases for regulating and enforcing activities in ABNJ (through asserting jurisdiction over nationals, ports, and markets financial flows) could be explored. Cooperation on legal mechanisms to address compliance and enforcement issues in ABNJ could be promoted.

5. **Build technical capacity amongst Small Island Developing States (SIDS) and Least Developed Countries (LDCs)** to participate actively in ABNJ management and governance frameworks and share benefits from development in the ABNJ. This would include developing integrated conservation and management activities to address the interconnectedness of ABNJ and the livelihoods of coastal communities (e.g. by sustainably managing species migrating between coastal areas and ABNJ) and addressing key drivers of habitat degradation and species decline within and beyond national jurisdiction. Support for initiatives to help deliver management and enforcement capabilities of flag and port states, including implementation of the Agreement on Port State Measures to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated Fishing, and improved traceability against overfishing.

In summary, this STAP information paper synthesizes the regulatory and legal frameworks of UNCLOS. It encourages the GEF to support actions that account for the diversity of ecosystem services that ABNJ provides to regulating the climate, maintaining and enhancing marine biodiversity, and supporting local livelihoods. Integrated spatial planning and other tools, or approaches, can help support future actions on ABNJ while strengthening governance arrangements that can address future risks and environmental challenges not aptly covered by current laws and institutional policies.

4 The Global Environment Facility (GEF) International Waters Learning Exchange and Resource Network which is currently linking a new Large Marine Ecosystem Learning Network.

INTRODUCTION

1.1 CONTEXT

Sixty-four per cent of the world's oceans are classified as 'Areas beyond national jurisdiction' (ABNJ), meaning they lie beyond the boundaries or control of any state. These 'open oceans' essentially represent a global commons containing ecosystems with marine resources and biodiversity of ecological, socioeconomic, and cultural importance. Open ocean areas beyond national jurisdiction and their resources face increasing pressures from human development and impacts from global environmental change.

Recent scientific studies show that biodiversity in the deep and open ocean (both within and beyond national jurisdiction) provides numerous benefits to people. These include food resources, regulation of the Earth's climate and potentially novel medicines. Life in the deep sea has been found to play a fundamental role in global biogeochemical cycles, such as nutrient regeneration and production of oxygen, as well as the maintenance of the Earth's climate through the global carbon cycle (Armstrong et al. 2010; K. L. Smith et al. 2009; Riser and Johnson 2008). The ocean has great potential for mineral, energy and living resources (Koslow 2007), with fish products providing a major source of animal protein for a large part of the world's population, particularly in countries where hunger is widespread (Inniss et al. 2016).

The vast open ocean constitutes the largest source of species and ecosystem diversity on Earth, containing just under half of the world's animal phyla (Inniss et al. 2016). Certain marine features which commonly occur in areas beyond national jurisdiction – such as seamounts – have high levels of biodiversity, and frequently harbour species not found elsewhere. Significant numbers of these species mature late and reproduce slowly. Consequently, heavy fishing pressures can rapidly undermine the biodiversity of such features in the absence of careful management (Inniss et al. 2016).

To date, only a fraction of the deep sea and the open ocean has been subject to detailed research

(Ramirez-Llodra et al. 2010). For example, only 0.0001 per cent of the pelagic zone, which covers an area of 1.3 billion km^3, has been closely studied. Knowledge gaps include the diversity and distribution of key ecosystems, habitats and species. Global-scale knowledge of microbial organisms – including bacteria, archaea and viruses – is lacking, though they comprise the great majority of ocean life by weight. Current knowledge of diversity and distribution is biased towards large, charismatic species, such as whales and other marine mammals, or economically valuable fish species (Inniss et al. 2016). Enormous challenges remain to better understand the diversity and functioning of the deep and open ocean.

There is strong evidence that the richness and diversity of organisms in the deep sea exceeds all other known biomes, from the metazoan to the microbial realms (Rex and Etter 2010; Zinger et al. 2011) and supports the diverse ecosystem processes and functions necessary for the Earth system to function (Thurber et al. 2014). Moreover, the extensive species, genetic, enzymatic, metabolic and biogeochemical diversity hosted by the deep oceans also holds the potential for new pharmaceutical and industrial applications (Inniss et al. 2016).

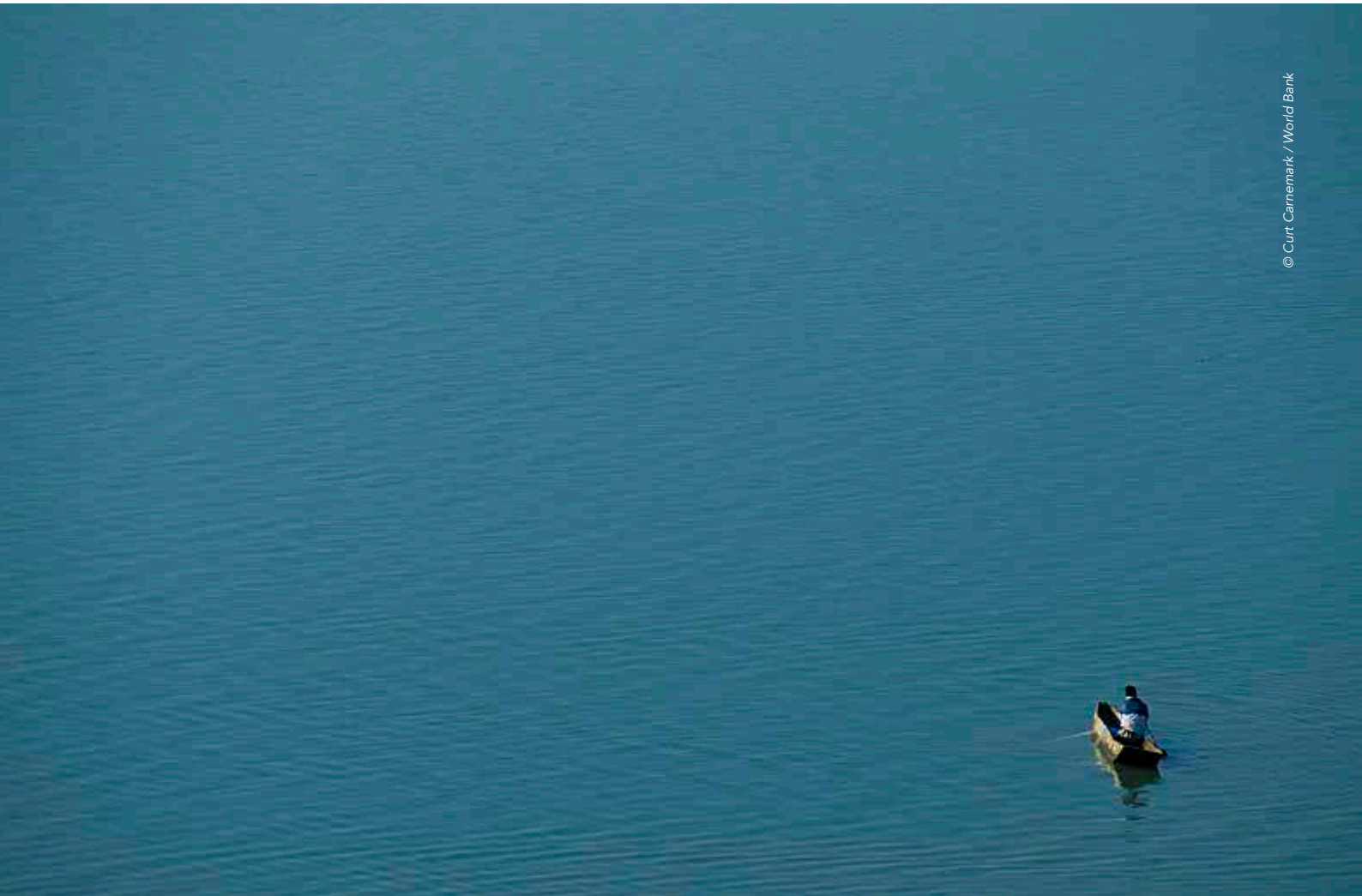
Over recent decades, human activities in ABNJ have developed exponentially, while pressures on ocean biodiversity are rising. These pressures are now relatively well documented through the recent First United Nations World Ocean Assessment and a large body of published scientific research. They include unsustainable and destructive fishing practices, illegal and unreported fishing, maritime transport and associated noise, ship strikes, pollution, and transport of invasive species. Mineral mining is on the horizon and could have extensive impacts if not effectively regulated. The combined effects of the volume of fishing and the fishing gear applied has resulted in a number of environmental impacts including (i) overfishing of fish stock (Pauly et al. 2002); (ii) destruction of fish habitat (Sainsbury, Campbell, and Whitelaw 1993); (iii) the fishing down of marine food webs (Pauly et al. 1998); (iv) ecological disruption; and (v) by-catch problems (Alverson, Freeber, and Pope 1994). Furthermore, much of the fish catch is not reported, and/or is caught illegally, leading to an underestimate of global marine harvests (Pauly and Zeller 2016). Other impacts include the laying of underwater cables, marine scientific research and biological prospecting (research and development related to genetic resources). Future threats - some of which are now being realized - include the burgeoning carbon economy and associated activities such as ocean fertilization and carbon sequestration, as well as offshore energy and aquaculture. Current impacts to ecosystems from unsustainable resource exploitation, destruction of habitats and pollution act cumulatively with global impacts from rising levels of CO_2 in the atmosphere, which include ocean warming, acidification, shifting currents, reduced mixing and decreasing oxygen levels. There is a clear scientific basis to all of these threats, the impacts of which are already being measured and are expected to increase (Noone, Sumaila, and Diaz 2013). Oceans are increasingly seen as indispensable for addressing many of the largest challenges facing humanity and the planet in coming decades, from world food security and climate change to the provision of energy, natural resources, and improved medical care (OECD 2016).

According to the First United Nations Global Ocean Assessment, the oceans are undergoing significant change due to anthropogenic impacts on climate and the atmosphere. The ocean has absorbed approximately 93 per cent of the combined extra heat stored by warmed air, sea, land and melted ice between 1971 and 2010. This warming has many consequences, including rising sea levels, reduced mixing of ocean water, deoxygenation and shifts in ocean circulation, with resulting impacts on the distribution and diversity of species and food webs, as well as the structure and functioning of ecosystems. In addition to these changes, the ocean is becoming more acidic. The CO_2 absorbed by the ocean reacts with the seawater to form carbonic acid, which is decreasing the pH of the ocean. While this occurs at different rates in different locations, the current global rate of ocean acidification is faster than at any time in the past 300 million years (Hönisch et al. 2012). Science has demonstrated these changes will have extensive detrimental impacts on many marine species, including particularly calcifying organisms such as corals, shellfish, and phytoplankton. In the deep sea (including in ABNJ) cold water corals and their associated ecosystems are particularly at risk. Cold, deep waters are lower in pH than waters surrounding shallow reefs, and future projections indicate that 70% of cold-water corals could experience corrosive conditions by the end of this century (Guinotte et al. 2006) . However, ocean acidification is likely to impact a wide range of species as well as ocean food chains. Aside from the slowing and/or reversing of calcification, organisms may suffer other adverse effects, such as loss of food resources, reproductive or physiological damage (CBD 2014).

Localized stressors – such as unsustainable and destructive fishing practices, shipping impacts, pollution, mining, and other resource extraction – combine with the global stressors caused by climate change. An equally important, though vastly underestimated stressor, is the approximately 250 billion tonnes of chemicals which humans unleash annually, most of which end up in the oceans (Cribb 2017). The need to understand the interactions and potentially cumulative or multiplicative effects of multiple stressors has been identified as one of the most important questions in marine ecology today (Darling and Côté 2008). These combined stressors have serious implications for the health, productivity and resilience of the open oceans in areas beyond national jurisdiction.

Because individual stressors interact, managing each activity that takes place in ABNJ in isolation will be insufficient to conserve marine ecosystems. Multiple stressors call for integrated management. From a governance point of view, however, integrated management in the open oceans presents particular challenges. There is no state, organization or other institution that bears the overall responsibility for ocean areas beyond national jurisdiction. Instead, a number of legal instruments, along with global and regional institutions and initiatives, have been put in place to address and manage issues that are relevant to the protection and preservation of the seas, including in ABNJ. Yet the majority of bodies involved in ocean governance cover a relatively narrow sectoral activity and the few bodies that do have a cross-sectoral mandate do not generally have jurisdiction to take measures in the open ocean. Addressing management issues one sector at a time is less than satisfactory, partly because this approach fails to address the cumulative impacts on the environment from all relevant activities and partly because activities in ABNJ almost inevitably have some impact on other ocean uses and activities, and therefore require coordinated management.

Many developing countries and small island developing states lack the capacity and technologies to manage their national waters in a comprehensive manner, as well as the ability to participate meaningfully in collaborative management activities in ABNJ. This presents an additional challenge to addressing the impacts of multiple stressors both within and beyond national jurisdiction. In an interconnected ocean, strengthening national capacity holds the key to improved governance in all ocean areas. Gaps in capacity also prevent least developed countries from taking advantage of what the ocean can offer them, including improved livelihoods and economies.



1.2 OBJECTIVES OF THE STUDY

The objective of this study is to map the regulatory landscape of the open oceans beyond national jurisdiction, and to identify gaps and opportunities to improve its management. By increasing the understanding of the legal challenges related to ABNJ, this study seeks to support states, individuals, and global institutions such as the Global Environment Facility (GEF) to identify and implement activities that can achieve an overall net benefit to the global environment in ABNJ[5]. In the current GEF 6 Programming Directions and the International Waters Focal Area Strategy, the focus of action is on 'Large Marine Ecosystems' (LMEs), with limited activities in ABNJ. The present study can support the GEF partnership and other organisations and states in identifying key activities for future preservation and sustainable utilization of ABNJ.

5 GEF-6 Programming Directions, GEF Assembly Document GEF/A.5/07/Rev.01, May 22, 2014

More particularly, this study:

A. Reviews existing legal and regulatory regimes governing environmental protection in ABNJ;

B. Reviews existing institutions, their mandates and how they relate to emerging ABNJ activities;

C. Critically assesses gaps in environmental regulation in ABNJ and the ability of the existing agreements and institutions to expand their activities to include the marine environment in ABNJ (e.g. Gjerde et al. 2008).

To meet the objectives set out in points A, B, and C above, the study is divided into three main parts. The first part, Chapter 2, consists of a review of the jurisdictional framework governing ABNJ which is set out in one single convention - the 1982 UN Convention on the Law of the Sea (UNCLOS). This instrument, which is frequently referred to as the 'Constitution for the Oceans', establishes the rights and obligations of states in any sea area, including ABNJ, both generally and with respect to specific activities. It is the only convention that comprehensively governs sea areas beyond national jurisdiction. UNCLOS, along with its two implementing agreements, represents the legal foundation for what measures states can and cannot take in ABNJ, and must therefore be assessed in some detail, both generally (sections 2.2 and 2.3) and specifically for the various ocean activities that the convention regulates (sections 2.4-2.8). A key question underlying the review is whether this jurisdictional framework, which was negotiated in the late 1970s and early 1980s, is still adequate for today's needs and challenges with respect to ABNJ.

The second part reviews developments that complement the jurisdictional framework. UNCLOS was never intended to stop the development of rules or institutions, and it specifically encourages – sometimes even requires – states to lay down more detailed rules in future international agreements and to collaborate in international fora. Chapter 3 covers regulatory and institutional developments of relevance to ABNJ. Here the question is not so much what states can or cannot do, but rather what they have done in terms of regulating and enforcing activities in ABNJ, and how the different rules and institutions relate to each other. This helps inform options for future action to address outstanding issues with respect to the conservation and sustainable use of marine biodiversity in ABNJ. A selection of activities and institutions are discussed in sections 3.2 – 3.6, while certain examples of issues that fall between the current regulatory regimes – and hence are of particular interest for ABNJ governance – are highlighted in section 3.7. The latter category includes new threats to, and uses of, oceans instigated by climate change, the problems of cumulative impact as well as new scientific advances and problems linked to multi-sector initiatives, such as marine protected areas.

The summary and key messages section provides the overall conclusions of the study and provides policy recommendations to the GEF partnership on actions which can be taken to strengthen the management of the ABNJ, in view of the on-going negotiations on a new Implementing Agreement on BBNJ and beyond. It identifies different gaps in regulation, implementation and governance and assesses to what extent they represent a concern for the governance of ABNJ.

UNCLOS AND ABNJ

2.1 GENERAL ON UNCLOS

The adoption of UNCLOS in 1982 was a milestone in the history of ocean governance. It was the first attempt at a comprehensive treaty governing all aspects and uses of the oceans and is frequently described as the 'Constitution for the Oceans'.[6] Its authority is underpinned by a very broad participation among states: currently, 168 states and the European Union (EU) are parties to UNCLOS. Most parts of the convention, including its provisions on the high seas' freedoms and environmental obligations, are generally considered to represent customary international law and hence to be binding for all states, irrespective of whether they have formally ratified or acceded to the convention.[7] However, the customary law status of Part XI of UNCLOS which deals with the international seabed area (discussed in section 2.2.3 below) is more uncertain, and this component of UNCLOS is generally considered to be governed by treaty law alone, binding only on its parties.

UNCLOS establishes a general framework for the oceans and their use. It divides oceans into different maritime zones and provides the governing principles for their establishment and delimitation. It also regulates the rights and obligations of states within the different zones; these rights and obligations differ for each activity and depend on the capacity in which the state acts (as flag state, coastal state or port state[8]). The jurisdiction of states over the oceans is thus regulated according to both space and function: it depends on both the activities undertaken and the area in which they are conducted. Apart from the horizontal division in maritime zones, UNCLOS also includes a vertical distinction between the ocean floor (seabed) and the superjacent (overlying) water column.

UNCLOS obliges states to protect and preserve the marine environment, including through measures to protect rare or fragile ecosystems as well as the habitat of depleted, threatened or endangered species and other forms of marine life (UNCLOS, Articles 192 and 194(5)). States are also to cooperate at global and regional levels to develop rules, regulations and guidelines to protect and preserve the marine environment, taking into account regional conditions (UNCLOS, Article 197).

UNCLOS also includes an elaborate system for settling disputes (in Part XV), which covers disputes relating to activities in and the utilization of ABNJ. States which are party to UNCLOS are subject to a general obligation to settle disagreements peacefully (UNCLOS, Articles 279 and 280) by any means of their choosing, but if they are unable to reach a settlement they are subject to compulsory dispute resolution procedures under UNCLOS Article 281 "in any dispute relating concerning the interpretation or application of this Convention" (UNCLOS, Article 286). Such disputes may be resolved by the International Tribunal for the Law of the Sea (ITLOS), the International Court of Justice, an arbitral procedure under Annex VII, or 'special arbitration' under Annex VIII, depending on the choices made by the disputing parties (UNCLOS, Article 287). The Annex VII Tribunal is the default dispute resolution institution in the event that the parties cannot agree or have made no choice as to their preferred option (UNCLOS, Article 287(5)).

Matters which are not covered by UNCLOS are governed by "the rules and principles of general international law" (UNCLOS, Preamble).

6 UNCLOS replaced four conventions related to the law of the sea which had been adopted in Geneva in 1958 (the Convention on the Territorial Sea and the Contiguous Zone; the Convention on the High Seas; the Convention on Fishing and Conservation of the Living Resources of the High Seas; and the Convention on the Continental Shelf), but went well beyond the combined substantive scope of those conventions.

7 The two main sources of international law are: 1) treaty law, based on formal written agreements in the form of conventions, protocols, etc., that states must formally approve; and 2) customary law, which is unwritten law, resulting from a general and consistent practice of states that they follow from a sense of legal obligation (*opinio juris*). There is no hierarchical order between the two sources. See e.g. Statute of the International Court of Justice (ICJ), Article 38(1).

8 A flag state refers to the state in which a particular ship is registered. A coastal state is a state with a coastline and maritime zones, while a port state refers to a (coastal) state that exercises jurisdiction over foreign ships on the basis that they are entering its ports. A state can - and frequently will - have all these capacities at the same time. With respect to research and other installations at sea, UNCLOS also uses the term 'state of registry' (see e.g. Articles 109, 209 and 262).

2.2 PROVISIONS ON ABNJ

2.2.1 GENERAL

Most of the maritime zones and areas regulated by UNCLOS relate to areas *within* the national jurisdiction of (coastal) states. With the exception of the territorial sea, which may extend up to 12 nautical miles from the baseline[9] and forms part of the coastal state's territory, UNCLOS introduced certain new zones, notably the exclusive economic zone which may extend up to 200 nautical miles from the baseline where the coastal state has sovereign rights over living resources and jurisdiction over a number of activities, which means that other states are not free to exercise activities such as fishing without the consent of the coastal state.[10] With respect to the seabed, the area within the jurisdiction of the coastal state is called the continental shelf. Figure 1 below provides an overview of the main maritime zones.

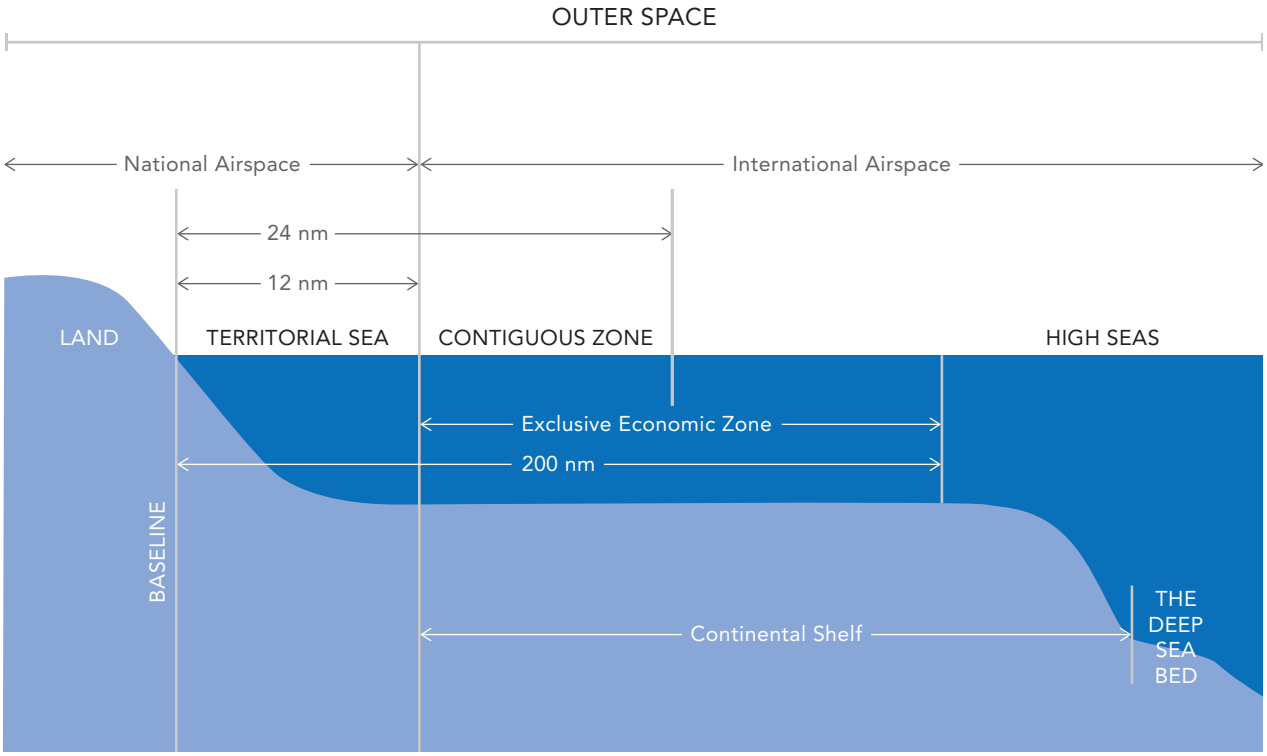


Figure 1: Maritime zones and Jurisdiction (Schofield 2003) - the figure does not include internal waters landward of the baseline.

The interest of the present study is limited to ocean areas *beyond* national jurisdiction. There are only two jurisdictional areas of this kind in UNCLOS: the 'high seas' (covering the water column) and 'the Area' (covering the seabed, sometimes referred to as 'the deep seabed'). The regulatory nature and background of these two areas are very different. While the legal regime for the high seas is based on centuries of tradition of 'freedom of the seas', the deep seabed represents an entirely new type of regulatory regime introduced in UNCLOS.

9 The baseline is normally the low-water mark along the coastline of the coastal state (Article 5), but in certain cases - for example where the coastline is deeply indented or covered by a fringe of islands - special rules apply that allow the drawing up/establishment of other types of baselines (see Articles 7-14).

10 UNCLOS, Articles 55 et seq. Other new maritime zones are: archipelagic waters (Article 49), ice-covered areas (Article 234), straits used for international navigation (Part III).

The high seas and their resources are essentially accessible to any state that has the capability to exploit them, subject to the general obligations of all states to protect and preserve the marine environment and the duty to cooperate at global and regional levels to this end (UNCLOS, Articles 192, 194(5) and 197). UNCLOS also recognizes a duty to cooperate in the conservation and management of high seas living resources, though its more specific provisions focus primarily on fish (UNCLOS, Articles 117-119). As the responsibility for complying with and enforcing these obligations rests largely with the flag states, these provisions have been unevenly implemented in practice.

By contrast, the Area and its resources are specifically declared to be the 'common heritage of mankind' where all resources "are vested in mankind as a whole" (UNCLOS, Article 137(2)). The International Seabed Authority, composed of states who are parties to UNCLOS, is given substantial authority to monitor, inspect and take measures to ensure compliance of operators engaged in seabed mining and related activities.

Figure 2 provides an initial illustration of how UNCLOS regulates various aspects of ABNJ and how they relate to each other. The main features of the UNCLOS regime for ABNJ (i.e. the high seas and the Area), are briefly discussed in sections 2.2.2 and 2.2.3. In sections 2.4 to 2.8, various activities regulated in UNCLOS are reviewed in more detail. Apart from UNCLOS, the review includes the two 'implementing agreements' adopted in 1994 and 1995, and which have elaborated or modified the UNCLOS provisions in relation to certain fish stocks and activities in the Area.[11] A potential third Implementing Agreement to UNCLOS, specifically focusing on BBNJ, is under negotiation.

11 The 1994 Agreement relating to the implementation of Part XI of UNCLOS entered into force on July 28, 1996 and presently includes 147 parties. The 1995 United Nations Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea of December 10, 1982 relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks (the 'Fish Stocks Agreement', or FSA)) entered into force on December 11, 2001 and includes 82 parties. Both numbers include the participation of the European Union.

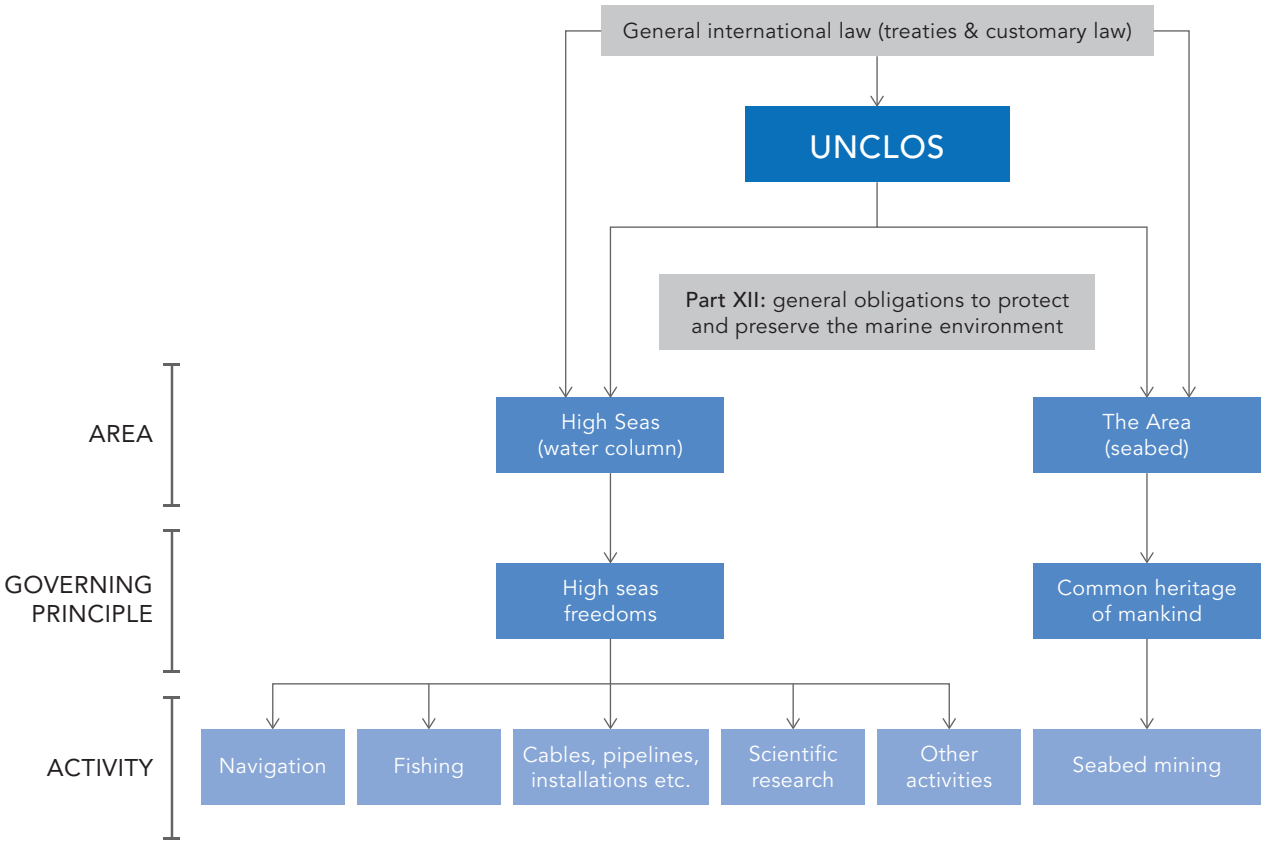


Figure 2: Schematic picture of key ABNJ matters regulated by UNCLOS

2.2.2 THE HIGH SEAS

UNCLOS Article 86 establishes the spatial scope of Part VII, entitled High Seas, as follows:

> *The provisions of this Part apply to all parts of the sea that are not included in the exclusive economic zone, in the territorial sea or in the internal waters of a State, or in the archipelagic waters of an archipelagic State.*

In other words, any sea area which lies beyond a coastal state's jurisdiction represents the high seas, which are free to be utilized by all states, whether coastal or land-locked (UNCLOS, Article 87), and which no state may validly subject to its sovereignty (UNCLOS, Article 89). Not all coastal states have established an Exclusive Economic Zone (EEZ), which means that the high seas for some states begin at the outer limit of the territorial sea (E.J. Molenaar 2015).[12]

The freedom of the high seas is a fundamental principle which has been a cornerstone of the law of the sea since the 17th century. This freedom is enjoyed by all states irrespective of whether or not they have a coastline of their own, and it comprises, *inter alia*, under UNCLOS Article 87(1):

(a) Freedom of navigation;

(b) Freedom of overflight;

(c) Freedom to lay submarine cables and pipelines, subject to Part VI;

(d) Freedom to construct artificial islands and other installations permitted under international law, subject to Part VI;

(e) Freedom of fishing, subject to the conditions lay down in section 2;

(f) Freedom of scientific research, subject to Parts VI and XIII.

The list is not exhaustive and other activities, not explicitly listed here, are subject to high seas freedoms. However, all activities on the high seas are subject to certain conditions and more detailed regulations: at a minimum, the general obligation of states is to exercise the high seas freedom "with due regard for the interests of other States in their exercise of the freedom of the high seas" (UNCLOS, Article 87(2)). The more general obligations for states to protect and preserve the marine environment elaborated in Part XII apply anywhere, including on the high seas. Another general understanding is that the high seas shall be reserved for peaceful purposes (UNCLOS, Article 88).[13] There is no established order of priority between the high seas freedoms (Churchill and Lowe 1999).

The high seas freedom "is exercised under the conditions laid down by this Convention and by other rules of international law" (UNCLOS, Article 87(1)). The term 'freedom' does not refer to an absence of rules in the high seas, but rather to the free *access* by all states, whether land-locked or not, to these areas and to participation in activities on the oceans, subject to the applicable limitations and rules including subsequent developments in international law.

The key principle for the high seas is that the flag state - i.e. the state in which the vessel is flagged (merchant, fishing, research or other) - has *exclusive* jurisdiction over its vessels. It is therefore the flag state's unique responsibility to place rules on its ships and to ensure that these are complied with on the high seas. Other states or organizations do not have jurisdiction over ships in this area "save in exceptional cases expressly provided for in international treaties or in this Convention" (UNCLOS, Article 92(1)). Most exceptions that exist within UNCLOS are not relevant to the topic of this study.[14]

No coastal states or other states have particular rights or privileges over activities of ships or nationals of other states in the high seas, irrespective of the area's proximity to their coasts or otherwise.[15] As opposed to the case of coastal state waters, there is no single state to manage, coordinate or administer the activities in the high seas. Legislative and enforcement jurisdiction is placed on the flag state of the ship in question, but flag states' jurisdiction and obligations vary depending on the activity in question and must be assessed on a case by case basis. Flag states'

12 There is a widespread practice of creating/using 'intermediate zones', which are not technically EEZ but fishery zones or pollution control zones, etc. They represent a grey area. Where such zones have been introduced, the limit between the high seas and areas under national jurisdiction may have to be assessed individually for each state, and depending on the activity in question.

13 This does not rule out naval manoeuvres or testing of conventional weapons exercises.

14 The specific exceptions in UNCLOS Article 110 concerning the rights of warships to visit foreign ships on the high seas include suspicion of piracy, slave trade, unauthorized broadcasting and a ship without a nationality. Exceptions may also be granted by specific treaties, an option which has recently been much utilized by certain states in relation to the prevention of terrorism.

15 See some exceptions relating to fisheries discussed in section 2.5.

obligations to regulate and intervene in activities in the high seas differ depending on whether the ship in question is engaged in maritime transport (navigation), fisheries, scientific research, or construction of installations, but also on the nature of the impact of the activity on the marine environment. The detailed obligations on flag states are discussed in chapter 3.

In parallel to the exclusive flag state jurisdiction, it is possible that other states may have authority over ships operating in the high seas *before or after* their stay in this area, based on other jurisdictional rules or principles. This is particularly relevant with respect to port states that have a *territorial* jurisdiction over foreign ships while they are voluntarily (Chircop and Linden 2006)16 in their ports or internal waters. A port state may use this jurisdiction to regulate matters that take place on the high seas which may be of significant importance when exploring avenues to regulate ABNJ, but as will be discussed in section 2.4.4, the extent to which such measures may be taken by port states is not entirely settled in international law.

UNCLOS' focus on states' jurisdiction over ships does not exclude the issue that states also have rights and obligations in respect of their nationals, whether natural or legal persons (UNCLOS, Articles 118 and 139). Other jurisdictional bases are also conceivable for measures that are not regulated in UNCLOS, such as trade-related measures, provided that they are recognized in (other areas of) international law (UNCLOS, Preamble).

2.2.3 THE AREA

While the UNCLOS high seas regime is dominated by the principle of free access of all states to the sea and its resources, the legal regime for the deep seabed is based on the principle that the Area's resources are common to mankind and should be jointly managed for the benefit of humankind. The 'Area' is defined in UNCLOS Article 1(1) as "the seabed and ocean floor and subsoil thereof, beyond the limits of national jurisdiction".

The spatial scope of the Area is not the same as the high seas. First, all coastal states have a continental shelf while coastal zones beyond the territorial sea need to be specifically claimed and established. Accordingly, even states that have *not* established an EEZ have a continental shelf up to 200 nautical miles, even without any express proclamation to that effect (UNCLOS, Article 77(3)). Second, as opposed to the EEZ, the continental shelf may extend *beyond* the 200 nautical miles limit, if certain conditions are met.[17] The principles and procedures that govern the fixing of the limits of the continental shelves are laid down in UNCLOS Article 76. States fix the limits on the basis of recommendations by a specific commission that was established by UNCLOS for this purpose (i.e. the Commission on the Limits of the Continental Shelf, or CLCS). The regime for the outer continental shelf is essentially the same as the 'regular' one, which means that the coastal state exercises sovereign rights to explore it and exploit its living and non-living natural resources,[18] though with certain limitations to the coastal state's rights that apply exclusively to the continental shelf beyond 200 nautical miles.[19]

There are presently some 70 applications for extended continental shelves submitted to the CLCS and some 30 recommendations have been issued (UN 2016). Consequently, the precise geographical scope of the Area is not yet completely settled and is unlikely to be so in the near future (M. Lodge 2015).[20]

The focus of Part XI lies on 'activities in the Area' (UNCLOS, Articles 134(2), 139 and 140). These activities are defined in UNCLOS Article 1(3) as "all activities of exploration for, and exploitation of, the resources of the Area". Such activities are to be undertaken "for the benefit of mankind as a whole" (UNCLOS, Article 140). The resources of the Area represent the common heritage of mankind (UNCLOS, Article 136) and all rights in them are vested in mankind as a whole, on whose behalf a specific organization created for this

16 A port states exercising full authority over ships that are in their ports for reasons relating to distress is a more complex legal question which will not be discussed further here.

17 The continental shelf may not extend beyond 350 nautical miles or, alternatively, more than 100 nautical miles beyond the point at which the seabed lies at a depth of 2500 meters.

18 UNCLOS Article 77(3) clarifies that the natural resources in question "consist of the mineral and other non-living resources of the seabed and subsoil together with living organisms belonging to sedentary species: that is to say, organisms which, at the harvestable stage, are immobile on or under the seabed, or are unable to move except in constant physical contact with the seabed or the subsoil."

19 Under UNCLOS Article 82, the coastal states have certain financial (revenue sharing) obligations in relation to their exploitation of non-living resources in the outer continental shelf that need to be settled through the ISA. This is an example of a *quid pro quo* for the extension of the continental shelf beyond 200 nautical miles, which essentially limited the size of the Area subject to the common heritage of mankind principle. In addition, UNCLOS Article 246(6) includes certain limitations to the discretion of the coastal state to withhold consent for other states to undertake marine scientific research in this area.

20 Lodge (2015) considers that this uncertainty about the limits is unlikely to present a real problem for the ISA (whose mandate under UNCLOS Article 157(1) is limited to the Area), as most mineral resources of interest to ISA are found in areas which are well beyond potential national jurisdiction.

purpose, the International Seabed Authority (ISA), shall act (UNCLOS, Article 137). Since the scope of the term 'resources of the Area' is limited to "all solid, liquid or gaseous mineral resources in situ in the Area" (UNCLOS, Article 133(a)), the scope of Part XI does not extend to living resources. In essence, this means that the bulk of UNCLOS Part XI addresses deep seabed mining activities; activities that are not related to that largely fall beyond its scope. If an activity is not governed by Part XI, the principles for the high seas will apply to that activity. In practice this distinction is not always clear, as is noted in section 3.7.5 relating to the legal status of living resources, including genetic resources, in the Area.

2.3 PROTECTION AND PRESERVATION OF THE MARINE ENVIRONMENT OF ABNJ

2.3.1 GENERAL

Before discussing the various activities at sea that are specifically regulated by UNCLOS, it is worth exploring in greater detail a number of the Convention's more general obligations on states to protect and preserve the marine environment, independent of activity or ocean area concerned.

The very first Article of UNCLOS Part XII - which addresses protection and preservation of the marine environment - affirms that "States have an obligation to protect and preserve the marine environment" (UNCLOS, Article 192). Obligations to this end include that states "shall take all measures necessary to ensure that activities under their jurisdiction or control are so conducted as not to cause damage by pollution to other States and their environment" (UNCLOS, Article 194(2)). Furthermore, they shall, individually or jointly, take "all measures consistent with this Convention that are necessary to prevent, reduce and control pollution of the marine environment from any source" UNCLOS, Article 194(1).[21] 'Pollution of the marine environment' is very broadly defined UNCLOS, Article 1(4).[22] Other Articles specifically highlight the need for protecting sensitive areas, such as the need to take measures 'necessary to protect and preserve rare or fragile ecosystems as well as the habitat of depleted, threatened or endangered species and other forms of marine life' UNCLOS, Article 194(5),[23] and more general duties of cooperation at global and regional levels to prevent, minimize and control environmental harm (UNCLOS, Articles 197 *et seq*).

These general obligations apply everywhere, irrespective of the maritime zone concerned or the capacity in which the states act, and this includes ABNJ. When taking measures to protect the marine environment, states shall "refrain from unjustifiable interference with activities carried out by other States in the exercise of their rights and in pursuance of their duties in conformity with this Convention" (UNCLOS, Article 194(4)). In view of this and numerous other references to the other provisions of the Convention and to activities "within their jurisdiction and control", these general environmental obligations need to be read together with the more specific provisions for individual sources of marine pollution. Moreover, the general environmental obligations are usually less specific than the provisions on individual activities and include few, if any, provisions on enforcement measures. This means that there are few mechanisms to ensure that the general environmental obligations are actually followed by states.

UNCLOS was negotiated in the late 1970s and early 1980s in the very early days of international environmental law; it therefore does not include many of the principles, tools and approaches that have since been developed and included in later environmental treaties. While UNCLOS includes the fundamental obligation of states not to cause harm to the environment of other states and to prevent pollution

21 Paragraph 3 of the same Article goes on to provide that the measures taken shall include measures to "minimize to the fullest possible extent" the release of toxic, harmful and noxious substances, pollution from vessels, and from installations and devices operating in the marine environment.

22 Under this Article 'pollution of the marine environment' means "the introduction by man, directly or indirectly, of substances or energy into the marine environment, including estuaries, which results or is likely to result in such deleterious effects as harm to living resources and marine life, hazards to human health, hindrance to marine activities, including fishing and other legitimate uses of the sea, impairment of quality for use of sea water and reduction of amenities".

23 See also the much less committing UNCLOS Article 123 on enclosed and semi-enclosed seas, and Article 197 on regional co-operation. Certain obligations to protect sensitive sea areas have also been included in subsequent agreements, such as in the 1992 Convention on Biological Diversity (see sections 3.6.1).

spreading beyond their own jurisdiction,[24] it does not, for example, include references to the precautionary approach, the polluter-pays principle, or references to the use of modern management mechanisms such as the ecosystem approach (UNCLOS, Preamble), or tools such as marine spatial planning.

However, the subsequent development of such environmental principles cannot be ignored when UNCLOS is applied today.[25] Many key principles have since been developed, not only in terms of substantive content, but also in terms of legal status.[26] The 'precautionary approach', in which lack of scientific certainty shall not be used as a reason to postpone cost-effective measures to prevent environmental degradation, is a case in point. This principle was introduced as Principle 15 in the Rio Declaration in 1992, and has since been reiterated in many international conventions, including the CBD, the Kyoto Protocol, the Fish Stocks Agreement (FSA) and the 1996 London Dumping Protocol. The principle has also been regarded as representing customary law by international courts.[27]

Another example which represents an important aspect of the precautionary approach is the development of a duty to undertake an environmental impact assessment (EIA) in order to identify and respond to

24 UNCLOS, Article 194(2). "States shall take all measures necessary to ensure that activities under their jurisdiction or control are so conducted as not to cause damage by pollution to other States and their environment, and that pollution arising from incidents or activities under their jurisdiction or control does not spread beyond the areas where they exercise sovereign rights in accordance with this Convention."

25 This is recognized by UNCLOS itself (e.g. when providing that the freedom of the high seas "is exercised under the conditions laid down by this convention and by other rules of international law" (UNCLOS, Article 87(1))).

26 The interpretation of a treaty should, according to Article 31(3) (c) of the Vienna Convention on the Law of Treaties, take into account not only the context but "any relevant rules of international law applicable in the relations between the parties".

27 See for example the 2010 decision of the ICJ in the *Pulp Mills on the River Uruguay* Case (Argentina v. Uruguay) [2010] ICJ Rep 14, para 164 and *Responsibilities and Obligations of States Sponsoring Persons and Entities with Respect to Activities in the Area (Advisory Opinion)* [2011] ITLOS Rep 10, para. 135.
Yet, even with widespread agreement of the status of the principle as such and its fundamental importance in the environmental decision-making process, there is still plenty of scope for disagreement on the implications of the principle in individual cases. Issues such as whether the identification of a serious risk imposes an obligation to refrain from the activity in question altogether, and questions relating to determining a serious risk and the burden of proof are likely to come up in any concrete dispute.

potential risks of planned activities. In addition to the obligation to carry out an EIA covered in a variety of treaties (e.g. CBD, Article 14; UNFCCC, Article 4(f)) – including a loosely formulated obligation in UNCLOS Article 206[28] – the process itself has been subject to international regulation in the 1991 Convention on Environmental Impact Assessment in a Transboundary Context (the Espoo Convention). The obligation to conduct an EIA on activities that have the potential to significantly harm the marine environment has also been endorsed as a principle of general international law by the International Court of Justice (ICJ)[29] and the ITLOS Seabed Disputes Chamber.[30] At regional level, the most elaborate scheme is probably that laid down in the 1991 Protocol on Environmental Protection to the Antarctic Treaty (Madrid Protocol).[31] More recently, both the UN General Assembly and the Conference of the Parties (CoP) of the CBD have adopted resolutions and guidelines - outside the frame of binding law - with respect to the adoption of EIAs in ABNJ (Alex G Oude Elferink 2012; Robin Warner 2012; R. Warner 2015).

UNCLOS itself does not preclude further developments of its own provisions by means of new agreements or other instruments, but it does presume that such agreements will be compatible with its key provisions.[32] UNCLOS Article 237 specifically foresees the development of more detailed rules on environmental protection, provided such rules are consistent with the general principles and objectives of UNCLOS. Such agreements will then be of relevance when interpreting and applying the provisions of UNCLOS.[33]

Finally, it should be noted that the environmental obligations and principles of UNCLOS have also been interpreted and developed by international case law. Several international courts and tribunals acting under the UNCLOS umbrella have recently dealt with the status of states' environmental obligations under UNCLOS and concluded, *inter alia*, that states' duty to protect the marine environment encompasses the conservation of the living resources of the sea,[34] and extends beyond controlling pollution to measures focused primarily on conservation and the preservation of ecosystems[35] and "to the prevention of harms that would affect depleted, threatened, or endangered species indirectly through the destruction of their habitat".[36] Case law, in other words, suggests a development towards a more holistic and integrated understanding of states' environmental obligations than the sectoral regime of UNCLOS might otherwise suggest. The duties in UNCLOS Part XII are to be read as 'a duty to protect the marine environment as a whole' departing from the needs of the ecosystem.

2.3.2 CONCLUSIONS

- The general environmental obligations of UNCLOS are important, but not specific. These include the obligation to protect the environment, including rare and fragile ecosystems, and to cooperate to elaborate further rules, regulations and guidelines. However, they contain no institutional or other follow-up mechanism to verify whether or not the obligations are being complied with.

- Many modern environmental principles (e.g. polluter pays principle, ecosystem approach, precautionary approach) are not considered in UNCLOS, but subsequent developments in international environmental law should be taken into account when interpreting and applying UNCLOS in this regard today.

- UNCLOS does not close the door to further developments of its principles, and includes specific provisions foreseeing the development of more detailed rules, including environmental rules.

28 UNCLOS Article 206 includes an obligation of states to assess the effects of activities under their jurisdiction or control when they "have reasonable grounds for believing that planned activities under their jurisdiction or control may cause substantial pollution of or significant and harmful changes to the marine environment". There are no requirements relating to the content of the assessment or on how the results of the assessment should be used in a subsequent decision-making.

29 *Pulp Mills on the River Uruguay* Case (Argentina v. Uruguay) [2010] ICJ Rep 14, para 204.

30 *Responsibilities and Obligations of States Sponsoring Persons and Entities with Respect to Activities in the Area (Advisory Opinion)* [2011] ITLOS Rep 10, paras 145 and 148.

31 The 1991 Madrid Protocol, in particular Articles 3, 8 and Annexes I, II, IV and V, establish a comprehensive system of environmental impact assessment of application to all activities, including scientific activities, and stringent controls designed to prevent pollution and to protect wildlife, especially vulnerable ecosystems and habitats.

32 UNCLOS, Article 311(2) and (3). Paragraph (6) of the same Article, however, rules out any future amendments to the principle of 'common heritage of mankind'.

33 The Matter of the South China Sea Arbitration (UNCLOS Annex VII Arbitral Tribunal, www.pcacases.com/pcadocs/MU-UK%20 20150318%20Award.pdf), para. 942.

34 Southern Bluefin Tuna (ITLOS provisional measures, www.itlos.org/fileadmin/itlos/documents/cases/case_no_3_4/Order.27.08.99.E.pdf), para. 70; Request for an advisory opinion by Sub-regional fisheries Commission (ITLOS Advisory opinion, www.itlos.org/fileadmin/itlos/documents/cases/case_no.21/advisory_opinion/C21_AdvOp_02.04.pdf), para. 120.

35 Chago Islands Marine Protected Area Arbitration (UNCLOS Annex VII Arbitral tribunal, www.pcacases.com/pcadocs/MU-UK%20 20150318%20Award.pdf), para. 538.

36 The Matter of the South China Sea Arbitration (UNCLOS Annex VII Arbitral Tribunal, www.pcacases.com/pcadocs/MU-UK%20 20150318%20Award.pdf), para. 945.

- International case law has emphasized the need for an ecosystem- focused interpretation of the UNCLOS environmental obligations.
- However, a holistic and integrated strategy for protecting the marine environment poses a particular challenge in ABNJ in view of the absence of any governance framework for making multi-sector assessments and decisions.

2.4 NAVIGATION

2.4.1 GENERAL

Almost any activity on the high seas - be it merchant shipping, fisheries, marine research, military activities, or the installation of structures - will involve ships and will hence fall under the scope of UNCLOS provisions on navigation (McDorman 2015).[37] The rights and obligations of flag states, coastal states and port states are dealt with in considerable detail in several different parts of UNCLOS. The interests of flag states in favour of ships' free and unimpeded navigation and the interests of coastal states in regulating and enforcing measures against foreign ships are balanced differently for each maritime zone, on the basis that a coastal state's jurisdiction over foreign ships increases with the proximity of the ship to the territory of that coastal state.

2.4.2 FLAG STATE JURISDICTION

Flag state jurisdiction represents the traditional cornerstone of the regulatory authority over ships. UNCLOS establishes that all states, including landlocked states, have a right to sail ships flying their flag and to fix the conditions for granting nationality to ships.[38] However, UNCLOS also includes a number of detailed and specific duties for flag states. In addition to every state's obligation to "effectively exercise its jurisdiction and control in administrative, technical and social matters over ships flying its flag" (UNCLOS, Article 94(1)), it imposes a number of minimum criteria on flag states' legislation by reference to the 'generally accepted' international rules and standards (UNCLOS, Articles 94(5) and 211(2)). The minimum obligations apply irrespective of whether the flag state has formally ratified the rules and standards in question (ILA 2000).

As for enforcement, UNCLOS similarly imposes obligations on flag states to ensure compliance with the "applicable international rules and standards" and, when ships are non-compliant, to undertake a variety of enforcement measures, including investigations, institution of proceedings for alleged violations, penalties for violations, prohibition from sailing in certain cases and co-operation with other states (UNCLOS, Article 217(1) and (2)).

UNCLOS, in other words, avoids the need to formulate more precise prescriptive and enforcement obligations by referring to an abstract and continuously changing set of international rules to be developed elsewhere. This was a conscious choice by the drafters, the purpose of which was to avoid 'freezing' the requirements at a given level, or a given point in time, while still preserving the international character of the rules in question.

Despite the stringency of flag states' duties set out in UNCLOS, the convention is remarkably silent on the legal consequences to a flag state of failure to meet its obligations. The only immediate remedy provided for any state "that has clear grounds to believe that proper jurisdiction and control with respect to a ship have not been exercised" is a formal factual report, which the flag state has to investigate and act upon appropriately (UNCLOS, Article 94(6)). Also, a flag state loses its privilege to take over proceedings from a port state in the occurrence of an illegal discharge if the flag state "has repeatedly disregarded its obligation to enforce effectively the applicable international rules and standards" (UNCLOS, Article 228(1)).

In all other circumstances, general international law on state responsibility applies, which means that if a state has failed to meet its international obligation and if that failure can be attributed to the state, it will be held responsible under international law. In most cases, however, the flag states' duty is limited to exercising due diligence in regulatory and administrative matters. Individual failures by ships do not

37 It should be noted, however, that when it comes to warships and other ships subject to sovereign immunity, many of the rules that grant jurisdiction to coastal and port state do not apply due to specific exemptions in UNCLOS. See e.g. Articles 95, 96 and 236.

38 UNCLOS, Articles 90 and 91(1). The nationality of persons on board or involved in the operation of the ship are not relevant for the rights and obligations of the flag state. See e.g. *M/V Saiga* Case (No.2) ITLOS Case No. 2, 1999, para. 106 and *M/V Virginia G* Case, ITLOS Case No 19, para. 127.

normally give rise to state responsibility.[39] Claims invoking state responsibility are not very common in the law of the sea and in international law more generally. There is no post-UNCLOS international judgment in which a state has been held responsible under international law for failing to live up to its flag state responsibilities.

The effectiveness of flag state jurisdiction as the principal means for ensuring that obligations are met on the high seas is further compromised by the ease by which operators of ships can choose the jurisdiction of their operations. In reality many ships have a relatively weak connection with their flag state, despite the UNCLOS Article 91(1) which requires that there be a 'genuine link' between the two.[40]

In practice flag states largely rely on 'classification societies' for assessing ships' compliance with international safety and environmental requirements. This role has more recently been supplemented by voluntary and now mandatory flag state audit requirements imposed by the International Maritime Organization (IMO) for commercial ships. However, similar safeguards do not exist for fishing vessels.

2.4.3 CERTAIN EXCEPTIONS TO THE EXCLUSIVITY OF FLAG STATE JURISDICTION

Ships are subject to the *exclusive* jurisdiction of the flag state in the high sea "save in exceptional cases expressly provided for in international treaties or in this Convention" (UNCLOS, Article 92(1)). Two such express exceptions relate to the possibility of port and coastal states taking enforcement measures for the purpose of protecting the marine environment.

Firstly, UNCLOS Article 221 grants specific jurisdiction to coastal states in case of maritime casualties which result – or may reasonably be expected to result - in major harmful consequences, even if it involves actions in ABNJ. Under UNCLOS Article 221 the coastal state may in such cases take proportionate measures to protect their coastline or related interests, including fishing, from pollution. The rule, which is based on the 1969 International Convention Relating to Intervention on the High Seas in Cases of Oil Pollution Damage, accordingly sets aside the general jurisdictional regime in cases of serious pollution and provides a more extensive jurisdiction by coastal states to protect their interests, including in the EEZ and the high seas.

Secondly, an important novel provision of UNCLOS was Article 218 permitting port states to take enforcement measures against foreign ships for violations of international discharge standards, even if the discharge took place in the high seas or in other states' coastal waters. This provision departed from prevailing theories of jurisdiction, as it did not specify that the effects of the pollution had to be felt in the enforcing (port) state. However, this provision has been relatively sparingly used in practice.[41]

2.4.4 PORT STATE JURISDICTION

To complement the flag state's jurisdiction over ships for activities taking place on the high seas, it may be possible to make use of the jurisdiction that states have over ships during subsequent or preceding port stays. As with the generally accepted international requirements for ships, port states have a specific role in UNCLOS: the right to ensure that all ships visiting their ports meet international standards, and those that do not may be detained until any deficiencies have been rectified (UNCLOS, Articles 218, 219, 220(1) and 226). With respect to merchant ships, this role is implemented in practice through a series of regional port state control (PSC) arrangements (see section 3.2.3). UNCLOS has included a series of safeguards to ensure that such enforcement powers are not abused.[42]

As was noted above in section 2.4.3, port states have an express right to take enforcement measures against ships that violate international discharge standards, even when these violations occur within ABNJ. However, a port state's reliance on its territorial

39 See also the recent *Request for an Advisory Opinion submitted by the Sub-Regional Fisheries Commission (SRFC).* In this advisory opinion, delivered in April 2015, ITLOS found that "as far as fishing activities are concerned, the flag State, in fulfillment of its responsibility to exercise effective jurisdiction and control in administrative matters, must adopt the necessary administrative measures to ensure that fishing vessels flying its flag are not involved in activities which will undermine the flag State's responsibilities under the Convention in respect of the conservation and management of marine living resources. If such violations nevertheless occur and are reported by other States, the flag State is obliged to investigate and, if appropriate, take any action necessary to remedy the situation" (para. 119).

40 UNCLOS does not offer a precise definition of the 'genuine link' requirement. In the absence of detailed requirements on the conditions to attribute a nationality (a flag) to ships, the recourse to 'open registries' continues to be widespread among ship owners worldwide.

41 See EU Directive 2005/35 on ship-source pollution and on the introduction of penalties for infringements.

42 UNCLOS Articles 223-233. These include features as a prohibition of discrimination, a duty of states not to cause undue delay to foreign ships, and limitations of the penalties to be applied.

jurisdiction over ships in its ports by imposing requirements that do not have an international basis, (i.e. to adopt unilateral requirements, for instance, in relation to activities on the high seas), is controversial. This matter is not clearly regulated in UNCLOS, but some of its provisions[43] together with some general principles of international law suggest that there might be a way of complementing the jurisdiction of flag states on the high seas. At the same time, the territorial jurisdiction of a port state over ships in its ports needs to be balanced against the rights and jurisdiction of the flag state on the high seas.

States have broad powers to impose conditions on ships entering their ports based on their territorial sovereignty which includes internal waters and ports, and in the absence of any general right of access to ports in international law. These jurisdictional powers have justified rules, for example about the denial of access to ports for certain types of ships. In this case, a port state's requirements addressing 'static' matters, such as the types of construction or design of ships, will have incidental effects beyond the port state, including on the high seas. For example, a port state which requires that all oil tankers visiting their ports be constructed in a specific way and have certain extra equipment on board, will obviously affect the way tankers are constructed and equipped, even beyond the limits of the port. If many states jointly impose such requirements, the effect may be significant, even for open ocean areas beyond national jurisdiction. For example, if the US, Canada and the EU jointly refuse access to their ports to single-hulled tankers, the result would be that very few such ships would travel in North Atlantic and Arctic waters, thus significantly reducing potential for disastrous oil leaks.

The extent to which port states may impose *operational* requirements or obligations on ships relating to certain conduct on board that extend beyond their own territory, is more uncertain. Examples include rules requiring ships to refrain from certain discharges on the high seas or mandatory ballast water exchanges in the high seas. These types of rules are not widely applied in state practice, but it seems safe to conclude that it is feasible for port states to regulate certain types of matters, depending on the content of the rules and the measures taken to enforce the requirements.[44] General requirements of proportionality, the prohibition of discrimination and the abuse of rights apply to such requirements.[45]

2.4.5 CONCLUSIONS

- With minor exceptions, both prescriptive and enforcement jurisdiction in ABNJ relies fundamentally on action by flag states.

- While the material requirements are largely the same for all flag states, the degree of implementation of their responsibilities for control over their vessels varies, often due to the lack of a genuine link between the flag state and the ship.

- There is no tradition of holding flag states accountable for failing their duties. However, the obligations of flag states in combination with the principles of state responsibility suggest that actions to improve accountability might succeed.

- Enforcement actions that target individual ships, rather than their flag state, offer more possibilities – in particular for port states that are visited by the ships in question.

- The jurisdictional framework of UNCLOS does not rule out that prescription and enforcement are based on other jurisdictional bases than those provided for in the law of the sea. For example, individuals and corporations (such as shipowners, operators and others in the corporate chain of responsibility) could be subject to ABNJ-related regulation and enforcement measures from their home country. Opportunities may also exist for states to take measures in the form of trade or import restrictions and commercial limitations (e.g. banks or insurance conditions), linked to activities in ABNJ.

43 UNCLOS, Articles 25(2), 211(3) and 255. These indicate that port states have the option/the authority to impose requirements on foreign ships voluntarily visiting their ports.

44 Refusing access to the port itself or to certain port services is probably an enforcement measure which is easier to justify from a jurisdictional perspective as there is no right to such access that foreign ships can rely on. It may be more difficult to implement sanctions (such as fines) in a port state for matters that have taken place on the high seas (apart from violations of international pollution standards which, as was already noted, are specifically authorized in UNCLOS Article 218(1)).

45 These types of requirements may stem from (customary) international law, but some of them are specifically written down in UNCLOS. See e.g. UNCLOS Article 300 prohibiting the abuse of rights.

2.5 FISHERIES

2.5.1 THE UNCLOS REGIME

Fishing is listed as one of the freedoms of the high seas in UNCLOS Article 87(1) (e). The freedom does not include sedentary species living on or under the seabed of the continental shelf where it extends beyond 200 nautical miles.[46] The coastal state enjoys sovereign rights over its continental shelf and its living and non-living resources (UNCLOS, Articles 77(1) and (4)). The question of whether or not a particular species is subject to the sovereign rights of the coastal state or the freedom of fishing may arise, and the answer depends on whether it qualifies as a sedentary species. In regulating fishing on the high seas or fishing on the continental shelf, states are required to take due consideration of the rights of other states, and to restrain from unjustifiably interfering with those rights (UNCLOS, Articles 87(2) and 78).

The freedom of fishing on the high seas is a right that is bestowed upon the nationals of all states, including those belonging to land-locked states (UNCLOS, Article 116). However, the right is subject to several restrictions including a general obligation of due regard in respect to others exercising their freedoms on the high seas (UNCLOS, Article 87(2)). For example, fishing activities should not conflict with other uses such as navigation. Furthermore, other treaty obligations of a state may restrict the right to fish on the high seas (UNCLOS, Article 116(a)). They may include the obligations undertaken through membership of regional fisheries management organizations (RFMOs) or FAO agreements. The freedom of fishing is subjected to the rights, obligations and interests of coastal states regarding transboundary fish stocks (UNCLOS, Article 116 (b)). This obligation is reflective of the preferential rights of coastal states as recognized in the 1958 Fisheries Convention[47] and the 1974 *Fisheries Jurisdiction* Case.[48] However, the specific implications of preferential rights are disputed. This was one of the reasons for the adoption of the 1995 Fish Stocks Agreement[49] (see section 2.5.2). Finally, the exercise of the right to fish is restricted by conservation and cooperation obligations. States are obligated to take measures to maintain or restore stocks at levels which produce maximum sustainable yields, as qualified *inter alia* by environmental factors (UNCLOS, Article 117 as specified in Article 119). Where numerous states are fishing in the same area of the high seas or on the same stock, they are obligated to negotiate agreements on necessary conservation measures (UNCLOS, Article 118). They are also required to cooperate in establishing RFMOs for this purpose. States fishing on the high seas are also required to cooperate with relevant coastal states on the conservation of straddling fish stocks and highly migratory fish stocks (UNCLOS, Articles 63(2) and 64): these are transboundary fish stocks that live in areas under national jurisdiction as well as in ABNJ.

The general environmental obligations of UNCLOS also apply, including the protection of rare and fragile ecosystems and the habitat of depleted, threatened or endangered species and other forms of marine life (UNCLOS, Article 194 (5)). The conservation of living marine resources has explicitly been recognised as an integrated part of the duty to protect and preserve the marine environment in recent years' case law. In the Southern Bluefin Cases between Australia/New Zealand and Japan over conservation of a highly migratory fish stock on the high seas, ITLOS established that "[…] the conservation of the living resources of the sea is an element in the protection and preservation of the marine environment."[50] The obligation is not only applicable to the coastal state but to flag states wherever they operate.[51] The Tribunal in the Chagos Marine Protected Area arbitration explicitly referring to UNCLOS Article 194 (5) underlined that its obligations extended beyond

46 Sedentary species refers to "[…] organisms, which at the harvestable stage, either are immobile […] or unable to move except in constant physical contact with the seabed or the subsoil" (UNCLOS Article 77(4)). Species of coral, crustaceans (crabs and lobster), sponges and clams qualify as sedentary.

47 Convention on Fishing and Conservation of the Living Resources of the High Seas, Article 6.

48 *Fisheries Jurisdiction* (United Kingdom v. Iceland), Merits, Judgment, ICJ Reports 1974, 3 (25-26, paras 57-60).

49 The full title is United Nations Agreement for the Implementation of the United Nations Convention on the Law of the Sea of 10 December 1982 relating to Straddling Fish Stocks and Highly Migratory Fish Stocks (New York 4 August 1995, in force 11 December 2001), 2167 UN *Treaty Series*, 88.

50 *Southern Bluefin Tuna Cases* (New Zealand v. Japan; Australia v. Japan) Request for Provisional Measures, Order of 27 August 1999, paragraph 70, available at www.itlos.org/fileadmin/itlos/documents/cases/case_no_3_4/Order.27.08.99.E.pdf.

51 Request for an advisory opinion submitted by the Sub-Regional Fisheries Commission (SRFC) Advisory Opinion of 2 April 2015, paragraph 120, available at www.itlos.org/fileadmin/itlos/documents/cases/case_no.21/advisory_opinion/C21_AdvOp_02.04.pdf.

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preventing pollution. It included measures that "focussed primarily on conservation and the preservation of ecosystems."[52]

The freedom of fishing and the above-mentioned obligations also apply to *marine mammals*. However, UNCLOS Article 65 applies to marine mammals when they are on the high seas. According to this provision, states are not required to manage the stocks at 'maximum sustainable yield' level but may ban or restrict the exploitation beyond levels envisioned by UNCLOS. States are required to cooperate on the conservation of marine mammals. They are obligated to work through 'appropriate international organizations' for the conservation of cetaceans (i.e. whales, dolphins and porpoises).

Anadromous and catadromous species are transboundary species either migrating from the sea to spawn in rivers or migrating from freshwater to the ocean to spawn. In either case, the coastal state in whose rivers the species originates or in whose waters the species spend most of its life carries the weight of the responsibility for their conservation and management (UNCLOS, Articles 66(1) and 67(1)). Consequently, the exploitation of these species is limited to waters landwards of the outer limits of the EEZ (UNCLOS, Articles 66(3) and 67(2)). These species are not to be exploited on the high seas. However, in cases where this would lead to economic dislocation of states fishing for anadromous species, fishery activity may be permitted on the high seas. The state of origin and the other states must first agree on the conditions for the high seas fisheries (UNCLOS, Article 66(3)). They may provide governance arrangements by establishing a regional organization.

In spite of freedom of fishing restrictions, the vaguely formulated obligations combined with open access to fishing rights have created challenges to the regulatory regimes. Where RFMOs have been established to regulate high seas fisheries, states are not obligated to become members and those that are members are not legally bound to apply the measures adopted

52 An Arbitral Tribunal Constituted under UN Convention on the Law of the Sea Annex VII, In the Matter of the Chagos Marine Protected Area Arbitration (Republic of Mauritius v. United Kingdom), Award of 18 March 2015, paragraph 538, available at www.pcacases.com/pcadocs/MU-UK%2020150318%20Award.pdf.

through the organization. Consequently, these measures cannot be enforced against vessels flying the flag of non-members on the high seas. However, non-members are still required to cooperate in conservation, to take measures in respect of their vessels, and to ensure compliance. The fishing activities of non-members, (defined as 'unregulated fishing') may undermine the efforts of member states to conserve and manage fish stocks. Another implication of the open access character is that new entrants or states may claim their right to access an existing fishery. New entrants may thus challenge the rights of the states already established in the fishery. These RFMOs are often constrained with governance challenges (e.g. weaknesses regarding competence, decision-making and compliance), which will be addressed below. A recent advisory opinion of ITLOS, applicable to waters under national jurisdiction, suggests that the cooperation and conservation obligations of a flag state include the duty to exercise 'due diligence'.[53] This suggests that the flag state is required to adopt adequate measures and to ensure that they are complied with. A failure by one or more fishing vessels to comply with the rules does not necessarily constitute a violation of the flag state's international obligations unless the flag state can be shown to have breached its duty to exercise due diligence.[54]

Freedom of fishing is normally associated with capture fishing or harvesting of *wild* living marine resources. Yet, as the freedoms of the high seas are not exhaustively listed in UNCLOS, they may also include a right to fish farming or aquaculture on the high seas. Fish farming would require some type of installation to prevent the fish or other species from escaping, but as is discussed in section 2.7 below, states also enjoy the freedom of establishing installations on the high seas (UNCLOS, Article 87(1) (d)). The establishment and use of such installations must not, however, conflict with the sovereign rights of the coastal state to the natural resources of the continental shelf where it extends beyond 200 nautical miles and overlaps with the high seas or conflict with the state's general environmental obligations. The installations must also be established and used with due regard of other high seas freedoms (UNCLOS, Article 87(2)). On this basis, fish farms could probably not be created in areas with established fishing grounds or sea-lanes. Furthermore, the unilateral introduction of safety zones around the installations to prevent collisions may also conflict with the exercise of high seas freedoms. Fish farming assumes exclusivity of the operator to the living marine resources farmed. Exclusivity to these resources combined with enclosure of parts of the high seas may conflict with the ban on subjecting parts of the high seas to state sovereignty (UNCLOS, Article 89). It may also be a type of activity that should be subject to an environmental impact assessment if it might cause "substantial pollution or a significant and harmful change to the marine environment" (UNCLOS, Article 206).

53 ITLOS, *Request for an Advisory Opinion Submitted by the Sub-Regional Fisheries Commission (SRFC)*, paras. 129-140.

54 *Ibid*, para.129.

2.5.2 THE 1995 FISH STOCKS AGREEMENT - FSA

The Fish Stocks Agreement (FSA) is one of the concrete outcomes of the 1992 Rio Conference on Environment and Development.[55] It is applicable to straddling fish stocks and highly migratory fish stocks on the high seas (FSA, Article 3). This may be the result of the most contentious or pressing conflicts regarding high seas fishing at the time, which was between coastal states, and states fishing on the high seas on these transboundary resources. Nevertheless, the FSA may have implications for fisheries on the high seas in general, as well as for fisheries in areas within national jurisdiction. The FSA may be described as a framework convention, setting out principles and norms to be implemented by state parties to RFMOs, through their jurisdiction or competence as coastal states, flag states and port states. Some provisions are, however, directly applicable: for example, the right to fish on a regulated stock on the high seas is conditional on either membership of the relevant RFMO or on agreement to apply its conservation and management measures (FSA, Article 8(4)).

The objective of the FSA is "[…] to ensure the long-term conservation and sustainable use of [these fish stocks] through effective implementation of the relevant provisions of the Convention" (FSA, Article 2). The FSA develops the obligations of UNCLOS and introduces new principles, such as the precautionary approach, and protection of marine biodiversity, it specifies the obligations of flag states, and develops regional schemes for enforcement. It provides for the ecosystem approach, as states may adopt measures aimed at conserving other species belonging to the same ecosystem as those targeted in the fishery. The main elements of the FSA consist of:

55 Report of the United Nations Conference on Environment and Development, A/CONF.151/26 (Vol. II), Agenda 21, paragraph 17.49 (e).

- **New conservation and management principles (FSA, Articles 5-7):**
  These include precautionary and ecosystem-based approaches and the protection of marine biodiversity. The obligation to apply the precautionary approach has been specified through a separate provision and Annex (FSA, Article 6 and Annex II). States may *inter alia* not use the lack of scientific information as a reason not to take conservation measures. Protection of marine environments means broadening the scope of fisheries management, if necessary, to adopt measures to conserve other species living within the same ecosystem as those targeted by fishing activities. States are also expected to develop or adopt fishing gear technologies and practices which minimize impacts on non-target species, fish and non-fish (an ecosystem approach). Linked with these principles is the need to strengthen the basis of the decision-making through collection and sharing of fishing catch and other data and the results of marine scientific research. States are required to assess the impacts of fishing – and other human activities – along with natural environmental conditions on target fish stocks and other species belonging to the same ecosystem. The question concerning the relationship between the sovereign rights of the coastal states and the freedom of fishing transboundary fish stocks has been addressed through a requirement of compatibility between conservation measures agreed upon for the high seas and those adopted by coastal states for the same stock (FSA, Article 7(2)). The coastal states are required to take into account the agreed-upon measures for adjacent parts of the high seas. However, the agreed measures for the high seas must not undermine the effectiveness of coastal state measures. Furthermore, the biological unity of the stock is an important factor in ensuring compatibility.

- **Strengthening of the role of RFMOs (FSA, Articles 8-14):**
  Even if states are required to cooperate, UNCLOS is rather vague on how they are to cooperate. States are not obligated to be members of the relevant RFMO. Under the FSA the mode of cooperation is specified: States shall cooperate either by becoming a member of the RFMO or by agreeing to apply its measures (FSA, Article 8(4)). Only member states and states agreeing to apply its measures are entitled to access the fisheries regulated by the RFMO (FSA, Article 8(4)). The purpose of these Articles under FSA is to provide the RFMO with exclusive competence in the regulation of a high seas fishery. Consequently, where there are no RFMOs to regulate the fishery for a straddling fish stock or a highly-migratory fish stock on the high seas, both coastal state and the states fishing the stock on the high seas are required to establish one (FSA, Article 8(5)).

  Membership in existing RFMOs is reserved for states with a 'real interest in the fisheries concerned'. There is no definition of 'real interest', but it implies that a mere interest in accessing the fishing areas or in the conservation of the fish stocks is not sufficient. The States Parties have the responsibility, as members of the RFMOs, to operationalize this condition.

  The functions of the RFMOs are specified in FSA Article 10. The establishment of conservation and management measures and the allocation of participatory rights are among their primary tasks. The FSA does not include any general norm or principle for allocating participatory rights in the form of quotas or fishing days. There is a provision on the nature and extent of participatory rights for new entrants to the fishery (FSA, Article 11). It contains a non-exhaustive list of considerations that include, for example, the status of stocks, former fishing, contributions to the conservation of stocks, and the needs of coastal communities and of coastal states. These considerations are also relevant in establishing participatory rights for existing members of the RFMO. Other tasks of the FSA/RFMO worth highlighting include obtaining and reviewing scientific advice and the communication of scientific assessments, establishing standards for collection, reporting and exchange of catch data, as well as mechanisms for monitoring, control and enforcement. In addition, the RFMO is to establish procedures for boarding and inspections of fishing vessels within its regulatory area on the high seas (FSA, Article 21(2)). Further research and capacity is needed to help developing countries implement many of these aspects.

- **Specifying the duties of the flag states (FSA, Articles 18-19)**
  Together with the FAO Compliance Agreement (see below), the FSA is important because it specifies the duties of the flag state in exercising its jurisdiction, and consequently the scope of

the due diligence duty described above. The flag state will control the fishing activities of its vessels on the high seas by the use of licenses or authorizations (FSA, Article 18(3)). Consequently, fishing on the high seas is illegal under national law, unless the vessel has a permit. The flag state shall also establish other conditions necessary to comply with its obligations. Furthermore, the flag state shall ensure the timely recording and reporting of position and catches according to the provisions of the RFMO, as well as for monitoring, control and surveillance of the vessel. The flag state is also responsible for ensuring that its vessels comply with the measures adopted through the RFMO (FSA, Article 19). Their responsibilities include the duty to investigate violations of any of these measures and, if evidential requirements are satisfied, to initiate legal proceedings. The sanctions applied should be severe enough to ensure future compliance. Even if other states, members of RFMOs, and port states have a role in enforcing the measures of the RFMO, it is still the flag state (member or not) that has the main responsibility under FSA. This is underlined by the obligation only to authorize its vessels to fish on the high seas where a state is able to exercise its responsibilities as flag state (FSA, Article 18(2)). Despite this obligation, it is clear that some state parties and non-state parties lack the capacity fully to exercise their responsibilities. Addressing this will enhance overall implementation.

- **Requirements of developing states (FSA, Articles 24-26)**
  The preamble of the FSA recognises the need of developing states for specific assistance to participate in the conservation, management and use of straddling and highly migratory fish stocks. Developed states are required to provide assistance to developing states, either directly or through international and regional bodies such as UNEP, FAO or the GEF (FSA, Article 24(1)). The objective here is to enhance these states' ability to regulate and develop their fisheries for the straddling and highly migratory fish stocks under their jurisdiction, and to enable them to participate in high seas fisheries (FSA, Article 25(1)). This assistance particularly favours the least developed states and small island developing states. The interests of developing states in whose waters of national jurisdiction the stock occurs is one of the relevant considerations in deciding participatory rights for new entrants to a fishery (FSA, Article 11(f)). It indicates that a duty to assist developing states in participating in high seas fisheries is primarily restricted to the region or sub-region to which they belong (a developing state with ambitions to participate in high seas fisheries outside its region would have to participate on an equal footing with other states). The assistance provided may be financial support, technical assistance, or training and consultancy, and its primary goal is to improve the ability to collect, exchange and analyse catch data, undertake marine scientific assessments and research, and to monitor, control and enforce.

  The recognition of the special requirements of developing states not only includes an obligation to assist them to conserve and manage their own resources and to fish on the high seas; it also implies obligations when adopting measures through RFMO for the high seas (FSA, Article 24(2)). States have a duty to consider the vulnerability of the developing states which depend on living marine resources for food. In addition to avoiding adverse impacts on subsistence, small scale and artisanal fishers, as well as fish workers, considerations must ensure that measures adopted for the high seas do not disproportionately transfer the burden of conservation onto developing states. These protected interests concern fishing activities in areas within the national jurisdiction of the developing states. The obligation to take into account these considerations therefore informs the obligation to ensure compatibility under FSA Article 8 (see above). Furthermore, extensive fishing of a straddling or highly migratory fish stock on the high seas may restrict opportunities for developing and maintaining a fishery in areas under national jurisdiction, and this may have negative effects. These considerations may call for a less extensive fishery on the high seas than the other considerations on compatibility would imply. Developing states could benefit from assistance in assessing the impacts of the high seas fishery on their fisheries within national jurisdiction, as well as measures to enhance their domestic management of shared resources.

2.5.3 CONCLUSIONS

- The cooperation and conservation obligations in the high seas are relatively vague in UNCLOS and mainly directed at certain target species. In combination with the principle of open access, this provides for what is described as 'unregulated.

- The FSA goes further than merely implementing some of the UNCLOS high seas fisheries provisions. It strenghtens the roles of RFMOs, port states, flag states and coastal states, and establishes new norms and principles for precautionary and ecosystem-based approaches to management and protection of marine biodiversity.

- Though the FSA is only applicable to straddling and highly migratory fish stocks, its principles in theory could also apply to the management of other fisheries of open ocean areas beyond national jurisdiction. The FSA strengthens the role of the RFMOs, but does not really address how decision-making can be improved or how fishing rights are to be allocated between member states and cooperating non-members.

- Many developing countries would benefit from the enhanced capacity to implement their rights and responsibilities as flag states, port states and coastal states as laid out in the FSA.

2.6 MARINE SCIENTIFIC RESEARCH

2.6.1 GENERAL

Our knowledge about the oceans is still limited. Improving this knowledge and understanding of marine and coastal processes is a prerequisite for protecting the marine environment and its ecosystems, and for supporting sustainable economic opportunities from ocean resources.[56] Marine scientific research is regulated in UNCLOS Part XIII and the competent international organization for marine scientific research is UNESCO's Intergovernmental Oceanographic Commission (IOC).

Any state or competent international organization is free to undertake marine scientific research, but it must be carried out exclusively for peaceful purposes and with appropriate scientific methods and means compatible with the convention. UNCLOS lists a series of principles guiding marine scientific research, including the promotion of international cooperation and dissemination (UN DOALOS 2010). Marine scientific research is to be conducted in compliance with all relevant regulations adopted in conformity with the Convention, including those for the protection and preservation of the marine environment (UNCLOS, Article 240(d)). The provisions of UNCLOS Part XII, discussed above, accordingly apply to the conduct of marine scientific research, even if such research is not specifically mentioned in that part.[57]

The term 'marine scientific research' is not defined in UNCLOS, but a number of Articles in Part XIII highlight the importance of transparency and openness with regard to research, and to the publication and dissemination of its results (UNCLOS, Article 244). Based on other terms in UNCLOS, it may be inferred that the term refers to activities with a scientific purpose, as distinct from military activities, such as hydrographic surveys, exploration and exploitation of resources, and of underwater cultural heritage (Roach 2014). It is unclear if research undertaken for purely commercial purposes - such as prospecting and exploration of resources - falls outside the scope of this term, in particular where such activities involve property rights and confidentiality of results, which is frequently the case.[58]

Most of UNCLOS Part XIII deals with the jurisdiction and arrangements for conducting research in coastal states' waters. Only two Articles specifically address research beyond national jurisdiction, distinguishing between the high seas and the Area.

2.6.2 HIGH SEAS

The right to undertake marine scientific research on the high seas belongs to the high seas freedoms listed in UNCLOS Article 87(1) (f). All states, land-locked or not, as well as competent international organizations have the right to conduct marine scientific research in the water column beyond the limit of the EEZ (UNCLOS, Article 257). The only qualification is that such research should be undertaken "in conformity with this

56 See section 1.1 above. This message is also underscored in the First World Ocean Assessment, as summarized in Part I.VI.

57 Part XIII also contains provisions on the responsibilities of states for measures taken in contravention of the Convention, and for liability for damage caused by pollution of the marine environment airing out of marine scientific research activities undertaken by them or on their behalf (e.g. UNCLOS, Article 263).

58 UNCLOS, Article 241. "Marine scientific research activities shall not constitute the legal basis for any claim to any part of the marine environment or its resources." A common scenario in practice, which also complicates definitions, is that a new compound is first discovered via scientific research and later commercialized.

Convention", which refers to certain general principles such as the requirement that the research be conducted exclusively for peaceful purposes and "with appropriate scientific methods and means", and that it shall not "unjustifiably interfere with other legitimate uses of the sea" (UNCLOS, Article 240). In addition, certain general principles relating to cooperation and dissemination of results apply (UNCLOS, Articles 242 and 244).

If an activity is considered *not* to constitute marine scientific research (for example, because of its method or purpose) and the activity in question does not fall within any other of the high seas freedoms listed in UNCLOS Article 87(1), it may still form part of the high seas freedom. The list of activities in UNCLOS Article 87(1) is not exhaustive and leaves room for other activities to develop, as long as they are not specifically prohibited by other international rules. For such 'other' activities, only the general rules providing for the peaceful use of the high seas and the duty to have due regard to the interests of other states will apply, along with the general obligations of UNCLOS, including its Part XII on environmental protection.

2.6.3 THE AREA

In the Area, marine scientific research remains open to all states, but there are additional provisions regarding the output and benefits from such research. As for the high seas, the starting point is a right for all states to conduct research, but here the additional provisions on marine scientific research in the Area of Part XI apply (UNCLOS, Article 256). In particular, UNCLOS Article 143 demands that research is carried out "for the benefit of mankind as a whole". It specifically foresees a role for the ISA to carry out research,[59] but states that parties[60] to UNCLOS may do so as well, provided that they comply with various obligations relating to the promotion of international cooperation and publication of the results (UNCLOS, Article 143). It is to be noted that states' rights to conduct research in the Area is not limited to research on mineral resources of the seabed.[61]

2.6.4 CONCLUSIONS

- There is a significant need for marine scientific research (MSR), as knowledge of the oceans is still quite limited. This lack of knowledge inhibits both conservation and sustainable use of ocean resources in ABNJ.

- In the absence of a definition, it is not always clear what activities fall within the scope of MSR in a legal sense.

- There are certain important differences between MSR carried out in the high seas and in the Area where the results of MSR are to be shared for the benefit of all humankind, but the distinction is not always easy to make in practical terms. If MSR in the Area relates to 'activities in the Area', it is also subject to the provisions of Part XI.

- The absence of detailed rules for MSR on the high seas is accentuated by the absence of other global rules for marine environmental protection in general and by the paucity of regional rules in this area. Activities that fall outside the scope of MSR (and other high seas freedoms, such as fishing) in the high seas are subject to even less regulation.

2.7 CABLES, PIPELINES, ARTIFICIAL ISLANDS AND INSTALLATIONS

The freedom of the high seas also covers the laying of submarine cables, of pipelines, as well as the construction of artificial islands and other installations permitted by international law (UNCLOS, Article 87(1)(c) and (d)). All states are free to undertake these activities on the high seas, subject of course to the general requirements that they shall be for peaceful purposes[62], shall take measures to protect and

59 UNCLOS, Article 143(2). ISA's role in undertaking marine scientific research in the Area is further specified in Sections 1(5) (h) and 2(1) (b) of the Annex to the 1994 Agreement.

60 Note that this part refers to States Parties, while the general freedom of research refers more generally to states. Whether this should be taken to mean that only parties to UNCLOS are entitled to undertake MSR in the Area is not clear, but to the extent that non-party states would like to do so, it would in any case not be difficult to operate through a ship that flies the flag of a party.

61 For prospecting such resources, ISA's prior approval is required. See e.g. the ISA Regulations on Prospecting and Exploration for Polymetallic Nodules, Regulations 2-4 (www.isa.org.jm/files/documents/EN/Regs/MiningCode.pdf). On the other hand, the same regulations also provide that "these regulations shall not in any way affect the freedom of scientific research pursuant to article 87" (Regulation 1(4)).

62 Both the high seas and the Area are to be used for peaceful purposes only (UNCLOS, Articles 88 and 141). In the absence of other treaty provisions, however, it seems accepted practice that states may place military installations on the seabed, and there is ample evidence in state practice to this effect.

preserve the marine environment including rare or fragile ecosystems, and shall have 'due regard' to the interests of other states and all rights with respect to activities in the Area.[63] An additional qualification is that these freedoms are subject to limitations that follow from Part VI on the continental shelf, but it is unclear to what extent the provisions of Part VI, which deal with areas within national jurisdiction, can be applied to the high seas.[64] At any rate, it is clear that artificial islands, installations and structures do not possess the status of islands; they have no maritime zones of their own and their presence shall not affect the delimitation of maritime zones (UNCLOS, Articles 60(8) and 80).

Most controversies concerning these activities relate to the balancing of interests between the states undertaking these activities and the coastal states whose waters and/or continental shelves will be affected by the activities. Yet, the laying of cables or pipelines may also clash with activities beyond national jurisdiction, notably in the Area, as the mining of seabed minerals might cause obvious strains in relation to the use of the Area for submarine cables or pipelines. In such cases, UNCLOS Article 147(1) merely provides that both 'activities in the Area' (i.e. seabed mining activities) and 'other activities in the marine environment' have to be carried out with 'reasonable regard' for each other. Potential conflicts between cables, pipelines, installations and environmental issues, such as laying of cables over sensitive habitats like cold water coral and sponge reef, are not addressed in UNCLOS.

UNCLOS Article 147(2) also provides specific rules for installations used to carry out activities in the Area, which specify the otherwise rather unregulated right to exercise this high seas freedom.[65] It is provided, *inter alia*, that installations may not be established where they may interfere with "the use of recognized sea lanes essential to international navigation" or to areas of intense fishing activity. No corresponding qualifications exist for the laying of cables and pipelines.

In conclusion, the regulation of these activities are subject to certain standards and guiding principles if they are undertaken on the continental shelf of a state or linked to 'activities of the Area' (i.e. seabed mining activities). Activities that fall outside of these are subject to notably little regulation. While the laying of cables and pipelines includes more detailed provisions (UNCLOS, Articles 113-115) derived from the 1958 Convention on the High Seas relating to the breaking of, or injury to, cables or pipelines and the indemnification of losses (Burnett, Beckman, and Davenport 2013), the rules on installations are more or less non-existent as long as the installation in question cannot be linked to the exploration or exploitation of seabed minerals. If the activity is not linked to seabed mining, there will accordingly be no specific environmental obligation applying for this purpose,[66] no monitoring and enforcement provisions and no international body in charge of its supervision and control. General environmental requirements apply to these activities, but there is no specific international legislation for installations, whether globally or regionally.

63 UNCLOS, Articles 87(2) and 88. The right to lay submarine cables and pipelines has some further provisions in UNCLOS Articles 112-115, largely emanating from the 1958 Convention on the High Seas. It is clarified, *inter alia*, that due regard shall be had to existing cables and pipelines and the possibilities to inspect them. Certain provisions on penalties and liability for conduct resulting in damage to cables or pipelines are also included.

64 For example, due regard for the freedom of navigation would require compliance with the same conditions as prescribed for structures in UNCLOS Articles 60(3) and 80, including notification of construction and removal of such structures, while the prohibition on states from subjecting any part of the high seas to their sovereignty (UNCLOS, Article 89), may prevent the unilateral establishment of safety zones around artificial islands on the high seas under UNCLOS Article 60(4)-(7).

65 To obscure the scope of this freedom further, the only reference to it is in UNCLOS Article 87(1) (d) under which this freedom (which was introduced in UNCLOS without a precedent in the 1958 Convention on the High Seas) covers the construction of artificial islands "and other installations permitted under international law" without any indication of what such installations might be.

66 See also the specific rules on pollution arising from activities in the Area in Part XII (UNCLOS, Articles 209 and 215), which are similarly limited to the exploration and exploitation of (mineral) resources.

2.8 DEEP-SEA MINING

2.8.1 UNCLOS

The traditionally liberal principles of the law of the sea that governed ABNJ were not considered adequate for dealing with the presumed riches on the seabed in the 1970s. Neither the option of having the seabed divided among coastal states along the lines of 'exploitability', nor the principle of high seas freedom and free access to the resources for anyone who has the technical capacity to exploit them were considered to meet the demands of 'fair access and the equitable sharing of benefits' that prevailed at this time.

Instead, a completely new legal regime was created for the Area which represented the most innovative - and controversial - aspect of the entire UNCLOS. Under this, the resources of the Area are deemed to belong to mankind as a whole as part of the 'common heritage of mankind'. Part XI of UNCLOS designs a comprehensive system to secure fair access to those resources and an equitable sharing of benefits that arise from them. It also deals with certain ancillary duties of states, including environmental protection obligations.

2.8.2 THE 1994 AGREEMENT

UNCLOS Part XI never gained support among the industrialized states, which in reality had the most capacity to engage in deep seabed activities and to finance activities in the Area. In the early 1990s extensive negotiations took place to remove or tone down some of the most controversial elements of the text so as to make the convention more acceptable to industrialized states.[67] This resulted in a new agreement in 1994 to implement UNCLOS Part XI, which entered into force in 1996. Despite its title, the 1994 Agreement goes beyond mere implementation, and in reality modifies several substantial aspects of UNCLOS Part XI and Annex III, including some institutional, technology transfer and benefit sharing elements of the Convention. Under Article 2 of the 1994 Agreement, the two conventions shall be interpreted and applied as a single instrument, but if there are inconsistencies between them, the 1994 Agreement shall prevail (Hayashi 1996).[68] States becoming parties to UNCLOS following the adoption of the 1994 Agreement will automatically be bound by the latter; it is not possible to be bound by the 1994 Agreement without being a party to UNCLOS (UNCLOS, Article 4(1) and 4(2)).

While reaffirming the 'common heritage of mankind' principle, the 1994 Agreement reflected a more market-oriented approach to deep seabed mining, and reduced some of the potential costs involved for industrialized states. The original exploration and exploitation scheme of UNCLOS Part XI and Annex III is significantly modified in substance as well as procedure. The role and authority of ISA were toned down, in particular with regards to its operational arm, 'the Enterprise', whose role as a vehicle for development was much reduced and now is subject to essentially similar rules as other (private) contractors. Production limits were abolished and obligations on mandatory technology transfers to developing states were removed. A series of procedural rules were changed to bring more influence to the ISA Council at the expense of its Assembly. The 1994 Agreement accordingly maintained the principle of the 'common heritage of mankind', but modified several key features of it, including the regimes for equitable access to resources, centralized management and sharing of benefits.

2.8.3 PRINCIPLES GOVERNING THE AREA

The regime that applies to the Area is based on four key principles. Firstly, like for the high seas, UNCLOS Article 137(1) ensures that the Area will not be subject to the national jurisdiction of any state.[69]

Secondly, all rights over the resources of the Area are vested in mankind as a whole, on whose behalf an International Seabed Authority (ISA) shall act. Under UNCLOS Article 1(3), 'activities in the Area' means

67 In UNGA Resolution 48/263 (1994), it was recognized that "political and economic changes, including in particular a growing reliance on market principles, have necessitated the re-evaluation of some aspects of the regime for the Area and its resources".

68 Part XI still applies for the 21 states that were UNCLOS parties and have not concluded the 1994 Agreement. However, this is not likely to cause a duality of regimes in practice.

69 UNCLOS, Article 137(1). "No State shall claim or exercise sovereignty or sovereign rights over any part of the Area or its resources, nor shall any State or natural or juridical person appropriate any part thereof. No such claim or exercise of sovereignty or sovereign rights nor such appropriation shall be recognized."

all activities relating to exploration and exploitation of resources of the Area. The term 'resources' specifically refers to the mineral resources of the seabed and excludes living resources.[70] Access to the resources is open to all states, with a particular emphasis on developing and geographically disadvantaged states. This broad access to resources is supplemented by the principle of 'equitable sharing of financial and other economic benefit' derived from activities in the Area. Such a sharing mechanism is not detailed in the current rules, but is to be set up through an appropriate mechanism under UNCLOS Articles 140(2) and 160(2) (f) (i).

Thirdly, the regime is supported by an institutional framework which notably includes the establishment of an Authority (ISA) to manage the activities in the Area on behalf of 'mankind as a whole'.[71] All state parties to UNCLOS are members of the ISA, which administers seabed mining-related activities through an Assembly and Council, as advised by a Legal and Technical Commission. The Authority also comprises an operational entity, 'the Enterprise', to carry out activities in the Area, both directly and indirectly through the transporting, processing and marketing of minerals recovered from the Area (UNCLOS, Article 170(1) and Annex III).

Fourthly, seabed mining activities are to be regulated to ensure effective protection of the marine environment. In addition to the environmental obligations in Part XII of UNCLOS, Article 145 imposes obligations on states acting through the ISA to adopt appropriate rules, regulations and procedures for, *inter alia*, the prevention, reduction and control of pollution and other hazards to the marine environment from harmful effects of activities in the Area. This obligation also extends to "the protection and conservation of the natural resources of the Area and the prevention of damage to the flora and fauna of the marine environment". A complementary obligation for states to adopt rules no less effective than those adopted by the ISA for activities in the Area undertaken by ships, installations, structures and other devices operating under their flag or other form of authority is laid down in UNCLOS Article 209. Additionally, UNCLOS Article 141 provides that the Area shall be open to use exclusively for peaceful purposes (M. Lodge 2015).[72]

On top of this, Part XI includes a variety of obligations on states that are engaged in activities in the Area, which are notably stringent compared to other parts of the Convention. UNCLOS Article 139, for example, explicitly obliges states to exercise effective control over their national citizens, and covers the liability of states and international organizations for damage caused by their failure to carry out their responsibilities.

In brief, the regime established under UNCLOS Part XI – as modified by the 1994 Agreement – is a very comprehensive one, based on detailed elaboration of the rights and duties of the states and other players involved, and a strong involvement of the ISA in the regulation and enforcement of 'activities in the Area', which essentially targets seabed mining activities. This contrasts with the liberal, free access-oriented regime that applies for other uses of the high seas discussed in the previous sections. In a few matters, Part XI regulates aspects of the Area that do not relate to mining activities. For one, it regulates the conduct of marine scientific research in the Area more generally, by specifically calling for close cooperation between states and ISA in this field.[73] It also provides certain basic principles covering objects of an archaeological and historical nature that are found in the Area (UNCLOS, Article 149).

As is shown in section 3.4 below, exploitation of mineral resources in the Area is currently in the process of becoming a practical reality, which highlights the need to clarify the responsibilities of the various parties involved and the boundaries between different legal regimes.

2.8.4 CONCLUSIONS

- Part XI, as modified, establishes a strong regulatory and enforcement regime where ISA has far-reaching rights and responsibilities. However, this regime is limited to mining activities and mineral resources.

70 UNCLOS, Article 133(a). Resources are defined as "all solid, liquid or gaseous mineral resources *in situ* in the Area at or beneath the seabed, including polymetallic nodules".

71 UNCLOS, Article 137(2). In order to avoid the impression that 'mankind as a whole' would hereby be introduced as a legal subject of its own, Article 157(1) clarifies that ISA is "the organization through which States Parties shall organize and control activities in the Area".

72 This does not amount to a prohibition of any military activities, but rather, when read together with UNCLOS Article 301, refers to a prohibition on the use of the seabed for aggressive activities in the sense of Article 2 of the UN Charter. See also the 1971 Seabed Arms Control Treaty.

73 UNCLOS, Article 143. Marine scientific research in the Area shall be carried out exclusively for peaceful purposes and for the benefit of mankind as a whole.

- The ISA is charged with acting on behalf of mankind, sharing financial and other economic benefits, promoting marine scientific research and ensuring the effective protection of the marine environment
- Everything that falls outside the scope of 'activities in the Area' is very loosely regulated. As the example of 'bioprospecting' illustrates (see section 3.7.4), it is not always easy to categorize an activity squarely within or outside an 'activity in the Area'.

2.9 CONCLUDING OBSERVATIONS ON THE UNCLOS REGIME FOR ABNJ

UNCLOS establishes a comprehensive jurisdictional framework. It enjoys widespread formal support, and its authority is not in question. A variety of activities in, and uses of, the oceans are governed by the convention and subject to a sometimes detailed apportioning of rights and obligations between states.

The geographical scope of this jurisdictional scheme encompasses all sea areas. All parts of the oceans and the seabed are included within UNCLOS' scope, and the jurisdiction of states is apportioned for all ocean areas. In theory at least, some states will always have jurisdiction over activities taking place in the oceans, either through the nationality of the persons concerned or through the flag state jurisdiction over the vessel(s) involved. The term ABNJ (Areas Beyond National Jurisdiction) refers to areas which are beyond the limits of the zones of national jurisdiction, i.e. beyond the EEZ and the (outer) continental shelf of coastal states.

This chapter emphasizes the importance of the flag state when it comes to legislative and enforcement authority over ships and installations on the high seas. Some limited and unspecified jurisdiction for non-flag states to protect ABNJ has been included as regards vessel-sourced marine pollution (through port state jurisdiction), dumping (through the imposition of obligations on the state where the material is loaded) and fisheries (through the role of RFMOs provided for in the FSA). The general picture, however, clearly is one of strong reliance on flag state jurisdiction for activities in ABNJ, which underscores the need to enhance the capacity of flag states to fulfil their obligations under UNCLOS and other conventions.

The absence of concurrent jurisdiction by states other than the flag state in ABNJ affects the balance of rights and obligations involved. Firstly, on the high seas, where concurrent jurisdiction by other states is generally not available, there is no state, or other body, to protect the interest of those marine areas. Secondly, flag state jurisdiction, as laid down in UNCLOS, is not an effective way to ensure that obligations are complied with. While a series of stringent obligations apply to flag states in UNCLOS, the convention fails to establish mechanisms that ensure that flag states meet their obligations. For example, it refers to the requirement for there to be a 'genuine link' between the flag state and the ship, but does not include any mechanism to ensure the follow-up of this requirement, which therefore is in reality largely devoid of substantive meaning (R. Rayfuse 2010). Moreover, UNCLOS has almost no provisions relating to enforcement measures against states that fail to meet their detailed flag state obligations, and the rules on state responsibility under general international law have never been used against flag states.

The relevance of these considerations goes beyond maritime transport and fisheries, as most activities on the high seas – including activities that relate to the seabed – involve ships.

Where the activity in question relates to the exploration and exploitation of (mineral) resources, the exclusivity of flag states' jurisdiction is a lesser concern. For these cases, UNCLOS Part XI, as subsequently modified by the 1994 Agreement, establishes a developed regime with detailed substantive rules on many aspects, including environmental and biodiversity protection, and a strong involvement of an international body, the ISA, as regards regulation, monitoring and enforcement. Yet, the usefulness of this scheme has not yet been tested, as seabed mining has yet to properly begin. However, with now more than 24 contracts for exploration approved by the ISA, and regulations to govern exploitation currently under development (see section 3.4), the relevance of the regime is likely to increase in the coming years.

Another conclusion that follows from the review above is that UNCLOS fails to live up to the ambition

set out in its preamble that "the problems of ocean space are closely interrelated and need to be considered as a whole". In reality, the framework it provides is highly compartmentalized: in scope, as largely artificial maritime borders are decisive for determining the jurisdictional powers of states, rather than biological considerations such as ecosystems; and in substance, as different activities in ABNJ are regulated separately, and at times quite differently with very few points of interaction between them, and no institutional or other structure put in place to address questions relating to management or governance. The sectoral approach of UNCLOS may be regarded as being of lesser concern to coastal states as they are ultimately the bodies responsible for managing, coordinating and prioritizing between different uses in their own coastal zones. For ABNJ, however, there is no such body, which means that the absence of provisions on integration, coordination and institutional back-up is particularly significant. Presently, any question relating to the extent of states' rights and obligations on the high seas needs to be approached on a case-by-case basis, with the outcome depending on what activity is at issue, and on the extent to which the flag state in question is bound by and implements the applicable rules, if any.

Another question to consider is whether everything that relates to the uses of the oceans is *exhaustively* covered by UNCLOS. An oft repeated statement is that the Convention "sets out the legal framework within which all activities in the oceans and seas must be carried out",[74] which seems to indicate that any current or future activity in the oceans is already covered and finds its legal basis and regulation in UNCLOS. However, that view fails to allow for the flexibility that was built into the convention to take account of subsequent developments and concerns. Any convention is a product of its time and can only deal with matters known at the time it was negotiated. A series of developments have taken place in the past few decades which were not – and could not have been – foreseen by the drafters of UNCLOS. To limit those activities to individual UNCLOS provisions that were drafted with other purposes in mind would not do justice to the constitutional and framework nature of UNCLOS, and more generally, to its sensitivity towards further development.

Similarly, UNCLOS introduces certain principles relating to environmental governance that, at the time, were quite advanced. Since then, however, international environmental law has developed significantly and with it a series of principles have been introduced, some of which might have reached the status of customary law. While UNCLOS itself refers only sparingly to such principles, subsequent developments in environmental law are of relevance for the application and interpretation of the convention.

UNCLOS itself does not purport to be the final word on ocean regulation. With regards to international conventions that further develop international law within its area of coverage, UNCLOS includes certain provisions which specifically foresee this type of development, provided they do not deviate from the main principles of UNCLOS. Article 311(2) provides that UNCLOS "shall not alter the rights and obligations of States Parties which arise from other agreements compatible with this Convention and which do not affect the enjoyment by other States Parties of their rights or the performance of their obligations under this Convention." With respect to agreements made to protect and preserve the marine environment, UNCLOS Article 237 provides that Part XII of the Convention (addressing the protection and preservation of the marine environment) is "without prejudice to the specific obligations assumed by States under special conventions and […] to agreements which may be concluded in furtherance of the general principles set forth in this Convention." However, obligations assumed under such instruments "should be carried out in a manner consistent with the general principles and objectives of this Convention". The alterations made to UNCLOS in the 1994 Agreement and the 1995 FSA illustrate that these limitations need not be overly restraining, as long as there is widespread political willingness to modify the rules.

UNCLOS, in other words, contains quite a range of imperfections when it comes to the regulation and governance of ABNJ, some of which will be up for discussion in the on-going negotiations on the new Implementing Agreement on BBNJ. However, in view of the dynamic nature of UNCLOS it is not possible to assess its merits and failures without a review of how its provisions have been applied and developed in practice since its adoption. The most important international regulatory and institutional developments of relevance for ABNJ are discussed in the following chapter.

74 UNGA Res. 63/111 (2008), Preamble, p. 1.

OTHER CONVENTIONS AND INSTITUTIONS

AND THEIR MANDATE IN RELATION TO ACTIVITIES IN ABNJ

3

3.1 GENERAL

The UNCLOS regime is neither complete nor static and was not intended to be so. The convention largely leaves it to states and other international bodies, such as the IMO, ISA and FAO, to set more precise limits of states' rights and obligations and to establish systems for managing various activities in the oceans.

This chapter reviews other international conventions and/or institutions that are relevant to the protection of oceans beyond national jurisdiction. The focus is on how post-UNCLOS developments have specified or altered the jurisdictional regime laid down in the convention. The aim is not to provide a full overview of the activities of all such developments, but rather to examine the nature of the relevant institutions' mandates and activities in general terms and their implications for ABNJ. Figure 3 below, which is not exhaustive, illustrates the many and varied international institutions concerned. They are all subject to the regulatory framework of UNCLOS, but their relationship to the UN and its subsidiary bodies varies. The Figure also demonstrates that there is currently no single organ or body responsible for coordinating activities in ABNJ between these bodies.

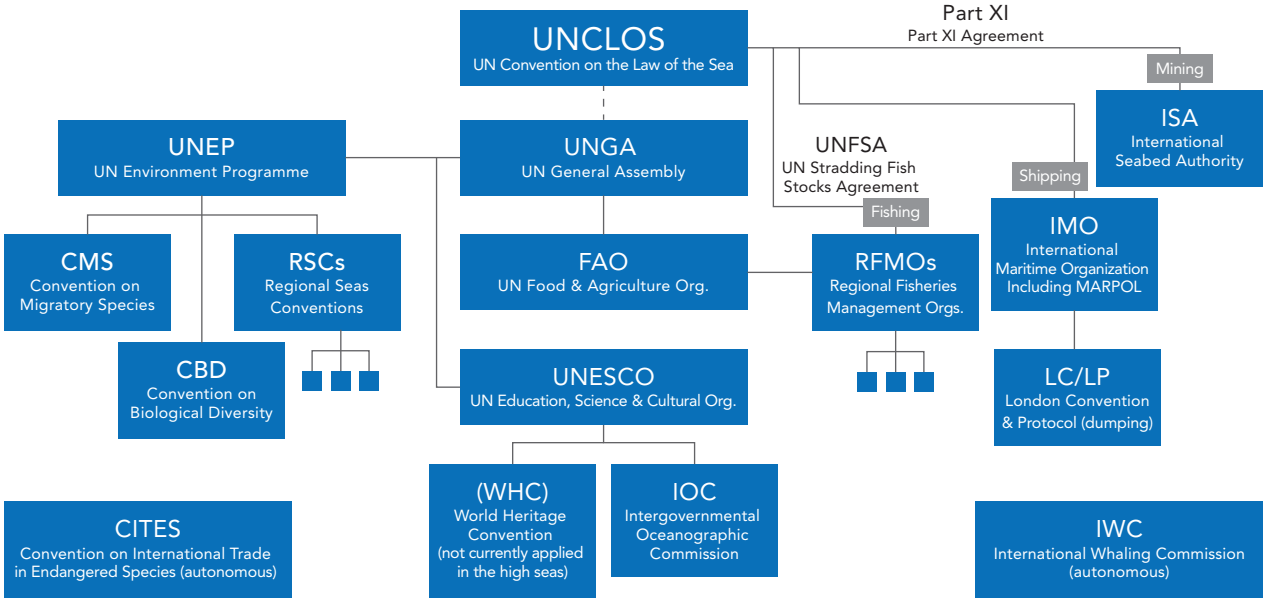

Figure 3: international institutions involved regulating/governing ABNJ (Ardron and Warner 2015).

In this chapter, these various institutions and agreements are addressed separately and mainly from the point of view of how the activities of the international organizations concerned have had implications for ABNJ. Section 3.7 provides some examples of relevant issues that do not easily fall within the mandates of any existing organizations. Through these examples, a more detailed picture emerges of the 'gaps' in this area, and other legal and institutional complications involving issues that are not presently subject to specific regulation, in UNCLOS or elsewhere.

3.2 SHIPPING – IMO

3.2.1 GENERAL

Shipping poses many threats to ABNJ and the marine environment. Examples of its potential negative impacts include pollution from garbage, oily wastes, hazardous materials, sewage, grey water and noise, collision with cetaceans and sea turtles, introduction of unwanted species into a local marine environment and air emissions of various kinds.

The International Maritime Organisation (IMO) is the only international body with a specific mandate to regulate safety and environmental matters related to shipping. Roughly half of the 50 Conventions adopted within the IMO specifically relate to environmental protection. They cover a broad range of themes, including accident prevention, rules for ship construction and equipment, operational and management standards, pollution response activities and civil liability rules. The IMO Conventions are commonly complemented by more detailed recommendations, guidance documents and other non-binding tools aimed at harmonizing and facilitating implementation. Of the environmental threats mentioned above, by far the greatest attention to date has been placed on the prevention of – deliberate or accidental – pollution by ships.

3.2.2 PRESCRIPTION

The main IMO Convention for dealing with the prevention of pollution of ships is the International Convention for the Prevention of Marine Pollution from Ships (MARPOL).[75] This Convention addresses different types of pollutants, both ship and cargo-generated, in its six technical Annexes,[76] and covers a variety of technical aspects of vessel-source pollution, including ship construction standards, monitoring equipment, discharge standards, waste facilities in ports and sanctions for violations. Other conventions have also been adopted to deal with other rules, such as ballast water management (to prevent the spread of non-indigenous species through ships' ballast water) and rules for anti-fouling paint on ships' underwater hulls. Preventing pollution from ships is closely related to maritime safety in general, and the principal convention in this area is the International Convention on the Safety of Life at Sea (SOLAS).[77] Both MARPOL and SOLAS are widely accepted, including by the main flag states.[78] The main IMO rules also qualify as 'generally accepted rules and standards' within UNCLOS and hence represent a minimum standard of operation for all ships, irrespective of whether the flag state in question has actually formally accepted the rule or not.

Not all issues are covered, however. Substantive issues for which there are currently no binding technical rules include ships' underwater noise, biofouling, grey water discharges and ship strikes, while other issues, such as the reduction of greenhouse gases from ships, is regulated in a way which is unlikely to have much impact, at least in the coming decades. Moreover, some IMO Conventions – notably the ballast water management Convention – have not yet been ratified widely enough to bring them into force.

3.2.3 ENFORCEMENT

The key obligations in IMO conventions are placed on the flag state, and they apply irrespective of the location of the ship. It is accordingly up to the flag state to ensure that ships within its register comply with the relevant obligations, and it is the flag state's administration that issues certificates of compliance, often assisted by a 'classification society'. The IMO has traditionally avoided undertaking controls or other follow-up action with respect to poorly-performing flag states. Yet important progress has recently been made in this area through the adoption in December 2013 of the IMO Instruments Implementation Code (III Code).[79] The Code sets a global standard to enable states to meet their obligations as flag, port and/or coastal states, and became mandatory in 2016.[80] The audit scheme is expected to bring about many benefits, including identifying where capacity-building activities (for example, the provision of technical assistance) would have the greatest effect.[81]

In most IMO Conventions (SOLAS, Article I/19; MARPOL Article 5(2)), the flag state obligations on regulation and control are supplemented by rules on optional controls and enforcement by port states. Port State Control (PSC), which is to some extent covered in UNCLOS (UNCLOS, Articles 219 and 226), has become a principal tool for states to ensure that foreign ships entering their ports meet international requirements. Outside the IMO framework, a series

75 International Convention for the Prevention of Pollution from Ships 1973/78

76 The six Annexes deal with: oil (Annex I); hazardous substances in liquid form (Annex II); packaged hazardous substances (Annex III); sewage discharges (Annex IV); garbage (Annex V); and air emissions (Annex VI). Any discharge of oil, noxious liquid substances, sewage and garbage to the sea is prohibited, unless specific conditions are met with respect to the substance concerned as regards discharge rate, speed, and distance from shore. More stringent standards have been agreed upon for 'special areas'. All Annexes also include requirements and standards for certificates and record books, as well as requirements for states to provide facilities for receiving waste and residues from ships in ports, with particularly high requirements for ports located within special areas.

77 International Convention on the Safety of Life at Sea.

78 Ratification details are available at: www.imo.org/en/About/Conventions/StatusOfConventions/Pages/Default.aspx.

79 IMO Resolution A.1070(28) (IMO Instruments Implementation Code)

80 IMO Resolutions A.1067 (28) (Framework and procedures for the IMO Member State audit scheme), and A.1068 (28) (Transition from the voluntary IMO Member State audit scheme to the IMO Member State).

81 IMO Member State Audit Scheme available at: http://www.imo.org/en/OurWork/MSAS/Pages/AuditScheme.aspx

of regional port state control organizations have been established to coordinate control of the international shipping standards aboard ships that visit the ports of the region.[82] However, in the absence of global coordination of the PSC procedures and practices, there are large differences in how PSC is implemented between the regions in the world.

By contrast, coastal states have not played a very important role in the enforcement of rules on vessel-sourced pollution. This is partly due to the quite limited enforcement jurisdiction which is provided to coastal states in UNCLOS, but a more important consideration may be that physical enforcement against ships at sea is impractical, difficult and expensive to undertake.

However, technological advances mean that states can increasingly monitor the activities of ships without physically intervening. Examples include mandatory automatic ship identification systems, and the remote surveillance of traffic and (mainly oil) spills from aircraft or satellites, for subsequent enforcement in port. Remote surveillance technologies may be particularly relevant for monitoring ships' activities in ABNJ. Such technological advances could greatly enhance the capacity of port and coastal states to monitor activities in ABNJ and increase the prospect of targeted enforcement measures while ships are in port, before or after their operations on the high seas.

3.2.4 IMO'S AREA-BASED TOOLS

Since shipping is an international activity, there is a strong tradition in IMO of making the safety and environmental standards for ships applicable worldwide, without distinction as to the trading area concerned. The IMO Conventions, therefore, generally apply to all sea areas in the same manner, irrespective of whether or not they are in ABNJ. This is also a result of the fact that many of the relevant rules relate to 'static' features such as the construction, design, equipment and manning of ships, which cannot easily be altered during a voyage. However, this has not prevented IMO from agreeing to specific protective measures for certain sea areas where such measures are deemed to be appropriate. So far, IMO has developed three different types of measures to enhance the protection of sea areas in need of specific safeguards from the environmental hazards associated with shipping.

First, MARPOL includes the notion of 'special areas'. All four Annexes that include discharge standards have a mechanism whereby areas or regions in the world can have more stringent standards for the discharge of oil, other hazardous substances, sewage and garbage of ships due to their oceanographical and ecological conditions and the concentration of traffic.[83] The same applies to air emission control areas (ECAs) which restrict emissions of sulphur or nitrogen oxides in specific areas under Annex VI. These areas are normally large regional sea areas, which are defined in geographical terms and not on the basis of concerned maritime zones under UNCLOS.[84] Some of these special areas include portions of the high seas meaning that the stricter limits also apply in ABNJ. There is currently no MARPOL special area – other than the Antarctic – that specifically covers ABNJ. However, nothing prevents IMO from amending individual MARPOL Annexes to include new special areas that are exclusively located in ABNJ, such as the Sargasso Sea.

Secondly, SOLAS Chapter V provides for so-called 'ships routeing' measures which are mainly aimed at directing maritime traffic. Over the years, more measures to direct traffic have been added, including 'areas to be avoided' where traffic by certain types of ships may be completely prohibited. It is accepted that such measures can be adopted on purely environmental grounds. Routeing measures, as well as ship reporting systems, are adopted by IMO based on the rules laid down in chapter V of SOLAS.[85] It is unclear if such measures can be adopted on the high seas,[86] but in practice some of the existing measures apply on the high seas, though usually close to the coastal waters of one or more coastal states.

82 Port state control MoUs/agreements have been signed covering Europe and the North Atlantic (Paris MoU); Asia and the Pacific (Tokyo MoU); Latin America (Acuerdo de Viña del Mar); Caribbean (Caribbean MoU); West and Central Africa (Abuja MoU); the Black Sea region (Black Sea MoU); the Mediterranean (Mediterranean MoU); the Indian Ocean (Indian Ocean MoU) and the Persian Gulf (Riyadh MoU) See e.g. www.parismou.org/ or www.tokyo-mou.org/.

83 See guidelines for establishing special areas IMO Resolution A.927(22), www.imo.org/blast/blastDataHelper.asp?data_id=24553&filename=A927%2822%29.pdf

84 E.g. in Annex I the special areas are the Baltic Sea, the Mediterranean Sea, the Black Sea, the Red Sea, the "Gulfs" area, the Gulf of Aden, the Antarctic area, North West European Waters, the Oman area of the Arabian Sea and Southern South African waters. For an overview of IMO Special Areas and Emission Control Areas, see www.imo.org/en/OurWork/Environment/SpecialAreasUnderMARPOL/Pages/Default.aspx

85 See guidelines for states seeking to establish such measures, www.imo.org/en/OurWork/Safety/Navigation/Documents/1060.pdf

86 The geographical reach of mandatory routeing systems in terms of coastal zones is not specified in SOLAS Regulation V/10, but several of its provisions (notably paras. (8) and (9)) seek to ensure the consistency between these measures and international law, particularly the law of the sea.

Thirdly, the IMO has introduced the concept of a 'particularly sensitive sea area' (PSSA). These areas have a specific need for protection through action by the IMO because of their recognized ecological, socio-economic, or scientific significance, and because of their vulnerability to damage by international maritime activities.[87] These actions may cover a broader set of measures extending beyond discharge rules to also include routeing measures, reporting requirements, traffic guidance, equipment standards, etc. Since PSSAs are non-binding guidelines, their jurisdictional status is not very strong, which means that each protective measure needs to have "an identified legal basis".[88] The IMO adopts PSSAs on a case-by-case basis, and there are no strict rules stipulating limits to size or jurisdictional areas. There seems to be nothing to prevent PSSAs from covering vast ocean areas, including ABNJ (Roberts, Chircop, and Prior 2010). All that is needed is IMO agreement. However, the usefulness of the PSSA status has been questioned, as the decision itself is not legally binding and the measures in question could be directly and independently established under the IMO instruments (e.g. for ship routeing, reporting, MARPOL special areas). Nevertheless, a PSSA designation may help raise seafarers' awareness of sensitive areas because it will appear on their charts. It may also encourage the adoption of new types of measures (e.g. noise requirements). However, a PSSA designation offers no additional jurisdictional powers of enforcement, which means that it would still mainly fall on flag states to ensure that rules are complied with on the high seas. Fifteen PSSAs had been established up to 2016, none of which extends to the high seas.

A development of relevance to ABNJ in the polar areas is the Polar Code. This applies to both Arctic and Antarctic waters and introduces, through amendments to MARPOL and SOLAS, a variety of additional safety and environmental requirements on ships operating in the polar regions. In addition, the Polar Code includes additional requirements which are submitted in the form of recommendations.[89]

The examples above demonstrate that, given political will, there is nothing to prevent the IMO from agreeing to special protection measures, even in ABNJ. As long as the IMO approves the measures in one of its 'generally accepted' international conventions, it follows from UNCLOS that all ships, irrespective of nationality, will have to follow said rules. However, it is important to note that the absence of jurisdiction by states in ABNJ means that the duty to ensure that the rules are actually respected falls mainly, if not exclusively, on flag states. The new procedures for mandatory flag state performance audits create an interesting opportunity to work with the IMO to improve flag states' capacity to ensure their ships' compliance with safety and environmental rules.

3.2.5 ASSESSMENT

In general terms, the IMO rules for the prevention of pollution from ships are quite stringent, and operational vessel-source pollution would be a small problem if they were all actually complied with. However, there are considerable imperfections in implementation, even though MARPOL has, in the past decades, contributed to a significant decrease in pollution – accidental or deliberate – from international shipping.

Thanks to the legal construction adopted in UNCLOS, notably the references to 'generally accepted' rules adopted in IMO, the main rules relevant to the prevention of pollution from ships cover vessels of all states, regardless of whether or not they have formally ratified the MARPOL or SOLAS conventions. And owing to the legislative techniques opted for in the IMO, the rules of those conventions apply irrespective of the sea area in which a ship operates and will be verified in ports, irrespective of their nationality.

ABNJ are therefore reasonably well regulated against many forms of ship-sourced pollution and other impacts under the main IMO Conventions. Moreover, as the four existing mechanisms for particularly vulnerable sea areas illustrate, there is nothing legally to prevent the IMO from agreeing to further, more stringent measures for particular areas in ABNJ, should a need or wish for them arise.

The situation is less satisfactory with respect to matters that are not yet regulated by the IMO, or rules that have not yet been fully adopted by states and are therefore not yet enforced or generally accepted. Among the rules in this category with particular relevance for ABNJs are the ones which deal with the physical disturbance caused to marine life by ships (noise or collisions) as well as ballast water

87 More information on PSSA is available at www.imo.org/en/OurWork/Environment/PSSAs/Pages/Default.aspx

88 IMO Resolution A.982 (24) Revised Guidelines for the Identification And Designation Of Particularly Sensitive Sea Areas, Paragraph 6.

89 IMO Resolution MSC.385 (94). See also: www.imo.org/en/MediaCentre/HotTopics/polar/Pages/default.aspx

discharges, biofouling, and grey water discharges from cruise ships.

It should also be noted that modern environmental law principles play a relatively limited role in the IMO's law-making. Indeed, in some cases the IMO's own principles for adopting new rules fit uneasily with such environmental principles. For example, it is a long-standing practice in the IMO that new rules are developed only on the basis of "a clear and well-documented demonstration of compelling need."[90] This approach is at odds with the precautionary principle, which has been adopted in many other instruments of relevance for ABNJ.

The main weakness of the system lies in its strong reliance on flag states to make and enforce the rules, and this is particularly relevant in ABNJ where concurrent jurisdiction by other states is so limited. In this sense, post-UNCLOS activities at IMO have had very little effect on the structure of international law of the sea (H. Ringbom 2015), and there seems to be no appetite to challenge this within the organization.[91] However, in the past few decades, the introduction of modern technologies and tools such as satellite-based surveillance has greatly improved the technical capacity of states to monitor ships' whereabouts, even far from shore. This opens up new possibilities for states other than the flag state to participate in the enforcement of rules that apply in ABNJ. Moreover, the new mandatory flag state audit scheme signifies a possible changing tenor inside the IMO and opens the door to identify and assist the weaker flag states in meeting their obligations.

3.2.6 CONCLUSIONS

- The IMO has adopted a wide range of environmental rules that are ambitious in terms of their stringency and widely applicable throughout the world. The IMO's rules are generally technical in nature, and do not seek to alter the jurisdictional regime set out in UNCLOS.
- Substantive gaps still exist, either due to a lack of rules (for example, in the case of preventing ship strikes with cetaceans or noise requirements for ships) or a lack of the ratification of rules that have already been adopted (for example, ballast water management). In certain cases, such as the reduction of greenhouse gases, the matter is regulated and the rules are in force, but the material requirements are so weak that they are almost void of practical significance, at least in the short term.
- Modern environmental law principles play a relatively limited role in the IMO's law-making. In some cases the IMO's own principles for regulating rules fit uneasily with such environmental principles.[92]
- The application of the IMO rules is still almost exclusively the responsibility of flag states, though in certain regions port state control has complemented the flag state control, particularly when it comes to technical safety and environmental standards for ships.
- Technological advances relating to surveillance offer new possibilities for monitoring ships' activities in ABNJ.
- Recent initiatives by the IMO for mandatory audits of merchant vessel compliance with key IMO agreements, and the FAO Port State Measures Agreement, offer useful opportunites to bolster compliance under UNCLOS.
- There is a need for further improvements in flag state and port state performance, which may often hinge on capacity issues.

90 IMO Resolution A.500 (XII) (1981) and A. 777(18) (1993).

91 IMO Doc. LEG/MISC.8 (2014).

92 It is a long-standing practice in the IMO that new rules are developed only on the basis of "a clear and well-documented demonstration of compelling need" (IMO Resolution A.500 (XII) (1981) and A. 777(18) (1993)). This approach is at odds with the precautionary principle which has been adopted in many other instruments of relevance for ABNJ.

3.3 DUMPING – IMO

3.3.1 GENERAL

Dumping refers to any deliberate disposal at sea of waste or other matter from ships, aircraft, platforms or other man-made structures.[93] UNCLOS includes certain specific provisions in Part XII which seek to ensure that dumping is at least as effectively regulated at sea as is provided for in global substantive rules and standards (UNCLOS, Article 210(6)). These obligations apply not only to the flag state of the ship concerned, but also to coastal states and, more importantly for the present context, to the state where the waste or other matter was loaded.[94]

More detailed rules on dumping are found in the 1972 Convention on the Prevention of Marine Pollution by Dumping of Wastes and other Matter (commonly known as the London Convention). This Convention was significantly strengthened through a Protocol adopted in 1996.[95] Both instruments govern dumping at sea (excluding internal waters) wherever it occurs, hence also in areas beyond national jurisdiction. The 1972 Convention essentially permitted the dumping of all substances, except those listed in Annex I of the Convention, as long as there was a permit from a Contracting Party. By contrast, under the 1996 Protocol, state parties are required to prohibit the dumping of all wastes or other matter, unless the substance in question is specifically listed in the so-called 'reverse list' Annex 1 of the Convention, and specifically authorized.[96] Incineration at sea of waste and other matter is completely prohibited (1996 Protocol, Article 5).

The 1972 London Convention and its 1996 Protocol have significantly contributed to halting the largely-unregulated dumping and incineration activities that were taking place in the late 1960s and early 1970s. Along with these two global instruments, dumping is also regulated in a series of regional conventions, which are not discussed in detail here.[97]

For the purposes of ABNJ, a relatively strict regulatory framework exists. The jurisdictional rules on dumping have no geographical limitation, and hence apply to ABNJ. In short, there are stringent enforcement obligations on flag, coastal and loading states and strict material rules that apply at global levels, in particular through the 1996 London Protocol. The real challenges with respect to dumping relate to reporting, compliance and enforcement – that is, ensuring that states live up to their obligations in practice.

The London Convention and Protocol have been amended in order to respond to challenges that were not foreseen at the time of their adoption. Since the London Protocol's entry into force in 2006, the governing bodies of the instruments have made some additional regulatory changes, focusing on new methods to mitigate climate change. At the first meeting of the parties in 2006, amendments to the Protocol permitting sub-seabed carbon sequestration (the storage of CO_2 under, but not on or above, the seabed) were agreed.[98] In 2012 the IMO, concerned with the risk of CO_2 leakage into the sea, adopted Specific Guidelines for the Assessment of Carbon Dioxide for Disposal into Sub-Seabed Geological Formations.[99] Article 6 of the Protocol prohibits contracting parties from allowing the export of wastes or other matter to other countries for dumping or incineration at sea. That Article, having been interpreted as prohibiting the export of CO_2 from a contracting party to other countries for injection into sub-seabed geological formations, was amended in 2009 to allow for cross-border transport of CO_2 for sub-seabed storage, but the Amendment has not yet entered into force. Another Amendment concerns ocean fertilization activities, and will be discussed below in section 3.7.3.3.

Acting as secretariat for the London Convention, the IMO has initiated other actions including clarifying the

93 UNCLOS, Article 1(5). This also includes the dumping *of* ships, and platforms, within the definition. By contrast, disposal of waste "derived from the normal operation" of vessels, aircrafts, and platforms is not covered.

94 UNCLOS, Article 216. This Article lays down an unqualified obligation for the coastal state, the flag state, and for any state in which the substance is loaded to enforce the rules.

95 1996 Protocol to the Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter of 29 December 1972 (hereafter the London Protocol or the 1996 Protocol). See in particular 1996 Protocol Article 10(1). The 1996 Protocol entered into force in 2006 and presently has 45 states parties. The 1972 Convention had 84 parties.

96 This main rule only applies to certain strict exceptions relating to emergencies and force majeure. The 'reversed list' in Annex 1 to the 1996 Protocol contains material such as dredged materials, sewage sludge and fish waste and, through an amendment made in 2006, CO_2 sequestration.

97 For a summary of the regional Conventions and Agreements that include requirements on dumping, see IMO: 'The London Protocol: What It Is and How to Implement It', the IMO, London, 2013, Annex 10.

98 IMO Doc. LC-LP.1/Circ.5.

99 IMO Doc. LC 34/15, Annex 8, 2 November 2012.


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wording used in the Convention and Protocol, and the Convention's relationship to the rules governing the prevention of pollution from ships. An example is the provision holding that the London Convention does not cover disposal of wastes "incidental to or derived from the normal operations of vessels".[100]

In conclusion, the Convention governing dumping at sea, including ABNJ, represents a solid regime which is based on stringent material rules, in particular for the signatories to the 1996 Protocol. However, the rules on implementation and enforcement are far less strict. There is a non-compliance mechanism in place that allows states to contest each other's practices, but rules on sanctions or liability, for example, are still lacking. In addition, the governing bodies under the London Convention and, in particular, the 1996 Protocol, have been quite adaptive in responding to new ocean disposal challenges, such as CO_2 sequestration in the seabed and ocean fertilization. The regime covers dumping in ABNJ, but it does not extend to land-based discharges into the marine environment or to any dumping in states' internal waters. In order for the regime to be more effective, formal participation in the 1996 Protocol should increase and the capacity for states to report, monitor and control illegal dumping be enhanced.

100 London Convention Article III (1) (b) (i) and LP Article 1(4) (2) (1). See e.g. the discussions and solutions with respect to the disposal of spoilt cargo and animal carcasses in VanderZwaag (2015).

3.3.2 CONCLUSIONS

- The jurisdictional regime governing ocean dumping is comparatively strong in relation to other forms of marine pollution addressed in UNCLOS. In addition to the jurisdiction of the flag state, the port of loading of the matter to be dumped has an unqualified obligation to enforce the applicable international rules on dumping, which also cover dumping in ABNJ.

- The material rules on dumping as laid down in the 1996 Protocol are quite stringent and are based on a precautionary approach. The original 1972 convention is not as stringent, but is still more widely ratified.

- The IMO and the parties to the dumping instruments have been fairly quick to respond to new uses of the oceans, such as carbon sequestration and ocean fertilization. However, bringing new treaty rules into force takes time.

- Key concerns for the effectiveness of the dumping regime relate to compliance, monitoring and enforcement.

3.4 SEABED MINING - ISA

3.4.1 GENERAL

The International Seabed Authority (ISA) came into being by the entry into force of UNCLOS in November 1994, but only begun to function in 1996. Its task is to "organize and control activities in the Area, particularly with a view to administering the resources of the Area" (UNCLOS, Article 157(1)). It has wide-reaching prescriptive and enforcement jurisdiction in this field including the power to adopt rules and regulations relating to prospecting, exploration, and exploitation in the Area (UNCLOS, Article 160(2)(f)(ii)), and wide-reaching enforcement powers to ensure that the conditions agreed to by contractors are met (UNCLOS, Article 153(5)), to terminate operations when necessary, and to impose penalties for non-compliance (UNCLOS, Annex III, Article 18(1)).

In addition to regulating and administering seabed mining, a number of ancillary functions for the ISA follow from other parts of UNCLOS Part XI, such as the promotion and encouragement of marine scientific research of the Area and its resources (UNCLOS, Article 143(2) and (3)), the transfer of technology and scientific knowledge about the Area to developing countries (UNCLOS, Article 144(1) and (2)), and the promotion of international cooperation over activities in the Area (UNCLOS, Article 160(2)). Issues that are not linked to the exploration and exploitation of the Area's resources (such as the laying of pipelines and cables on the deep seabed) are not part of the activities of the Area, and therefore lie beyond the ISA's mandate and jurisdiction. However, UNCLOS Article 157(2) provides some flexibility here, by stating that the ISA "shall have such incidental powers, consistent with this Convention, as are implicit in and necessary for the exercise of those powers and functions with respect to activities in the Area". While this may not include the power to regulate activities that are not defined as 'activities in the Area', it may entail some capacity to insist that other activities are conducted with 'due regard' to the aims and objectives of the Area.

All parties to UNCLOS are *ipso facto* members of the ISA (UNCLOS, Article 156(2)). They are all represented at the Assembly while the executive organ, the Council, is composed of 36 states. In addition, key preparatory functions are performed by certain subsidiary bodies established by the Council, such as the Legal and Technical Commission, where members act in their personal capacity.[101] More unusually, the ISA has its own operational organ called 'the Enterprise'. However, changes in the 1994 Agreement effectively put 'the Enterprise' on hold by establishing a number of conditions to be met before 'the Enterprise' can operate as an independent entity.[102]

3.4.2 ACTIVITIES

Activities in the Area are divided into three phases: 1) the exploration phase; 2) the exploitation phase; and 3) the sharing of benefits arising from the operations.

Review of the implementation of the deep seabed mining rules for activities in the Area is hampered by the fact that such activities have not yet reached beyond the first phase. Economic conditions have to date not favoured commercial mining operations in the Area, though that may now be changing. Regulations for exploiting seabed minerals are under development. In its first two decades of operation, the ISA has focused on managing pre-mining requirements such as developing draft mining codes and contracts as well as training and other initiatives. The main activities of the ISA have so far concentrated on putting in place a legal framework for the prospecting and exploration phase. Rules relating to the exploitation of minerals are expected to be ready in 2016.

3.4.3 REGULATION OF ACTIVITIES

The main function of the ISA is to regulate the how activities in the Area may be carried out.[103] It specifies that they must be performed by a qualified entity following a formal written plan of work (in the form of a contract) drawn up in accordance with

101 UNCLOS, Article 165. This Commission reviews all proposed plans of work for activities in the Area and makes recommendations. It also has a supervisory role. In fact, most substantive matters require prior consideration by this Commission. Sometimes the Council is required to take into account its recommendations. The size of this commission was enlarged in 2011 from 15 to 25 members.

102 First, initial operations shall be through joint ventures, no need for states to finance its operations. Second, its activation is decided by Council. The first request for joint venture arrived in 2013, by a Canadian company. See Doc. ISBA/19/C/18

103 Activities in the Area are defined in UNCLOS Article 1(3) as "all activities of exploration for, and exploitation of, the resources of the Area". While this definition does not, strictly speaking, include prospecting of resources, this pre-exploration phase has nevertheless been included in the ISA regulations.

the requirements of Annex III and approved by the Council. Entities wishing to carry out activities in the Area must be nationals of a state party, or effectively controlled by it or its nationals, and must be sponsored by one or more states parties (UNCLOS, Article 153(2) (b) and Article 4(3), Annex III).[104]

To date, the Authority has issued three sets of regulations dealing with prospecting and exploration for mineral resources: The Regulations on Prospecting and Exploration for Polymetallic Nodules in the Area (adopted 13 July 2000[105]), which was later updated and adopted 25 July, 2013; the Regulations on Prospecting and Exploration for Polymetallic Sulphides in the Area (adopted 7 May, 2010[106]), and the Regulations on Prospecting and Exploration for Cobalt-Rich Crusts (adopted 27 July, 2012[107]). These regulations are broadly similar in scope, format and content. Their main differences relate to the spatial and geological characteristics of the mineral resources they concern.[108]

By 31 May 2016, the ISA had concluded 15 contracts for polymetallic nodules, 5 for polymetallic sulphides, and 4 for cobalt crusts.[109]

At the time of writing, the ISA had not yet finalized rules regulating the exploitation phase, but had indicated that this was a priority, and had set a target date of completion of 2016.[110]

3.4.4 ENVIRONMENTAL RESPONSIBILITIES

Extraction and exploration of resources in the Area may have serious impacts on the ocean environment and biodiversity.[111] The ISA has specific responsibilities to ensure the protection of the environment from harmful effects which may result from activities in the Area. It shall, in particular, adopt appropriate rules and procedures for the prevention, reduction and control of pollution, and for "the protection and conservation of the natural resources of the Area and the prevention of damage to the flora and fauna of the marine environment" (UNCLOS, Article 145).

Even though deep ocean mining has not yet begun in practice, ISA has developed a comprehensive set of environmental guidelines dealing with three types of minerals (Wolfrum 2014).[112] The ISA has also taken into consideration the general principles of environmental law, by specifying the obligation to conduct prior environmental impact assessments (Le Gurun 2007) and by implementing the principles of the precautionary approach and best environmental practice, both in the ISA Regulations[113] and in contracts for exploration.[114]

In addition, the detailed management plan for the Clarion Clipperton Zone in the Central Pacific, which includes the establishment of nine areas of particular environmental interest, provides an example of regional-scale, ecosystem-based management of activities which has been put in place by the ISA.[115] More environmental research is needed now that seabed mining may be imminent, to ensure that the environmental rules effectively reflect the precautionary approach and that additional regional-scale ecosystem-based plans are in place and enforced in practice for all areas of mining interest.

3.4.5 CONCLUSIONS

- The ISA has a significant role to administer seabed mining on behalf of [hu]mankind. This includes a mandate to create environmental measures which ensure effective protection of the marine environment from the impacts of mining and related activities.

- However, the ISA is not specifically mandated to adopt rules to protect the marine environment

104 At the request of the ISA, the precise obligation of the sponsoring states was examined by ITLOS Seabed Disputes Chamber. See ITLOS Case No 17.

105 Doc. ISBA/6/A/18, as updated by ISBA/19/C/17

106 Doc. ISBA/16/A/12/Rev.1

107 Doc. ISBA/18/A/11

108 While nodules are vastly available, polymetallic sulphides and cobalt-rich crusts are found in localized deposits in specific areas.

109 See www.isa.org.jm/deep-seabed-minerals-contractors?qt-contractors_tabs_alt=0
Fourteen of these contracts are for the exploration of polymetallic nodules in the Clarion-Clipperton Fracture Zone (13) and Central Indian Ocean Basin (1). There are five contracts for the exploration of polymetallic sulphides in the South West Indian Ridge, Central Indian Ridge and the Mid-Atlantic Ridge, and three contracts for the exploration of cobalt-rich crusts in the Western Pacific Ocean.

110 Doc. ISBA/20/C/32 (2014). The urgency of the matter is highlighted by the fact that the 15 year terms of the first exploration contracts signed in 2001 will expire in 2016. See also www.isa.org.jm/mining-code

111 For example, while the exploitation of polymetallic nodules can be done with little damage to seabed, harvesting of polymetallic sulphides (which are located close to hydrothermal vents) entail more risks as smokers could be damaged.

112 Doc. ISBA/19/LTC/8 (2013).

113 E.g. Regulation 31(2) of the ISA Regulations on Polymetallic nodules.

114 E.g. Regulation 33(2) of ISA Regulations of sulphides.

115 See Doc. ISBA/18/C/22. See also the review of this management plan undertaken by Seascape consultants, available at www.isa.org.jm/files/documents/EN/20Sess/LTC/CCZ-EMPRev.pdf

from other seabed activities such as marine scientific research (MSR), bioprospecting, laying of cables and pipelines, and the construction of seabed installations, when these activities are not related to seabed mining, regardless of whether or not they may have an impact on environment and biodiversity. This creates potential for conflicts between uses and gaps in coverage.

- While the the performance and effectiveness of ISA is regularly made pursuant to UNCLOS Article 154 (Johnson et al. 2016), a full assessment of the role and performance of the ISA can only be done once seabed mining has entered the exploitation phase, which is not yet the case.

- The issue of mining operations conflicting with other uses of marine areas beyond national jurisdiction has not yet arisen in practice. However, as detailed rules on exploitation are now being developed, it is opportune to consider potential gaps or overlaps in relation to other regimes.

- Judging from its practice regarding exploration, the ISA takes its environmental mandate seriously and has generally sought to implement and further develop environmental principles in its Mining Code.

- The ISA has developed innovative approaches to precautionary environmental protection such as the regional environmental management plan for the Clarion Clipperton Zone, but faces many challenges as seabed mining moves towards the exploitation phase.

3.5 FISHERIES

3.5.1 GLOBAL LEVEL

3.5.1.1 UN General Assembly Resolutions

The United Nations General Assembly (UNGA) has, since the early 1990s, annually adopted a resolution on sustainable fisheries based on the report of the Secretary-General and deliberations at the United Nations Open-ended Informal Consultative Process on Oceans and the Law of the Sea. In the most recent resolution, among the issues addressed were: the responsibilities of flag states to ensure compliance by their vessels on the high seas; cooperation through existing regional fisheries management organizations (RFMOs); and the establishment of new RFMOs where there are gaps.[116] The UNGA resolutions also underline the importance of ratifying and implementing existing instruments. States and RFMOs were explicitly asked to implement the FAO Guidelines on Management of Deep-Sea Fisheries in the High Seas to protect vulnerable marine ecosystems.[117] UNGA has also called on states to apply an ecosystem approach to fisheries management, directly or through the RFMOs.[118]

116 See e.g. Resolution A/RES/69/109 - Sustainable fisheries, including through the 1995 Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea of 10 December, 1982 relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks, and related instruments, paragraphs 6, 27 and 122 available at http://daccess-ods.un.org/TMP/5806931.85329437.html .

117 UNGA Resolution A/RES/64/72, paras 113-127.

118 UNGA Resolution A/RES/62/177, paras 5-7, 85, 90 and 93.

3.5.1.2 The Food and Agriculture Organization of the United Nations (FAO)

The Food and Agriculture Organization (FAO) is the global institution dealing with fisheries and aquaculture issues. One of its key tasks is to collect, analyse and disseminate information relating to nutrition, food and agriculture (FAO Constitution, Article I (1)), including fisheries. Every two years, as part of their responsibilities, the FAO publishes The State of World Fisheries and Aquaculture (FAO 2016). According to the 2016 report, in 2013 68.6% of assessed fish stocks were within limits of biological sustainable levels and consequently 31.4% of assessed fish stocks were being fished at unsustainable levels. Further, 58.1 % of assessed fish stocks were fully fished, and underfished stocks were at 10.1%.

The FAO is also responsible for promoting and recommending national and international action on research, technical assistance and conservation of natural resources (FAO Constitution, Article I (2)). The Committee on Fisheries (COFI), currently the only global inter-governmental forum where major international fisheries and aquaculture problems and issues are examined, was established as a subsidiary body of the FAO Council in 1965. This body was created to review the programme of work of the FAO on fisheries, and to review fisheries problems and possible solutions through cooperative actions between the member states (FAO Constitution, Article V (6) (b)).

As part of its global mandate, and in an effort to promote long-term sustainable fisheries, the FAO has established regional fisheries bodies (RFBs). Some of these have advisory functions (FAO Constitution, Article VI (1)). Other fisheries organizations established by the FAO are authorized to adopt binding decisions (FAO Constitution, Article XIV (1)). These regional fisheries bodies will be addressed in section 3.5.2. FAO undertakes a coordinating role by hosting meetings between the secretariats of the RFBs.[119]

The FAO has also adopted two international agreements of relevance:

- 1993 Compliance Agreement[120], and
- 2009 Port State Measures Agreement.[121]

119 See minutes from the meetings at http://www.fao.org/fishery/topic/18244/en#RFB1

120 FAO Agreement to Promote Compliance with International Conservation and Management Measures by Fishing Vessels on the High Seas, Rome 24 November 1993, in force 24 April 2003, 2221 UN *Treaty* Series, 120, reg no. 39486. The FAO Compliance Agreement has 40 parties.

121 Agreement on Port State Measures to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated Fishing, Rome 22 November 2009. Under Article 29 of the Agreement it entered into force 30 days after the deposit of the twenty-fifth approval/ratification/accession instrument. The agreement currently has 33 participants.

The purpose of the 1993 Compliance Agreement was to address the problem of 'reflagging' where vessels fishing on the high seas change their flags from member's to non-member's in order to avoid the conservation measures adopted through a RFMO (Edeson 2003). The Compliance Agreement is applicable to fishing vessels that are being used, or are intended for, fishing on the high seas (1993 Compliance Agreement, Article II). The main obligation specifies the responsibility of the flag state: Each Party is required to take "[…] such measures as may be necessary to ensure that fishing vessels entitled to fly its flag do not engage in any activity that undermines the effectiveness of international conservation and management measures" (1993 Compliance Agreement, Article III (1)). What constitutes undermining the effectiveness of measures is not clarified in the Compliance Agreement. However, it does indicate that even the flag states that are not directly bound by this clause are not completely free of its obligations. As with the FSA, they must at least regulate access of their vessels for high seas fisheries by the use of authorizations and must set conditions (e.g. catch and gear restrictions). Flag states must refrain from issuing such license until they are able to exercise this responsibility. Furthermore, they cannot authorize fishing vessels that have previously

undermined the effectiveness of measures under another flag. Flag states are required to maintain a record of vessels authorized to fish on the high seas (1993 Compliance Agreement, Article IV). In addition, states are obligated to cooperate, *inter alia*, in the exchange of information and evidence to identify vessels involved in undermining international measures. This includes the port state's obligation to report such vessels to the flag state.

The objective of the 2009 FAO Port State Measure Agreement, which entered into force 5 June 2016, is to prevent Illegal, Unregulated and Unreported fishing (IUU fishing) by the use of so-called port state measures (2009 FAO Port State Measures Agreement, Article 2). The concept of IUU fishing originates from one of the international plans of action (described below) to implement the Code of Conduct for Responsible Fisheries. Both the FSA and Compliance Agreement include port state measures, but the FAO Port State Measures Agreement includes obligations that are more specific. The measures to be taken by the port state are also directed at enforcing compliance with the agreed conservation and management measures for the high seas areas through RFMOs. This agreement includes provisions for port entry, the use of ports, inspections and follow-up. There are also provisions made for special requirements of developing states.

The parties must designate ports where foreign-flagged fishing vessels may request permission to enter (2009 FAO Port State Measures Agreement, Article 7). Before entering such ports, the vessels are required to submit an advance request (2009 FAO Port State Measures Agreement, Article 8) which must include information *inter alia* on fishing authorization (e.g. period, area, gear and catches), total catch on board and catch to be landed. This information assists the port state in determining whether or not the vessel has been involved in IUU fishing (2009 FAO Port State Measures Agreement, Article 9 (1)). If the port state has sufficient evidence that the vessel has been involved in IUU fishing – for example, if it has been listed by RFMOs for prior involvement in such fishery – the port state is obligated to refuse entry to its ports (2009 FAO Port State Measures Agreement, Article 9(4)). If a vessel is permitted to enter port, but its authorization to fish on the high seas is not valid, or it is unable to confirm that the fish on board were caught in compliance with relevant RFMO conservation and management measures, it may be refused landing or transhipment of catches, and/or services such as resupply (2009 FAO Port State Measures Agreement, Article 11). The Port State Measures Agreement does not exclude the port state from taking other measures consistent with international law. Arresting the vessel in port for fishing activities on the high seas would, however, violate the freedom of the high seas and the exclusive jurisdiction of the flag state. The port state is required to communicate with the flag state on these matters, and the flag state is obligated to investigate cases where there is evidence that a vessel has been involved in IUU fishing (2009 FAO Port State Measure Agreement, Article 20).

This agreement recognizes the special requirements of developing states (2009 FAO Port State Measures Agreement, Article 21) by requiring other states to provide assistance to develop capability, both legally and in compliance with the obligations of the agreement. Due regard must be given to ensure that developing states are not disproportionately burdened in the implementation of their obligations (2009 FAO Port State Measures Agreement, Article 21(2)). This Article suggests that the obligations may not be applied equally among states unless the capacity of developing countries is enhanced. Even before the Agreement came into force, its measures were being implemented at regional level through some of the RFMOs.

FAO has adopted several non-legally binding instruments of relevance for high seas fisheries. First, these include the 1995 Code of Conduct for Responsible Fisheries (also called Code of Conduct or simply The Code).[122] The Code includes provisions similar to the FSA for applying the precautionary approach, on the conservation and maintenance of marine biodiversity, on the cooperation through RFMOs, on flag state responsibilities, and others (1995 Code of Conduct for Responsible Fisheries, Articles 6-8). The Code covers more species, has a wider geographical scope and is applicable to all fisheries within and beyond national jurisdiction (1995 Code of Conduct for Responsible Fisheries, Article 1.2). The Code and its implementation may assist in ensuring that the rules and principles developed from the 1992 Rio Conference have a broader impact than the transboundary species provisions of the FSA.

Secondly, the Code has been supplemented by international plans of action (IPOA):[123]

122 Code of Conduct for Responsible Fisheries is available at www.fao.org/docrep/005/v9878e/v9878e00.htm

123 See an overview of the IPOAs at: www.fao.org/fishery/code/ipoa/en

- International Plan of Action for Reducing Incidental Catch of Seabirds in Longline Fisheries;[124]
- International Plan of Action for the Conservation and Management of Sharks;[125]
- International Plan of Action for the Management of Fishing Capacity;[126] and
- International Plan of Action to Prevent, Deter, and Eliminate Illegal, Unreported and Unregulated Fishing (IPOA-IUU).[127]

A third type of instrument, the technical guidelines,[128] offer assistance to states in the implementation of the Code on matters concerning marine protected areas, precautionary approaches to capture fisheries, ecosystem approaches to fisheries (EAF) and aquaculture, and conservation and management of sharks. The FAO has also adopted international guidelines for the management of deep-sea fisheries on the high seas.[129]

The IPOAs and technical guidelines provide guidance to coastal states, flag states and RFMOs in the implementation of the Code of Conduct. Space does not allow detailed description of all these instruments. FAO has been instrumental in operationalizing both the precautionary approach and the EAF, which is a way of ensuring ecosystem considerations are included in more "conventional fisheries management" (UNEP 2016). EAF is defined as:

> *An ecosystem approach to fisheries (EAF) strives to balance diverse societal objectives, by taking into account the knowledge and uncertainties about biotic, abiotic and human components of ecosystems and their interactions and applying an integrated approach to fisheries within ecologically meaningful boundaries (FAO 2003).*

The FAO International Guidelines for the Management of Deep-Sea Fisheries in the High Seas were adopted in response to a call by the UN General Assembly.[130] They apply to fisheries for species that may only tolerate a low exploitation rate and the use of fishing gear that is likely to contact the sea floor.[131] The objective is to prevent significant adverse impacts on vulnerable marine ecosystems (VME) caused by overexploitation of species with low productivities and physical damage caused by fishing gear to deep habitats.[132] VME are identified through criteria such as uniqueness and rarity, functional significance of the habitat and fragility.[133] When a deep-sea fishery is likely to undergo significant adverse impacts in an area, the flag state and/or the RFMO are recommended to undertake an environmental impact assessment which includes risk assessment of likely impacts, mitigation and management measures to prevent significant adverse impacts on VME and provides for the long-term conservation of low-productivity species.[134] In cooperation with RFMOs, FAO has developed a database that provides an inventory of measures established in ABNJ which apply to deep-sea fisheries.[135]

The IPOA for conservation and management of sharks was triggered by concern about the over-exploitation of shark populations as fisheries expanded seawards.[136] The objective of this IPOA is to ensure sharks' conservation and management for long-term sustainable use. It applies to areas within and beyond national jurisdiction. States are advised to develop national plans of action for conserving and managing sharks, which apply to vessels flying their flags conducting targeted fishing for or catching sharks as by-catch. Further, states are required to cooperate through regional or sub regional fisheries bodies in regional plans of action. National and regional plans shall *inter alia* ensure that targeted and non-targeted fishing for sharks are sustainable and protect critical habitats.

The IPOA-IUU adopted in 2001 recognises that a major cause of fish over-exploitation lies in inadequate implementation, compliance and enforcement of global and regional instruments. It has had an impact on international fisheries law through the 2009 Port State Measures Agreement. Illegal, Unreported and Unregulated (IUU) fishing has also become a key consideration in the practice of the RFMOs (discussed below) and applies to areas both within and

124 See overview of the Seabirds IPOA at: www.fao.org/fishery/ipoa-seabirds/en

125 See overview of Sharks IPOA at: www.fao.org/fishery/ipoa-sharks/en

126 See overview of Fishing Capacity IPOA at: www.fao.org/fishery/ipoa-capacity/en

127 See overview of IUU IPOA at: www.fao.org/fishery/ipoa-iuu/en

128 See an overview of FAO Technical Guidelines at: www.fao.org/fishery/code/publications/guidelines/en

129 FAO International Guidelines for the Management of Deep-Sea Fisheries in the High Seas, available at: www.fao.org/docrep/011/i0816t/i0816t00.htm

130 UNGA Resolution 61/105, paras 88-91, cf paras 80 and 83.

131 FAO International Guidelines for the Management of Deep-Sea Fisheries in the High Seas, paragraph 8.

132 Ibid., paragraph 6.

133 Ibid., paragraphs 42-46.

134 Ibid., paragraphs 42-53.

135 FAO Vulnerable Ecosystem Database, available at: http://www.fao.org/in-action/vulnerable-marine-ecosystems/en/

136 FAO IPOA for conservation and management of sharks, available at: www.fao.org/ipoa-sharks/background/sharks/en/

beyond national jurisdiction. The definition of *Illegal* fishing on the high seas is any activity pursued by a vessel flying the flag of a RFMO member that is in contravention of the conservation measures applicable to those members or of activities in violation of the commitments undertaken by cooperating non-members (IPOA-IUU paragraph 3.1). *Unreported* fishing is defined as an activity undertaken in the area of competence of a relevant RFMO, which has not been reported or has been misreported in violation of its reporting procedures (IPOA-IUU paragraph 3.2). Unreported fishing is normally considered on a par with illegal fishing. *Unregulated* fishing on the high seas is carried out in the regulatory area of a RFMO by stateless vessels or by vessels flying the flag of non-member states, which are not consistent with or contravene the measures of the RFMO (IPOA-IUU paragraph 3.3.1). This definition has caused some controversies, as the fishing activities of the non-members are not necessarily in violation of international law (Theilen 2013). Any fishing in an area where there are no applicable conservation and management measures and where the fishing activity is in violation of conservation obligations also constitutes unregulated fishing (IPOA-IUU paragraph 3.3.2).

The objective of the IPOA-IUU is to prevent, deter and eliminate IUU fishing (paragraph 8). The IPOA-IUU also advises states to take appropriate action to ensure that their vessels are not involved in IUU fishing on the high seas under the flag of states that do not honour their responsibilities. The measures to be taken by the flag states are to a large degree identical to those regulated in the FSA and Compliance Agreement. These states should *inter alia* use their capacity and not permit vessels that have been involved in IUU fishing to fish or to re-flag.

3.5.2 REGIONAL LEVEL

3.5.2.1 General

There are over 40 regional fisheries bodies worldwide (UNEP 2016). They vary in scope and with regard to competence. While some are species-specific (such as those addressing tuna species), others include all fish species within identified parts of the high seas. As already mentioned, some of these regional fisheries bodies are established by the FAO, and some have a more advisory (scientific or management) function. Here the focus will be on regional organizations or arrangements that are competent under their constituent treaties to adopt legally binding management measures and to take action to ensure that these measures are complied with. These are termed regional fisheries management organizations, or RFMOs.

3.5.2.2 RFMO - Highly Migratory Fish Stocks

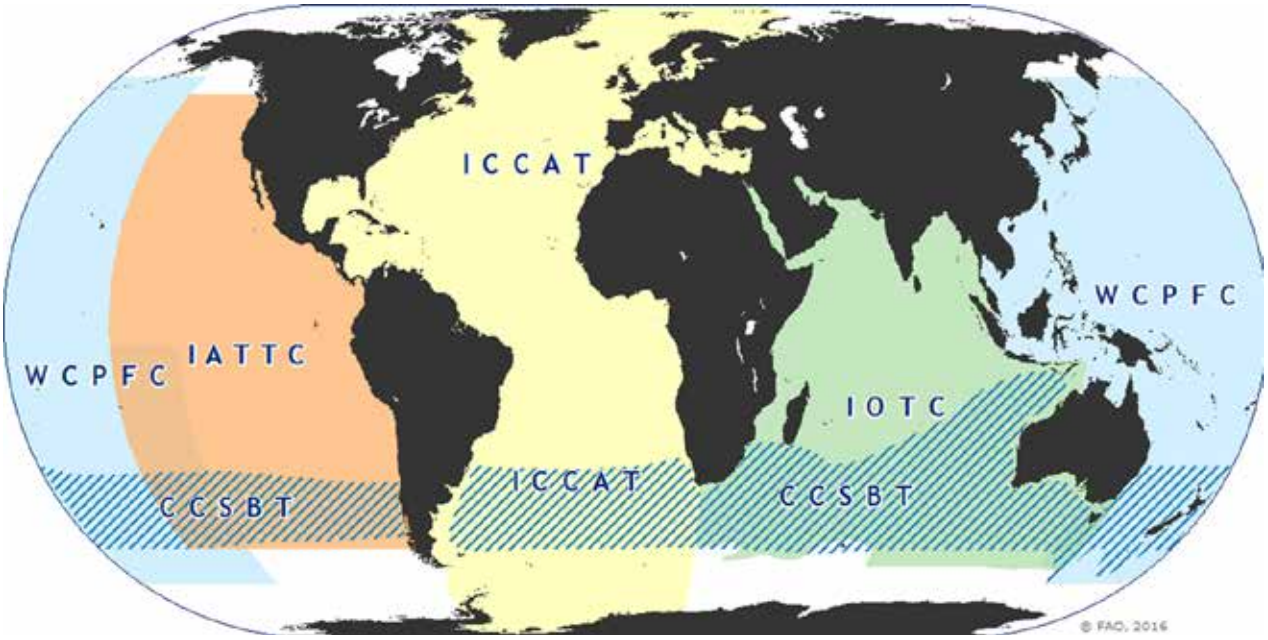

Figure 4: Competence areas of Tuna Regional Fisheries Management Organizations (Source: FAO, 2016)

Five established RFMOs have the competence to regulate the fisheries for tuna or tuna-like fish stocks on the high seas (UNCLOS, Article 64 and Annex I)[137]:

- **The Inter-American Tropical Tuna Commission**, *IATTC*, established in 1950. In view of legal developments of recent years, the IATTC adopted a constituent treaty in 2003 (Antigua Convention) in order to strengthen the organization. It entered into force in 2010.
- **The International Commission for the Conservation of Atlantic Tunas**, *ICCAT* was established in 1969. There is an ongoing work in the RFMO to revise the constituent treaty to bring it in line with the legal developments in recent years.
- **The Commission for the Conservation of Southern Bluefin Tuna**, *CCSBT* was established in 1994.
- **The Indian Ocean Tuna Commission**, *IOTC* was established in 1996.
- **The Western Central Pacific Fisheries Commission**, *WCPFC* was established in 2004 and is to a large degree influenced by the 1995 FSA.

3.5.2.3 Non-tuna species RFMOs

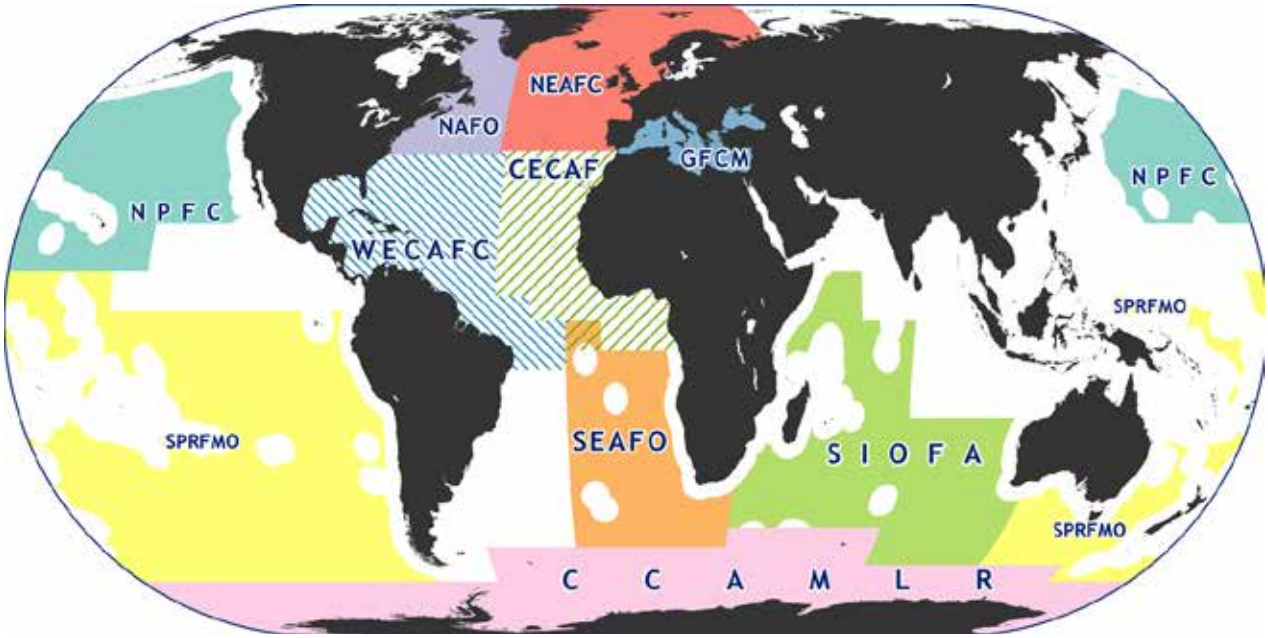

Figure 5: RFMOs and CCAMLR areas of competence (Source: FAO, 2017)

137 See also: www.tuna-org.org/

There are nine established RFMOs competent to regulate the fisheries for straddling fish stocks and discrete fish stocks on the high seas. They do not include regional organizations competent to regulate anadromous species in areas beyond national jurisdiction.[138] Nor are regional bodies established by coastal states for cooperation on the management of shared fish stocks included.[139] However, the latter bodies may regulate the fisheries of the parties of shared stocks in adjacent areas of the high seas. These nine RFMOs are also not competent to regulate catches of sedentary species or marine mammals.

- **The Northwest Atlantic Fisheries Organization**, *NAFO*, established in 1979 is the successor of ICNAF. A new convention was adopted in 2007, but is not yet in force.

- **The North-East Atlantic Fisheries Commission**, *NEAFC*, was established in 1982. The constituent treaty was amended in 2004 and 2006 to expand the mandate of the RFMO to include the conservation of marine biodiversity and to provide for dispute settlement.[140] The dispute settlement procedures have yet to enter into force.

- **General Fisheries Commission for the Mediterranean**, *GFCM*, was established in 1952 and has had its constituent treaty amended.

- **Commission for the Conservation of Antarctic Marine Living Resources**, *CCAMLR* was established in 1982.

- **South East Atlantic Fisheries Organization**, *SEAFO* was established in 2003 after the adoption of the FSA.

- **South Indian Ocean Fisheries Agreement**, *SIOFA*[141] was signed in 2006 and established in 2012. Its second meeting was held in 2015.

- **South Pacific Regional Fisheries Management Organisation**, *SPRFMO* was established in 2012.

- **North Pacific Fisheries Commission**, *NPFC* was recently established in July 2015.

- **Convention on the Conservation and Management of Pollock Resources in the Central Bering Sea**, *CCBSP* entered into force in 1996.

Even if new RFMOs have been established in recent years, gaps remain in the geographical coverage of RFMOs capable of adopting binding conservation and management measures for straddling fish stocks and discrete high seas fish stocks, in accordance with Article 8 of the 1995 FSA. These gaps are specifically found in the Atlantic: no RFMO covers the Southwest Atlantic and in the Central Atlantic, there are two RFBs (advisory function only) established by the FAO:

- **Fishery Committee for the Eastern Central Atlantic**, CECAF;

- **Western Central Atlantic Fishery Commission**, WECAFC.

Discussions on transforming these two regional fisheries bodies into RFMOs competent to adopt binding measures have yet to provide results (Takei 2013). In addition, the two newly established Pacific RFMOs do not cover the whole ocean.

The regulatory area of NEAFC covers parts of the high seas of the Central Arctic Ocean. Most parts of this high seas area are not covered by any RFMO, were there to be commercial fishing in the future due to the withdrawal of the sea ice. However, the five Arctic coastal states (Norway, Denmark [in respect of Greenland], Canada, USA and the Russian Federation) have agreed on a declaration of cooperation on scientific research and the prevention of unregulated fishing in this area.[142] They have committed only to issue commercial fishing licences pursuant to the decisions of one or more RFMOs (existing or new). The temporary ban on fishing includes the regulatory area of NEAFC. However, this only applies to the fishing vessels in the five states and not at present to states from outside the region. The five Arctic coastal states have initiated talks with four other states (People's Republic of China, Republic of Korea, Japan and Iceland) and the EU who have fishing interests in the region, to seek their agreement

138 The salmon regional fisheries organizations include the North Atlantic Salmon Organization (NASCO), and the Pacific Salmon Organization (PSC), and the North Pacific Anadromous Fisheries Commission (NPAFC).

139 Examples of such bodies include the Joint Norwegian-Russian Fisheries Commission and the Joint Technical Commission for the Maritime Front (CTMFM).

140 See Status of the 1980 Convention On Future Multilateral Cooperation in North-East Atlantic Fisheries here: www.neafc.org/system/files/status-of-1980_convention-03.pdf

141 More information on SIOFA available at: www.fao.org/fishery/rfb/siofa/en.

142 See Declaration of 15 July concerning the Prevention of Unregulated High Seas Fishing in the Central Arctic Ocean on Arctic Fisheries at www.regjeringen.no/en/aktuelt/fishing-arctic-ocean/id2427705/.

to the temporary ban and to the establishment of future RFMO(s).[143]

3.5.2.4 Characteristics of RFMOs

Membership: As stated under Article 8 of the FSA, the right to fish on the high seas is conditional on membership or agreement to apply the measures of the RFMO. Some RFMOs are open to new members,[144] whereas others are closed, as they require the consent of all or a majority of existing members.[145] The closed RFMOs do not usually stipulate criteria for membership.[146] Some of them have established arrangements for cooperation with non-members (described as cooperating non-contracting parties), consistent with FSA Article 8(3).[147] The arrangements provide for non-contracting parties to comply with conservation and management measures as well as reporting obligations. The willingness of non-contacting parties to cooperate undoubtedly depends on the fishing prospects.

Decision-making: These RFMOs have the authority to adopt decisions on, among other things, conservation and management measures, allocation of national quotas, enforcement, and compliance schemes that are legally binding on their member states. Decisions are normally taken by consensus, but some constituent treaties are open to majority vote. Where decisions are taken by a majority vote, members are free to opt out, but they will be bound by the outcomes when they come into force. In the new and revised constituent treaties of some RFMOs, the right to opt out has been restricted as members are required to give reasons for their objection and to stipulate the alternative measures (as necessary) to be established by the member.[148] Opt out clauses are used most frequently against decisions that concern allocations of national quotas. The use of the opt-out clause may result in procedures initiated to prevent possible disputes, which could have negative effects on the fishery resources. For example, NPFC may call a new meeting to review a contested decision and bring forth two independent experts to advise them on international law and RFMO practices. If the alternative measures are considered unjustifiable, the member state must revise its alternative measures, implement the original decision or institute dispute settlement procedures.

Functions of the RFMO: The main tasks of the RFMO include the adoption of conservation and management measures (such as total allowable catches and technical regulations), and allocation of quotas or levels of fishing effort between its members. Further, RFMOs are responsible for establishing schemes that ensure compliance with and enforcement of measures. The RFMOs also usually have scientific functions, including compilation and dissemination of statistical data and providing scientific stock assessment and advice. With the exception of CCAMLR, the constituent treaties of RFMOs predating the FSA included few rules or principles to guide decisions on conservation and management of living marine resources. The precautionary approach and protection of marine biodiversity and Ecosystem Approach to Fisheries (EAF) have been included in treaties and/or practice of some but not all RFMOs (new and old).[149] In addition, not all RFMOs have included the new principles in their treaties, nor have they necessarily applied them. One such example is ICCAT.[150]

The SPRFMO Convention (i.e. Convention on the Conservation and Management of High Seas Fishery Resources in the South Pacific Ocean) is an example on the integration of protection of marine biodiversity into the function of RFMOs, based on the FSA and the Code of Conduct. Its objective is "[…]through the application of the precautionary approach and an ecosystem approach to fisheries management, to ensure the long-term conservation and sustainable use of fishery resources and, in so doing, to safeguard the marine ecosystems in which these resources occur" (SPRFMO Convention, Article 2). The objective is specified through several principles and approaches, including the protection of marine ecosystems, the application of the precautionary

143 Meeting on High Seas Fisheries in the Central Arctic Ocean: Chairman's Statement, 15 December 2015 at http://www.state.gov/e/oes/rls/pr/250352.htm#1

144 The open RFMOs include NAFO (Article XXII (4)), SPRFMO (Article 37) and SIOFA (Article 23). The last two mentioned are open to new states interested in the fishery resources managed through them.

145 The closed RFMOs include NEAFC (Article 20(4)), IATTC (Article IX (2)), WCPFC (Article 35(2)), and IOTC (Article IV (2)).

146 One exception is NPFC, which is open to relevant coastal states and states wishing to fish on the regulated resources. CCAMLR is open to states with interest in research and harvesting of the regulated species (Article XXIX). Membership in the decision-making body is dependent on the state actually conducting these kinds of activities (Article VII, paragraph 2).

147 Examples of RFMOs with formalised cooperation with non-members include NEAFC (Scheme of Control and Enforcement, chapter VII), SPRFMO (Article 32) and WCPFC (Article 32 para 4).

148 Examples of RFMOs with such procedures include NAFO (2007 Convention, Article XIV para 5) and NPFC (Article 9 paragraph 1 c).

149 Examples include WCPFC (Article 5(d) end (f)); NAFO 2007 (Article III); NEAFC (Article 4(2)); and NPFC (Article 3). These principles are not explicitly included in the constituent treaty of CCAMLR, but have been applied in practice. See www.ccamlr.org/en/organisation/ccamlrs-contribution-global-food-security.

150 ICCAT, Report of the Independent Performance Review of ICCAT, 2009, pp.14-16.

approach and an ecosystem approach (SPRFMO Convention, Article 3 (1)). The SPRFMO is provided with wide discretion in adopting conservation and management measures (SPRFMO Convention, Article 20 (1)). In addition to ensuring the long-term sustainability of target fish stocks, measures are to maintain or restore populations of non-target species above safe levels, protect the habitats and marine ecosystems in which target and non-target species occur from the impacts of fishing. The latter measure includes prevention of significant adverse impacts on VMEs. These measures may include temporal or spatial restrictions on fishing or fishing gear (SPRFMO Convention, Article 20(2)).

Recent work within both UNGA and FAO to operationalise the new principles through RFMOs has also been important. Two examples are the conservation of sharks and the efforts to regulate deep-sea fisheries.

RFMOs have an important function in implementing the IPOA for the Conservation and Management of Sharks.[151] In fact, several RFMOs have adopted measures for the conservation and management of sharks.[152] They include CCAMLR, ICCAT, and NAFO. CCAMLR has adopted measures to reduce the bycatch of sharks and has banned commercial fishing for sharks, whereas ICCAT has banned fishing for specific shark species and NAFO measures include a requirement to utilise all parts of sharks.[153] FAO has established a database that provides an overview of measures adopted at national and regional level for conservation and management of sharks.[154] There is still much work to be done to address concerns related to sharks, as well as bycatch of sea turtles, cetaceans, juveniles of target species, impacts of fishing gear when deployed as well as when abandoned or lost (e.g. purse seines, fish traps), as well as the wider ecosystem impacts of fishing.

The FAO guidelines for the management of deep-sea fisheries on the high seas aim to assist RFMOs in managing deep-sea fisheries.[155] RFMOs competent to regulate fishing for straddling and discrete high seas fish stocks are also usually competent to manage deep-sea fisheries.[156] The FAO has established a database (VME Database) that provides an inventory of the conservation and management measures adopted through RFMOs for deep-sea fisheries.[157] NEAFC for example has adopted measures to protect VMEs and to regulate bottom fishing[158] (which include 13 areas closed for bottom fishing). In some areas, protective measures have been adopted that provide for comprehensive marine protected areas (see section 3.7.2) however there is more that could be done. The UNGA reviewed progress with respect to the implementation of UNGA Resolution 61/105 (and subsequent resolutions) in 2016.

The allocation of participatory rights is probably the most contentious issue within any RFMO. Disagreements on the allocation of total allowable catch (TAC) between member states (and possibly cooperating non-members) can prove a major obstacle to the sustainable use and conservation of fish stocks. As with the FSA, the constituent treaties of the RFMO, including the new ones, do not provide clear criteria on how to allocate participatory rights and accommodate new members.[159] Some RFMOs do not even allocate participatory rights between their members. The practice seems to favour existing members and may undermine the willingness of new states to commit to applying the conservation measures of the RFMOs.

Compliance/enforcement: Consistent with FSA, Compliance Agreement and Code of Conduct many RFMOs have expanded their mandate to prevent both Illegal and Unregulated fishing within their regulatory areas through licensing and reporting obligations, monitoring, surveillance and control schemes (e.g. satellite-tracking), inspection at sea and port inspection schemes. There are large differences between some RFMOs.

151 International Plan of Action for the Conservation of Sharks, paragraph 24.

152 Regional Fisheries Management Organization Measures for Shark Conservation and Management (draft as at March 2014), available at https://cites.org/eng/prog/shark/legality.php. A database on measures to conserve and manage sharks is available at http://www.fao.org/ipoa-sharks/database-of-measures/en/

153 An overview of shark-related measures adopted through RFMOs is available at https://cites.org/sites/default/files/eng/prog/shark/docs/shark%20RFMO%20measures%20-%20draft%20March%202014.pdf

154 Database of measures on conservation and management of sharks, at http://www.fao.org/ipoa-sharks/database-of-measures/en/

155 International Guidelines for the Management of Deep-Sea Fisheries in The High Seas, FAO 2009, available at www.fao.org/docrep/011/i0816t/i0816t00.htm

156 FAO, Regional Bodies involved in Deep-Sea Fisheries, available at http://www.fao.org/in-action/vulnerable-marine-ecosystems/background/regional-fishery-bodies/en/

157 FAO VME Database, at http://www.fao.org/in-action/vulnerable-marine-ecosystems/vme-database/en/

158 Recommendations 19/2004 and 9/2015 Protection of VME in NEAFC RA, available at www.neafc.org/managing_fisheries/measures/current/

159 See e.g. WCPFC, Article 10(3) ; NPFC, Article 7(1) (f-g).

Several RFMOs have established their own port state control schemes, including NEAFC, NAFO, SEAFO, GFCM and ICCAT. The purpose of these schemes is to ensure that vessels of member states and non-member states comply with the regulatory requirements, and/or have not undermined them. These schemes are normally used in combination with sightings and inspection of vessels at sea. Vessels of non-member states found to be engaged in fishing activities in an RFMO may be listed as involved in IUU fishing. They may be subjected to more extensive actions when calling at ports in member states. The port state schemes include the requirement for advance requests for port entry; the denial of entry for IUU listed vessels; inspection and control in port; and denial of uses of the port for transhipment and vessel services.

Other RFMOs have introduced additional compliance measures. Notably, CCAMLR has introduced a Catch Documentation Scheme for Patagonian Toothfish to identify the origin of Toothfish landed in, imported into, or exported from territories of member states or cooperating non-member states. This determines whether the fish was caught in a manner consistent with CCAMLR conservation measures. The EU has introduced a similar scheme.[160]

In recent years, most of the RFMOs have commissioned external performance reviews (Ceo et al. 2012). As they are intended to have a central role in high seas fisheries, these assessments are important in assessing whether the RFMOs have been accorded the necessary functions and are executing them. The reviews provide recommendations on different aspects such as the adequacy of the legal framework, and its effects on conservation and management, compliance and enforcement, decision-making and dispute settlement, and international cooperation. This has led ICCAT to start revising its constituent treaty of the late 1960s, and IOTC to start a work on allocation of participatory rights.

160 EU Regulation 1005/2008, Article 12.

3.5.3 CONCLUSIONS

- The UNGA and FAO have important roles in developing and cementing international fisheries law.

- The FAO has a longstanding history in establishing RFMOs and servicing them, developing international laws and, not least, assisting in operationalizing and implementing the general principles, and ensuring compliance, through means such as the Port State Agreement.

- The precautionary approach and the ecosystem approach are examples of concepts further developed and advocated by the FAO. Examples include guidelines on the ecosystem approach to fisheries management and on how to protect vulnerable areas of the seabed. However progress in implementing these guidelines by RFMOs has been uneven at best and much more work is needed.

- Even if FSA has led to the establishment of new RFMOs, there are still species and geographical gaps in the coverage of RFMOs. Membership remains an issue, as many RFMOs do not stipulate conditions and require consensus by existing members to accept new members. This may lead to conflicts and disputes with states that have an interest in the fisheries, but are unable to be part of the decision-making. On the other hand, there is an obvious need to restrict access to the RFMOs.

- Some RFMOs have tried to overcome such difficulties in international cooperation by linking the decision-making to dispute settlement procedures.

- The inability of some RFMOs to agree on participatory rights may have wider implications for the conservation of fish stocks and the protection of marine biodiversity. It may lead to fish stocks being harvested at levels higher than the member states themselves agree will maintain the stocks within sustainable limits.

3.6 MULTILATERAL ENVIRONMENTAL AGREEMENTS

3.6.1 PROTECTING BIOLOGICAL DIVERSITY

3.6.1.1 The CBD

The Convention on Biological Diversity (CBD)[161], which was adopted in 1992, is a cornerstone of global efforts to conserve biodiversity on land and at sea, and in a comprehensive manner rather than through the protection of individual species.[162] The Convention lays down principles and imposes certain obligations relating to 1) the conservation of biodiversity; 2) the sustainable use of its components; and 3) the fair and equitable sharing of the benefits arising from the utilization of genetic resources (CBD, Article 1). It is very widely ratified, with 196 contracting parties.

The CBD is a framework Convention and many of the principles and rules are relatively vague and intended to be supplemented by targets that are more precise and by obligations. To some extent, this has already been done through the adoption of further protocols, guidance and decisions by the Conference of the Parties (CoP), which are discussed in section 3.6.1.2.

It is important to note that the scope of the CBD does not fully extend to ABNJ. Unless otherwise expressly provided, the obligations related to components of biodiversity, such as individual species, are limited to areas within the national jurisdiction of the parties (CBD, Article 4(a)). It is further stated that obligations in relation to conservation and sustainable use of biodiversity in ABNJ are limited to a duty to cooperate directly or through competent international organizations "as far as possible and as appropriate" (CBD, Article 5). There are accordingly no direct obligations on state parties to conserve or sustainably use components of marine diversity beyond their national jurisdiction. By contrast, the Convention specifically applies both within and beyond the limits of national jurisdiction of a party "in the case of processes and activities, regardless of where their effects occur, carried out under its jurisdiction or control" (CBD, Article 4b). Thus, it seems clear for example, that the procedural obligations listed in CBD Articles 6 and 7 (e.g. to develop national biodiversity strategies and

161 The Convention on Biological Diversity, at www.cbd.int/convention/text/

162 See e.g. the definition of biological diversity in Article 2 as meaning "the variability among living organisms from all sources including, *inter alia*, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part: this includes diversity within species, between species and of ecosystems".

to identify and monitor components that are particularly vulnerable) apply irrespective of where the activity in question takes place. Similarly, CBD Article 14 on EIAs and other measures that seek to minimize adverse impacts specifically refers to certain obligations with respect to information sharing in order to minimize damage to ABNJ. However, CBD Article 15 on the fair and equitable sharing of benefits of genetic resources does not include any indication that it extends to resources beyond national jurisdiction. In fact, the provision refers explicitly to the sovereign rights of states over their natural resources, which implies that it is limited to those resources found within areas under national jurisdiction.

CBD Article 22 regulates the relationship between the CBD and other Conventions. Paragraph 2 specifically addresses the law of the sea, and indicates that the drafters of the CBD did not seek to challenge the jurisdictional scheme of UNCLOS, whether for ABNJ or otherwise:

> *Contracting Parties shall implement this Convention with respect to the marine environment consistently with the rights and obligations of States under the law of the sea.*

3.6.1.2 Activities

The Conference of the Parties under the CBD is competent to adopt protocols and amendments to the Convention and other actions necessary to achieve its purposes (CBD, Article 23(4)). The CoP is assisted by the Subsidiary Body on Scientific, Technical and Technological Advice (SBSTTA) (CBD, Article 25). The CoP has adopted several thematic programs, which include the programme of work on marine and coastal biodiversity (previously called the 'Jakarta mandate') established in 1995.[163] The recent program of work includes issues regarding BBNJ (CBD COP 7 Decision VII/5). The program signals that the CBD has, among other things, a facilitation role through developing cooperation with different international bodies and institutions in order to protect marine biodiversity in areas beyond national jurisdiction. The need to increase knowledge concerning the genetic resources of these areas is prioritized. Furthermore, the CBD seeks to promote conservation and sustainable use of resources by identifying threats, particularly to seamounts, hydrothermal vents, and cold-water corals, and by taking necessary measures to eliminate harmful activities, for example, through temporal bans. These measures are to be undertaken by the contracting Parties, the UN General Assembly (with reference to its work on deep-sea fishing) and relevant global and regional organizations. The CBD also supports the work of the UN General Assembly in finding suitable mechanisms to establish marine protected areas in ABNJ.

The CoP has also adopted specific decisions on the biodiversity of deep-sea (CBD COP 8 Decision VIII/21) and marine protected areas (CBD COP 8 Decision VIII/24). In the former, the contracting parties are requested to take action to regulate activities within their control or jurisdiction in order to prevent damage to biodiversity. Other international institutions such as the UN General Assembly are identified as the competent bodies that should consider different types of measures such as codes of conduct, marine protected areas, and prohibitions against harmful activities. With regard to protected areas, the central role of the United Nations General Assembly in addressing issues relating to the conservation and sustainable use of biodiversity in marine ABNJ is similarly recognized. The role of the CBD in regards to ABNJ was further defined in 2006 by the Conference of the Parties (CBD COP 8 Decision VIII/24) as supporting the work of the UN General Assembly by providing scientific and technical information relating to marine biological diversity, the application of the ecosystem approach and the precautionary approach in ABNJ (CBD COP 8 Decision VIII/24). In fulfilling this mandate, the CBD has undertaken a number of activities that have provided valuable scientific and technical information relating to ABNJ.

Perhaps the most important of these scientific activities relates to describing Ecologically or Biologically Significant Marine Areas (EBSAs). In 2008, the CBD CoP adopted a list of seven scientific criteria[164] for the identification of EBSAs in need of protection in open-ocean waters and deep-sea habitats, and also provided guidance for selecting representative networks of Marine Protected Areas (MPAs), including for ABNJ (CBD COP 9 Decision IV/20). The work of identifying such areas is still ongoing, but the map below indicates the geographical extent of the areas so far discussed and described. The areas, which are not coupled with any protective measures at this stage, are located both within and beyond national jurisdiction.

163 Information on the thematic program is available at www.cbd.int/marine/.

164 The scientific criteria for identifying EBSAs relate to: uniqueness or rarity; special importance for life history stages of species; importance for threatened, endangered or declining species and/or habitats; vulnerability, fragility, sensitivity, or slow recovery; biological productivity; biological diversity; and naturalness.

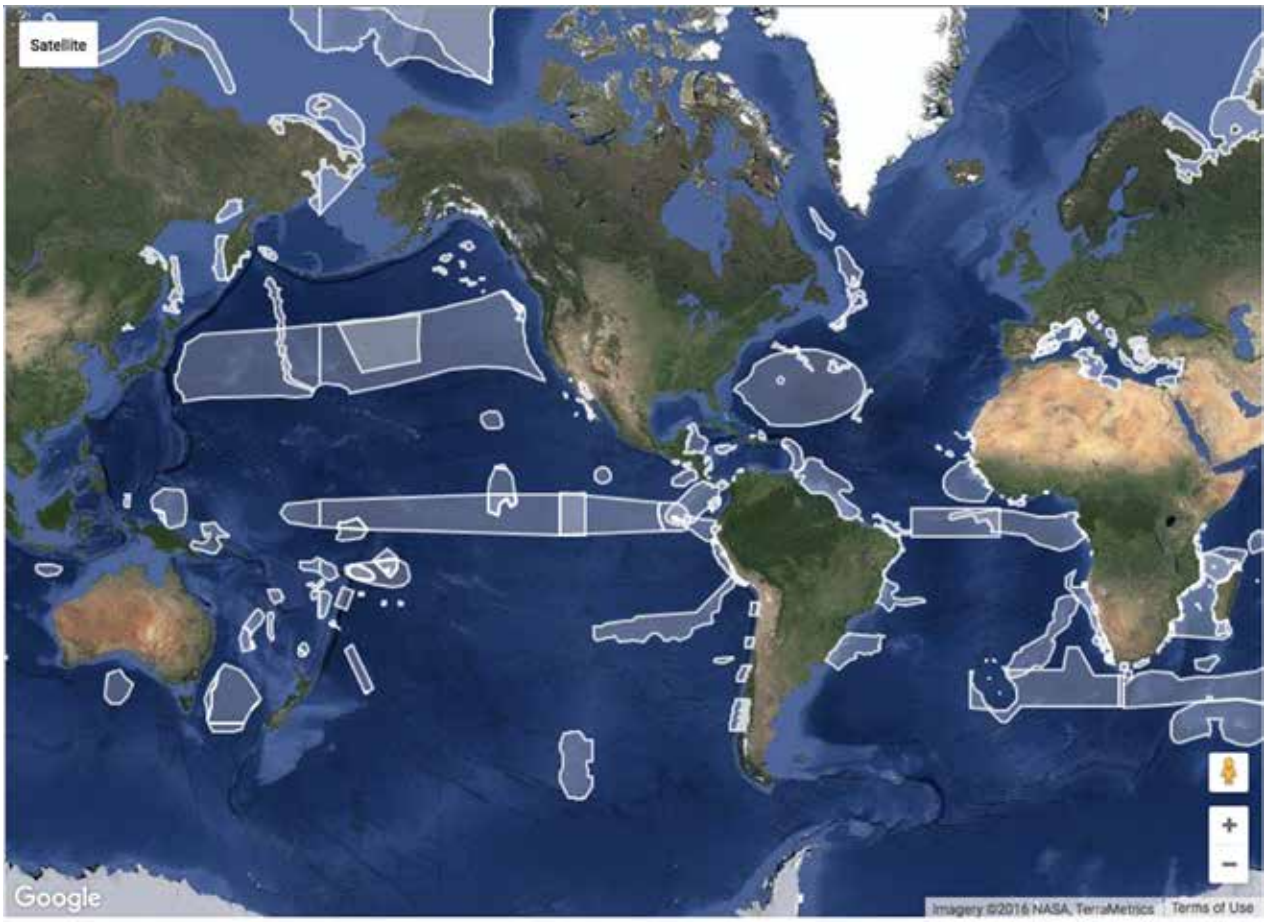

Figure 4: The extent of CBD EBSAs described at regional workshops and endorsed by the CBD Conference of the Parties.[165]

The Aichi Biodiversity Targets are also relevant for ABNJ (CBD COP 10 Decision X/2). Aichi Target 6 calls for sustainable management of fish stocks,[166] while Target 11 (which has been specifically supported by UNGA[167]) calls for 10% of marine and coastal areas to be protected.[168] The discussion on the implementation of these targets has included ABNJ (Rochette et al. 2014).

In addition to the work on describing EBSAs, the CBD has also developed EIA guidelines and studies relating to biodiversity both within and beyond national jurisdiction, including on acidification, ocean noise and cold-water biodiversity. Moreover, it has produced a series of scientific summaries that are highly relevant to the work on ABNJ.[169]

The Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization to the Convention on Biological Diversity entered into force in 2014.[170] The Nagoya Protocol implements the third of the objectives of the CBD on fair and equitable sharing of benefits from utilizing genetic resources (Nagoya Protocol, Article 1). It applies to genetic resources within the scope of

165 This map was sourced from https://www.cbd.int/ebsa/

166 See quick guide, https://www.cbd.int/doc/strategic-plan/targets/T6-quick-guide-en.pdf

167 UN General Assembly Resolution A/RES/67/78 paragraphs 193-194.

168 See quick guide at https://www.cbd.int/doc/strategic-plan/targets/T11-quick-guide-en.pdf

169 Examples include: Impacts of Ocean Acidification on Marine Biodiversity (www.cbd.int/doc/publications/cbd-ts-75-en.pdf); Marine Spatial Planning (www.cbd.int/doc/publications/cbd-ts-68-en.pdf); Impacts of Marine Debris on Biodiversity (www.cbd.int/doc/publications/cbd-ts-67-en.pdf); Geoengineering (www.cbd.int/doc/publications/cbd-ts-66-en.pdf); Impacts of Ocean Fertilization on Marine Biodiversity (www.cbd.int/doc/publications/cbd-ts-45-en.pdf); and Synthesis and Review of Best Available Scientific Studies on Priority Areas for Biodiversity Conservation in Marine Areas Beyond the Limits of National Jurisdiction (www.cbd.int/doc/publications/cbd-ts-37-en.pdf)

170 The text of the protocol and more information is available at www.cbd.int/abs/

CBD Article 15 and the benefits arising out of their utilization (Nagoya Protocol, Article 3). Consequently, the protocol is not applicable to ABNJ. As concluded above, the CBD Article 15 concerns genetic resources under the jurisdiction of contracting Parties.

3.6.1.3 Conclusion

The work of the CBD represents a considerable contribution to advancing the scientific and technical basis for future governance and management in ABNJ. It has enhanced the opportunities for states and international organizations to cooperate in the field. From a legal standpoint, however, the role of the CBD in protecting biodiversity in ABNJ is constrained by the jurisdictional limitations imposed by the founding convention.

Subsequent decisions by the CoP and their implementation by Parties and with the support of the Secretariat have contributed to the scientific basis for advancing governance in ABNJ. The principles established in the CBD and subsequent scientific work on areas of ecological or biological importance and other developments provide a good basis for cooperation and coordination through existing organizations, as well as in the development of a possible new agreement under UNCLOS on biodiversity in open ocean areas beyond national jurisdiction.

3.6.2 OTHER RELEVANT INTERNATIONAL RULES AND ORGANIZATIONS[171]

3.6.2.1 International Whaling Commission

The International Whaling Commission (IWC) is competent to establish regulations on conservation and exploitation of whale resources (ICRW, Article V). These regulations may be applicable to ABNJ (ICRW, Article I (2)). In 1982, the IWC adopted a temporal moratorium on commercial whaling for all whale stocks in effect for the 1985/86 season (Schedule of IWC, paragraph 10(e)). The IWC has also designated two sanctuaries, covering the whole Indian Ocean and the waters around Antarctica where all whaling is prohibited (Schedule of IWC, paragraph 7(a) and (b)). The North-Atlantic Marine Mammal Commission (NAMMCO) was established in 1992, partly as a consequence to the dissatisfaction of the North Atlantic coastal states with the direction taken by the IWC concerning the moratorium on commercial whaling. NAMMCO has yet to become an alternative to the IWC in regulating whale hunting. The regional organization has primarily exercised scientific tasks, in addition to adopting regulations on hunting methods and establishing inspection and observation schemes.[172]

3.6.2.2 Conservation of Migratory Species

The Convention on the Conservation of Migratory Species of Wild Animals (CMS) is the only global biodiversity-related treaty with the objective of the conservation and sustainable use of terrestrial, avian and marine migratory species and their habitats across their entire migratory range.[173] The migratory species are dependent on a range of habitats across their migratory range whether in marine areas within and/or beyond the limits of national jurisdiction. Under the CMS, the Contracting Parties (122 as of February 2016) are obligated to act to avoid any migratory species from becoming endangered, even when the species' range includes areas in the open ocean (CMS, Article II).

Species listed on CMS Appendices whose range includes ABNJ include over 20 species on Appendix I (Migratory Endangered Species, Article III) and over 40 species on Appendix II (Migratory Species to be subject to Agreement, Article IV). These species include large and small cetaceans, pinnipeds, seabirds, turtles, sharks and rays.

A CMS Party is considered a 'range state' for a migratory marine species when its flag vessels are engaged in 'taking' the species outside national jurisdictional limits (CMS, Article I (1) (h)). Range states are required to ban the taking of species listed in Appendix I, to take measures to ensure their conservation and to restore habitats of importance (CMS, Article III(4) and (5)). For the species that are listed on Appendix II, range states are required to enter into separate agreements with the objective of restoring the species (CMS, Articles IV and V). Parties are to report on their flag vessels when they engage in taking or are planning to take the species (CMS, Article VI (2)).

171 Some additional initiatives to protect marine biodiversity in ABNJ, which do not affect the regulatory situation, are listed in Appendix 4.

172 The regulations of hunting methods are available at www.nammco.no/Nammco/Mainpage/DocumentsAndInformation/committee_on_hunting_methods_.html . Provisions of the Joint NAMMCO Control Scheme for the Hunting of Marine Mammals, are available at www.nammco.no/webcronize/images/Nammco/978.pdf

173 The convention text and other information on CMS activities are available at www.cms.int

Accordingly, resolutions on threats relevant to the conservation of migratory species in ABNJ, such as those adopted on by-catch and underwater noise, are applicable when a Party's flag vessel operates in ABNJ.

Several regional agreements have been concluded under CMS, tailored to the specific situation in that part of the world. Three of the legally binding agreements concern species found in ABNJ:

- ACCOBAMS,[174] focusing on cetaceans in the Mediterranean and Black Seas;
- ASCOBANS,[175] addressing conservation measures for small cetaceans in the North and West of Europe; and
- ACAP,[176] covering albatrosses and petrels.

Several non-binding Memoranda of Understanding, such as the one on migratory sharks and rays or the two on marine turtles, also cover ABNJ.[177] The Memorandum of Understanding (MoU) on the Conservation of Migratory Sharks (Sharks MoU)[178] is a recent effort to advance international collaboration to stem the global decline in shark and ray species and to protect their habitat. Like albatrosses and petrels, sharks and rays are highly vulnerable to overexploitation as they grow slowly, mature late, and produce very few offspring. Key elements of the Sharks MoU include a revised Conservation Plan and Programme of Work for 2016-2018 which aims to strengthen research, monitoring and data collection to better understand shark populations and fisheries. Further, the establishment of the Conservation Working Group was tasked with developing a strategy for cooperation with Regional Seas Conventions and Action Plans, Regional Fisheries Management Organizations and fisheries-related organizations.

The CMS CoP has recognised the need for area-based measures. It has developed recommendations for the design and implementation of ecological networks of protected sites covering migrating species, including for ABNJ (CMS COP 11 Resolution UNEP/CMS/Resolution 11.25). State Parties are encouraged to cooperate on the identification, designation and maintenance of "comprehensive and coherent ecological networks of protected sites". They are further asked to pursue cooperation with regional seas agreements such as the Convention for the Protection of the Marine Environment of the North-east Atlantic (OSPAR) and the Baltic Marine Environment Protection Commission (HELCOM) to develop 'network coherence'.

174 Agreement on the Conservation of Cetaceans of the Black Sea, Mediterranean Sea and contiguous Atlantic area, at http://accobams.org

175 Agreement on the Conservation of Small Cetaceans in the Baltic, North East Atlantic, Irish and North Seas, at www.ascobans.org/

176 Agreement on the Conservation of Albatrosses and Petrels, at http://acap.aq/

177 See an overview of the MoUs at http://acap.aq/

178 Memorandum of Understanding on the Conservation of Migratory Sharks, at www.cms.int/sharks/

3.6.2.3 CITES

The Convention on International Trade in Endangered Species of Wild Flora and Fauna (CITES) has a mandate to ensure that international trade in animals and plants does not threaten their survival. Trade in marine species caught in ABNJ may be listed by CITES (CITES Article II, cf. Article I (d) and (e)). CITES has specified which states shall be identified as a State of Introduction and a State of Export (i.e. subject to obligations) with regard to import and of export respectively of listed species caught in areas beyond national jurisdiction.[179] Appendix I includes species threatened with extinction, whereas Appendix II includes those species that may become threatened unless their international trade is restricted. Appendices I and II include species that must be regulated by a party within its jurisdiction where cooperation in restriction of trade is necessary (CITES, Article II). The severity of trade restrictions depends on which list a species is on, Appendix I being the most stringent. It includes provision for prior grant of an export license, which shall be granted under specific conditions, including documentation that the export will not be detrimental to the species (CITES, Article III). Living marine resources, including several shark and whale species, are listed in Appendix I or II.[180] A proposal to list Bluefin tuna was not adopted by CITES.[181] The debate raised questions on the relationship between

179 The relationship between CITES and UNCLOS has been subject to some uncertainty. 'Introduction from the sea' is defined in CITES Article I (e) "transportation into a State of specimens of any species which were taken in the marine environment not under the jurisdiction of any State". Since CITES was concluded in 1973, when there was no EEZ, this wording would cover species in very large sea areas. However, a resolution from the Conference of the Parties in 2007 resolved the matter by clarifying that the relevant area is "those marine areas beyond the areas subject to the sovereignty or sovereign rights of a State consistent with international law, as reflected in the United Nations Convention on the Law of the Sea" (Resolution Conf.14.6). The details of how this is to be applied in practice in relation to regional fisheries bodies has been further clarified in Resolution Conf. 14.6 (Rev. CoP16) (2013), available at http://cites.org/eng/res/14/14-06R16.php

180 CITES Appendices I, II and III valid from 5 February 2015, available at www.cites.org/sites/default/files/eng/app/2015/E-Appendices-2015-02-05.pdf

181 See press release at http://cites.org/eng/news/pr/2010/20100318_tuna.shtml

CITES and international agreements or RFMOs. CITES is required to consult with relevant RFMOs on scientific data and to coordinate measures, before listing a species (CITES, Article XV (2) (b)). CITES has established cooperation with the IWC and CCAMLR.[182] The criteria for listing have been developed in cooperation with the FAO.[183]

3.6.3 REGIONAL SEA INSTRUMENTS AND BODIES

The United Nations Environmental Programme (UNEP) launched the Regional Seas Programme (RSP) in 1974, following the 1972 United Nations Conference on the Human Environment.[184] The objective of the Regional Seas Programme is to address the accelerating degradation of the world's oceans and coastal areas through the sustainable management and use of the marine and coastal environment. This is achieved by engaging neighbouring countries in comprehensive and specific actions to protect their shared marine environment.

Altogether, there are 18 regional seas programmes. They differ considerably: some are administered by UNEP, serving as their Secretariat,[185] whereas others are independent but associated with UNEP (UNEP 2016). More than 143 countries participate in 13 Regional Seas programmes established under the auspices of UNEP: Black Sea, Wider Caribbean, East Asian Seas, Eastern Africa, South Asian Seas, ROPME Sea Area, Mediterranean, North-East Pacific, Northwest Pacific, Red Sea and Gulf of Aden, South-East Pacific, Pacific, and Western Africa. A third group of RSPs are independent, and include the Antarctic, Arctic, Baltic Sea, Caspian Sea and the North-East Atlantic. The Convention for the Protection of the Marine Environment of the North-East Atlantic (OSPAR Convention) is one such independent RSP.

The RSP usually functions through an Action Plan. Fourteen of the RSPs have a legal basis in the form of a regional framework convention with issue-specific protocols.[186] Participation in RSP is limited to the coastal states of the relevant region (UNEP 2016).[187] The exception is the RSP for Antarctica.

Traditionally, RSPs have addressed pollution from different sources (ships, land-based and offshore sources, and dumping). Since the 1990s, parallel to developments in international law, the protection of marine biodiversity has been included in the mandate of some of the RSPs (UNEP 2016).[188] As will be revisited in section 3.8.2, establishment of marine protected areas (MPAs) has been a central instrument in marine biodiversity protection. More recently, conservation of biodiversity and the protection of the marine environment have been supplemented by socio-economic objectives (UNEP 2016). This provides for a more comprehensive area-based approach through integrated coastal zone management.[189]

Most RSPs have their geographical area of application limited to areas under national jurisdiction. However, four are fully or partly (including some of the protocols) applicable to ABNJ (either only the high seas or both water column and seabed) (UNEP 2016; Robin Warner 2009). They include the RSPs for the Pacific region (SPREP)[190], and for the Mediterranean (Barcelona Convention)[191], for the North-east Atlantic (OSPAR Convention)[192] and for Antarctica (CCAMLR and Madrid Protocol).[193] A couple of the RSPs are considering expanding their geographical scope to cover ABNJ (UNEP 2016).

There are few examples of RSPs adopting measures directly applicable to the marine environment of the ABNJ (Robin Warner 2009). One exception is the

182 Resolution Conf. 12.4 Cooperation between CITES and the Commission for the Conservation of Antarctic Marine Living Resources regarding trade in toothfish, available at http://cites.org/eng/res/12/12-04.php; Resolution Conf. 11.4 Conservation of cetaceans, trade in cetacean specimens and the relationship with the International Whaling Commission, available at http://cites.org/eng/res/11/11-04.php

183 Listing Criteria – FAO activities in relation to CITES, with reference to CITES Resolution Conf. 9.24, available at www.fao.org/fishery/topic/18147/en

184 United Nations Environmental Programme's Regional Seas available at: www.unep.org/regionalseas/about/default.asp

185 UNEP Administered Programs, at: http://www.unep.org/regionalseas/programmes/unpro/default.asp

186 The East Asian Sea (www.cobsea.org), Northwest Pacific (www.nowpap.org), South Asian Seas (www.sacep.org), and the Arctic (www.pame.is) RSPs are not based on framework convention and protocols.

187 An overview of states participating in the different RSP is available at http://www.unep.org/regionalseas/events/default.asp

188 This includes the Black Sea, the Baltic Sea, Mediterranean, North-East Atlantic, Red Sea and Gulf of Aden and the Wider Caribbean.

189 Mediterranean RSP: Protocol on Integrated Coastal Zone Management in the Mediterranean, available at http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:22009A0204(01)&from=EN

190 The Convention for the Protection of the Natural Resources and Environment of the South Pacific Region (Noumea Convention) Article 1 cf. Article 2 (a); www.sprep.org/legal/noumea-convention

191 The Convention for the Protection of the Marine Environment and the Coastal Region of the Mediterranean (Barcelona Convention), Article 1.

192 Convention for the Protection of the Marine Environment of the North-East Atlantic, Article 2 (1), cf. Article 1(a).

193 Convention for the Conservation of Antarctic Marine Living Resources (CCAMLR), Article 1; Protocol on Environmental Protection to the Antarctic Treaty (Madrid Protocol), Article 3, cf. Article 1(b); Antarctic Treaty, Article VI.

OSPAR Convention, which has established MPAs in ABNJ, to be addressed in section 3.8.[194] OSPAR is not competent to regulate all activities within its geographical scope (e.g. shipping, deep-sea mining, fishing).[195] Further, OSPAR may only regulate the activities of its contracting parties and not the activities of third states exercising their rights under the law of the sea in the geographical area of OSPAR.

Another example of an RSP, which extends to ABNJ, is the Madrid Protocol and the CCAMLR. The objective of CCAMLR is the conservation of Antarctic living marine resources (CCAMLR, Article II). This includes "[…] the maintenance of the ecological relationships between harvested, dependent and related populations" and "[…] prevention of changes or minimisation of the risk of changes in the marine ecosystem". The Commission set up under CCAMLR is competent to adopt measures to regulate the harvesting of these living marine species (CCAMLR, Article IX). CCAMLR is considered a RSP by UNEP, whereas others such as FAO consider it a regional fisheries body (UNEP 2016).[196] Under the Madrid Protocol, Antarctica is designated as a nature reserve, devoted to peace and science (Madrid Protocol, Article 2). It is applicable to the Antarctic treaty area as defined in Article VI of the Antarctic Treaty (Madrid Protocol, Article 3). This includes the waters south of 60° S. The protocol sets out strict substantial and procedural regulations for activities within the treaty area to ensure the protection of its environment, ecosystems and their intrinsic, aesthetic and scientific values (Madrid Protocol, Articles 3, 6 and 8). In short, any activity relating to mineral resources is banned, unless it is for scientific research purposes (Madrid Protocol, Article 7). The Madrid Protocol includes Annexes, *inter alia*, on environmental impact assessment, conservation of flora and fauna, prevention of marine pollution and on protected areas. The scope of the term 'activities relating to mineral resources' is not clear (e.g. whether exploration for oil and gas is included in the ban). It is also unclear if marine bioprospecting should be regulated through CCAMLR or the Madrid Protocol. The Madrid Protocol Annex II on flora and fauna permits taking for scientific purposes only (Madrid Protocol, Article 3).

Annex IV of the Madrid Protocol concerns the Prevention of Marine Pollution. It includes the prohibition of any discharge of oil or oily mixture and noxious liquid substances, and any other harmful chemicals or other substances into the sea (Madrid Protocol, Annex IV, Articles 3-4). The Annex is only applicable to the parties of the Madrid Protocol and is not intended to derogate from specific rights and obligations the parties have as parties to MARPOL. These regulations of maritime shipping within the Antarctic Treaty Area are subject to MARPOL in order to apply to flag states. Annex V on protected areas provides the legal basis for establishing marine protected areas (Madrid Protocol, Annex V, Articles 3-4).

3.6.4 THE UN SUSTAINABLE DEVELOPMENT GOALS (SDGS)

The Sustainable Development Goals (SDGs) were adopted in September 2015 at the 70th UN General Assembly. The 17 goals aim at ending poverty, protecting the planet, and ensuring prosperity for all as part of a new sustainable development agenda. Each goal has specific targets to be achieved over the next 15 years. While not legally binding, they are expected to have high support from both developing and developed countries, with governments likely to establish national frameworks for their achievement. A review mechanism has also been established: regional follow-up and review will be based on national-level analyses and contribute to follow-up and review at the global level.

The 17 SDGs and associated targets tackle a broad range of issues related to the environment and development in an integrated manner. Most importantly for present purposes, SDG 14 is dedicated to the oceans, including the open ocean. However, a number of the other goals and targets can also be considered to relate to BBNJ, and support activities necessary to its new international instrument. A detailed table listing the Sustainable Development Goals that are relevant to oceans in general and to oceans in ABNJ in particular is provided in Appendix 3.

194 See an overview of the MPAs established through OSPAR at www.ospar.org/work-areas/bdc/marine-protected-areas

195 OSPAR Convention, Annex V on the Protection and Conservation of the Ecosystems and Biodiversity of the Maritime Area, Article 4.

196 FAO Regional Fishery Bodies Summary Descriptions: www.fao.org/fishery/rfb/ccamlr/en

3.7 REGULATORY GAPS AND OVERLAPS: SOME EXAMPLES

3.7.1 GENERAL

This review has mainly been based on an institution-by-institution assessment of the activities of the various bodies involved in some way in the management of ABNJ. It does not, however, capture problems of overlaps and/or gaps between the different sectors. The present section highlights some relevant issues that either involve several legal regimes together or fall outside the scope of any existing legal regime. This section, in other words, provides examples of gaps and overlaps in the regulatory regimes discussed above which illustrate concerns that may arise from current legal reality in ABNJ.

Five examples are given. The first, addressing integrated MPAs on the high seas, illustrates the complications that arise when a multitude of activities and sectors are involved. This is particularly relevant for ABNJ as almost any measure in these areas will have implications for many different activities. The second and third examples relate to the effects of climate change on oceans and seas, and the effectiveness of the measures used to mitigate these changes. Ocean acidification is a relatively new environmental concern which is not addressed in any of the relevant international legal texts, but has been considered in several institutions; ocean fertilization is an example of a measure used to mitigate the effects of climate change, which initially was unregulated but has been addressed by some recent rules to address the most pressing concerns involved with this activity. The fourth example, marine litter, is not a new issue, but its regulation is still far from satisfactory. The problems of marine litter emphasize the need for implementation at national level and point to some of the more general limitations of international law. The fifth example relates to the rights of states to explore and exploit the genetic resources in the water column and on the seabed of open ocean

areas. These genetic resources may be subject to 'bioprospecting', which has been defined as "the process of gathering information from the biosphere on the molecular composition of genetic resources for the development of new commercial products".[197] It raises questions regarding entitlements to these resources, and thus to their legal status in ABNJ, especially the genetic resources of the deep seabed (Jørem and Tvedt 2014).

3.7.2 PROTECTING AN AREA OR SITE: INTEGRATED MPAS IN THE HIGH SEAS

3.7.2.1 General

Marine Protected Areas may prove an effective management tool in ABNJ for many different concerns, such as overfishing, protecting species, conserving and protecting particularly valuable ecological marine areas, or avoiding shipping-related disturbances. Bodies like IMO, ISA and the RFMOs have made use of different protection tools, such as 'special' or 'closed' areas, in ABNJ for their own sectors. MPAs are also among the few available tools that can be used to deal with *multiple* threats to biodiversity. The establishment of MPAs has accordingly been identified as a priority by various international fora.[198] However, the creation of such areas in ABNJ involves a variety of legal considerations, such as the competence to establish such areas, the protective measures that may be prescribed therein, and the enforcement necessary to ensure that rules are complied with. Unlike MPAs established under national jurisdiction, there is no obvious authority that could provide management oversight of a high seas MPA. It has previously been noted that MPAs and other area-based management tools are part of the new BBNJ international legal agreement under development at the United Nations.

There is no universally accepted definition of 'marine protected area', or 'protected area' more generally, although the definition adopted by the International Union on the Conservation of Nature (IUCN) is widely used (Dudley 2008). It reads:

A clearly defined geographical space, recognised, dedicated and managed, through legal or other effective means, to achieve the long-term conservation of nature with associated ecosystem services and cultural values.

The key question here is how integrated, multi-purpose MPAs can be established on the high seas and, if so, according to what rules. The brief outline below of rules governing the matter illustrates that a series of different legal regimes are relevant, but that none of them succeeds in establishing a framework for integrated MPAs in ABNJ.

3.7.2.2 An obligation to protect marine areas beyond national jurisdiction?

The general obligation under UNCLOS to protect and preserve the marine environment includes a responsibility to take measures that are "necessary to protect and preserve rare or fragile ecosystems as well as the habitat of depleted, threatened or endangered species and other forms of marine life" (UNCLOS, Article 192, cf. Article 194(5)). This obligation applies to all maritime areas, under national jurisdiction as well as ABNJ. The obligation to protect and preserve the marine environment is not limited to the prevention of damage by pollution from any source; the conservation of living marine resources is also part of the protection and preservation of the marine environment. The obligation is directed at all human activities that may be detrimental, such as marine pollution from different sources, the introduction of alien species, overharvesting of living marine resources, physical disturbance and impacts.[199] States, in other words, at the very least have an obligation to protect vulnerable marine ecosystems or habitats in ABNJ. On this basis the establishment of an MPA in the open ocean beyond national jurisdiction would appear to be entirely consistent with the more general obligation to protect and preserve the marine environment, even if the more detailed sector-based parts of UNCLOS Part XII do not specifically refer to such an obligation.

Under the Convention on Biological Diversity (CBD), states are required to establish a network of

197 Bioprospecting of Genetic Resources of the Deep Sea-bed, UNEP/CBD/SBSTTA/2/15 Para 31.

198 See e.g. World Summit 2002, Plan of Implementation, para. 32(c), 'UNGA Resolution A/RES/ 66/288. The future we want', paras. 158 *et seq*. Under Target 11 of the 'Aichi Biodiversity Targets', adopted in 2010 by the CoP to the CBD, at least 10 per cent of coastal and marine areas, especially areas of particular importance for biodiversity and ecosystem services, are to be "conserved through effectively and equitably managed, ecologically representative and well connected systems of protected areas and other effective area-based conservation measures" by 2020.

199 See e.g. ITLOS Advisory Opinion, para. 120, South China Sea Arbitration, para. 959.

protected areas in order to meet the objective of the conservation of biological diversity (CBD, Article 8(a)-(e)). Protected areas, which may also be established at sea, are geographically defined areas "[…] which are designated or regulated and managed to achieve specific conservation objectives" (CBD, Article 2). Yet, as noted above, the jurisdictional scope of the CBD involves restrictions on the use of marine protected areas in ABNJ (CBD, Article 4). It is applicable to components of biological diversity, such as ecosystems, habitats and species, in areas within national jurisdiction and to processes and activities under the jurisdiction or control of state parties in ABNJ. States could agree to restrain their activities in order to provide an area with a higher level of protection in ABNJ.

At the same time, the obligations of the CBD must be interpreted and applied consistently with the rights and obligations of states under the law of the sea (CBD, Article 22(2)). In the light of recent case law on UNCLOS Article 192, an obligation to establish marine protected areas does not appear inconsistent with the obligations of states under UNCLOS to conserve living resources and to protect the marine environment. In order to prevent adverse effects on biodiversity, individual flag states may also be required under the CBD to take measures to regulate the activities of vessels flying their flag (CBD, Article 8(l)).

Concerns have been raised with respect to the effect of possible restrictions in MPA on the exercise of high seas freedoms, though those concerns primarily address the measures associated with operating the MPA rather than the establishment of an MPA as such. It should also be recalled that high seas freedoms are not unlimited and come with obligations.

However, the legal uncertainty in this area has led to conclusions that "[…] the limited scope of the CBD concerning the components of biodiversity and the express precedence of rights granted by UNCLOS prevent substantial legal progress on the issue of MPAs under CBD" (Nele Matz-Lück and Fuchs 2014). As already noted in section 3.6.1.2, the CoP of the CBD has recognized the CBD's role in advising the UNGA on scientific and technical issues relating to protecting biodiversity in ABNJ. Moreover, the Aichi Biodiversity Target 11 calling for conservation of 10% of marine areas is also applicable to ABNJ. RSPs for the North-East Atlantic,[200] Antarctica,[201] Mediterranean,[202] and Wider Caribbean[203] have protocols related to biodiversity and MPAs, and some of them have put in place MPAs beyond national jurisdiction, as discussed in the next section.

3.7.2.3 Mechanisms for establishing MPAs in ABNJ

Establishing MPAs in ABNJ under the present regime must be done within the existing sectoral framework. A first challenge is the divergence in regulation between the sectors. While some of the sectors have elaborate schemes for area-based protection measures (e.g. fisheries, shipping, seabed mining), others, such as marine scientific research and the laying of submarine cables or pipelines, are governed by a very generic legal framework. Even the basic question of whether the area is an ABNJ may differ between different sectors (notably in the case of extended continental shelves, where the seabed is subject to national jurisdiction and the water column above it is not).

In order to be effective in such a sectoral framework, MPAs need to be established through multilateral cooperation, at global or regional level. Under UNCLOS, states are instructed to cooperate at whichever level is appropriate to develop rules, standards and procedures for the protection of the marine environment. This obligation is further specified for the regulation of activities such as fishing, navigation and activities in the Area. Yet there is presently no existing organization authorized to set up integrated MPAs covering the full suite of activities which may affect biodiversity in ABNJ.

What can be done at present is to pursue measures one-by-one through several organizations. This is not without merit, as it can potentially provide near-term protection from some key threats. Below is a brief recap of the tool available for establishing MPAs in open ocean areas beyond national jurisdiction:

For commercial shipping, measures on the high seas could include the adoption of area-based measures discussed in section 3.2.4 (i.e. MARPOL special areas and emission control areas, ships' routeing and reporting systems and PSSAs). This assumes one can surmount likely resistance to applying the precautionary approach. Once incorporated in any of the main Conventions, these

200 OSPAR Convention, Annex V on the Protection and Conservation of Ecosystems and Biological Diversity of the Maritime Area, Article 3(1) (iii), cf. Article 2a.

201 Convention on the Conservation of Antarctic Marine Living Resources, Article IX (2) (g).

202 Protocol to the Barcelona Convention concerning Specially Protected areas and Biological Diversity in the Mediterranean

203 The Protocol Concerning Specially Protected Areas and Wildlife (SPAW) in the Wider Caribbean Region was adopted on 18 January 1990 and entered into force on 18 June 2000.

measures will apply to ships of any state, but are to be enforced by flag states.

In fisheries management, area-based measures that are relevant for a MPA include those that aim beyond pure stock conservation, for example the closure of an area with high density of juveniles or other vulnerable species. An area closure can mean imposing a restriction on the use of particular types of gear or fishing practices (e.g. bottom trawling) to protect vulnerable habitats, or it can mean a permanent ban covering all fishing activities. As referred to in section 3.5, FAO has adopted guidelines for the management of deep-sea fisheries on the high seas which include criteria for regulating fishing activities within vulnerable marine ecosystems (VMEs), and closing them to trawling and other bottom-fishing activities. VME identification and management is undertaken by RFMOs.

The adoption of area closures is dependent on the existence of an RFMO that is capable of adopting such measures in the area of interest. Traditionally, RFMOs have been competent to adopt conservation and management measures that promote the optimal utilization or sustainable harvesting of target fish stocks.[204] Gradually, however, more RFMOs – as discussed in section 3.5.2 – are broadening their mandates to include protection of marine biodiversity or to apply the 'ecosystem approach' in regulating fisheries. As already noted NEAFC has adopted bans on bottom trawling within specified areas (section 3.5.2.4). The FAO database on VMEs provides an overview of measures taken through the different RFMOs to protect VMEs.[205]

CCAMLR has an explicit mandate to close areas for conservation and science. In 2009, CCAMLR established a high seas MPA in the South Orkney Islands southern shelf, a region covering 94 000 km^2 in the south Atlantic.[206] All commercial fishing activities are prohibited within the MPA as well as dumping of wastes from fishing vessels. CCAMLR has adopted guidelines to provide a framework for the establishment of other CCAMLR MPAs.[207] Work to consider further MPA establishment is ongoing, including forming a network of MPAs.[208] However, proposals to establish these MPAs have not yet been adopted.[209] CCAMLR also undertakes protection of VMEs, which includes ban on all bottom activities.[210]

RFMOs are competent to regulate the exploitation of living marine resources, which are a part of the high seas freedoms. The coastal state may have a continental shelf extending beyond 200 nautical miles and consequently be concurrent with the water column of the high seas. The coastal state may be required under UNCLOS Article 192 and the CBD to adopt measures within its sovereign rights to ban the catches of sedentary species and the exploitation of mineral resources on the seabed (e.g. gravel). A problem may arise when fishing activities in the water column contravene these measures. Trawling near the bottom may harm both flora and fauna. The coastal state is not competent to regulate the fishing activities targeting non-sedentary species living near or at the seabed. However, the freedom of fishing is subject *inter alia* to the rights, obligations and interests of the coastal states, which is relevant for high seas fisheries (UNCLOS, Article 116(b)). This suggests that high seas fishing activities cannot undermine the efforts of the coastal state to protect its marine environment.

With respect to mining activities in the Area, UNCLOS Article 145 requires the ISA to adopt measures to ensure the effective protection of the marine environment. Such measures include appropriate rules, regulations and procedures for *inter alia* "[…] the protection and conservation of the natural resources of the Area and the prevention of damage to the flora and fauna of the marine environment". The competence of the ISA does not necessarily include activities that are unrelated to mining activities. It has already adopted a broad-scale regional environmental management plan for the Clarion Clipperton Zone.[211] The plan includes nine 'areas of particular environmental

204 See e.g. International Convention for the Conservation of Atlantic Tunas, Article VIII (1).

205 The FAO Vulnerable Marine Ecosystem Database at: www.fao.org/in-action/vulnerable-marine-ecosystems/vme-database/en/

206 CCMLR Conservation Measure 91-03 (2009) Protection of the South Orkney Islands Southern Shelf, at https://www.ccamlr.org/en/science/marine-protected-areas-mpas 91-03.pdf

207 CCAMLR Conservation Measure 91-04 (2011) General Framework for the Establishment of CCAMLR Marine Protected Areas, at www.ccamlr.org/sites/drupal.ccamlr.org/files//91-04.pdf

208 See Marine Protected Areas, at www.ccamlr.org/en/science/marine-protected-areas-mpas; CCMLR, Report of the Twenty-Seventh Meeting of the Commission, Hobart Australia 27 October- 7 November 2008, paras 7.2-7.3, at www.ccamlr.org/en/system/files/e-cc-xxvii.pdf

209 See CCAMLR, Report of the Thirty-Fourth Meeting of the Commission, Hobart Australia 19-30 October 2015, paras 8.41-8.122, at www.ccamlr.org/en/system/files/e-cc-xxxiv_4.pdf

210 CCAMLR Conservation measure 22-09 (2012) Protection of Registered Vulnerable Marine Ecosystems in Subareas, Divisions, Small-Scale Research Units, or Management Areas open to Bottom Fishing, at www.ccamlr.org/sites/drupal.ccamlr.org/files//22-09.pdf

211 The environmental Management Plan for the Clarion Clipperton Zone is available at https://www.isa.org.jm/environmental-management-plan-clarion-clipperton-zone

sensitivity' (APEIs) in which no exploration claims are to be submitted.[212] As other non-mining activities are to be conducted with "due regard" to mining-related activities, it is conceivable that the ISA could act as a hub to seek to coordinate activities in a way that do not undermine the objectives of the APEIs. This would not be inconsistent with its broader objective of protecting the common heritage of mankind (UNCLOS, Articles 143(1) and 149).[213]

As mentioned above in section 3.6.3, some regional seas agreements include ABNJ. Furthermore, some of these (e.g. OSPAR and Barcelona) have a mandate to take measures to conserve marine biodiversity that may include the establishment of MPAs.[214] Specially Protected Areas of Mediterranean Importance (SPAMIs) have been established, including in ABNJ (Nele Matz-Lück and Fuchs 2014).[215] The SPAMI established on the high seas in the Mediterranean is primarily directed at protecting the cetaceans within its boundaries.[216] Broader, multipurpose MPAs may be established in the future.

3.7.2.4 Case study: the OSPAR MPAs

The OSPAR Ministerial Meeting has adopted decisions establishing seven MPAs in ABNJ.[217] It defines MPA as "an area within the maritime area for which protective, conservation, restorative or precautionary measures, consistent with international law, have been instituted for the purpose of protecting and conserving species, habitats, ecosystems or ecological processes of the marine environment". The decisions cover the objective and geographical area of the MPA. Five of them include only the water column of the high seas overlapping an extended continental shelf of coastal states. The decisions are supplemented by non-legally binding recommendations on their management.[218] The recommendations include general and specific conservation objectives which direct the contracting parties in taking concrete measures. No specific measures are thus included. However, the recommendations indicate that they may be adopted in the future. The recommendations also provide for awareness-raising and information-building to promote awareness by stakeholders of the objectives of the MPA and to share information on or knowledge about the biodiversity and adverse impacts on it. Contracting parties are encouraged to initiate marine scientific research within the MPAs. They are requested to inform OSPAR about plans for human activities in the MPAs or outside that may have significant impacts on the ecosystem of the MPA. Environmental impact assessments are to be undertaken where there may be conflicts between the new activities and the conservation objectives of the MPA. Finally, the Contracting Parties are to engage with third parties and international organisations with a view to fulfilling the objectives of the MPA.

The requirement for engagement with third parties reflects the fact that the decisions and recommendations are only applicable to the activities of the contracting parties in the MPAs. Further, the OSPAR Convention includes all human activities which can have an adverse effect on the ecosystems and the biodiversity in the North-East Atlantic. However, it does not deal with fisheries management, regulation of mining in the Area or the regulation of shipping (OSPAR Convention Annex V, Article 4). The requirement to engage with international organizations with a view to promote the achievement of the MPA's objectives reflects the fact that its regulations do not cover those activities. The international organisations competent to regulate the harvest of living marine resources in MPAs include NEAFC, ICCAT, NASCO and IWC. IMO is authorized to regulate shipping and ISA mining in the Area. OSPAR is required to cooperate with these international bodies (Erik J Molenaar and Elferink 2009).

OSPAR has entered into a Memorandum of Understandings with NEAFC, the IMO and ISA as well as the International Council for the Exploration of the

212 ISA, Decision of the Council relating to an environmental management plan for the Clarion-Clipperton Zone, ISBA/18/C/22, para. 6, at https://www.isa.org.jm/sites/default/files/files/documents/isba-18c-22_0.pdf

213 These specifically refer to the benefit to mankind in relation to marine scientific research or underwater cultural heritage.

214 Protocol concerning Specially Protected Areas and Biological Diversity in the Mediterranean, www.unep.ch/regionalseas/main/med/medspap.html and OSPAR Convention Annex V on the Protection and Conservation of the Ecosystems and Biological Diversity of the Maritime Area, www.ospar.org/html_documents/ospar/html/ospar_convention_e_updated_text_2007_annex_v.pdf

215 See overview at www.rac-spa.org/spami

216 The Pelagos Sanctuary, www.rac-spa.org/sites/default/files/doc_spamis/spamis/25_pelagos.pdf

217 Decisions 2012/1 Charlie Gibb North High Seas MPA; 2010/1 Milne Seamount Complex MPA; 2010/2 Charlie Gibbs South MPA; 2010/3 Altair Seamount High Seas MPA; 2010/4 Antialtair Seamount High Seas MPA; 2010/5 Josephine Seamount High Seas MPA and 2010/6 Mid Atlantic Ridge North of the Azores High Seas MPA.

218 Recommendations 2012/1 Management of Charlie Gibb North High Seas MPA; 2010/12 Management of Milne Seamount Complex MPA; 2010/13 Management of Charlie Gibbs South MPA; 2010/14 Management of Altair Seamount High Seas MPA; 2010/15 Management of Antialtair Seamount High Seas MPA; 2010/16 Management of Josephine Seamount High Seas MPA; 2010/17 Management of Mid Atlantic Ridge North of the Azores High Seas MPA.

Seas (ICES).[219] These MoUs are of general character. However, in 2014 OSPAR together with NEAFC adopted a collective arrangement on cooperation and coordination on selected areas in ABNJ in the North-East Atlantic.[220] The arrangement is intended to include other international organisations competent to regulate human activities in these areas, including IMO and ISA (NEAFC and OSPAR 2015). The arrangement is applicable to selected areas beyond national jurisdiction. The participating organisations are committed to ensure that "[…] suitable measures for the conservation and management of the areas are implemented, where appropriate, by conservation objectives established for these areas" (paragraph 5 of the MoU). This suggests the possibility of the organisations agreeing on joint objectives for the areas. The arrangement further stipulates the exchange of scientific information and environmental assessments as well as on existing and proposed human activities under their jurisdiction. The organisations may cooperate on environmental impact assessment and shall consult on review of their objectives. The areas identified by OSPAR include the seven MPAs designated by OSPAR.[221] These areas coincide partly with the thirteen VMEs closed for bottom trawling under NEAFC regulations.[222]

3.7.2.5 Conclusion

Marine protected areas were identified as an important instrument for conserving important or vulnerable marine ecosystems by the UNGA through its oceans and the law of the sea resolutions,[223] the CoP of the CBD (CBD COP 8 Decision VIII/24), as well as the 2012 UN Conference on Sustainable development (Rio+20).[224] However, achieving MPA (or other effective conservation measures) coverage of 10% of the oceans by 2020 as set by the CBD is likely to prove a challenge, particularly in ABNJ.

The law of the sea certainly does not prevent states from assuming further obligations in order to protect their marine environments by establishing MPAs with associated measures in ABNJ, as long as these are consistent with its general principles (UNCLOS, Article 237). On the contrary, international case law increasingly appears to accept that this type of action belongs to the environmental duties of states under international law. However, these measures may not directly restrict the rights of third states or impair the performance of their obligations without their consent (UNCLOS, Article 311(2)). This raises the question of the position of third states to MPAs in ABNJ. Under general international law, an MPA and its associated measures are only legally binding on the contracting parties to these instruments (Vienna Convention on the Law of Treaties, Articles 34-36). However, third parties may voluntarily accept to comply with the measures by legislating for the operation of their ships and the conduct of their nationals. Furthermore, their obligation under UNCLOS to protect vulnerable ecosystems, habitats and endangered species arguably implies an obligation not to permit activities under their jurisdiction that undermine the objectives of a MPA. UNGA resolution 61/105 (as confirmed in subsequent resolutions) and the FAO International Guidelines on deep-sea bottom fisheries on the high seas reemphasize the obligation of states to avoid 'significant adverse impacts' on biodiversity in ABNJ.

In conclusion, there are many opportunities for pursuing measures to enhance the protection of marine areas in ABNJ. However, this review also indicates a number of considerations that stand in the way of establishing effective integral MPAs in ABNJ. Firstly, the regulatory regime remains sectoral in the sense that different uses of the oceans have different jurisdictional rules in ABNJ and different tools are available to implement any measures taken in such areas. Even the question whether or not an area is an ABNJ may in some cases differ from one sector to another. This calls for close coordination between the sectors, but in the absence of a coordinating body set up for the purpose, it is likely to be a challenging task. The institutions involved have very different interests and responsibilities in ABNJ, including different criteria for when it is appropriate to establish MPAs in the first place. Sectoral organizations are free to decide on whether and to what extent they wish to collaborate in a multi-purpose MPA and the primary interest of the relevant international bodies is not necessarily focused on biodiversity and environmental matters. Nevertheless, the case study

219 See an overview of the MoU and agreements OSPAR has entered into with other international organisations at http://www.ospar.org/about/international-cooperation/memoranda-of-understanding .

220 Collective arrangement between competent international organisations on cooperation and coordination regarding selected areas in areas beyond national jurisdiction in the North-East Atlantic, at http://www.neafc.org/basictexts

221 Collective arrangement between competent international organisations on cooperation and coordination regarding selected areas in areas beyond national jurisdiction in the North-East Atlantic, Annex 1B.

222 Collective arrangement between competent international organisations on cooperation and coordination regarding selected areas in areas beyond national jurisdiction in the North-East Atlantic, Annex 1A.

223 See e.g. UNGA Resolutions A/RES/63/111 paras. 134-135 and A/RES/69/245 para.224

224 UNGA Resolution A/RES/ 66/288. The future we want, para 177

of OSPAR illustrates that it has proved possible to establish MPAs, even through regional organizations (where competent to regulate in ABNJ), and to seek protective measures through the relevant global and regional competent bodies. Thirdly, the difficulty under international law of binding third states or non-parties to the agreement in question would be an obstacle to the effective enforcement of such MPAs, in particular those that are adopted on a regional basis. Finally, the establishment of the MPAs does not resolve any jurisdictional issues relating to implementation and enforcement. The future effectiveness of marine protected areas in the open ocean, therefore, largely depends on the individual (flag) state concerned, but this could be achieved even within the current jurisdictional scheme by complementary regulatory and enforcement measures adopted by port states in combination with remote surveillance technologies.

3.7.3 NEW ENVIRONMENTAL ISSUES LINKED TO CLIMATE CHANGE

3.7.3.1 General points on climate change and ocean ABNJ

Oceans play a key and complex role in the climate system. On the one hand, they constitute a heat buffer and absorb some 25 to 50 per cent of the anthropogenic CO_2 released into the atmosphere. On the other hand, they are also victims of climate change as this absorption leads to a general warming and acidification of the oceans. Increases in ocean temperature will lead to decreases in gas exchange at the sea surface, decreased ocean mixing and decreased export of carbon to the ocean interior. Ocean warming also contributes to deoxygenation by decreasing oxygen solubility at the surface and enhancing stratification. The combination of ocean acidification, increases in ocean temperature and deoxygenation can lead to significant changes in organism physiology and habitat range (Turley et al. 2013; Keeling, Körtzinger, and Gruber 2010). Other effects of climate change include sea-level rise, coastal erosion, coral bleaching, shifting species distribution and generally, a reduced number of species (Maho and Durant 2011). In addition, many geo-engineering methods designed to mitigate climate change involve new forms of utilization of the oceans, such as sequestration of CO_2 and ocean fertilization, which are likely to impact biodiversity in the oceans in ways which are not yet well understood (Scott 2015; CBD 2009).

The main legal instrument for regulating climate change at global level is the 1992 UN Framework Convention for Climate Change and its Paris Agreement, adopted in 2015. The Paris Agreement commits for the first time all nations to reduce their rates of greenhouse gas emissions to "well below 2 degrees Celsius above pre-industrial levels and to pursue efforts to limit the temperature increase to 1.5 degrees Celsius above pre-industrial levels", and puts into place a system of monitoring and verification of national emissions, as well as significant guidance and tangible commitments on mitigation, adaptation, financing, capacity development and technology transfer. The Paris Agreement includes recognition for the ocean within the preamble and in the agreement itself, under the banner of Ecosystem Integrity. The Paris Agreement Articles 4 and 5 provide that parties should promote sustainable management and "take action to conserve and enhance, as appropriate, sinks and reservoirs of greenhouse gases". This provides a basis for further focus on the need for marine protection, particularly with regard to the ocean's role as a carbon sink.

3.7.3.2 New environmental problems: ocean acidification

Oceans have absorbed approximately one third of all carbon released by human activities. While this has delayed climate change, it has also affected the chemistry of the oceans, as drawing down CO_2 from the atmosphere has caused them to acidify at a geologically unprecedented rate, subjecting marine organisms to an additional environmental stress (CBD 2014). It is increasingly recognized that acidification is changing ocean productivity with potentially very significant environmental and food security implications (Stephens 2015).[225] Marine calcifying organisms seem particularly at risk, since additional energy will be required to form their shells and skeletons, and in many ocean areas, unprotected shells and skeletons will dissolve (CBD 2014). The UN General Assembly has described this as an 'alarming' phenomenon and states were urged to make significant efforts to tackle its causes.[226] At present there are no rules governing ocean acidification, which raises the question as to what rules apply in ABNJ or otherwise. Three different legal regimes may be of relevance, yet none of them seems to offer a concrete basis for protecting the oceans against this particular threat.

225 See Report of the UN Secretary-General to UNGA UN Doc. A/68/71 (2013).

226 UNGA Resolution A/RES/69/245, para. 169.

Firstly, reducing carbon emissions from all sources is the key action for reducing, and eventually halting, the impacts of ocean acidification and warming. Thus, the newly adopted Paris Agreement of the UNFCCC offers the natural starting point for countries to take individual and collective action towards curtailing their emissions, and as a result, addressing ocean acidification. However, the Paris Agreement, like its predecessor, the Kyoto Protocol, does not address this matter directly and is generally short of an oceans perspective (Tanaka 2015; Harrould-Kolieb 2016).[227] The Paris Agreement does not include fixed targets or reduction obligations at this point and its impact in general, as with respect to reducing ocean acidification, is therefore dependent on the more general commitments (i.e. Nationally Determined Contributions) that states will make in the future and how well those commitments will be implemented. However, unlike its predecessor, the Paris Agreement clearly recognizes the importance of oceans in the fight against climate change and the reports of the Intergovernmental Panel on Climate Change now include acidification and other impacts affecting the oceans within their scientific reporting on climate change.

Secondly, the general provisions of UNCLOS relating to the protection and preservation of the marine environment apply. UNCLOS defines pollution of the marine environment in terms that are broad enough to cover the introduction of CO_2 into the ocean environment (UNCLOS, Article 1(1)(4)) (Tanaka 2015). Under the UNCLOS general rules for the protection and preservation of the marine environment in Part XII, states are obliged to prevent this type of pollution from any source (UNCLOS, Article 194(3)),[228] and have a duty not to transform one form of pollution into another (UNCLOS, Article 195). However, these obligations are generic and do not include any mention of measures, targets, or follow-up mechanisms. More specific rules and principles, including the precautionary principle, may follow from the rules relating to ocean dumping, to the extent that placing CO_2 into the oceans may fall within that definition. This would apply only if the placing is intentional, which is not the case for most CO_2 emissions, but may place limits on carbon storage activities on the seabed. As noted above, the 1996 Protocol has already been amended to permit the storage of CO_2 under the seabed, but not on or above,[229] and additional guidelines have subsequently been adopted to reduce the risks of leakage.[230]

Thirdly, the impacts of ocean acidification on marine biodiversity have been addressed by the CBD through decisions of the Conference of the Parties[231], and through a recent comprehensive scientific synthesis (CBD 2014). Targets for ocean acidification have also been included in a strategic plan for biodiversity (Aichi Biodiversity Targets, CBD COP 10 Decision X/2). However, the focus of the CBD work to date has been: to further the scientific understanding of biodiversity impacts of ocean acidification and to promote management action to enhance the resilience of vulnerable ocean environments to warming and acidification by minimizing sectoral stressors. It has not gone further by, for example, identifying a desirable pH threshold or range for the oceans. While the CBD does not provide a framework for directly regulating biodiversity in ABNJ, it does apply to processes and activities that may have adverse impacts on biodiversity in ABNJ (CBD, Article 4(b)), including acidification and other impacts of from carbon emissions.

The issue has also been taken up in various recent instruments of a 'soft law' character. It was already noted above in section 3.6.4 that Goal 14 of the Sustainable Development Goals adopted by the UN General Assembly in 2015, pertains to conserving and sustainably using the oceans, seas and marine resources for sustainable development. Target 14.3 specifically calls on countries to "minimise and address the impacts of ocean acidification, including through enhanced scientific cooperation at all levels".

Finally, since the consequences of ocean acidification may vary widely between different ocean areas, there have also been some activities in the field in areas which are particularly vulnerable to changes in ocean acidity. The polar regions in particular have taken a (non-committing) interest in this regard, notably through the Arctic Ocean Acidification Assessment[232] and various scientific committees within the Antarctic Treaty system (Stephens 2015).[233]

227 It is even uncertain if the definition of 'climate change' in Article 1(2) of UNFCCC covers chemical changes in oceans. It reads "a change of climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is in addition to natural climate variability observed over comparable time periods."

228 This Article specifically refers to pollution from or through the atmosphere.

229 IMO Doc. LC.LP.1/Circ.5 (2006).

230 IMO Doc. LC 34/15, Annex 8 (2012).

231 See, for example, COP Decisions IX/20 (2008), X/13 and X/29 (2010), XI/18 (2012), XII/23 (2014).

232 AMAP, Oslo 2013, available at www.amap.no/documents/doc/amap-assessment-2013-arctic-ocean-acidification/881

233 Stephens (2015) concludes that "despite the high level of awareness among the Antarctic science community ocean acidification has not been considered in any significant way by the CCAMLR."

In conclusion, the topic of ocean acidification is unregulated in terms of 'hard' and specific rules, and only lightly touched upon by several different legal regimes. However, it is a new and emerging issue increasingly considered through policy fora, including the CBD and the UN Informal Consultative Process on oceans and law of the sea (ICP), as well as through global assessments such as the United Nations World Ocean Assessment. The regimes described above offer quite different focuses and potential solutions (mitigation and adaptation) to the issue, which illustrates that the forum for governing the matter will be very relevant for how ocean acidification will be addressed. Yet there appears to be little connection between the regimes and no system in place for coordinating their respective tasks and responsibilities. In order to remedy the lack of coordination – at least in the field of science, capacity building and communication – the International Atomic Energy Agency has recently set up an international coordination centre for ocean acidification,[234] but that does not answer the question of which institution or institutions are responsible for regulating ocean acidification.

3.7.3.3 New mitigation measures: ocean fertilization

Oceans are not only seen as suffering adverse effects from carbon emissions, but also as a potential vehicle for experimental geo-engineering solutions to climate change. Geo-engineering activities in the oceans involve a whole range of measures which were difficult to foresee even a decade ago (Scott 2015). A well-known example, which has already received some attention, is ocean fertilization, which is the artificial stimulation of oceans' ability to draw down CO_2 from surface waters to the ocean's depths, hence increasing oceans' capacity to store atmospheric carbon.[235]

The concept of ocean fertilization is based on artificially increasing the natural processes by which carbon is sequestered from the atmosphere into marine systems via the 'biological pump', which is the sum of a suite of biologically mediated processes that transport carbon from the surface euphotic zone to the deep ocean (Volk and Hoffert 1985). Fertilization is typically done by introducing nutrients such as iron, phosphorus, or nitrogen into the oceans to stimulate the growth of phytoplankton, which absorb CO_2.

Iron fertilization has been shown to change the composition of phytoplankton communities in the small-scale enrichment experiments conducted to date. Changes to phytoplankton and bacterial communities could have unpredictable consequences for global ocean food chains (depending on location), and the many fisheries upon which humanity relies upon favouring, for example, the proliferation of opportunistic, less commercially viable species such as jellyfish. While uncertainties exist, ocean fertilization could be linked to harmful algal blooms. Also, the phytoplankton bloom caused by fertilization is likely to increase oxygen demand in the underlying waters due to the consumption and degradation of organic matter. A decrease in oxygen concentrations can lead to increases in anoxic bacterial processes, and hence to additional release of methane from the oceans (CBD 2009).

From a purely legal point of view, a starting point could be that ocean fertilization is also subject to high seas freedom and, since it is not prohibited, it is *prima facie* lawful to the extent that it is conducted for peaceful purposes and with due regard to the interests of other states and rights with respect to activities in the Area (UNCLOS, Article 87(2)). The general obligations to protect and preserve the marine environment obviously also apply.

However, ocean fertilization is a new activity that was not necessarily within the contemplation of the drafters of UNCLOS, and may therefore be an uncomfortable fit.[236] Additionally, ocean fertilization has been deemed to fall within the definition of 'pollution of the marine environment' in UNCLOS Article 1(1) (4).[237] The obligations include the requirement of states to take "all measures to prevent, reduce and control pollution of the marine environment from any source" (UNCLOS, Article 194), including those "resulting from the use of technologies under their jurisdiction and control" (UNCLOS, Article 196).

Moreover, since ocean fertilization will normally be covered by the definition of 'dumping' (see section

234 See www.iaea.org/ocean-acidification/

235 While there is no internationally agreed definition of ocean fertilization, parties to the London Convention and London Protocol put forward the following definition for the purpose of Resolution LC-LP.1 (2008) on the Regulation of Ocean Fertilization: "any activity undertaken by humans with the principal intention of stimulating primary productivity in the oceans, not including conventional aquaculture, or mariculture, or the creation of artificial reefs".

236 To mine and distribute the vast quantities of material needed to fertilise the ocean will require equally vast quantities of energy, and hence may prove self-defeating in terms of preventing climate change.

237 Scott (2015) considers that fertilization would be covered by the definition where the fertilizer is 'introduced' into the marine environment through artificial means, but probably not where the nutrients are already located in the oceans but only pumped to the surface by means of ocean pipes.

3.3), UNCLOS requires states to adopt laws and regulations to control dumping that are no less effective than the "global rules and standards" (UNCLOS, Article 210(6)). In this respect, there is an important distinction between the original 1972 London Convention and its Protocol from 1996. The governing bodies of the two instruments agreed in 2008 that ocean fertilization should not be allowed given the present state of knowledge, other than for legitimate scientific research.[238] In 2013, the 1996 Protocol was formally amended to regulate the placement of matter for ocean fertilization and other geo-engineering activities. The amendment limits geo-engineering activities to scientific research, and adopts a framework for assessing whether specified geo-engineering activities, including ocean fertilization, should be allowed in the future.[239] In line with the reverse listing regime of the Protocol, the presumption is accordingly that geo-engineering activities will *not* be permitted, including in ABNJ. Once this rule enters into force it would constitute a considerable strengthening of the applicable rules on ocean fertilization, including in ABNJ. However, as long as the 1996 Protocol is not considered the 'global rules and standards' within the meaning of UNCLOS Article 210(6), the obligation will only bind the parties to the Protocol.

Finally, it should be noted that the CBD has also adopted a (non-binding) moratorium on geo-engineering activities more generally, which provide additional – moral, if not legal – constraints for decision-makers to authorize such activities.[240] In addition, the CBD has produced a scientific synthesis of the Impacts of Ocean Fertilization on Marine Biodiversity, which summarizes the potential impacts and uncertainties associated with this practice (CBD 2009).

At minimum, in view of the scientific uncertainties involved with ocean fertilization, a precautionary approach arguably applies to such activities, which considerably restrain states' liberty to take such measures (see section 2.3). In any case, there are some general obligations with respect to undertaking an environmental impact assessment in order to identify and respond to potential risks.[241] And in many cases, ocean fertilization activities may also come within the scope of marine scientific research, as regulated in UNCLOS Part XIII, with the additional principles of methods and dissemination of results that that entails.

3.7.4 MARINE LITTER

Marine litter, or marine debris, has been defined as "any persistent, manufactured or processed solid material discarded, disposed of or abandoned in the marine and coastal environment" (UNEP 2005). As is well-known, litter from land and sea-based sources keeps ending up in the oceans at an ever-increasing pace, causing significant damage to marine wildlife and ecosystems – and significant risks for humans in health and safety, but also in the form of economic losses from, *inter alia*, fouled beaches, fishing gear, and propellers. Floating debris often end up in ocean gyres, where currents are the weakest, forming giant debris 'islands' such as the Great Pacific Garbage Patch in the North Pacific. The debris, together with potentially invasive species and other novel entities and chemicals, may also be transported in currents to distant shores.

There is no single treaty instrument to deal specifically with marine litter. The general environmental obligations of UNCLOS apply, but for the rest, a legal distinction has to be made depending on where the litter originates.

To the extent that this litter comes from sea-based operations, there are strict prohibitions in place, either through MARPOL Annex V (see section 3.2.2) or the London Dumping regime (see section 3.3). MARPOL Annex V applies to ships of any category and size, and also to offshore installations. Ever since it entered into force in 1988, it has prohibited all discharge of plastic (which represents 80% of marine litter) into the sea, including in ABNJ, and requires ships to maintain a garbage record book to track all disposal and incineration aboard. In port, all parties have an obligation to provide adequate waste reception facilities for ships' waste, including garbage. Amendments concluded in 2011, including a 'reverse listing'

238 Resolution LC-LP 1 on the Regulation of Ocean Fertilization (2008). A subsequent resolution of 2010 further specified the notion of legitimate scientific research (Resolution LC-LP.2 on the Assessment Framework for Scientific Research Involving Ocean Fertilization (2010), which guides parties in assessing proposals for ocean fertilization research, and includes detailed environmental assessment rules. These instruments are not legally binding.

239 New Article 6bis, providing that parties shall not allow the placement of matter into the sea from vessels, aircraft, platforms or other man-made structures at sea for marine geoengineering purposes unless the activity is authorized under a permit. The amendments also include the adoption of new annexes 4 and 5 to the convention Resolution LP.4 (8), 18 October 2013.

240 See CBD Decisions IX/16 (2008), para. C.4; X/33 (2010), para. 8(w); and XI/20 (2012).

241 Apart from UNCLOS Article 206, a more detailed risk assessment framework for ocean fertilization is laid down in LC.LP Resolution 2, which is currently non-binding, but will be binding for the parties to the 1996 Protocol once the 2013 amendments enter into force.

approach prohibiting any discharge of garbage that is not specifically permitted, have since strengthened the regime for other types of garbage as well. There are significant questions as to how well this has been enforced, particularly with respect to fishing vessels. The impacts of lost, abandoned or discarded fishing gear are another serious concern that is only starting to get regional and international attention.[242]

Similarly, marine litter falls squarely within the definition of dumping in the London Dumping Convention, provided it is not considered to fall within "disposal at sea of wastes or other matter incidental to, or derived from, the normal operations of vessels" (London Convention, Article II(1)(b)(i)), in which case MARPOL would govern it. The London Convention fully prohibits the dumping of "persistent plastics and other persistent synthetic materials, for example, netting and ropes, which may float or may remain in suspension in the sea in such a manner as to interfere materially with fishing, navigation or other legitimate uses of the sea" (London Convention, Annex I, para. 4). Under the more stringent 1996 Protocol, dumping at sea of marine litter in any shape or form is similarly prohibited.

If the litter originates from land-based sources, which is estimated to be the case for 80% of marine litter worldwide, different rules apply. UNCLOS imposes certain general duties on states to legislate for land-based pollution, but includes no obligation to develop rules for this purpose at an international level.[243] There is no global Convention on land-based marine pollution. Instead the matter has been addressed through the non-binding 1995 Global Programme of Action for the Protection of the Marine Environment from Land-based Activities (GPA) and has been taken up in several regional instruments,[244] sometimes further specified in protocols specifically targeting land-based marine pollution.[245]

In the past decade, a number of efforts have also been made in non-binding recommendations for states to take measures to reduce this form of marine pollution.[246] The Global Partnership on Marine Litter was launched in June 2012 in Brazil as a voluntary multi-stakeholder coordination mechanism in which all partners agree to work together to further reduce and better manage marine litter.[247] The UN Environmental Assembly has also encouraged UNEP to support the development of marine litter action plans with countries upon request.[248]

Despite this increasing attention to the issue, controlling marine litter from land-based sources remains largely dependent on national waste management legislation, which of course differs significantly from one country to another. Indeed, marine litter is part of the broader global problem of waste management, which is becoming a major public health and environmental concern in many countries and deserves greater attention.

The sheer quantity of marine litter, combined with the indication that the situation is getting worse,[249] illustrates that the existing legal regimes have not been successful in preventing marine litter, even for

242 Marine pollution originating from purse seine and longline fishing vessel operations in the Western and Central Pacific region, Report submitted to the Technical and Compliance Committee, Western and Central Pacific Tuna Commission, Eleventh Regular Session, 23 - 29 September 2015; 2003-2015 WCPFC-TCC11-2015-OP06 24 Sept 2015

243 UNCLOS Article 207(1) provides that "States shall adopt laws and regulations to prevent, reduce and control pollution of the marine environment from land-based sources, including rivers, estuaries, pipelines and outfall structures, taking into account internationally agreed rules, standards and recommended practices and procedures." Paragraph 5 of the same Article is somewhat more specific: "Laws, regulations, measures, rules, standards and recommended practices and procedures […] shall include those designed to minimize, to the fullest extent possible, the release of toxic, harmful or noxious substances, especially those which are persistent, into the marine environment." As to enforcement, Article 213 provides that "States shall enforce their laws and regulations adopted in accordance with Article 207 and shall adopt laws and regulations and take other measures necessary to implement applicable international rules and standards established through competent international organizations or diplomatic conference to prevent, reduce and control pollution of the marine environment from land-based sources".

244 Including OSPAR, CCAMLR and the 1983 Convention for the Protection and Development of the Marine Environment of the Wider Caribbean Region (Cartagena Convention) and, at EU level, the Maritime Strategy Framework Directive (Directive 2008/56).

245 See e.g. the 1999 Protocol concerning Pollution from Land-Based sources and activities to the Convention for the Protection and Development of the Marine Environment of the Wider Caribbean Region.

246 Examples include resolutions adopted by the UNGA urging states to take action with respect to marine litter (see e.g. Res. A/63/L.42 (2008), para. 107 and the work undertaken within the Global Programme of Action on the Protection of the Marine Environment from Land-Based Activities (www.gpa.unep.org). See also the 2011 Honolulu Strategy and its associated Commitments at www.unep.org/pdf/PressReleases/Honolulu_Commitment-FINAL.pdf . At its very first meeting in June 2014, the United Nations Environment Assembly of UNEP adopted resolution 1/6 on Marine plastic debris and microplastics. See www.unep.org/unea/UNEA_Resolutions.asp. This resolution encourages Governments, intergovernmental organizations, industry and others to cooperate with the Global Partnership on Marine Litter; requests UNEP to provide support to the development of marine litter action plans upon request by countries; and requests UNEP's Executive Director to present a study on marine plastic debris & microplastics to UNEA-2.

247 More information on the Global Partnership for Marine Litter may be found at: http://www.unep.org/gpa/gpml/gpml.asp

248 See e.g. Resolution 1/6 of the United Nations Environment Assembly on "marine plastic debris and microplastics" (2014).

249 The 2005 UNEP Report at p. 4 concludes that "[d]espite actions taken nationally and internationally, the situation with regard to marine litter is continuously getting worse".

sea-based pollution. For instance, In the densely trafficked North Sea, half of the litter found on beaches is estimated to originate from ships (Trouwborst 2011). The lack of capacity for implementation of waste management policies at national level is one of the main reasons for the failure,[250] as is the absence of a global convention that would oblige states to take measures in their own countries to minimize marine litter.

3.7.5 MARINE GENETIC RESOURCES (MGR)

3.7.5.1 General

The vertical division made in UNCLOS between the seabed in the Area and the superjacent water column of the high seas is essentially based on the presumption that the interest in the high seas lies in its living resources (i.e. fish) while the Area is interesting only for its mineral resources. While that presumption may have been correct at the time of the Convention's negotiation, subsequent scientific information about life on and near the seabed has already given rise to a number of cases, which question this starting point and blur the distinction between the two types of resources. A large range of organisms have been found to live on, in and above the deep seabed; some are attached to the seabed, some live in the sediments inside the seabed, while others are free swimming, often with a symbiotic relationship between the two categories. In some cases, larval forms of an organism may be free swimming, while the adult is attached to the seabed. In addition, mineral and biological resources are sometimes physically connected.[251]

UNCLOS, however, recognizes no grey areas in this sense. A free-swimming living resource found in the high seas is subject to high seas freedom, in most cases presumably the freedom of fishing. This contrasts with the regime governing the resources of the Area, which are vested in mankind as a whole on whose behalf ISA shall act (UNCLOS, Article 137(2)), subject to a very elaborate international regime for exploration, exploitation and benefit-sharing.

The distinction may also be relevant when it comes to marine scientific research. MSR in general is subject to Part XIII of UNCLOS, which recognizes the right of all states to conduct marine scientific research, subject to the rights and duties of other states, as well as the general principles for the conduct of MSR set forth in UNCLOS Article 240, which envisages the adoption of regulations for the protection and preservation of the marine environment. According to UNCLOS Article 241 "marine scientific research activities shall not constitute the legal basis for any claim to any part of the marine environment or its resources." In the Area, under UNCLOS Article 143, marine scientific research shall be carried out exclusively for peaceful purposes and for the benefit of mankind as a whole, in accordance with Part XIII. While States Parties may carry out marine scientific research in the Area, they are also expected to promote international cooperation in marine scientific research in the Area by, among other things, effectively disseminating the results of research and analysis when available, through the Authority or other international channels.

The two examples illustrate the legal significance of knowing whether it is the regime for the Area or the superjacent water column that applies to a particular activity – and how difficult it may prove in practical terms to establish which one applies.

3.7.5.2 Marine genetic resources on the seabed: freedom of the high seas or common heritage status?

The resources of the Area are the common heritage of mankind (UNCLOS, Article 136). However, these resources, as defined in UNCLOS, do not include living resources (Jørem and Tvedt 2014). The 'resources' of the Area are defined as meaning "[…] all solid, liquid or gaseous mineral resources in situ in the Area at or beneath the seabed, including polymetallic nodules" (UNCLOS, Article 133(a)). The wording accordingly focuses on mineral resources, even if the term 'Area' encompasses more. Hence, unlike the original proposal made by Malta for the Common Heritage of Mankind (CHM) regime (Pardo 1975), the regime developed under UNCLOS does not extend to living organisms. The distinction is narrower than for the continental shelf, where sovereign rights of coastal states over the 'natural resources' include both living and non-living resources. The living marine resources are 'sedentary species' that are attached to the ocean floor, rather than free-swimming.[252]

250 See www.unep.org/regionaLseas/marinelitter/about/default.asp

251 D. Leary (2010) notes the difficulties involved in distinguishing between e.g. a microbe found inside a hydrothermal vent, or in its immediate surrounding, or one some distance away from it living in symbiotic relationship to such vents.

252 The full definition in UNCLOS Article 77(4) reads: "The natural resources referred to in this Part consist of the mineral and other non-living resources of the seabed and subsoil together with living organisms belonging to sedentary species, that is to say, organisms which, at the harvestable stage, either are immobile on or under the seabed or are unable to move except in constant physical contact with the seabed or the subsoil."

UNCLOS is accordingly silent about the rights and obligations of states in relation to the exploration of living resources on the seabed. The legal status of living and genetic resources is not clear in regard to the commercial use of marine genetic resources and illustrates the difficulties of the international legal regime in keeping pace with scientific and technological development. Thus, there are different views as to whether the exploitation of marine genetic resources originating from the deep seabed beyond national jurisdiction falls under the regime of 'freedom of the high seas', which allows the user to keep their findings (Hodgson et al. 2014), or under the regime of 'the common heritage of mankind', which would require benefits from the use of genetic resources to be equitably shared amongst all countries. A purely textual reading of the Convention suggests that living resources, including marine genetic resources, currently do not qualify as resources under the definitions in UNCLOS Part XI, and that consequently their exploration and exploitation also lie outside the authority of ISA. That approach appears to have been a conscious choice by the drafters of UNCLOS, rather than an omission, in view of the broader definition that was originally proposed and the failure to adopt for the Area the same solution as for national jurisdiction on the continental shelf.

Another question is whether marine genetic resources could nevertheless be held to form part of the 'common heritage of mankind' concept through contextual interpretation, and would hence be subject to the benefit sharing regime of UNCLOS and the supranational management scheme administered by ISA.[253] That position finds support in the fact that the wealth of marine life dwelling in the darkness below the 200 meter average depth of the continental shelf or the potential value of their genetic resources was not recognized by the negotiators of UNCLOS. Hydrothermal vents, widely considered an oasis for marine life, were only discovered in the late 1970s.

3.7.5.3 Genetic resources of the high seas: the relationship to Marine Scientific Research

The term 'marine scientific research' is not defined in UNCLOS Part XIII, *inter alia*, due to disagreements over the need to distinguish between pure scientific research and applied or commercially oriented research (Jørem and Tvedt 2014). It may be read to "include any study or related experimental work designed to increase knowledge of the marine environment" (Treves 2008). Bioprospecting often starts out as MSR, with the commercialization taking place later following analysis of samples in the laboratory. It is also not uncommon for a commercial development to be based on samples collected by scientists through MSR and deposited in *ex situ* collections, from which they can be obtained by those interested in their commercial properties. Bioprospecting is not, in most cases, dependant on harvesting large quantities of resources, as often a synthetic or derivative can be produced. Yet marine scientific research generally involves some amount of extraction to be meaningful. Furthermore, there is no distinction between pure and applied MSR in regard of the high seas in Part XIII (UNCLOS, Article 257). This suggests that bioprospecting is regulated by the MSR regime. However, UNCLOS frequently operates with separate and related activities such as survey activities, prospecting, exploration and exploitation, which are not considered MSR and may be regulated separately in Parts II, III, V, VI XI, and Annex III to the Convention (UN DOALOS 2010). Nevertheless, there can be substantial overlap between MSR and 'exploration' as defined under Part XI. Nearly all activities involved in 'exploration' can also be carried out as MSR, albeit without the protection and exclusivity afforded by a contract with ISA.

While scientific research into marine genetic resources clearly represents MSR, the position of bioprospecting is more delicate in view of the commercial elements inherent in that activity. The difference between the two essentially lies in the purpose and intent of the activity (Glowka 1996), which may cause obvious categorization problems. The commercial aspects may emerge at a late stage after the genetic resource has been brought to a laboratory. In any case, whatever criterion for distinguishing the two is used, it seems inevitable that there will always be a grey zone between the research and bioprospecting that cannot easily be attributed exclusively to one or the other. For such cases, UNCLOS Article 251 provides that "States shall seek to promote through competent international organizations the establishment of general criteria and guidelines to assist States in ascertaining the nature and implications of marine scientific research".

Some guidance can be gained from the recent 2013 amendment to the London Protocol to include marine geo-engineering activities, which outlines for the first time in law of the sea detailed criteria for

253 This is subject to different views in legal literature Cf the views by N. Matz-Lück (2010) at p. 62, with that of A. Oude Elferink (2007), at p. 174.

the identification of research activities compared with commercial activities. The six criteria for the identification of research activities are as follows: addition to scientific knowledge, based on best available scientific knowledge and technology; appropriate scientific methodology; subject to peer review; no economic interest involved; commitment to publish scientific results; and available financial resources.

If bioprospecting is part of the freedom of MSR it will have to be exercised within the conditions set in Part XIII of UNCLOS. It includes the requirements that activities must be conducted for peaceful purposes, do not unjustifiably interfere with other legitimate uses of the high seas, and must be conducted in compliance with measures taken to protect and preserve the marine environment (UNCLOS, Article 240). There are no adopted international agreements on regulating the environmental aspects of MSR. The activities will be regulated by the general obligations and the obligations on vessel source pollution, which has been specified through separate instruments. Additionally, under UNCLOS, the research state is required to make all results from the MSR available through publication (UNCLOS, Article 244). Where the research (i.e. bioprospecting) leads to inventions that are protected by intellectual property rights, which is often the case (e.g. through patents), conflicts between the different legal regimes (MSR and intellectual property right - IPR) may also arise (Jørem and Tvedt 2014).

3.7.5.4 Benefit-sharing and MGR

Conscious of being left ever further behind as commercial activity increases and the capacity gap widens, developing countries in particular have argued that marine genetic resources are covered by the common heritage of mankind principle. This would imply that some form of benefit-sharing should take place between those countries that are collecting and commercializing genetic resources from "the Area" and those that do not have the means to do so. Many developed countries do not support this viewpoint, however, arguing that the products derived from marine genetic resources, such as pharmaceuticals, already benefit all countries, and their use falls under the principle of freedom of the high seas. While this remains a contentious issue, progress has recently been made by focusing discussions on the creation of a potential regime for access and benefit sharing of marine genetic resources, and including this topic in the 'package' of elements to be included in the new international instrument (BBNJ) which is currently under development.

Existing mechanisms for access and benefit sharing (ABS) do not apply to marine genetic resources in ABNJ (Office of the Pacific Ocean Commissioner and Pacific Ocean Alliance 2015). However, existing regimes could offer models for the design of an ABS regime for marine genetic resources in ABNJ. For example: 1) the Nagoya Protocol to the CBD, which provides for bilateral access and a benefit sharing approach for genetic resources within national jurisdictions, highlights the range of benefits that can be addressed in an ABS regime; 2) the FAO International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA), a multilateral ABS regime applicable to 64 food crops, highlights the importance of non-monetary benefit sharing (including the role of a 'common pool' for data sharing) and shows it is possible for a regime to link monetary benefit sharing and intellectual property rights; 3) the WHO Pandemic Influenza Preparedness Framework for the Sharing of Influenza Viruses and Access to Vaccines and Other Benefits, also highlights the role of 'common pools' providing access to data and information in an ABS regime. These existing mechanisms highlight a number of relevant elements that could be included in an ABS regime for marine genetic resources in ABNJ.

Furthermore, existing provisions under UNCLOS (e.g. marine scientific research (Part XIII), technology transfer (Part XIV), and the Area (Part XI)) provide a basis for non-monetary benefit sharing (e.g. sharing of research results, international cooperation in marine scientific research and developing scientific and technical capacity) that could be further implemented in support of fair and equitable access to marine genetic resources in ABNJ and the sharing of benefits arising from their use.

3.7.6 CONCLUSIONS

The examples discussed above illustrate different regulatory uncertainties and weaknesses that follow from the absence of specific rules for a topic that has surfaced only after the adoption of the relevant international instruments.

These uncertainties involve both overlaps and gaps, but a common feature is the highly sectoral approach to the various environmental issues at hand. Depending on which regulatory regime is consulted, the focus and regulatory solutions offered are very different. Furthermore, in all five examples, there is a notable lack of linkage between the various institutions concerned and a resulting lack of certainty as to which body is responsible for administering the matter.

Scientific and technological progress will give rise to new environmental insights and fresh uses for the oceans. A more coordinated regime of ocean governance seems to require a system by which matters can be settled in the cases of gaps and overlaps. In addition, current sector-based governance models fail to address the multiplicity of threats and impacts that ocean areas are facing.

3.8 LOOKING FOR NEW INTEGRATED MANAGEMENT MODELS FOR ABNJ

The high seas and seabed beyond national jurisdiction suffer from multiple anthropogenic threats, the sum of which is greater than the respective parts, and matters relating to the conservation and protection of the marine environment therefore need to be considered as a whole. At the same time the regulatory and institutional framework discussed above is strongly based on individual sectoral activities (Rochette et al. 2014).[254] This discrepancy is only gradually and very inconclusively being addressed by supplementary rules of environmental law and a broader understanding of the scope and nature of the environmental protection obligations included in UNCLOS Part XII.

This situation raises the question of what management tools are available to implement international environmental obligations in ABNJ in an integrated manner. There is certainly scope for developing more tools for this purpose, but currently international environmental law acknowledges four main groups of management tools for cumulative threats: 1) area-based management tools; 2) ecosystem-based planning tools, such as marine spatial planning; 3) environmental impact assessment and strategic impact assessments; and 4) ecosystem-based information tools to support management. Not all these tools are in use, or even available for use in ABNJ.

The table in Appendix 2 summarises how the four main tools are currently applied by international agreements and bodies in ABNJ. The table illustrates that many gaps still exist, in particular with respect to geographic coverage, coordination gaps between instruments and institutions, and the absence of a cumulative threat perspective. As noted, these tools also form part of the 'package' of issues that are being discussed within the on-going negotiations of the BBNJ Agreement.

The outcome of the BBNJ negotiations is still unclear, of course, as states have very different interests in the matter. Yet, it appears that a potential agreement emanating from this process could substantially improve the coherence, cooperation and coordination of the international regime for the conservation and sustainable use of marine biodiversity in ABNJ. Shared governance principles, common criteria and standards for EIAs, mechanisms for the designation of marine protected areas and the adoption of area-based conservation measures, both large scale and small, and an ongoing framework for consultation, review and assessment of progress may represent significant advances in this area. This is not without its challenges, however. Significant efforts are required to integrate biodiversity concerns and ecosystem-based solutions into today's sectoral management. The new agreement must also operate within the constraints of not undermining existing institutions and agreements. Thus the agreement is unlikely to alter the basic structure of the law of the sea in this field. How and whether the agreement will address more 'horizontal' issues of international law, such as flag state criteria, state responsibility, and sanctions for non-compliance, remains to be seen. Such issues are highly relevant in shaping a future regime for protecting biodiversity in ABNJ but do not form part of the agreed 'package'.

254 Rochette et al. (2014)have listed the following drawbacks of sectoral governance regimes in ABNJ: they are not able to respond to the impacts of cumulative threats from multiple sources; they do not aim to protect all the features of conservation importance within their boundaries, including the overall health and diversity of the ecosystem; they may be non-systematic and hence unlikely to result in a coherent network of ecologically representative and well-connected systems of protected areas; they lack a mechanism to ensure the coordination of the measures adopted by these organizations, presenting the potential for gaps and duplication of efforts; and they lack a common set of selection criteria or scientific advice, which may lead to conflicting results between sectors.

3.9 CONCLUDING OBSERVATIONS

This chapter has assessed post-UNCLOS developments with respect to the management of ABNJ. In chapter 2, it was concluded that UNCLOS does not preclude further developments of its provisions or jurisdictional regime, as long as its key principles are respected and maintained. The significant amount of regulatory activity reviewed here in itself indicates that the oceans, including ABNJ, have not escaped regulatory attention in recent decades. More than thirty multilateral treaties which to some extent regulate activities in ABNJ have been addressed in this chapter. Numbers alone, however, do not say much about the completeness or adequacy of the resulting regulatory regime.

The overwhelming majority of instruments discussed above belong to two main groups. First, a great number of treaties (and related soft law instruments) govern the most traditional uses of the seas (i.e. shipping and fisheries). Despite a significant regulatory activity, even these sectors entail important gaps in terms of coverage of certain geographical areas and/or fish stocks or of more recent environmental challenges. As regards jurisdiction, both sectors have made significant post-UNCLOS progress in developing, or at least clarifying, the rights and obligations of non-flag states. The second group of instruments addresses broader environmental objectives, but without a particular maritime focus. These Conventions have usually been careful not to exceed the jurisdiction of their state parties and usually contain explicit safeguard clauses to ensure that jurisdictional matters laid down in UNCLOS are not affected. This clearly limits their applicability in ABNJ. Similarly, at regional level only few of the regional seas agreements extend to ABNJ. No single instrument specifically targets ABNJ and none of the existing instruments take as a starting point the concerns or resilience of the oceans' ecosystems. The only sector with a reasonably comprehensive integrated governance regime for ABNJ in place is that covering the international seabed area, though most of that regime covers only a relatively narrow set of activities, that is, seabed mining. With respect to emerging environmental concerns and ocean uses that were not contemplated at the time when UNCLOS was negotiated, the current regulatory regime is increasingly out of line with contemporary pressures. Not only is there an absence of rules in many of these areas, but there is also a lack of process for dealing with new challenges for the oceans.

In jurisdictional terms, the developments reviewed here have not fundamentally challenged the regime set out in UNCLOS, for ABNJ or otherwise. The rights and duties of states with respect to ABNJ are still essentially the same as those laid down in 1982. Sectoral agreements have generally departed from jurisdictional setup of UNCLOS and made specific reference to their intention not to affect that system. Even instruments that approach their topic from a more ecosystem-oriented angle, such as the CBD, have not so far managed to make much regulatory impact on the flag state-based and maritime zone-oriented jurisdictional regime of UNCLOS. However, the existing jurisdictional framework includes unutilized potential, notably in the form of an increased role for port states in regulating, monitoring and taking enforcement measures with respect to activities in ABNJ. Some of this potential has been noted in recent regulatory measures in the field of shipping and fisheries. Regulatory measures may also depart from the traditional approaches to the law of the sea by targeting more broadly the responsibility of individuals and corporations under the jurisdiction of the states concerned, with respect to their activities in ABNJ, or by supportive measures like trade or import conditions or other types of commercial limitations for persons who have failed to comply. Alternatives to flag state jurisdiction are thus already available, albeit subject to a number of limitations. The potential of such alternative regulatory approaches seem particularly worthwhile to explore with respect to regional agreements or other instruments with limited formal participation, where the constraints posed by the *pacta tertiis* principle would otherwise limit the effectiveness of the rules.

It is also true that ocean management is still as compartmentalized along sector lines as it was when UNCLOS was drafted. This chapter has presented a complex network of international institutions and arrangements that have little formal interaction between them. As long as only one sector is concerned, this is not a big problem. The IMO regulates ships and ocean dumping, while the FAO – along with and RFMOs – deals with fisheries, and the ISA manages seabed mining activities. However, as soon as the matter touches upon several sectoral activities, or falls outside the scope of any of them, basic questions – such as what rules apply, who is in charge for legal developments or who coordinates the activities – rise to the foreground. The status and content of

various general environmental principles, such as the precautionary approach, or the duties relating to environmental impact assessments, vary significantly between the different sectors. This absence of integration is a key challenge for effective management of ABNJ, as protection measures in these areas almost inevitably affect the interests of several uses and there is no entity in place to govern or prioritize between them. The only international body that has assumed a broad approach to questions concerning ocean policy and governance is the UN General Assembly, but this is a policy forum with an almost all-encompassing mandate that possesses neither the institutional tools nor the expertise to assume a hands-on responsibility for ocean governance. The need for institutional governance for ABNJ is thus another key issue for development that emerges from this review.

In the absence of an overarching governance framework for ABNJ, the prevailing freedom-oriented, sector-based approach to the conservation and environmental protection of ABNJ is likely to continue, with different rules and principles governing different uses. Over time, this entails the growing risk that important issues will be inadequately regulated, because they were not foreseen at the time of the conclusion of UNCLOS. At present, key developments of relevance to ABNJ include an increased understanding of marine ecosystems; new forms of activities and interests in the resources of the ABNJ; new environmental challenges such as climate change and ocean acidification, which in turn call for new mitigation measures, including geo-engineering initiatives. The access to marine genetic resources, including 'bio-prospecting' in ABNJ is a further case in point. It is not addressed in substantive terms by UNCLOS or in jurisdictional terms by the CBD. Similarly, neither of the existing international treaty regimes that govern access to and benefit-sharing of genetic resources[255] extend to marine genetic resources beyond national jurisdiction,[256] which leaves UNCLOS as the principal authority for resolving the matter, even if genetic resources were hardly within the minds of drafters when laying down the rules for the common heritage of mankind when UNCLOS was first negotiated. Similar issues have been raised for the other examples discussed in section 3.7 in relation to integrated MPAs, or the more recent environmental problems and solutions in relation to climate change. As time goes by, there will doubtless be more such cases.

In conclusion, it is clear that there is a large range of relevant topics that can be addressed at the ongoing negotiations of a new implementing agreement specifically aimed at addressing biodiversity beyond national jurisdiction. While the new agreement might not be able to address all such issues or to alter the fundamentals of the present jurisdictional scheme of the oceans, it does represent an opportunity to introduce more coherence, cooperation and integration into the governance of ABNJ and to adjust current rules to contemporary environmental needs. Such adjustments and developments are not only specifically foreseen, authorized and called for by UNCLOS, but arguably also form part of states' increasingly specified duty to protect and preserve the marine environment, irrespective of the maritime zone concerned.

255 Notably, on the one hand, CBD Article 15 and the 2010 Nagoya Protocol to the CBD and, on the other hand, the 2001 FAO International Treaty on Plant Genetic Resources for Food and Agriculture.

256 Marine genetic resources that are located within national jurisdiction are covered under CBD Article 22.2 and subject to its principles to the extent that this treatment does not conflict with the law of the sea.

SUMMARY OF FINDINGS

4

4.1 UN CONVENTION ON THE LAW OF THE SEA (UNCLOS)

UNCLOS is the main jurisdictional framework governing use of the oceans, including ABNJ. It is widely accepted in formal terms and is commonly described as the 'Constitution for the oceans'. The law of the sea, as codified in UNCLOS, includes two types of jurisdictional areas beyond national jurisdiction: the 'high seas' (covering the water column) and 'the Area' (covering the seabed beyond the outer continental shelf, sometimes referred to as 'the deep seabed').

The regulatory nature and background of these two areas are very different. The legal regime for the high seas is based on 'freedoms of the seas, meaning all states have the right to access the high seas for specific purposes. The freedom of the high seas has been a cornerstone of the law of the sea for centuries, but has continued to develop. Today this is coupled with a general duty for states to protect and preserve the marine environment, to have due regard for the interests of other states, to conserve living marine resources and to cooperate for these purposes. By contrast, the Area and its resources are specifically declared to be the 'common heritage of mankind'. Under this regime, which represented one of the key unique aspects of UNCLOS, all resources "are vested in mankind as a whole" (UNCLOS, Article 137(2)). The regulation of activities in the Area is subject to a very elaborate regime under tight international institutional control through the International Seabed Authority (ISA). This regime, however, is largely confined to seabed mining activities.

The jurisdictional regime of UNCLOS in ABNJ relies heavily on flag states, both in terms of prescription and enforcement. Other states are not given a main role for legislating or enforcing rules in these areas. Indeed, the starting point of UNCLOS is that flag states have *exclusive* jurisdiction in the high seas, subject only to specific express exceptions (UNCLOS, Article 92(1)). Moreover, UNCLOS includes few measures to ensure that flag states comply with the applicable rules. More recently, port states are increasingly assuming greater roles for promoting compliance with international rules, such as under the recent FAO Port State Measures Agreement for fishing or various IMO conventions and regional port state control arrangements for shipping.

UNCLOS creates a highly compartmentalized regime under which the jurisdiction of states depends not only on the artificial borders of maritime zones, but also on the activity in question. The rights and obligations of flag, coastal and port states depend on whether the matter concerns navigation, fishing, dumping, marine scientific research etc. with little connectivity between the sectors. Under this framework, each sector focuses on their unique issues, priorities and interests. This design does not easily accommodate more recent needs of, for instance, integrated ecosystem-based approaches or the application of cross-sectoral environmental principles. Increasing human activities in ABNJ emphasize the importance of further efforts to enhance coherence, cooperation and coordination amongst the various sectoral interests and organizations.

UNCLOS is neither static nor complete, nor was it intended to be so. The Convention itself does not rule out future developments, even in jurisdictional terms, provided its key principles are respected and maintained. Furthermore, subsequent developments in international law (e.g. in relation to principles of environmental law) need to be taken into account when applying UNCLOS. According to its preamble, matters that are not covered by UNCLOS are governed by "the rules and principles of general international law" (UNCLOS, Preamble). All these considerations suggest that law of the sea, despite the undisputed authority of UNCLOS, is a dynamic field of international law which does not exist in isolation from other international legal processes. For example, there is some scope for using other bases of jurisdiction than those provided for in UNCLOS for asserting jurisdiction over activities in ABNJ, provided that those alternative bases are recognized under international law. Examples include jurisdiction based on nationality (of individuals and corporations), or territoriality (in the form of, for example, port state requirements, import restrictions or other trade limitations relating to activities on or products from ABNJ).

4.2 REGULATORY AND INSTITUTIONAL DEVELOPMENTS

Since the adoption of UNCLOS many international conventions and institutions have been developed to address various aspects of ocean governance, including ABNJ. Substantive law has developed significantly since the adoption of UNCLOS in all sectors resulting in a significant strengthening of the legal framework for the threats associated with shipping, dumping, and fisheries. Moreover, developments in other areas of international law, such as the development of principles of international environmental law, have had impacts on how rights and obligations in the law of the sea are to be interpreted and applied. Table 1 summarizes the main instruments and institutions that are involved in regulating oceans within and beyond areas of national jurisdiction.

Table 1: Summary of key instruments and institutions involved in regulating oceans

	Shipping	Fisheries	Sea-bed mining	Dumping	Environment/ Biodiversity	Research (MSR)	Land-based
Global rules -jurisdiction	UNCLOS, several parts	UNCLOS/ FSA	UNCLOS/ 1994 Agreement	UNCLOS Part XII	UNCLOS Part XII	UNCLOS Part XIII	UNCLOS Part XII
Global rules -technical	IMO Conventions	FAO instr.	UNCLOS/ 1994 Agreement	LDC/LP	CBD, ICRW conservation agreements, etc.	-	-
Global body	IMO	FAO	ISA	IMO	UNEP, IWC and others	UNESCO/ IOC	UNEP
Regional bodies/rules	-	RFMOs, CCAMLR	-	OSPAR/ UNEP	Regional seas, NAMMCO, etc.	-	Regional seas

The regulatory developments to date have not significantly challenged the jurisdictional scheme as laid down in UNCLOS. Despite a series of new Conventions, instruments and institutions addressing various aspects of ocean usage the regime is still essentially sectoral and based on the jurisdictional apportioning of powers of states in different maritime zones. Rules that apply to ABNJ are principally for flag states to implement and enforce, while obligations of an overarching or 'horizontal' nature - such as the conservation of biodiversity – are not well developed regarding ABNJ. The continued sector-based approach means that issues which do *not* fall within any of the sectors identified in UNCLOS are difficult to fit within any of the existing regulatory or institutional responsibilities[257]. This, in turn, has created a significant barrier to developing new rules and solutions for such cross-sectoral issues.

At the policy level, governments have long recognized the need for a more integrated approach to ocean governance, including in ABNJ. Already in 1992 at the United Nations Conference on Environment and Development (UNCED) in Rio de Janeiro, governments called for new approaches to ocean

257 Due to the fact that the matter falls outside the scope of any sector regulated under UNCLOS, because there is disagreement on what sector it belongs to, or because it is multi-sectoral by nature, such as the establishment and management of integrated MPAs, ecosystem-based planning tools, etc.

management, "that are integrated in content and are precautionary and anticipatory in ambit" (UNCED 1992). In 2002, the World Summit on Sustainable Development (WSSD) in Johannesburg adopted further commitments to reduce the rate of biodiversity loss by 2010, to encourage the application of ecosystem approaches to marine management by 2010, to facilitate the establishment of representative Marine Protected Area (MPA) networks by 2012, to maintain the productivity and biodiversity of important and vulnerable marine and coastal areas, and to integrate marine and coastal areas management into key sectors.[258] In 2010, parties to the Convention on Biological Diversity (CBD) adopted the Aichi Biodiversity Targets. Target 11 calls for 10 per cent of coastal and marine areas, especially areas of particular importance for biodiversity and ecosystem services, to be conserved by 2020 through effectively and equitably managed, ecologically representative and well connected systems of protected areas and other effective area-based conservation measures, and integrated into the wider landscapes and seascapes. Finally, in 2015, the UN General Assembly adopted the Sustainable Development Goals (SDGs). SDG 14 relates to conserving and sustainably using the oceans, seas and marine resources for sustainable development, and includes many targets relevant to ABNJ (see Appendix 3).

The recently initiated UNGA process to create an international legally-binding BBNJ instrument could thus serve as an important vehicle to update the environmental framework of UNCLOS to integrate modern norms, fill gaps and prompt a more comprehensive approach to mounting environmental challenges. The instrument is to address a package of four key issues: marine genetic resources, including questions on the sharing of benefits; measures such as area-based management tools, including marine protected areas; environmental impact assessments, and capacity building and the transfer of marine technology. During 2016 to 2017, a 'preparatory committee' is to convene at least four times "to make substantive recommendations to the General Assembly on the elements of a draft text of an international legally binding instrument under UNCLOS".[259] The General Assembly is to decide in 2018 whether and when to convene an intergovernmental conference to finalize the negotiating text, with its decision depending on progress being effectively achieved in the preparatory committee.

258 World Summit on Sustainable Development (WSSD), *Agenda 21 Plan of Implementation*. Johannesburg Declaration on Sustainable Development, A/CONF.199/20, Johannesburg, South Africa, September 2002.

259 UN General Assembly (UNGA) Resolution A/RES/69/292 - June 19, 2015.

4.3 REGULATORY, MANAGEMENT AND IMPLEMENTATION GAPS

This study has identified six types of regulatory 'gaps' in the ABNJ regime, particularly with regard to imperfections in regulation and/or enforcement or in institutional competences. Because of their different nature, a distinction is made between rules of a 'jurisdictional' nature and 'substantive' rules.[260]

1. **Absence of rules.** In their strictest sense, regulatory gaps refer to matters that are completely unregulated. UNCLOS does not contain complete jurisdictional voids in this sense as the flag state will always have jurisdiction over activities conducted by its vessels, including in ABNJ. For other states, however, the absence of jurisdiction in ABNJ rules is all the more noticeable as UNCLOS and subsequent conventions include very few rights for states to take action in relation to ABNJ.

   As far as substantive rules are concerned there are several important gaps. More recent environmental concerns such as biodiversity conservation, cumulative impacts from multiple stressors on the marine environment, ocean acidification and marine litter keep emerging as are new uses of the oceans including those with climate mitigation potential (geoengineering and ocean fertilization). Ocean noise and the physical impacts of vessels on marine cetaceans and other large animals are additional rising concerns. In the absence of a regulatory framework for addressing emerging concerns, the substantive gaps are likely to grow over time.

   Substantive gaps also exist in a geographical sense. While UNCLOS is of universal coverage, regional rules (e.g. in the form of regional fisheries management organizations or environmental protection Conventions for regional seas) have a more limited geographical scope and leave large parts of the oceans uncovered, depending on the activity or species concerned.

2. **Inadequate rules.** The absence of jurisdictional gaps, *sensu stricto*, in the law of the sea does not exclude that there are a number of issues for which the current jurisdictional framework is weak, or so limited that it may be entirely unsuitable for dealing with a particular issue at hand. This study has identified a number of such jurisdictional inadequacies, notably in relation to the high seas freedoms that are not subject to more detailed regulation in UNCLOS or other instruments. The protection of biodiversity in the marine environment from the impacts of high seas fishing activities is one such example of a weak jurisdictional area. Marine scientific research or the construction of installations on the high seas are subject to very limited regulatory guidance, and activities that do not fall within any of the defined activities in UNCLOS are even less regulated in ABNJ. And though the high seas jurisdictional regime relies heavily on the responsibilities of flag states, it includes few mechanisms for any jurisdiction or organization other than the flag state itself to ensure that these responsibilities are actually met.

   It was already noted that the sectoral scheme as such is inadequate for addressing matters that fall outside or between the sectors identified in UNCLOS. Over time such issues have increased and a number of important borderline issues have already been identified that are difficult to categorize on the basis of the UNCLOS wording from 1982. A particularly relevant example is whether genetic resources on the seabed should be categorized as part of the Area and therefore part of the common heritage of mankind subject to benefit sharing obligations. Significant differences of view exist between different states and interest groups with respect to this issue.

3. **Rules are not in force or not widely ratified.** Regulatory gaps may also arise where regulation as such is adequate, but rules are not in force or only apply to a very limited number of states. For example, some important IMO conventions, notably the 2004 International Convention for the Control and Management of Ships' Ballast Water and Sediments, have not yet entered into force.[261] There is also a significant difference in substance between the 1972 Convention on the Prevention of Marine Pollution by Dumping of

260 While there is a broad variety in how new substantive rules may be developed in terms of format, participation and institutions involved, jurisdictional rules (addressing states' rights and obligations over different sea areas) are 'norm-creating' by nature and need to have broad international acceptance and would normally only be altered in global instruments with a jurisdictional mandate, in close coordination with the UNCLOS regime.

261 The Ballast Water Management Convention will enter into force on 8 September 2017, 13 years after it was adopted at the IMO.

Wastes and Other Matter, or London Convention, and its more precautionary 1996 London Protocol, but the Protocol's more stringent rules do not bind the parties to the Convention, in view of the basic principle of international law that treaties bind only their parties (unless the treaty is accepted as customary international law or the Protocol can be said to reflect "global rules and standards" under UNCLOS Article 210(6)). Where a matter is regulated only by means of regional or national measures, the lack of authority to bind non-parties is an inherent challenge. Mechanisms to compel non-party states to comply are few in ABNJ, but the general environmental obligations of UNCLOS, together with subsequent developments as regards environmental principles, may help to expand the reach of national obligations.

4. **Rules are not implemented and enforced.** A regulatory gap may arise even where the rules exist and apply, but are not followed in practice. The reasons for such a lack of compliance may lie both in the rules themselves (e.g. if they lack effective enforcement provisions) or in the way they are implemented by states and individual operators. There are numerous examples of non-implementation and enforcement failures in the subject area of this study. Marine litter stemming from discharges of garbage and discards of fishing gear into the sea despite the existence of strong requirements in MARPOL are illustrations of a discrepancy between the requirements and their implementation. The absence of effective enforcement mechanisms for illegal fishing and other violations on the high seas are another key challenge that needs to be overcome if the existing regulatory system is to be made more efficient. The port state control schemes applied in shipping and by certain RFMOs are examples of measures by non-flag states to ensure that the international rules are complied with, at least by ships that visit ports in the region concerned. These could be built upon and reinforced. At the same time, further mechanisms are needed to help clarify the responsibilities and processes that apply for states and others who fail to comply with the applicable rules.

5. **Institutional governance gaps.** Regulatory gaps may refer to broader governance matters, such as the lack of regional management organizations for specific or multispecies fisheries for certain geographic areas or regional seas conventions or other bodies to coordinate conservation in ABNJ, or the mandate of different institutions is too narrow to address pressing issues such as cumulative effects of multiple impacts. There is not a single institution with a responsibility for integrated, multi-sectoral responses to complex issues in the management of ABNJ. Simply put, existing institutions are either concerned with a single sector or do not extend their mandate beyond national jurisdiction. No institution is identified as being responsible for dealing with new or unregulated matters in the oceans. A strict adherence to sector-based mandates means, on the one hand, that multi-functional and integrated protection initiatives are currently excessively heavy to administer. On the other hand, it means that it is difficult to find an institutional 'home' for new regulatory issues that arise with new scientific and technological developments or to address the cumulative impact of multiple environmental pressures. The emerging BBNJ Agreement which is currently under development could provide an ongoing platform for addressing ABNJ issues in an integrated multi-sectoral perspective.

6. **Governance principles.** A final category of gaps is the lack, or inconsistent application, of many modern governance principles in sectoral management in ABNJ. A broad range of commitments have been made by states, both under conventional law and 'soft' law, to adopt ecosystem approaches, apply the precautionary approach, integrate biodiversity conservation into management and ensure transparent and participatory decision-making processes. Some of those principles have even been held to represent customary international law. Yet, there remain significant differences in how those principles are applied and understood by states when it comes to activities in ABNJ.

   A contribution of the new BBNJ Agreement could be the elaboration of such principles – and tools to operationalize them – that takes into account multiple uses of the oceans. Examples of such tools include environmental impact assessments, strategic environmental assessments and area based planning and management tools. Governance principles could also help the new instrument to remain flexible enough to deal with new environmental threats and risks that are not covered by current substantive rules. New threats and risks will continue to surface and there is a need for procedures to accommodate them. In addition, our knowledge of existing threats and opportunities will need to develop if collective management efforts are to be successful in achieving globally agreed goals and targets for conservation and sustainable use.

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APPENDICES

APPENDIX 1: ONGOING GEF PROGRAMS AND PROJECTS IN THE ABNJ

The ongoing GEF Areas Beyond National Jurisdiction program focuses on the iconic last frontier for the expansion of marine fisheries and ecosystems. The GEF forged a unique and powerful alliance between: Countries through the Tuna and Deep Sea RFMOs; International Organisations; Private Sector and NGOs. The overall ABNJ program, coordinated by FAO, promotes efficient and sustainable management of fisheries resources and conservation of crucial habitats in the ABNJ and consists of mutually-reinforcing interventions in 4 projects:

1. The objective of the Tuna project is sustainable & efficient tuna production & biodiversity conservation through the ecosystem approach through

    - Sustainable management pilots of tuna fisheries
    - Strengthening & harmonization of monitoring control & surveillance (MCS) & Reducing IUU
    - Reduction of ecosystem impact of tuna fishing (bycatch & associated species)

2. The objective of the Deep Sea project is to enhance sustainability in the use of deep-sea living resources and biodiversity conservation in the ABNJ, through the systematic application of an Ecosystem Approach leading to:

    - Improved policy and legal frameworks
    - Reducing adverse impacts on VMEs and EBSAs
    - Improved planning and adaptive management for ABNJ deep-sea fisheries
    - Development and testing of a methodology for area-based planning
    - Pilot implementation and demonstration

3. The Ocean partnerships ocean partnerships for sustainable fisheries and biodiversity conservation – models for innovation and reform project, implemented by the World Bank, links straddling stocks from coasts to EEZs to ABNJ with activities in 4 regions.

    - The Bay of Bengal sub-project focus on strengthening local fisheries towards sustainable catches
    - The frameworks and experience of the Nauru Agreement and FFA offer an opportunity to pilot essential reforms which would lead to higher returns.
    - Regarding the Billfish fishery, trials will not only be held through the Western & Central Pacific Fisheries Commission with the small scale fishers but also with recreational fishers who are quickly becoming a bigger group globally and an important source of financing towards sustainable practices at the same time.
    - Regarding the Skipjack tuna fisheries in the Easter Pacific, tradable quotas systems will be explored with ITTC
    - The Innovation Support Facility, executed by Conservation International, will provide incentive funding for innovative approaches within the 4 regional sub-projects.
    - Building on the experience of WWF in the tuna project, global knowledge will be shared for the sustainable management of shared stocks and will inform decision makers

4. The Strengthening Global Capacity to Effectively Manage ABNJ

    - Facilitates cross-sectoral, multi-stakeholder dialogues, linking regional and global levels
    - Improves capacity for decision-making regarding ABNJ through Communities of Practice and a Global Ocean Fellowship Program
    - Improves knowledge management and public outreach on ABNJ, working with journalists and museums/aquaria and through an ABNJ Portal
    - Promotes effective global and regional coordination on ABNJ. Initially dubbed the 'glue' project, the aim is to bring all the information together to establish, exchange, and enhance knowledge and practices on ABNJ.

APPENDIX 2: TABLE OF MANAGEMENT TOOLS

Table: Management tools to address drivers of environmental degradation in ABNJ, their current application by international agreements, and gaps in their coverage.

Management tool	Threats that could be (partially or fully) addressed with these tools	International Agreement and their implementing bodies applying these tools in ABNJ	Gaps
Marine protected areas (MPAs) and networks	- Unsustainable and destructive fisheries, - Shipping impacts - Mining impacts - Ocean acidification and warming (e.g. establishment of refugia to buy time for emission reduction)	***MPAs:*** **Regional Seas Conventions and Action Plans:** Currently 7 MPAs in ABNJ under OSPAR (NE Atlantic) and one under the Barcelona Convention (Mediterranean) ***Sectoral area based management tools (ABMT)*** (single sector only) - **CCAMLR /Antarctic Treaty System:** Currently one offshore MPA, annual fisheries closures, and several coastal ASPAs & ASMAs with small marine components (technically ABNJ) - **RFMO/As:** Several fisheries closures in place to protect VMEs. - **Shipping agreements (through the IMO)** - Special Areas (SAs) under MARPOL, Particularly Sensitive Sea Areas (PSSAs), under IMO, Areas To Be Avoided (ATBAs) under SOLAS: Currently two SAs in ABNJ (Mediterranean and Antarctic). - **UNCLOS Part XI Agreement (and the ISA)** - Areas of Particular Environmental Interest (APEI), Preservation reference zones: Currently 9 APEIs in the North Central Pacific (Clarion- Clipperton Zone); preservation reference zones (PRZs) (none) - **International Whaling Convention** – Sanctuaries: Currently 2 sanctuaries in Indian Ocean (1979) and Southern Ocean (1994)	- **Global mechanism:** Despite globally agreed targets, no explicit global mechanism or mandate for MPAs, MPA networks or sectoral ABMTs for biodiversity conservation **Cumulative impacts:** None of the MPAs or ABMTs is able to address the full range of threats in a given area. - **Climate change impacts:** No MPAs in ABNJ currently address climate change impacts - **Geographic gaps:** RSCAPs do not cover all ocean areas - **Coordination gaps:** no one agency can coordinate multiple activities in one MPA or coordinate development of coherent network - **Implementation gaps:** sectoral organizations may be reluctant to adopt; regional organizations lack capacity - **Science-gaps:** better science always needed but often used as an excuse for lack of protective action
Marine spatial planning (MSP)	- Unsustainable and destructive fisheries - Shipping impacts - Mining impacts - Ocean energy, aquaculture and other uses requiring ocean space	- **OSPAR** is undertaking preparatory work for MSP, including through a workshop and an Intersessional Correspondence Group - **Shipping Agreements** e.g. for routeing measures and voyage planning under IMO could provide a precursor for MSP - **Sectoral ABMTs and MPAs** (see above) under different agreements and bodies could provide a precursor for MSP	- **Lack of explicit mandate** for MSP - **Lack of concrete examples** in ABNJ (many national and regional examples exist within national jurisdiction) - **Geographic gaps and coordination:** No one agency can coordinate implementation of MSP everywhere.

Management tool	Threats that could be (partially or fully) addressed with these tools	International Agreement and their implementing bodies applying these tools in ABNJ	Gaps
Environmental Impact Assessment & Strategic Environmental Assessment (EIA/SEA)	- New uses of the ocean - Uses that are likely to have impacts above a certain threshold	- **UNCLOS Part XI Agreement (and the International Seabed Authority):** EIA and broader seabed management plans for seabed mining activities - **London Convention/Protocol (1972):** Dumping, ocean fertilization - **UN Straddling Fish Stocks Agreement (1995), UNGA res.61/105, 64/72:** Bottom fisheries - **Madrid Protocol of the Antarctic Treaty System:** EIA for activities that have more than minor or transitory impact	- **Cumulative impacts:** None of the instruments are able to address full range of threats - **Geographic gaps and coordination:** No one agency can coordinate implementation of EIA/SEA everywhere - **Process gaps:** no mechanism to review consultation, participation and transparency procedures; to assess science, or to monitor effects for any other activities - **Trigger gap:** other than for VMEs, dumping or mining exploration, no requirement to adopt measures to prevent significant adverse impacts
Developing ecosystem-based information to support management	N/A	- **Convention on Biological Diversity** – the EBSA description process provides scientific information about areas meeting specific criteria - **IOC of UNESCO** - development of the Global Open Ocean and Deep Seabed (GOODS) Biogeographic Classification - **CCAMLR** bioregionalization provides a basis for MPA network development in the Southern Ocean - **ISA regional environmental management plan** - the CCZ plan and the new ones under development collect information to enable region-wide management of mining activities	- **Gaps in scientific knowledge** - **Gaps in information about human uses and threats** - **Gaps in provision of catch & bycatch data** - **Gaps in provision of environmental data from ISA contractors** - **Gaps in monitoring of human impacts**

APPENDIX 3: UN SUSTAINABLE DEVELOPMENT GOALS OF RELEVANCE FOR ABNJ

SDG goal	SDG target	Implication for ABNJ	Potential responses
Goal 14: Conserve and sustainably use the oceans, seas and marine resources	By 2025, prevent and significantly reduce marine pollution of all kinds, in particular from land-based activities, including marine debris and nutrient pollution	Marine debris, including plastics, and ship-based pollution are threats to biodiversity in ABNJ.	- Assist flag and port states to implement existing MARPOL and London Convention/ Protocol requirements - Support national and regionally-directed initiatives to control land-based sources of marine pollution
	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	Increasing the resilience of ecosystems in ABNJ through improved management and protection of ecosystems is a priority.	- Develop environmental impact assessments to assess the potential for significant adverse impacts of proposed activities in combination with existing stressors, - Reduce local stressors through more stringent regulation of existing and proposed activities - Establish sectoral area-based management tools (ABMTs) for conservation purposes, marine protected areas, MPAs, networks of MPAs and large scale zoning - Support relevant scientific research, training, capacity building and exchange of information
	Minimize and address the impacts of ocean acidification, including through enhanced scientific cooperation at all levels	Ocean acidification is a major threat in ABNJ, in particular for calcifying organisms such as pteropods and cold water coral reefs.	- Support mechanisms to enhance scientific cooperation and coordination - Assist efforts to remove local stressors to increase resilience - Identify and protect acidification and climate refuges
	By 2020, effectively regulate harvesting and end overfishing, illegal, unreported and unregulated fishing and destructive fishing practices and 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	Unsustainable fishing, including overfishing, IUU fishing, and destructive fishing practice, has major impacts on biodiversity and resources in ABNJ. Addressing this issue is an important priority.	- Reduce fishing capacity and effort - Support the conduct of EIAs and regulations to avoid significant adverse impacts of fishing activities on vulnerable species/populations or habitats - Assist flag and port states to enhance compliance with international and regional regulations and agreements - Establish fisheries closed areas, ideally as part of marine protected areas, to protect key habitats and populations - Support independent scientific input into RFMOs management processes - Improve RFMO reporting, monitoring and compliance mechanisms - Support enhanced cooperation and coordination with conservation bodies, e.g. CBD, CMS, CITES

SDG goal	SDG target	Implication for ABNJ	Potential responses
Goal 14: Conserve and sustainably use the oceans, seas and marine resources	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	This is consistent with the CBD Aichi Biodiversity Target 11, and also a priority in ABNJ. Area-based management measures, including marine protected areas, are part of the "package" of issues to be addressed in the new international instrument.	- Establish comprehensively managed MPAs, networks of MPAs and large scale zoning - Establish sectoral area-based management tools for conservation purposes - Support scientific cooperation and collaboration to establish basis for MPAs, networks and sectoral ABMTs on a regional basis
	By 2020, prohibit certain forms of fisheries subsidies which contribute to overcapacity and overfishing, eliminate subsidies that contribute to illegal, unreported and unregulated 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	Fisheries subsidies drive unsustainable fishing in ABNJ, and are thus an important issue to address.	- Support efforts to redirect perverse subsidies to efforts to rebuild health, productivity and resilience of ocean in ABNJ
	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	This relates to ABNJ particularly in regards to sustainable fisheries, cruise ship tourism, and likely also marine genetic resources.	By 2025, prevent and significantly reduce marine pollution of all kinds, in particular from land-based activities, including marine debris and nutrient pollution
	Increase scientific knowledge, develop research capacity and transfer marine technology, taking into account the Intergovernmental Oceanographic Commission Criteria and Guidelines on the Transfer of Marine Technology, in order to improve ocean health and to enhance the contribution of marine biodiversity to the development of developing countries, in particular Small Island Developing States and least developed countries	Capacity building and transfer of marine technologies are an important component of the "package" of elements for the new international instrument. The success of the new international instrument will also depend greatly on all countries being able to participate both in its negotiation, and its eventual implementation.	- Support ongoing capacity building and technology transfer initiatives relevant to ABNJ by the Intergovernmental Oceanographic Commission, the UN Regular Process on reporting and assessment of the marine environment; IPBES, CBD, RSCAPs, GOBI, DOSI, etc.,

SDG goal	SDG target	Implication for ABNJ	Potential responses
Goal 14: Conserve and sustainably use the oceans, seas and marine resources	Provide access for small-scale artisanal fishers to marine resources and markets	While small-scale fishers seldom fish in ABNJ, their livelihoods are connected to improved fisheries management in the high seas.	- Decrease overfishing of highly migratory and straddling fish stocks in ABNJ to support recovery of populations within national jurisdiction
	Enhance the conservation and sustainable use of oceans and their resources by implementing international law as reflected in UNCLOS, which provides the legal framework for the conservation and sustainable use of oceans and their resources, as recalled in paragraph 158 of The Future We Want	There is an implementation gap of current international obligations, and implementation is also key for the success of the new international instrument under UNCLOS for ABNJ.	- Support flag states and port states to enhance capacity to implement UNCLOS and other agreements relevant to conservation and sustainable use in ABNJ
Goal 2: End hunger, achieve food security and improved nutrition and promote sustainable agriculture	By 2030, end hunger and ensure access by all people, in particular the poor and people in vulnerable situations, including infants, to safe, nutritious and sufficient food all year round.	Oceans serve as the world's largest source of protein, with more than 3 billion people depending on the oceans as their primary source of protein. While the exact scale of high seas fisheries is not known, they are subject to the same trends in overexploitation documented in coastal waters. Declining and poorly managed fisheries threaten food security, particularly in developing countries.	- Establish MPAs and end overfishing in ABNJ to enhance recovery of species - Ensure excess capacity does not migrate to developing country EEZs - Build capacity of developing countries to negotiate robust access agreements and to ensure effective monitoring and enforcement
Goal 15: Sustainably manage forests, combat desertification, halt and reverse land degradation, halt biodiversity loss	Take urgent and significant action to reduce the degradation of natural habitats, halt the loss of biodiversity and, by 2020, protect and prevent the extinction of threatened species	Biodiversity loss in the ocean, including in ABNJ, is an issue to be urgently addressed.	- Raise awareness and scientific understanding - Support efforts of CBD, CMS, CITES, World Heritage Convention and RSCAPs to protect species and their habitats - Accelerate action by sectoral organizations to reduce impacts on species, habitats and ecosystems and to adopt proactive ABMTs
	Promote fair and equitable sharing of the benefits arising from the utilization of genetic resources and promote appropriate access to such resources, as internationally agreed	Benefit-sharing is one of the elements in the "package" to be addressed by the new international instrument. It is of particular importance for developing countries.	- Enhance scientific cooperation and coordination to facilitate access to marine genetic resources derived from ABNJ; - Support regional centers of excellence for marine science and bioinformatics to understand and utilize marine genetic resources from ABNJ and elsewhere

SDG goal	SDG target	Implication for ABNJ	Potential responses
Goal 15: Sustainably manage forests, combat desertification, halt and reverse land degradation, halt biodiversity loss	By 2020, integrate ecosystem and biodiversity values into national and local planning, development processes, poverty reduction strategies and accounts	The value of the ocean to humankind, and the maintenance of the goods and services it provides, should similarly be mainstreamed into policies.	- Support the development of biodiversity action plans by sectoral organizations and RSCAPS for ABNJ
	Mobilize and significantly increase financial resources from all sources to conserve and sustainably use biodiversity and ecosystems	The new international instrument will require financial resources for its operation, and for the planned capacity building activities.	- Mobilize new and additional resources for e.g. the activities described above
Goal 16: Promote just, peaceful and inclusive societies	Broaden and strengthen the participation of developing countries in the institutions of global governance	This target is important for negotiation and implementation of the new international instrument for biodiversity in ABNJ. Developing country participation is essential for its success.	- Support the participation of developing countries in negotiation of the new ABNJ instrument; - Increase the capacity of developing countries to ratify and implement the new ABNJ instrument - Support the participation of developing countries to participate in other relevant international agreements
	Enhance North-South, South-South and triangular regional and international cooperation on and access to science, technology and innovation and enhance knowledge sharing on mutually agreed terms, including through improved coordination among existing mechanisms, in particular at the United Nations level, and through a global technology facilitation mechanism. Enhance North-South, South-South and triangular regional and international cooperation on and access to science, technology and innovation and enhance knowledge sharing on mutually agreed terms, including through improved coordination among existing mechanisms, in particular at the United Nations level, and through a global technology facilitation mechanism.	Capacity building, access to science and technologies, and international cooperation towards this end are important for implementation of the new international instrument for ABNJ, and ultimately for better management of the oceans.	- Enhance existing and develop new mechanisms for capacity building, access to science and technologies, and international cooperation.

APPENDIX 4: OTHER INITIATIVES BY REGIONAL AND INTERNATIONAL ORGANIZATIONS RELATING TO GOVERNANCE, MANAGEMENT AND RESEARCH IN ABNJ

This appendix provides a non-exhaustive list of various initiatives and developments outside the strictly legal realm, by international organizations that focus on management and governance of biodiversity beyond national jurisdiction or scientific research.

The Convention on Biological Diversity Sustainable Ocean Initiative (SOI)

The Sustainable Ocean Initiative (SOI) was established by the CBD as a global platform to build partnerships and enhance capacity to achieve the Aichi Biodiversity Targets related to marine and coastal biodiversity. While not exclusive to ABNJ, SOI has undertaken regional capacity building workshops on topics such as description of EBSAs and marine spatial planning. SOI is also undertaking "training of trainers" to broaden the extent of the capacity building.

FAO/UNEP Common Oceans Programme

Seeking to generate a catalytic change, the Global sustainable fisheries management and biodiversity conservation in the Areas Beyond National Jurisdiction Program was approved by the Global Environment Facility (GEF) under the lead of the Food and Agriculture Organization of the United Nations (FAO) in close collaboration with two other GEF agencies, the United Nations Environment Programme (UNEP) and the World Bank, as well as other partners.

Focusing on tuna and deep-sea fisheries, in parallel with the conservation of biodiversity, the ABNJ Program aims to promote efficient and sustainable management of fisheries resources and biodiversity conservation in ABNJ to achieve the global targets agreed in international fora.

The Program concentrates on short-term milestones as part of a long-term plan to establish the strong networks, best management practices and facilitated information sharing needed to make a transformational impact towards responsible and sustainable use of ABNJ resources. It aims to:

- move towards the ecosystem approach and rights-based systems and away from the "race to fish";
- increase our ability to protect fragile ecosystems;
- foster international and cross-sectoral coordination and sharing of information.

The Sargasso Sea Commission

The Sargasso Sea Commission was established pursuant to the Hamilton Declaration on Collaboration for the Conservation of the Sargasso Sea, signed on 11 March 2014, by the governments of the Azores, Bermuda, Monaco, UK and US. The Commission will "encourage and facilitate voluntary collaboration toward the conservation of the Sargasso Sea." While the Commission has no management authority, it will "exercise a stewardship role for the Sargasso Sea and keep its health, productivity and resilience under continual review."

The Commission is the result of three years of work by the Sargasso Sea Alliance, and operates as a standalone legal entity established by Bermudian and US law. Operating in a largely virtual setting, Commissioners will serve in-kind in their personal capacity and will be supported by a small Secretariat based at the IUCN Washington, DC office. Commissioners were appointed by the Government of Bermuda and were selected through a consultation process in Spring 2014 by governments who support the aims of the Hamilton Declaration.

Intergovernmental Oceanographic Commission (IOC) of UNESCO

The Intergovernmental Oceanographic Commission of UNESCO (IOC-UNESCO), established in 1960 as a body with functional autonomy within UNESCO, is the only competent organization for marine science within the UN system.

The purpose of the Commission is to promote international cooperation and to coordinate programmes in research, services and capacity-building, in order to learn more about the nature and resources of the ocean and coastal areas and to apply that knowledge for the improvement of management, sustainable development, the protection of the marine environment, and the decision-making processes of

its Member States. In addition, IOC is recognized through the United Nations Convention on the Law of the Sea (UNCLOS) as the competent international organization in the fields of Marine Scientific Research (Part XIII) and Transfer of Marine Technology (Part XIV).

The IOC Ocean Science Sections (OSS) plays a lead role in creating the conditions for good science and building networks of scientific logistic facilities at global and regional scale. Some activities of relevance to ABNJ include the international Ocean Carbon Coordination Project (IOCCP) and Ocean Biogeographic Information System (OBIS). IOC also coordinates the Global Ocean Observing System (GOOS) and undertakes active capacity development.

Global Ocean Biodiversity Initiative (GOBI)

The Global Ocean Biodiversity Initiative is an international partnership advancing the scientific basis for conserving biological diversity in the deep seas and open oceans. It aims to help countries, as well as regional and global organisations, to use and develop data, tools, and methodologies to identify ecologically significant areas in the oceans, with an initial focus on areas beyond national jurisdiction.

This initiative began in late 2008 as collaboration between the German Federal Agency for Nature Conservation (BfN), IUCN, UNEP World Conservation Monitoring Centre, Marine Conservation Biology Institute, Census of Marine Life, Ocean Biogeographic Information System and the Marine Geospatial Ecology Lab of Duke University. The initiative continues to seek additional collaborators to help bring the best science and data to bear on the identification of ecologically significant areas beyond national jurisdiction. GOBI is facilitated by Seascape Partners with core support from BfN.

The work under this initiative builds on the scientific criteria adopted by the Parties to the Convention on Biological Diversity (CBD) in 2008 to identify ecologically or biologically significant areas (EBSAs) in the global marine realm. It ultimately aims to help countries meet the goals adopted under the Convention on Biological Diversity and other relevant international commitments related to the ocean. GOBI partners have played a significant role in providing scientific and technical support to the CBD regional workshops to describe EBSAs.

The Partnership for Regional Oceans Governance

The Partnership for Regional Oceans Governance (PROG) is a new initiative aimed at assisting nations and regional organizations in creating innovative regional strategies that will ensure delivery of the Sustainable Development Goals relevant to Oceans. Sustainable Development Goal 14 calls for the conservation and sustainable use of the oceans, seas and marine resources, while oceans and coasts are also represented in crosscutting goals and objectives in climate, land resources, food, and others.

The initiative is a partnership between UNEP, the German Federal Ministry for Economic Cooperation and Development (BMZ), the Institute for Advanced Sustainability Studies (IASS) and the Institute for Sustainable Development and International Relations (IDDRI). It will support the ocean-relevant SDGs by:

- Identifying lessons learned and developing innovative approaches to regional ocean governance;
- Promoting regional exchange and, wherever requested, assisting in strengthening regional capacities and ocean governance structures;
- Fostering the role of regional ocean governance approaches at the global level through engaging in multi-stakeholder processes, and by partnering with key players including intergovernmental and non-governmental organizations, research centres and think tanks.

The initiative will kick off with papers scoping the current state of play in regional oceans governance and the role oceans and coasts will play in the 2030 Agenda. The initiative then plans to support processes in selected pioneer regions aimed at meeting the relevant goals and monitoring their progress.

The Global Ocean Commission

The objective of the Commission is to formulate politically and technically feasible short-, medium- and long-term recommendations to address four key issues facing the high seas: overfishing; large-scale loss of habitat and biodiversity; the lack of effective management and enforcement; and deficiencies in high seas governance.

The work is undertaken by high-level Commissioners (see www.globaloceancommission.org/the-commissioners/) and is supported by Pew Charitable Trusts, Adessium Foundation, Oceans 5 and the Swire Group Charitable Trust, but is independent of all. It is hosted by Somerville College at the University of Oxford.

The Global Ocean Commission recently issued its final report on priorities for high seas and oceans governance www.globaloceancommission.org

Large Marine Ecosystem Projects

(LMEs) are regions of the world's **oceans**, encompassing coastal areas from river basins and **estuaries** to the seaward boundaries of **continental shelves** and the outer margins of the major **ocean current** systems. They are relatively large regions on the order of 200,000 km² or greater, characterized by distinct bathymetry, hydrography, productivity, and trophically dependent populations.

The system of LMEs has been developed by the US National Oceanic and Atmospheric Administration (NOAA) to identify areas of the oceans for conservation purposes. The objective is to use the LME concept as a tool for enabling ecosystem-based management to provide a collaborative approach to management of resources within ecologically-bounded transnational areas. Labelling an area an LME does not affect the legal status of the sea areas concerned or the rights and obligations of the (flag, coastal or port) states involved.

With the financial support of GEF and others, 110 countries in Africa, Asia, Latin America and Eastern Europe have been assisted in carrying out around 20 LME projects. Through these projects, countries started joint governance arrangements to address transboundary issues such as fisheries, oil and gas production, transportation, tourism, and offshore energy production.

Examples include the Benguela Current Commission where the three coastal states agreed to set up a specific governance mechanism for the Benguela Current LME.[262] The Commission is established through a treaty between Angola, South Africa and Namibia.[263] An interim commission is set up for the Guinea Current LME to be coordinated with the RSP of the region (UNEP 2016). In other cases, there is a cooperative arrangement between relevant regional institutions such as in the Mediterranean.[264]

IUCN FFEM Southern Indian Ocean project

The Southern Indian Ocean Project, funded by the French Global Environment Facility (FFEM) and carried out by IUCN, will focus on the conservation and sustainable exploitation of seamount and hydrothermal vent ecosystems of the South West Indian Ocean in areas beyond national jurisdiction, notably in the context of future mineral exploitation.

The overall objective of the project is to improve scientific knowledge, to better understand the potential links between local and regional fishing resources of the South West Indian Ocean to improve governance and to develop integrated management tools for areas beyond national jurisdiction, in order to better conserve biodiversity associated with seamount and hydrothermal vent ecosystems.

The specific objectives are:

- To advance the state of knowledge of deep sea marine ecosystems associated with hydrothermal vents and seamounts as well as the interrelationships with local and regional fish populations.
- To suggest sound conservation and management measures for deep-sea ecosystems in ABNJ, especially with regards to the creation of networks of MPAs in this region of the global ocean.
- To raise awareness of policy makers, the fishing and mining industries and the general public on the importance of preserving marine deep sea life.

262 More information available about the Commission on its website, e.g. www.benguelacc.org/index.php/en/about/the-history-of-the-bcc/the-sap-implementation-project

263 The Benguela Current Convention, available at www.benguelacc.org/index.php/en/about/the-benguela-current-convention

264 More information available at: www.themedpartnership.org/

www.stapgef.org

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