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CONSERVATION AND SUSTAINABLE USE OF MARINE BIODIVERSITY ON THE HIGH SEAS

A REVIEW OF EXISTING INSTRUMENTS UNDER THE AUSPICES OF A NEW INTERNATIONAL LEGALLY BINDING AGREEMENT

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ABBREVIATIONS

ABNJ Areas beyond national jurisdiction

ASMA Antarctic special managed areas

ASPA Antarctic specially protected areas

AT Antarctic Treaty

BBNJ Marine biodiversity of areas beyond national jurisdiction

BPA Benthic Protected Area

CBD Convention on Biological Diversity

CMS Convention on the Conservation of Migratory Species of Wild Animals

CAMLR Conservation of Antarctic marine living resources

CCAMLR Commission on the conservation of Antarctic marine living resources

COP Conference of the Parties

EBSA Ecologically and biologically significant marine areas

EA Environmental assessment

EIA Environmental Impact Assessment

EIS Environmental Impact Statement

F Fishing mortality

FRA Fisheries Restricted Area

GFCM General fisheries commission for the Mediterranean

HSMPA High seas marine protected area

ICATT International Commission for the Conservation of Atlantic Tunas

IOC International Oceanographic Commission

IOC/ ABE-LOS Advisory body of experts on the Law of Sea

ILBI International legally binding instrument

IMO International Maritime Organisation

ITPGRFA The International Treaty on Plant Genetic Resources for Food and Agricolture

IPPC International Panel on Climate Change MPA Marine Protected Area

ISA International Seabed Authority

IUU Illegal unregulated unreported fishing

LBA Legally-binding agreement

LOSC United Nations Convention on the Law of the Sea

MGR Marine genetic resources

MSY Maximum sustainable yield

NEAFC North-East Atlantic Fisheries Commission

NEAFO Northwest Atlantic Fisheries Organization

OSPAR Oslo/Paris Convention

OUV Outstanding universal value

PSSA Particularly sensitive sea areas

RFMOs Regional fisheries management organisations

SBSTTA Subsidiary Body on Scientific, Technical and Technological Advice

SEA Strategic environmental impact Assessment

SEAFO South-East Atlantic Fisheries Organisation

SIODFA Southern Indian Ocean Deepwater Fishers Association

SIOFA Southern Indian Ocean Fisheries Agreement

SPRFMO South Pacific Regional fisheries management organisation

SSA Sargasso Sea Alliance

TAC Total allowable catch

UNDP United Nations Development Programme

VCLT Vienna Convention on the Law of the Treaties

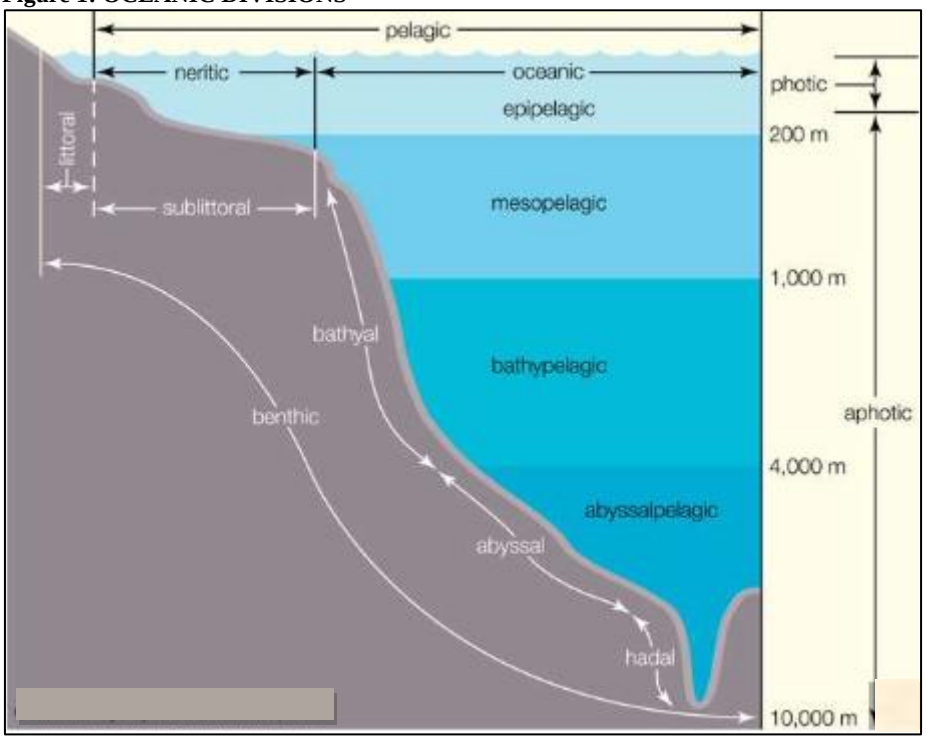
VME Vulnerable marine ecosystem

INTRODUCTION

Section 1. General overview

The Conservation and sustainable use of marine biodiversity beyond national jurisdiction will be one of the harshest challenges of the international community for the next decades. The oceans cover nearly 71% of the Earth's surface and they are generally divided into at least three realms, the sunlit open ocean (epipelagic), the midocean water column below 200m (mesopelagic and bathypelagic), and the abyssalpelagic comprising a wide range of geological structures and habitats.[1]

Figure 1: OCEANIC DIVISIONS[2]



Over the last 20 years the discoveries about life in the open ocean and the deep seas have contributed to a radical change of our understanding of oceanic life. If open ocean was originally thought to contain vast water habitats shrouded with inexhaustible riches, most recent reports have

[1] K M Gjerde 'Ecosystems and Biodiversity in Deep Waters and High Seas' (2006) UNEP Regional Seas Report and Studies No 178 ≤https://wedocs.unep.org/bitstream/handle/20.500.11822/13602/rsrs178.pdf?sequence=1&isAllowed=y≥ 11.

[2] -- 'Benthic Division' (Encyclopedia Brittanica/ Oceanography) (2010) ≤https://www.britannica.com/science/benthic-division≥ (last access 2020).

brought the awareness of a dramatic situation. Last ocean scientific reports testified that many species or populations of both large predatory fish (e.g.sharks, billfishes and tunas), transboundary and other migratory fish stocks (e.g. cod), sea turtles, cetaceans, and seabirds have already been depleted by human activities or brought to the brink of extinction, primarily due to uncontrolled fishing.[3] Practices like unregulated, unreported Fishing (IUU fishing),[4] over-fishing,[5] bycatch[6] and use of destructive gear [7] in vulnerable marine ecosystems (VMEs) [8] are seriously

[3] Ibid.

[4] IUU is defined by FAO in --'What is IUU fishing' (FAO website) ≤http://www.fao.org/iuu-fishing/background/what-is-iuu-fishing/en/≥ (last access 2020) as 'a broad term that captures a wide variety of fishing activity[…] found in all types and dimensions of fisheries', occurring 'both on the high seas and in areas within national jurisdiction' and concerning 'all aspects and stages of the capture and utilisation of fish', sometimes associated with organized crime.' FAO qualifies Illegal fishing when it is 'conducted by national or foreign vessels in waters under the jurisdiction of a State, without the permission of that State, or in contravention of its laws and regulations'*;* 'conducted by vessels flying the flag of States that are parties to a relevant regional fisheries management organisation but operate in contravention of the conservation and management measures adopted by that organisation and by which the States are bound, or relevant provisions of the applicable international law; or in violation of national laws or international obligations, including those undertaken by cooperating States to a relevant regional fisheries management organization'. FAO qualifies Unreported fishing when 'not reported, or have been misreported, to the relevant national authority, in contravention of national laws and regulations' or when fishing activities'are undertaken in the area of competence of a relevant regional fisheries management organisation which have not been reported or have been misreported, in contravention of the reporting procedures of that organisation'*;* and Unregulated fishing when fishing activities 'in the area of application of a relevant regional fisheries management organization that are conducted by vessels without nationality, or by those flying the flag of a State not party to that organization, or by a fishing entity, in a manner that is not consistent with or contravenes the conservation and management measures of that organization or in areas or for fish stocks in relation to which there are no applicable conservation or management measures and where such fishing activities are conducted in a manner inconsistent with State responsibilities for the conservation of living marine resources under international law'*;* IUU Fishing is discussed in FAO 'International Plan of Action to Prevent, Deter and Eliminate Illegal, unreported and unregulated fishing' (2001) ≤http://www.fao.org/3/a-y1224e.pdf≥; for further discussion see Y Tanaka *The International Law of the Sea* (3rd edn Cambridge 2019) and W Edeson 'FAO International Plan of Action to Prevent, Deter and Eliminate Illegal, unreported and unregulated fishing: the legal context of a non-legally binding Instrument' (2001)16 The International Journal of Marine and Coastal Law 603-623.

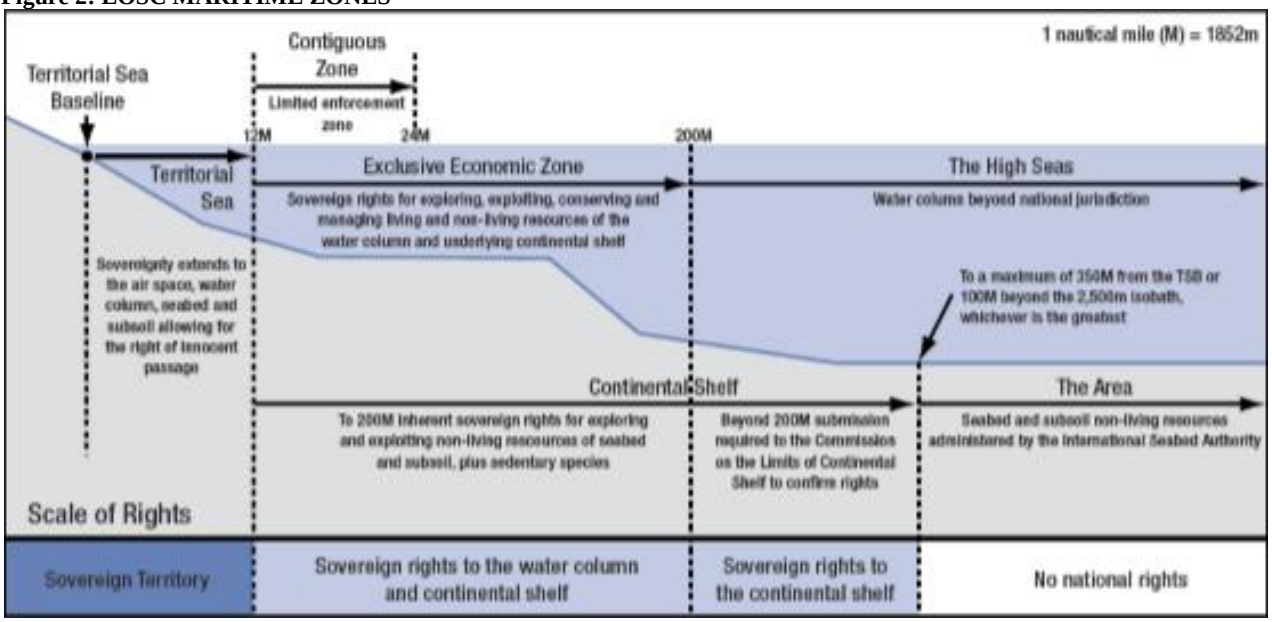
[5] According to the World Wide Fund (WWF) in --'Overfishing' (WWF website) ≤https://www.worldwildlife.org/threats/overfishing≥ Overfishing is 'the capture of unwanted sea life while fishing for a different species'.

[6] In --'By-catch fishing' (WWF website) ≤https://www.worldwildlife.org/threats/bycatch≥ (last access 2020) WWF defines the 'by-catch' fishing practice as 'the incidental capture of non-target species such as dolphins, marine turtles and seabirds'.

[7] As highlighted in FAO 'Report of the FAO Workshop on Vulnerable Ecosystems and Destructive Fishing in Deep-Sea Fisheries' FAO Fisheries Report No 829 (2007) ≤http://www.fao.org/3/i0150e/i0150e00.pdf≥ 'destructive fishing' cannot be defined in the absolute, apart from explosives, synthetic toxins, *muroami* fishing, which constitute the most representative examples. Quantification of the harm as to qualify a practice as 'destructive' is a policy choice conditional upon the objectives pre-planned.

compromising their conservation status. Additionally, other stressors like climate change, pollution from shipping vessels, introduction of invasive alien species, anthropogenic underwater noise, mineral exploitation, contribute to their depletion.[9] Despite the comprehensiveness of the 1982 UN Convention on the Law of the Sea,[10] a wide range of aspects on the high seas are incomplete or implemented. The legal seascape is fundamentally different within and beyond national jurisdiction.[11]

Figure 2: LOSC MARITIME ZONES [12]



As illustrated above, ABNJ include the high seas and the Area.[13] The Area[14] and its resources are common heritage of mankind and 'All rights in the resources of the Area are vested in mankind as

[8] FAO developed the vulnerable marine ecosystems database for the reduction current or potential impact on areas where VMEs are known or likely to occur, with particular reference to deep-sea fisheries in ABNJ.

[9] UNEP 'Healthy Planet, Healthy People' (2019) UNEP Global Environmental Outlook GEO-6 ≤https://wedocs.unep.org/bitstream/handle/20.500.11822/27539/GEO6_2019.pdf?sequence=1&isAllowed=y≥ 6.

[10] United Nations Convention on the Law of the Sea (adopted 10 December 1982, entered into force 16 November 1994) 1833 UNTS 3 (UNCLOS), hereinafter LOSC.

[11] For further discussion see. A Gillepsie *Conservation Biodiversity and International Law* (Edward Elgar 2011) 443.

[12] M Lloyd-Evans 'Increasing Value and Flow in the Marine Biodiscovery Pipeline' (2017) PharmaSea D6.8: the MGR Workshops ≤https://www.abdn.ac.uk/ncs/documents/BBNJ%20Timeline%2021%20PharmaSea%20D6.8%20FINAL.PDF≥ 16.

[13] Revised draft text of an Agreement on BBNJ article 1(4).

[14] Under LOSC article 1 Area means 'the seabed and ocean floor and subsoil thereof, beyond the limits of national jurisdiction'.

a whole, on whose behalf the Authority shall act[...].'[15] In high seas States must respect the freedom of the high seas,[16] and their duty to take measures in high seas falls primarily on the flag State duties.[17] On the high seas, States do not have much power to ensure an effective regime of conservation and sustainable use of marine biodiversity. According to the current regime, States are limited to contrast illegal practices carried out beyond national jurisdiction and to enhance properly an effective protection of marine biodiversity. Within national boundaries (especially in Exclusive Economic Zone (EEZ)), relevant progresses for the conservation of marine biodiversity were made. On the contrary, the current regime beyond national jurisdiction appears to be incomplete to guarantee the same degree of protection. Post-LOSC agreements compensated only in part LOSC legal gaps.[18] As the result of a thirteen years-work in 2017,[19] the UN Generally

[15] LOSC article 136.

[16] Under LOSC article 87(1) freedoms on the high seas are the 'freedom of navigation; freedom of overflight; freedom to lay submarine cables and pipelines[…] freedom to construct artificial islands and other installations permitted under international law[…]; freedom of fishing[…]; freedom of scientific research[…].'

[17] According to LOSC article 94 'Every State shall effectively exercise its jurisdiction and control in administrative, technical and social matters over ships flying its flag. 2. In particular every State shall: (a) maintain a register of ships containing the names and particulars of ships flying its flag, except those which are excluded from generally accepted international regulations on account of their small size; and (b) assume jurisdiction under its internal law over each ship flying its flag and its master, officers and crew in respect of administrative, technical and social matters concerning the ship. 3. Every State shall take such measures for ships flying its flag as are necessary to ensure safety at sea with regard, inter alia, to: (a) the construction, equipment and seaworthiness of ships; (b) the manning of ships, labour conditions and the training of crews, taking into account the applicable international instruments; (c) the use of signals, the maintenance of communications and the prevention of collisions. 4. Such measures shall include those necessary to ensure:(a) that each ship, before registration and thereafter at appropriate intervals, is surveyed by a qualified surveyor of ships, and has on board such charts, nautical publications and navigational equipment and instruments as are appropriate for the safe navigation of the ship; (b) that each ship is in the charge of a master and officers who possess appropriate qualifications, in particular in seamanship, navigation, communications and marine engineering, and that the crew is appropriate in qualification and numbers for the type, size, machinery and equipment of the ship; (c) that the master, officers and, to the extent appropriate, the crew are fully conversant with and required to observe the applicable international regulations concerning the safety of life at sea, the prevention of collisions, the prevention, reduction and control of marine pollution, and the maintenance of communications by radio.'

[18] Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea of 10 December 1982 relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks (adopted 4 December 1995, entered into force 11 December 2001) 2167 UNTS 3 (UNFSA); Convention on the Conservation and Management of Highly Migratory Fish Stocks in the Western and Central Pacific Ocean (adopted 5 September 2000, entered into force 19 June 2004) 2275 UNTS 43; Convention on the Conservation and Management of Fishery Resources in the South East Atlantic Ocean (adopted 20 April 2001, entered into force 13 April 2003); Southern Indian Ocean Fisheries Agreement (adopted 7 July 2006, entered into force 21 June 2012) (SIOFA); Agreement to promote Compliance with International Conservation and Management Measures by Fishing Vessels on the High

Assembly decided to 'convene an Intergovernmental Conference under the auspices of the United Nations, to consider the recommendations of the Preparatory Committee on the elements and to elaborate the text of an internationally legally binding instrument under the United Nations Convention on the Law of the Sea on the conservation and sustainable use of marine biological diversity of areas beyond national jurisdiction, with a view to developing the instrument as possible'.[20] The Conference held a three-day organizational meeting in New York, from 16 to 18 April 2018, to discuss organizational matters, including the process for the preparation of the zero draft of the instrument and, in August 2018, in its second session, the draft version of the future convention was drawn up. The 'Revised draft text of an agreement under the United Nations Convention on the Law of the Sea on the conservation and sustainable use of marine biological diversity of areas beyond national jurisdiction'(Revised Agreement on BBNJ).[21] as modified in the last operative session (October-November)[22] is the go-to document for my analysis. My analysis will focus the attention on high seas, even though the Conference refers to ABNJ in their entirety. The codification of an international legally binding agreement would reorganise a fragmented framework for the conservation of marine biodiversity in high seas. As noted by David Freestone, this Agreement represents the first occasion since the negotiation bringing to the adoption of

Seas (adopted 23 November 1993, entered into force 24 April 2003) (FAO Compliance Agreement); Code of Conduct for Responsible Fisheries (Adopted 31 October 1995); Agreement on Port State Measures to Prevent, Deter And Eliminate Illegal, Unreported And Unregulated Fishing (Adopted 22 November 2009, entered into force 16 June 2016) (PSMA).

[19] See. the first Ad Hoc Working Group (2004-2015), then followed by the Preparatory Commission (2016-17).

[20] 'International legally binding instrument under the United Nations Convention on the Law of the Sea on the conservation and sustainable use of marine biological diversity of areas beyond national jurisdiction'(adopted 24 December 2017) UNGA Res 72/249 ≤https://undocs.org/en/a/res/72/249≥.

[21] 'Intergovernmental conference on an international legally binding instrument under the United Nations Convention on the Law of the Sea on the conservation and sustainable use of marine biological diversity of areas beyond national jurisdiction' (New York 23 March–3 April 2020)(18 November 2019) UN Doc A/CONF.232/2020/3 (Conference on BBNJ) ≤https://undocs.org/en/a/conf.232/2020/3≥. which includes 'Revised draft text of an agreement under the United Nations Convention on the Law of the Sea on the conservation and sustainable use of marine biological diversity of areas beyond national jurisdiction' (27 November 2019) President's Revision to UN Doc A/CONF.232/2019/6 (Revised draft text of an Agreement on BBNJ) ≤https://www.un.org/bbnj/sites/www.un.org.bbnj/files/revised_draft_text_a.conf_.232.2020.11_advance_unedited_version_mark-up.pdf≥.

[22] The fourth session (New York, 23 March–3 April 2020) was suspended due to COVID-19 emergency.

UNFSA in 1995, to operate a deep reform of the LOSC's regime.[23].

Our work aims at reconciling existing international and regional instruments with the framework developed at UN stage. A large number of existing soft law instruments, regional programs, and models developed for IOs are likely to play a central role for the enhancement of the purposes prospected by the delegations at UN Intergovernmental Conference. These instruments need to be strengthened and coordinated under the auspices of the Conference. For the sake of our thesis, I will focus my analysis on Marine Protected Areas, Environmental Impact Assessments, the Transfer of Marine technology, their relationship with benefit-sharing and their capacity to enhance the purposes of conservation and sustainable use of BBNJ, prospected by the delegations at UN stage.

Section 2. Historical overview of the notions that are part of the current regime

Given the lack of a common framework, scholars agree on the widespread need of finding the exact term to be used in the context of BBNJ, which is of paramount importance to obtain a polished picture of this regime. In some cases these differences appear to remain at semantic level, but in others do not. The historical background highlights how the utilisation of these terms was inextricably related to a school of thought, and only recently they have begun to be used regardless of their original significance. The watershed is their reliance on a anthropocentric approach or rather, on an ecosystem approach.

A. The notion of protection, preservation and conservation

In recent years, in common language, these three terms have been used regardless of the specific elements differentiating one from the other.[24] The predominant approach has been 'maximalist'.

[23] D Freestone 'The UN Process to Develop an International Legally Binding Instrument under the 1982 Law of the Sea Convention: Issues and Challenges' in D Freestone (ed) *Conserving Biodiversity in Areas beyond National Jurisdiction* (Brill Nijhoff 2019) 3.

[24] --'Preservation' (National Geographic web site) ≤https://www.nationalgeographic.org/encyclopedia/preservation/≥; As noted by P Ricard in *La Conservation De La Biodiversité dans les espaces maritimes internationaux : un défi pour le Droit International* (Pedone 2019) 20, 'La protection ou la préservation du milieu marin participant

Since these matters started to be discussed, it had been almost a century before the definitions of 'conservation' and 'protection' were codified. One of the first philologists that showed an interest in this subject was Cândido de Figueiredo. According to Cândido de Figueiredo 'conservation' was the *rational utilization of* natural resources to abide by and preserve the ecosystem' ecological equilibrium.[25] Instead, 'protection' had a broader meaning and was identified as a set of measures to avoid any 'interference, damage or destruction' to the environment.[26] According to Marta Ribeiro's historic interpretation, from the definition of 'protection' originates that of 'preservation'. In turn, 'preservation' would eventually acquire a more specific content. It would specify the meaning of the environmental harm caused to both threatened animal species and plants.[27] A more dynamic view proposed by other scholars suggested that preservation worries about what is 'naturally' replaced by the ecosystem.[28] As noted by Chris Helzer, Nature Conservancy's Director of Science in the University of Nebraska, preservation is more passive than conservation.[29] Preservation builds barriers to keep resources isolated from surrounding influences, whereas conservation maintains the health of the current system.[30]

Overall, these differences cannot be considered only semantic. This divergence arose between the 'utilitarian' school [31] and the 'preservationist'[32] in the United States at the end of the XIX

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nécessairement de celle de la biodiversité marine, le trois notions seront considérées non pas comme parfaitement équivalentes, mais pouvant etre employés en vue de la meme finalité'.'

[25] C D Figueiredo *Grande Dicionario da Lingua Portuguesa*, (1rd edn Venda Nova, Bertrand Editora 1996).

[26] Ibid; M C D M Ribeiro *A protecção da biodiversidade marinha através de áreas protegidas nos espaços marítimos sob soberania ou jurisdição do Estado: dicussões e soluções jurídicas contemporâneas : o caso português (A protecção da biodiversidade marinha através de áreas protegidas nos espaços marítimos sob soberania ou jurisdição do Estado: dicussões e soluções jurídicas contemporâneas : o caso português)* (Coimbra Editor 2013) 109.

[27] Ribeiro (2013) 109; for further discussion see. N De Sadeleer and Charles-Hurbert Born *Droit International et Communaitaire de la Biodiversité* (1rd edn Dalloz 2004)17, 230.

[28] J Schenk *Examining the use of terms 'Conservation' 'Restoration' and Examining the use of terms 'Conservation" "Restoration" and "Preservation" between Natural Resource Professionals and "Preservation" between Natural Resource Professionals and Literature Reviews Literature Reviews* (thesis University of Nebraska 2010) 9.

[29] Schenk (2010) 9.

[30] Ibid.

[31] Gifford Plinchot (1865-1946) is regarded as the 'father' of American conservation and of the 'Preservationist' school by virtue of his great concern for the protection of the American forests. He was the founder of the Society of American Foresters in November 1900.

[32] John Muir (Dunbar, East Lothian, Scotland,1838- Los Angeles, California,1914) is considered the father of the 'utilitarian' current. As an advocate of U.S. forest conservation, he was one of the most important contributors for the establishment of the Sequoia National Park and Yosemite National Park, in California.

century.[33]The definition of conservation is inextricably linked to the 'utilitarian' school of thought, whose primary purpose was to avoid the over-exploitation of living resources in the interest of human activities.[34] On the opposite side, according to 'preservationists', the term protection was intended to protect biodiversity in its entirety, as detached by humans' interests.[35] This divergence based on one side on an 'anthropocentric' vision and on the other on the so-called ' ecosystem approach', contributed to develop this subject one century later.

The *Fur Seals Arbitration* was the first case of international law dealing with marine wildlife and more specifically with the regime beyond national jurisdiction.[36] The mention of 'protection' and 'preservation' in the Award, as intended *stricto sensu,* represented an exception in a period in which the tendency was to associate the protection of the environment to human needs. The award often associated the terms 'protection' and 'preservation' with 'fur seals'.[37] This unique case, showed for the first time how the 'preservationist' principles prevailed on human interests. This led to the creation of the Convention on the Protection and Preservation of Fur Seals,[38] enshrining at conventional level the principles asserted in the award.

Referring to Environmental Law in its entirety, before the adoption of the North Fur Seal Convention, in 1900 the Convention for the Preservation of Wild Animals, Birds and Fish in Africa was adopted. It was seen as the first multilateral treaty dealing with the direct protection of

[33] Ribeiro (2013) 107; At the beginning of the 20th Century Gifford Pinchot and John Muir had opposite views of America's wild lands' management (Pinchot promoted conservation and Muir preservation). In this context they worked as to convince Presidents to agree with them to start protecting open space.
Pinchot's believed that lands owned by the federal government could be used by industry for logging, mining and scientific research on extended acres of land, other than for the recreation of the general public. Pinchot's model seemed to prevail for a while as underlined by President Theodore Roosevelt's acceptance of 'conservation' as the best practice for the most of federally owned lands.

[34] Ribeiro (2013) 107.

[35] As evidenced in the context of forests' protection by National Geographic Society, preservation would imply to set aside any connection with human development; Ribeiro (2013) 107-108.

[36] *Fur Seals Arbitration (United Kingdom & Ireland v United States)* (*Arbitration)*(1893) Rep of International Arbitral Awards 28.

[37] ,Ibid at paras 265-271.

[38] Convention between Great Britain, Japan, Russia and United States Requesting Measures for the Preservation and Protection of Fur Seals in the North Pacific Ocean (signed 7 December 1911, entered into force 15 December 1911) 564 CTS 38 (North Fur Seal Convention); the Convention created an indissoluble linkage between protection, preservation and fur seals. This is particularly evident in the Preamble and in Article VII of the Convention.

wildlife.[39] The Convention's main aim was to prevent uncontrolled massacre of wild animals and to ensure a mechanism that could protect the most endangered species and reduce 'pest' species. This agreement represented a unique example in that period. By this day and age, it was the sole instrument attempting to embody draft 'preservationist' principles. Apart from the exception of the North Fur Seal Convention, at the time no other Convention was subscribed for this end. According to the Convention on Fishing and Conservation of the Living Resources of the High Seas the conservation of the living resources of the high seas means 'the aggregate of the measures rendering possible the optimum sustainable yield from those resources so as to secure a maximum supply of food and other marine products' and those measures are to be formulated '[…]with a view to securing in the first place a supply of food for human consumption.' [40] This statement proved how at the age the approach was still anthropocentric. It was only in the 1960s that treaties were adopted to protect wildlife, gradually moving away from the 'utilitarian' thought.[41]

Steps forward were made in the 1970s, through the conclusion of the Convention on International Trade in Endangered Species of Wild Fauna and Flora[42] and the Convention on the Conservation of Migratory Species of Wild Animals (CMS).[43] If the former played a crucial role for the protection of wildlife in general,[44] the latter was even more important. As a matter of fact, the CMS, implemented provisions directly applicable to marine forms of life.[45] Furthermore, it

[39]Convention for the Preservation of Wild Animals, Birds and Fish in Africa (adopted 19 May 1900) (London Convention).

[40] Convention on Fishing and Conservation of the Living Resources of the High Seas (adopted 29 April 1958, entered into force 20 March 1966) 559 UNTS 285 (Geneva Convention) Article 2.

[41]See. The African Convention on the Conservation of Nature and Natural Resources of 1964 (adopted 15 September 1968, entered into force 16 June 1969) (Algiers Convention); for discussion see. IUCN 'An introduction to the African Convention on the conservation of nature and natural resources' (2004) IUCN Environmental policy and Law Paper No 56 ≤https://portals.iucn.org/library/sites/library/files/documents/EPLP-056.pdf≥ 4.

[42] Convention on International Trade in Endangered Species of Wild Fauna and Flora (opened for signature 3 March 1973, entered into force 1 July 1975) (CITES) (Washington Convention).

[43]Convention on the Conservation of Migratory Species of Wild Animals (adopted 6 November 1979, entered into force 1 November 1983) (CMS).

[44] The Washington Convention aimed to ensure that trade in species does not threaten their survival. The General Agreement on Tariffs and Trade (GATT) Secretariat contributed to its development. This agreement obtained surprising achievements since its entry into force in 1975. Since then, only one species (the Spix'‟s Macaw) among the list of species protected by the Convention, has been driven to extinction in the wild because of its illegal trade.

[45]CMS, reached under the rubric of the UNEP in 1979, was addressed to protect migratory species whether terrestrial, marine or avian, throughout their entire ranges. The geographical coverage of the Convention

became a primary source of inspiration for a number of agreements for the conservation of terrestrial[46] and, foremost, of marine wildlife[47] and the species associated to it.[48] These two agreements do not provide any definition of conservation and protection. By this day and age, a definition of the terms 'conservation' and 'protection' was hardly ever included in applicable treaties.[49] In LOSC 'conservation' is inextricably connected with 'living resources,[50] while 'protection' with 'marine environment' and 'human life'.[51] These uses of the two terms will be reprised at the stage of CBD, as reported in two different sessions.[52]

The World Conservation Strategy (WCS), as jointly elaborated by IUCN,[53] WWF[54] and UNEP,[55]

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encompassed 'all the areas of land or water that a migratory species inhabits, stays in temporarily, crosses or overflies at any time on its normal migration route'(Article 1(f) and Article 1(i)).

[46] See. the Agreement on the Conservation of Populations of European Bats (signed 4 December 1991,entered into force 16 January 1994) (EUROBATS), concerning populations of European bats and see. the Memorandum of Understanding on the Conservation and Management of the Middle-European Population of the Great Bustard (Otis tarda) (entered into force 1 June 2001), concerning the middle European population of the Great Bustard.

[47] Agreement on the Conservation of Cetaceans of the Black Sea, Mediterranean Sea and Contiguous Atlantic Area (opened for signature 24 November 1996, entered into force 1 June 2001)(ACCOBAMS); Agreement on the Conservation of Small Cetaceans of the Baltic, North East Atlantic, Irish and North Seas (adopted 17 March 1992, entered into force 29 March 1994) (ASCOBAN); Wadden Sea Agreement (signed 16 October 1990, entered into force 1 October 1991), concerning seals in the Wadden Sea.

[48] Agreement on the Conservation of African-Eurasian Migratory Waterbirds (opened for signature 15 August 1996, entered into force 1 November 1999) (AEWA); Agreement on the Conservation of Albatrosses and Petrels (19 June 2001, entered into force 1 February 2004) 58 UNTS 257 (ACAP).

[49] S Borg *Conservation on the High Seas: Harmonizing International Regimes for the Sustainable Use of Living Resources* (Edward Elgar Publishing 2012) 92; P Birnie, A Boyle and C Redgwell *International Law and the Environment* (3rd edn Oxford University Press 2009) 550.

[50] See. LOSC Part VII Section 2.

[51] See. LOSC article 145 and article 146, and LOSC part XII named Protection and Preservation of the Marine Environment.

[52] COP to CBD Decision 'Conservation and Sustainable Use Of Marine And Coastal Biological Diversity' adopted by the Conference Of The Parties To The Convention On Biological Diversity (Jakarta 6 - 17 November 1995) CBD/COP/II/10; COP to CBD 'Decision Conservation and sustainable use of marine and coastal biological diversity, including a programme of work' (Bratislava 4-15 May 1998) CBD/COP/IV/5.

[53] The International Union for the Conservation of Nature (IUCN) was founded in 1948 and it became the global authority 'on the status of the natural' world, gathering together governments and civil society organisations with a shared goal to protect nature. Its primary purpose was to encourage international cooperation and provide scientific knowledge and tools to guide conservation action.

[54] As well as IUCN the World Wildlife Fund (WWF), when established (1961), encountered a very little number of participants. As highlighted in the Morges Manifesto, due to a lack of substantial funds, WWF was established as an international fundraising organization, working jointly with existing conservation groups and contributing trough a substantial financial support to the conservation movement on a worldwide scale.

was the first instrument to develop a shared definition of 'conservation.. The WCS was drawn up on the base of three new objectives for the International community: the safeguard of genetic biodiversity, the maintenance of ecologic process and the sustainable use of animals and plants' habitats. According to it, 'conservation' is the 'management of human use of the biosphere so that it may yield the greatest sustainable benefit to present generations while maintaining its potential to meet the needs and aspirations of future generations[…]embracing preservation, maintenance, sustainable utilization, restoration, and enhancement of the natural environment.'[56] From this definition, it still emerges the link between the term 'conservation' and the utilitarian school. According to this definition, preservation would eventually be a part of the broader concept of 'conservation'. In the 1980s, the predominant approach was still the utilitarian one.

In CBD[57], the content of 'conservation' was developed in detail through a twofold regime: *in-situ* and *ex-situ* conservation. While the *ex-situ* is defined as the 'conservation of components of biological diversity outside their natural habitats',[58] the *in situ* encompasses the sum of principles comprised in both the original definition of protection, conservation and preservation. The *in situ* conservation is regarded by CBD as '[...]the maintenance and recovery of viable populations of species in their natural surroundings and, in the case of domesticated or cultivated species, in the surroundings where they have developed their distinctive properties.'[59] This definition would be sufficiently broad to include marine biodiversity or living resources. However, several scholars have highlighted this definition of conservation was not in compliance with the original CBD

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[55] The United Nations Environmental Programme (UNEP) was founded in June 1972 under the auspices of the Stockholm Conference on the Human Environment. UNEP is the coordinating body for the United Nations' environmental activities. It developed regional and international environmental programs and conventions and it fostered environmental science and information and support to developing countries in implementing environmentally *sound* policies and practices.

[56] IUCN 'World Conservation Strategy'(1980) Introduction point 4 ≤https://eco-intelligent.com/2016/12/06/world-conservation-strategy-what-is-it-and-why-is-it-important/≥

[56] CBD article 2.;The World Conservation Strategy was jointly developed by UNEP, IUCN and WWF in 1980. It still constitutes a point of reference for the international community for the implementation of conservation measures. It focuses on the 'intellectual framework and practical guidelines' for conservation measures and identifies the priority activities in our *conservation efforts*, focused on efficiency and calls for global action. The three main objectives of the World Conservation Strategy were to maintain ecological processes and ecosystems that are of importance to human activities, like soil regeneration, nutrient cycling, water cleansing, to preserve genetic diversity of species on Earth and to ensure sustainable use of species and ecosystems which support communities and industries.

[57] Convention on Biological Diversity (signed 5 June 1992, entered into force 29 December 1993) (CBD).

[58] CBD article 2.

[59] Ibid.

perspective to ensure a strict 'preservation' of the environment.[60]

By this day and age the use of this term was already ambiguous, as evident in the WCS , where it is nearly assimilated to 'protection' and 'preservation'.[61] As noted by Mark Vrtiska[62] over the years, preservation has engaged a more 'liberal minded' and 'free spirited' meaning, whereas conservation has remained inextricably linked to 'living resources', as firstly influenced by LOSC.[63] In recent years, the majority of scholars have declared to prefer the term 'protection' as referred to any issue concerning the environment and thus, to respect the original dichotomy between the two.[64] According to Ribeiro, 'conservation' can be referred to all those restrictive and non-restrictive measures to ensure the existence of a balanced and healthy marine environment, as the result of an integrated management of the oceans.[65] In this sense, protection and conservation (*stricto sensu*) are part of a comprehensive approach for the conservation of the sea. In this regard, this semantic use overrides the original and limited vision laid down by LOSC, which associated the use of 'conservation' solely to living resources.[66]

Other scholars suggested that an interpretation of these provisions non-compliant with the original formulation would risk to be ineffective.[67] According to this vision, talking about 'the protection of MPAs' instead of 'conservation' would deprive of any economic significance marine biodiversity. Several scholars consider marine biodiversity to be inseparable from activities conditional upon economic interests.[68] Post-LOSC agreements seemed to adhere to this predominant approach. The use of the vocabularies made in LOSC was progressively set aside. This renewed definition of 'conservation' engaged a holistic character, potentially addressable to all the elements of biodiversity regardless their economic value. Consequently, the indissoluble association with

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[60] Ribeiro (2013) 111.

[61] F Burhenne-Guilmin and S Casey-Lefkowitz *The Convention on Biological diversity: a hard won global* in *achievement'* in Yearbook of international environmental law (Graham & Trotman / Martinus Nijhoff 1992) vol 3, 50.

[62]Mark Vrtiska is the waterfowl program manager for the Nebraska Game and Park Commission (NGPC).

[63] J Schenk (2010) 23.

[64] A Kiss and D Shelton *Manual of European Environamental Law* (2rd edn Cambridge University Press 1997) 39,42; A Kiss and J P Beurier *Droit International de l'Environnement* (3rd edn Pedone 2004)*;* Ribeiro (2013) 110.

[65] Ribeiro (2013) 124.

[66] Ibid.

[67] M Ortiz Garcia *Conservación de la biodiversidad marina: las áreas marinas protegidas* (Comares 2002) 152.

[68] Ribeiro (2013) 125.

living resources becomes unnecessary. In this sense, it becomes necessary to spell out the divergence between biodiversity and living resources as originated in LOSC.

B. The notion of marine biodiversity, marine biological diversity and living resources

The divergence between biodiversity, biological diversity and living resources can never be reduced to a formal matter..The divergence between 'biodiversity' and 'living resources' is evident in LOSC, CBD and in general provisions in MPAs' context. 'Biodiversity' and 'biological diversity' did not appear in LOSC, so the Convention only refers to marine pollution or 'living resources' (conservation or management). As for 'conservation', there is no provision in LOSC defining what 'living resources' are. This gave further agreements the chance to determine which life forms should be included in the meaning of 'living resources' and the relationship between these resources and the concept of biodiversity. The only institution that provided a definition of them before the adoption of LOSC was IUCN. IUCN identified 'living resources' conservation' 'as specifically concerned with plants, animals and microorganisms, and with those non-living elements of the environment on which they depend.'[69]12 years later, CBD would refer to biological resources' as 'genetic resources, organisms or parts thereof, populations, or any other biotic component of ecosystems with actual or potential use or value for humanity'.[70] In sum 'biological resources' could be defined as the tangible components of ecosystems. Therefore, even if the word 'biological' has a broader character than 'living', CBD gives us a definition of what resources are. Additionally, by differentiating this concept from 'biological diversity' CBD operates a clarification over the relationship between 'biodiversity' and 'living resources'.[71] In CBD the meaning 'biological resources' constitute a special element of the more comprehensive concept of biological diversity.[72]

[69] IUCN 'World Conservation Strategy'(1980), Introduction point 4.
[70] CBD article 2.
[71] In CBD article 2 'biological diversity' is defined as '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 ecosystem'.
[72] Among the others see S N Gunasekara and M D Saiful Karim 'Contemporary issues in the protection and conservation of the marine environment: an overview' in D Hassan and S Karim (eds) *International marine environmental law and policy* (Routledge 2019), that capsize this concept. They consider marine biodiversity a 'direct composition 'of living resources 'that compose it and the ecological processes that sustain it; at this purpose F L Bastos offered an interesting distinction between 'natural resources' and

The mention '*human value'* in Article 2 CBD cannot be ignored. It focuses the attention on the anthropocentric approach and, consequently, on the economic value attributed to 'living' or 'biological' resources. Hence, the divergence between conservation and protection highlighted by Mercedes Ortiz Garcia is evident. The concept of living resources seems to be inextricably linked to an economic value.[73] Conservation does not exist without living resources and vice versa.

Therefore, the need to define which life forms are comprised in the meaning of 'living resources' emerges. Although the proper scientific character of IUCN, CBD and annexed texts provided a definition in specific terms, other questions remained unsolved.

One of the main issue is whether recently discovered species, including hydrothermal vents and other deep sea bed environments, must fall under this definition.[74] This doubt about which forms of biodiversity should be included in the meaning of living resources becomes fundamental to verify whether LOSC provisions on the conservation of living resources on the high seas are applicable to them. Robin Warner considered the comprehensive value of these provisions an element sufficient to include in this definition these 'new' forms of life.[75] Post-LOSC agreements played a crucial role to develop the too broad content of the Sea Convention. On the other hand, a clarification of this terms can give birth to legal and political disputes.[76] According to some scholars, the inclusion of a wider range of species in this definition risks to be an hazardous interpretation and to consequently discourage the support of several States.[77]

As discussed later, LOSC provisions in Part VII Section II are focused on target-species, namely those species who have an economic value. Even though Article 119 addresses as recipients of

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'environmental goods' in *A internacionalização dos recursos naturais marinhos: contributo para a compreensão do regime jurídico-internacional do aproveitamento conjunto de petróleo e de gás natural nas plataformas continentais, do potencial aproveitamento de recursos minerais na área, da pesca no alto mar e os efeitos da regulamentação convencional respectiva em relação a terceiros estados* (AAFDL 2005) 142 ss.

[73] Garcia (2002) 152; Ribeiro (2013) 125.

[74] R Warner 'Protecting the diversity of the depths: environmental regulation of bioprospecting and marine scientific research beyond national jurisdiction' (2008) 22 Ocean Yearbook 411-443 ≤https://ro.uow.edu.au/cgi/viewcontent.cgi?article=1178&context=lawpapers≥ 14 ; H Kor, S Friedrich and U Feit *Deep Sea Genetic Resources in the Context of the Convention on Biological Diversity and the United Nations Convention on the Law of the Sea* (Bonn: German Federal Agency for Nature Conservation, BfN – Skripten 2003) 41-42.

[75] Warner (2008) 27.

[76] Warner (2008) 28.

[77] L. Glowka 'Putting Marine Scientific Research on a Sustainable Footing at Hydrothermal Vents'(2003) 27Marine Policy 303.

conservation measures 'associated and dependent species' upon 'targeted species', the focus remains fishing activities. Article 120 LOSC, is the only provision in part VII which extends the mandate of conservation measures to marine mammals.[78] Hence, the centrality of the discussion is about the divergence between the anthropocentric approach which was still predominant during the elaboration of LOSC, and the increasing importance engaged by the ecosystem approach, influencing the further agreements during the 1990s and the early 2000s. At this stage, sustainability goals play a crucial role. Now, the Revised Agreement on BBNJ reflect the development of these principles. At the stage of the Conference on BBNJ 'conservation' and 'sustainable use' are expressly addressed to 'marine biological diversity'. As discussed above this concept was developed under the CBD rubric. Under this rubric it emerges that 'biodiversity is not only the sum of all ecosystems, species and genetic material, rather, it represents the variability within and among them'.[79] Biological diversity is rather an attribute of life, which include the variety of bird species, the genetic variability of wheat around the world, forest types, etc..[80] Biological diversity is often understood at three levels, that include species diversity, genetic diversity and ecosystem diversity. The concept of marine genetic resources will be discussed in the context of benefit-sharing in the last chapter. Genetic diversity is generally regarded as the variety of genes contained in plants, animals, fungi and micro-organisms. It occurs within a species as well as between species.[81]

At this point, it remains necessary to highlight a last terminological issue fundamental to properly discuss BBNJ.

C. The notion of conservation and sustainable use

At the ultimate stage of the Conference on BBNJ, the focus shifts to the relationship between 'conservation' and 'sustainable use'. The most relevant innovation, as already evident in the title of

[78] LOSC article 120 provides that 'Article 65 also applies to the conservation and management of marine mammals in the high seas'.

[79] --What is biodiversity? (Convention on Biological Diversity- Belgian Clearing House Mechanism) ≤http://www.biodiv.be/biodiversity/about_biodiv/biodiv-what#:~:text=Biodiversity%20is%20not%20only%20the,variability%20within%20and%20among%20them.&text=while%20biological%20diversity%20is%20rather,forest%20types%2C%20etc.)≥. (1 June 2007).

[80] Ibid.

[81] Ibid.

the underway conference on BBNJ, is 'sustainable use'. This locution appears only once in the LOSC, associated to yield.[82] In the text of Revised Agreement on BBNJ conservation is always associated to the 'management system', whereas sustainable use, as evident in the Conference's name, is inextricably linked to biological diversity.

In CBD, sustainable use is defined as 'the use of components of biological diversity in a way and at a rate that does not lead to the long-term decline of biological diversity, thereby maintaining its potential to meet the needs and aspirations of present and future generation.'[83] A definition of use deprived of the character of sustainability would be like a consume of non-renewable resources, whilst, in this context it stands for a presumption of renewal and an element of repetition.[84] First, it could be asserted that conservation and sustainable use have the same meaning, but have a different scope.[85] A wide range of activities are to realized under the objective of sustainability, such bio prospecting, commercial potential of marine genetic resources, marine scientific research, and the of future of Deep seabed tourism.[86] This is reflected in the Revised Agreement on BBNJ, as modified in its last session,[87] identifying area-based management tools, environmental impact assessment, marine scientific research, capacity-building and technology transfer as the elements as to attain the scope of the Conference. This innovation operated by these elements entail a strong revision of LOSC for the interpretation of the provisions addressed to new-living resources. Here, 'sustainable' has a different application from 'conservation' *stricto sensu,* as intended by LOSC.[88]

[82] See.Article 61 and Article 119
[83] CBD Article 2.
[84] L Lijnzaad 'The conservation and sustainable use of marine biodiversity, Siamese twins?'(Paper presented at Maastricht University 2018) ≤https://colp.virginia.edu/sites/colp.virginia.edu/files/yogya-lijnzaad.pdf≥ 5; A Jiménez García-Carriazo 'Diversidad Biológica Marina fuera de las Zonas de Jurisdicción Nacional' (IMO International Maritime Law Institute 2019) 28.
[85] Ibid.
[86] Linjzaad 7; Jimenez 29.
[87] Fourth session New York, 23 March–3 April 2020.
[88] Linjzaad (2018) 8.

Chapter 1. A GENERAL DUTY FOR THE CONSERVATION OF MARINE BIODIVERSITY ON THE HIGH SEAS

Foreword

LOSC part VII regulates the high seas. The first section provides for general provisions, while the second section is devoted to the 'Conservation and management of the living resources of the high seas'. For the sake of our thesis, we will focus on the duties to take conservation measures, to cooperate and to manage living resources on the high seas. General provisions in part VII section I LOSC will be recalled, being inextricably linked to the provisions regulating conservation measures. My analyses ranges from the primary formulation of the provisions to their further development at the international and regional level. This chapter analyses whether LOSC and post-LOSC agreements can sufficiently guarantee an effective regime of conservation of marine biodiversity on the high seas, what it is the role of regional programs and how these 'general provisions' could be reviewed by the Conference on BBNJ. These obligations provide the underlying 'legal structure' for the elaboration of the specific tools for the conservation and sustainable use of BBNJ: (marine protected areas (MPAs), Environmental Impact Assessments (EIAs) and the Transfer of Marine Technology) that will be discussed in the following chapters.

1.1 A duty 'to take' measures for the conservation of living resources

1.1.1 The general content in LOSC and the lack of specific content

Article 117 LOSC requires States 'to take, or to cooperate with other States in taking, such measures for their respective nationals as may be necessary for the conservation of the living resources of the high seas'. The article does nothing but replacing the term 'to adopt' in the High Seas Fishing Convention,[89] with 'to take'. Otherwise, the replacing of the term is more than semantic.[90] The formulation 'to take' means that States are not only bound to adopt laws and

[89] Geneva Convention article 1(2).
[90] A Proelß *The United Nations Convention on the Law of the Sea* A *Commentary* (1rd edn C H Beck, Hart, Nomos 2017) 809.

regulation, but 'to enforce such measures'.[91] However, Article 117 does not define the measures to be adopted.[92] Article 117 asserts the duty, but not its precise implications. This had important consequences. In the absence of a well-defined regime to enforce conservation measures, it was easy to carry out illegal conducts with a critical impact on biodiversity in high seas.

Indeed, at primary stage, States were unable to take measures about 'their' vessels sufficient to contrast the practice of 'open registries'[93], 'reflagging' and 'illegal, unreported, unregulated (IUU) fishing .[94] Since the 1990s fight against IUU was the primary preoccupation of international community for the conservation of marine biodiversity in high seas. The lack of a precise content of the duty 'to take' is part of this problem.[95] The absence of a precise content reminded the States of the creation of new legal instruments to define the object of the duty in detail. Such a demand contributed to the creation of the 1993 Agreement to promote compliance with International Conservation and management Measures by fishing vessels on the high seas (FAO Compliance agreement)[96], the 1995 the UN Fish Stocks Agreement (UNFSA)[97], the FAO Code of Conduct for Responsible Fisheries[98], Agreement on Port State Measures (PSMA)[99]. Furthermore, these agreements had a strong influence on Regional Fisheries Management Organisations (RFMOs).

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[91] *Fisheries Jurisdiction (Spain v Canada) (Jurisdiction)* [1998] ICJ Rep 432, para 84.

[92] As above reported, the duty to take measures falls primarily under the flag State duties.

[93] As noted by Professor Doris König in 'Flags of Convenience' in *The Max Planck Encyclopedia of Public International Law* (Oxford University Press 2013) vol 11, 'A generally accepted definition of the term "flag of convenience" does not exist. There are, however, certain criteria which, according to the British "Rochdale Report are common to such flags" like the country of registry allowing ownership and/or control of its merchant vessels by non-citizens'. It was defined by W R Gregory in *A Thesis submitted to the Faculty of The School of Continuing Studies and of The Graduate School of Arts and Sciences in partial fulfilment of the requirements for the degree of Master of Arts in Liberal Studies* (thesi s Georgetown University Washington D.C. 2012) as 'a tool developed by the modern maritime business to circumvent Western labour and tax regulations through international vessel registration'.

[94] FAO Committee on Fisheries 'Flagging of Fishing Vessels on the High Seas' (1993) FAO Doc COFI/93/10; for further discussion see. P Bernie ' Reflagging Vessels on the High Seas' (1993) 2 Review of European Comparative and International Environmental Law 270.

[95] T Lobach 'Combatting IUU Fishing: Interaction of Global and regional inititiatives' in *D Vidas (ed) Law technology and science for oceans in globalisation : IUU Fishing, Oil Pollution, Bioprospecting, outer continental shelf* (Martinus Nijhoff 2010) 109; D J Doulman 'FAO Action to combat IUU Fishing: scope of initiatives and costraints on implementation' in D Vidas (ed) *Law technology and science for Oceans in Globalisation: IUU fishing, oil pollution, bioprospecting, outer.continental-shelf* (Martinus Nijhoff 2010) 131.

[96] See note. 18.

[97] Ibid.

[98] Ibid.

[99] Agreement on Port State Measures to Prevent, Deter and Eliminate Illegal, Unreported And Unregulated Fishing (Adopted 22 November 2009, entered into force 16 June 2016) (PSMA).

1.1.2 The Post-LOSC legal framework

The FAO Compliance Agreement strengthens the duties of the flag State for the purposes of the conservation of 'living resources' in high seas. First, the agreement introduces strict criteria for fishing vessels on the high seas.[100] 'No Party shall allow any fishing vessel entitled to fly its flag to be used for fishing on the high seas unless it has been authorized to be so used by the appropriate authority or authorities of that Party[…]'or '[…]unless the Party is satisfied that it is able, taking into account the links that exist between it and the fishing vessel concerned, to exercise effectively its responsibilities under this Agreement in respect of that fishing vessel.'[101] These responsibilities include the duty for States to obtain information from their vessels on the area of fishing activities, catch and landing, their right to take enforcement measures to avoid any infraction and to take sanctions of sufficient gravity to dissuade offenders from prosecuting their illegal conduct.[102] Secondly, the Agreement fills the gaps in article 94 LOSC and it reconciliates it with the purposes of Article 117 LOSC. At this purpose it obliges each Party to take 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'.[103] Secondly, The Agreement promotes cooperation between States for the identification of those fishing vessels flying their flag '[…]reported to have engaged in activities undermining international conservation and management measures.'[104] Thirdly, the Agreement intensifies transparency in the exchange of information between States Parties in relation to high seas fisheries.[105] These specific requirements have a fundamental role to strengthen States' responsibilities and their awareness on conservation goals. Further, it plays an important role as a cross reference to other legal sources, and it asserts that the flag state has the duty to submit information about its vessels fishing on the high seas. However, the limit of the Agreement is its legal nature. Moreover, the limited number of Parties signing the

[100] FAO Compliance Agreement Preamble 9.
[101] FAO Compliance Agreement article 3(2) and article 3(3).
[102] D Balton 'The Compliance Agreement' in E Hey (ed) *Developments in International Fisheries Law* (Springer Netherlands 1999) 31.
[103] FAO Compliance Agreement article 3(1)(a).
[104] FAO Compliance Agreement article 5.
[105] FAO Compliance Agreement Article 4; Borg (2012) 197.

Agreement and its delayed entry into force undermines its effectiveness.[106]

The UNFSA primarily addresses its scope to contrast over exploitation of straddling highly migratory species fish stocks.[107] UNFSA introduces important provisions to regulate high seas fisheries. Several RFMOs adapted their statutes on UNFSA.[108] UNFSA conservation norms based on international environmental principles radically influenced further agreements and States Parties' practice. However, the extent of these conservation norms is not constant.

Compared with the FAO Compliance Agreement the UNFSA provides for a series of more specific provisions 'to take' conservation measures.[109] UNFSA provides for an extensive list of conducts to be taken by flag States to control their vessels.[110] First, it obliges States to 'take' measures including the 'control of such vessels on the high seas by means of fishing licences, authorizations or permits, in accordance with any applicable procedures agreed at the sub-regional, regional or global level'[111]. Secondly, it provides for the '[…]establishment of regulations: to apply terms and conditions to the licence, authorization or permit sufficient to fulfil any sub-regional, regional or global obligations of the flag State; to prohibit fishing on the high seas by vessels which are not duly licensed or authorized to fish, or fishing on the high seas by vessels otherwise than in accordance with the terms and conditions of a licence, authorization or permit; to require vessels fishing on the high seas to carry the licence, authorization or permit on board at all times and to produce it on demand for inspection by a duly authorized person; and to ensure that vessels flying its flag do not conduct unauthorized fishing within areas under the national jurisdiction of other States; establishment of a national record of fishing vessels authorized to fish on the high seas and provision of access to the information contained in that record on request by directly interested States, taking into account any national laws of the flag State regarding the release of such information; requirements for marking of fishing vessels and fishing gear for identification in accordance with uniform and internationally recognizable vessel and gear marking systems, such as the Food and Agriculture Organization of the

[106] As reported before the Agreement entered into force 10 years after its adoption; for discussion see R Warner *Protecting the Oceans beyond National Jurisdiction: Strengthening the International Law Framework* (Martinus Nijhoff Publishers 2009) vol 3, 112.
[107] Warner (2009) 101.
[108] Ibid.
[109] Proelβ (2017) 810.
[110] UNFSA Article 18(2).
[111] UNFSA Article 18(3)(a).

United Nations Standard Specifications for the Marking and Identification of Fishing Vessels.'[112] RFMOs adopt these measures in respect of the duty of transparency.[113] These provisions develop the general content of Article 117 LOSC.[114] UNFSA relevance was highlighted by several Organisations. In 2014 UNGA called upon States '[…]individually and, as appropriate, through sub-regional and regional fisheries management organisations and arrangements with competence over discrete high seas fish stocks, to adopt the measures necessary to ensure the long-term conservation, management and sustainable use of fish stocks in accordance with the Convention and consistent with the Code and the general principles set forth in the Agreement.'[115] In 2006 UNGA convened a review conference to verify the effects of UNFSA on the conservation of straddling and highly migratory stocks.[116] Notwithstanding the conference highlighted how RFMOs had accomplished relevant progresses in incorporating the provisions introduced by UNFSA, a large number of them encountered limits in the implementation of part of UNFSA obligations.[117] Overall, UNGA indicated that UNFSA was still at preliminary level in outlining the 'best practice guidelines' for long term conservation measures, with particular regard to highly migratory and straddling fish stocks, to whom the Agreement was primarily addressed to.[118] This limited process of compliance affected the succeed of conservation and management measures.[119]

Furthermore, the Conference raised attention on a worrying increase in IUU fishing[120], first faced by the FAO Compliance Agreement, and highlighted the urgent need to contrast this practice through a substantial control over fishing vessels flying their flag.[121]'The UNFSA does not provide a legal

[112] UNFSA Article 18(3)(b)
[113] UNFSA Article 12.
[114] A E Boyle 'Further Development of the 1982 Convention on the Law of the Sea' in D Freestone and others (eds) *The Law of the Sea: Progress and Prospects* (Oxford University Press 2006) 47; J Harrison *Saving the Oceans Through Law: The International Legal Framework for the Protection of the Marine Environment* (Oxford 2017) 177.
[115] UNGA Res 69/109 (9 December 2014) para 33.
[116] UNGA 'Report of the Review Conference on the Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea of 10 December 1982 relating to the Conservation and Management of Straddling Fish Stocks and Highly migratory fish stocks' (5 July 2006) UN Doc A/210/2006/15.
[117] This was particularly so for the obligations provided in Article 10 and 12; Ibid at Annex. Section I(A) para 7; Warner (2009) 107-108.
[118] Warner (2009) 108.
[119] Ibid at Annex, 1th Section (A), para 14 and 1th Section (B), para 18(i); Warner (2009) 108.
[120] Ibid at Annex, 3th Section (A), paras 35-37.
[121] Ibid at Annex 3th Section (B), para 43 (a); At this purpose, UNGA suggested RFMOs to 'conduct independent performance reviews on a regular basis.

basis for juridical claims against non-member or objecting States who take measures less stringent than those adopted by RFMOs.[122] Non-member states to UNFSA are bounded to the flag State obligations in Article 91 LOSC, confirmed by ITLOS,[123] according to which 'Every State shall fix the conditions for the grant of its nationality to ships, for the registration of ships in its territory, and for the right to fly its flag[…]'. This obligation is easily circumvented by the use of 'flags of convenience' and the practice of 'reflagging'.[124] These illegal practices contribute to the proliferation of IUU Fishing or fishing that 'occurs in violation of- or at least with disregard for- applicable fisheries rules, whether those rules have been adopted at the national or international level'[125]. These practices reduced the effectiveness of conservation measures adopted by RFMOs.[126] With regard to IUU fishing ITLOS determined in its advisory opinion submitted on the request of the Sub-Regional Fisheries Commission (SRFC) that flag States would be under the obligation '[…]to take the necessary measures to ensure that vessels flying its flag comply with the protection and preservation measures adopted by the SRFC Member States'.[127] However, as duly noted by Proelβ this duty to ensure constitutes an obligation of conduct, rather than an obligation of result.[128]

The FAO Code of Conduct on Responsible Fisheries lays down a list of important provisions regulating fisheries, processing and trade.[129] The Code had the primary purpose to set down principles and criteria at regional and international level for responsible fisheries, having as recipients national governments as well as RFMOs and private companies involved in the capture

[122] Proelβ (2017) 839.
[123] *The M/V 'Saiga' Case (Saint Vincent and the Grenadines v Guinea*) *(Merits) (Judgement)* ITLOS Case No 2 (Order of 1 July 1999) para 10; *The M/V 'Virginia G' Case (Panama v Guinea-Bissau) (Judgement)* ITLOS Case No 19 (Order of 14 April 2014) paras 108-113.
[124] Proelβ (2017) 839.
[125] FAO 'Implementation of the International Plan of the Action to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated Fishing' (2002) FAO Technical Guidelines for Responsible Fisheries No 9, 6.
[126] R Rayfuse 'The Anthropocene, Autopoiesis and the Disingenousness of the Genuine Link adressing enforcement gaps in the legal regime for ares beyond National jurisdiction' in A G Oude Elferink, E J Molenaar (eds)*The International Legal regime of Areas beyond National Jurisdiction: Current and Future Developments* (Martinus Nijhoff Publishers 2010) Vol 26, 165-190.
[127] *Request for an Advisory Opinion Submitted by the Sub-Regional Fisheries Commission (SRFC) (Advisory Opinion)* ITLOS Case No 17 (2 April 2015) para. 136.
[128] A Proelβ 'The Contribution of the ITLOS to Strengthening the Regime for the Protection of the Marine Environment' in A Del Vecchio and R Virzo (eds) *Interpretations of the United Nations Convention on the Law of the Sea by International Courts and Tribunals* (Springer 2019) 93; In the Advisory opinion (see note supra) ITLOS recalls for 'an obligation to deploy adequate means, to exercise best possible efforts, to do the utmost, to obtain this result', but it cannot be equated to an obligation of result.
[129] FAO Code of Conduct Article 1(3).

and processing of fish, pursuing an interest in fisheries.[130] The general principles of responsible fisheries, embodied in Article 6(1), provide that ' States and users of living aquatic resources should conserve aquatic ecosystems' and that 'The right to fish carries with it the obligation to do so in a responsible manner as to ensure effective conservation and management of the living aquatic resources.' In this respect, the Code enshrines the principles provided by UNFSA, recalling a 'long-term sustainable use of fisheries resources in the overriding objective of conservation and management'.[131] Moreover, it contributed to develop UNFSA provisions. The FAO Code of Conduct disposes that conservation measures should not only ensure the sustainability of target stocks but also the conservation of aquatic habitats and ecosystems, the protection of endangered species and the reduction of pollution, waste, discards, catch by lost or abandoned gear, catch of non-target species, both fish and non-fish species, and impacts on associated or dependent species, through measures which include the development and use of selective environmentally safe and cost-effective fishing gear and techniques.[132] This provision highlights the strong interconnection between the adoption of conservation measures and the management of living resources, that it will be discussed in the third section of this chapter.

The main limit of these Agreements is the weakness of their legally-binding character, which brought a consistent part of the juridical community to not consider such agreements to be norm-creating. The ambiguity on the binding character of some provisions in FAO Code of Conduct is confirmed in the language used, which consistently resorts to the term 'should'.[133] Moreover, neither of these agreements met great support. For instance only 43 States are parties to the FAO Compliance and 77 to the Fish Stock Agreement .[134] Otherwise, there are reasons to counterbalance their weak jurisdictional character.

The arrangements in the FAO Code of Conduct seem to crystallize general principles on conservation and management of fish stocks which can contribute to the future development of the subject. As noted by Harrison FAO Code of Conduct provisions are a frame of reference for the international community, as well as individual states, to draw up legal instruments aimed at

[130] FAO Code of Conduct Article 1(2).
[131] FAO Code of Conduct Article 7.2.1.
[132] FAO Code of Conduct Article 7(2)(2).
[133] Ibid.
[134] --'Ground-breaking illegal fishing accord soon to enter into force' (FAO Press Release) ≤http://www.fao.org/news/story/en/item/414494/icode/≥ (16 May 2016).

addressing all manner of fisheries issues.[135] A further aspect of these instruments is their attitude to interact with binding treaties, which contain rules of reference.[136] By Harrison the FAO Code of Conduct provide 'generally recommended international minimum standards' for the purposes of article 61 and article 119 LOSC, meaning that States have the duty to take the Code into account when adopting conservation measures.[137]

The legal weakness of these agreements is just one part of the problem. Relying solely upon LOSC and post-LOSC flag State duties is insufficient to guarantee an effective control on fishing vessels. States have not sufficient resources to ensure this type of control alone. In this scenario cooperation for controls in high seas for the purposes of conservation plays a central role.

1.2 A duty 'to cooperate' for the conservation of living resources

1.2.1 A recognition under customary international law

Besides article 117 and article 118 LOSC the duty to cooperate for marine environmental issues is recognised under international customary law. Such a duty of cooperation has been recognised as a general principle of International Law[138] and as a fundamental rule of general international law, emanating from the principle of 'good-neighbourliness'[139], accepted by State Practice, as evident in the decisions and awards of international courts, including ICJ[140] and ITLOS. In *MOX Plant Case* ITLOS recognised the obligation to cooperate as 'a fundamental principle in the prevention of pollution of the marine environment under Part XII of the Convention and general international law and that rights arise therefrom which the Tribunal may consider appropriate to presen/e under article 290 of the Convention'.[141] Annex VII Arbitral Tribunal in the *South China Sea Arbitration* recognised the duty to cooperate as '[…]a fundamental principle in the prevention of pollution of the

[135] J Harrison *Making the Law of the Sea: A Study In The Development Of International Law* (Cambridge University Press 2011) 219.
[136] Harrison (2017) 180.
[137] Ibid.
[138] *Fisheries Jurisdiction case (UK v Iceland) (Merits)* [1974] ICJ Rep 3, para 72
[139] Charter of the United Nations (adopted 26 June 1945, entered into force 24 October 1945) (UN Charter) Article 74.
[140] *Gabcikovo-Nagymaros Project (Hungary v Slovakia) (Judgement)* [1997] ICJ Rep 7, para 141; *Pulp Mills on the Uruguay River Case (Argentina v Uruguay*) *(Judgment)* [2010] ICJ Rep 146.
[141] In *MOX Plant Case (Ireland v UK) (Provisional Measures)*) ITLOS Rep 95(Order of 3 December 2001) para 83.

marine environment under Part XII of the Convention and general international law'.[142] However, these statements recognize the duty to cooperate for the protection of the marine environment and they do not make explicit reference to the conservation of living resources. The historical development in the Introduction does not talk about the relationship between the protection of the marine environment and the conservation of living resources at this stage. It could be argued that there is a dichotomy between these two topics, as alluded in LOSC provisions on the settlement of disputes.[143] These doubts were solved by ITLOS in the *Southern Bluefin Tuna case*, which observed that in presence of a threat of a marine environmental harm 'the conservation of the living resources of the sea is an element in the protection and preservation of the marine environment.'[144] Likewise, the Arbitral Tribunal in the *Chagos Marine Protected Area Arbitration* recognized the conservation of living resources to be an inherent element of the protection of the marine environment.[145]

The relevance of this recognition in customary international law is inherent in Article 31(3)(c) VCLT[146] which requires a treaty interpreter to take into account 'any relevant rules of international law applicable in the relations between the parties'. This is generally regarded in the literature as the "systemic integration' method.[147] As Professor Virzo said 'the interpretative method specified in the provision is intended as a means to coordinate a given treaty with other relevant rules of international law applicable in relations between its contracting parties because both the treaty and the other rules belong to one and the same legal system'.[148] This is particularly relevant because the systemic

[142] *South China Sea Arbitration (Philippines v China)* (2016) PCA Case No 2013-19, para 946.
[143] See for instance LOSC Article 21 and Annex VIII.
[144] *Southern Bluefin Tuna Cases (New Zealand v Japan; Australia v Japan) (Provisional Measures)* ITLOS Case Nos 3 and 4 (Order of 27 August 1999) para 70.
[145] *The Chagos Marine Protected Area Arbitration (Mauritius v United Kingdom)* (Award of 18 March 2015) paras 283-291. Mauritius and UK entered into a dispute for the establishment of the borders of an MPA. Mauritius argued that the MPA established by the UK around the Chagos Islands, which included a ban on fishing was an environmental issue, while UK argued that the conservation of living resources was excluded by the tribunal's jurisdiction. Given that when UK established the MPA qualified the measure as an environmental issue, the Tribunal noted that UK could not go back on the characterisation of the nature of the measure in the arbitration proceedings.
[146] Vienna Convention on the Law of the Treaties (adopted 23 May 1969, entered into force 27 January 1980) 1155 UNTS 331 (VCLT).
[147] VCLT Article 31(3)(c) is considered to reflect general international law, as evident in *Oil Platforms (Iran v. United States of America) (Judgment)* [2003] ICJ Rep 161, para. 41; *Certain Questions of Mutual Assistance in Criminal Matters (Djibouti v. France) (Judgment)* [2008] ICJ Rep 177, para 112.
[148] R Virzo 'The 'General Rule of Interpretation' in the International Jurisprudence Relating to the United Nations Convention on the Law of the Sea' in A Del Vecchio and R Virzo (eds) (2019) 27.

integration method contributes to a progressive interpretation of LOSC.[149] International courts and tribunals take into account the progressive development of international law operating an harmonization amongst the Convention and the other rules that apply to its contracting parties, or at least to the parties to the disputes before them.[150]

1.2.2 A double duty to cooperate under LOSC

Article 118 provides that 'States whose nationals exploit identical living resources, or different living resources in the same area, shall enter into negotiations with a view to taking the measures necessary for the conservation of the living resources concerned[...]' and that '[...]They shall, as appropriate, cooperate to establish sub-regional or regional fisheries organizations to this end.' The relationship between Article 117 and Article 118 is general-special, to be seen with regard to Articles 63 and 65 LOSC, that impose similar cooperative obligations upon States for transboundary, shared, straddling, highly migratory stocks and associated and dependent species .[151] The disposal of Article 118 presents two main differences. First, Article 118 addresses the obligation only to 'States whose exploit identical living resources or different living resources in the same area, rather than to 'all States'. Secondly, it can be derived that use of the conjunction 'or' in Article 117, leaves States the freedom to adopt measures unilaterally.[152] By way of contrast, Article 118 provides that 'States shall cooperate with each other in the conservation and management of living resources in the areas of the high seas.' Such a provision leaves a wide margin for States to determine what measures to take in respect of their nationals. This results in a twofold scenario: the duty to take conservation measures is both an individual and a cooperative one.[153] State practice proved that conservation measures can come into existence only through cooperatively agreed upon measures. In the absence of a unique *modus operandi* it has been suggested that bilateral or multilateral processes are the most effective ones.[154]

[149] Ibid.
[150] Ibid.
[151] Proelβ (2017) 819.
[152] Proelβ (2017) 813.
[153] Ibid.
[154] Ibid.

1.2.3 The regional development and the auspices under the Agreement on BBNJ

RFMOs have been identified the most successful catalyst for conservation methodologies since the birth of the duty of cooperation.[155]

In the South West Pacific , Pacific Island Forum (PIF)'s leaders established the Council of Regional Organisations of the Pacific (CROP) in 1988 to improve cooperation, coordination, and collaboration between intergovernmental regional organisations.[156] The effectiveness of this initiative was ensured through the pooling and sharing of expertise and resources optimizing benefits to member countries and territories of CROP organisations. The so called 'coordinated CROP action' provided support to members at international conferences/negotiations, by reporting and setting on international commitments relevant indicators and targets.[157] Regional coordination mechanisms modelled on CROP action had a strong contribute to promote regional cooperation for the purposes of the conservation and sustainable use of BBNJ.[158] For example, the North Pacific Marine Science organisation joint with the International Council for the exploration of the Sea (ICES)[159] were strongly influenced by this model to enhance cooperative marine programs on marine scientific research in ABNJ.[160]

Altough RFMOs experienced huge difficulties in leading states to decrease catch on a sustainable level, they provide the 'best possible forum' for the realisation of an international cooperation system sufficiently able to safeguard fisheries' stocks.[161]. It is often hard to obtain a wide participation by States in this kind of regional frameworks. For these reasons cooperation has often been described as the 'Achilles heel' of the existing international governance arrangements in high seas.[162] At this purpose, during the third session of the Conference on BBNJ, the EU highlighted the importance to

[155] Borg (2012) 167.
[156] Council of Regional Organisations of the Pacific Charter (adopted in July 2004) para 5 ≤http://gsd.spc.int/sopac/docs/RIF/CROP%20Charter_2004.pdf≥.
[157] Ibid.
[158] G Quirk and H Harden-Davies 'Cooperation, competence and coherence: The role of regional ocean governance in the South West Pacific for the conservation and sustainable use of biodiversity beyond national jurisdiction'(2017) 32 The International Journal of Marine and Coastal Law 701.
[159] International Council for the exploration of the Sea (ICES) (adopted in Copenhagen 22 July 1902).
[160] Proelβ (2017) 828.
[161] Borg (2012) 168.
[162] J A Ardron, R Rayfuse, K Gjerde, and R Warner 'The sustainable use and conservation of biodiversity in ABNJ: What can be achieved using existing international agreements?' (2014) 49 Marine Policy 98–108; Quirk & Harden-Davies (2017) 701.

encourage cross-sectoral coordination and cooperation between competent international and regional organizations.[163] In the general provisions of the Revised Agreement on BBNJ, States are required to cooperate trough'[...]relevant legal instruments and frameworks and relevant global, regional, subregional and sectoral bodies'[164], for the promotion of '[…]marine scientific research and in the development and transfer of marine technology[…]'[165] and to '[…]establish new global, regional and sectoral bodies, where necessary.'[166]

1.3 A duty for 'the management' of living resources

Article 119 LOSC sets a plethora of conservation measures as part of the broad concept of 'management of living resources'. The article implicitly recalls several management principles and tools. These principles can be set in four major categories: harvesting targets and methods, (including the establishment of fishing seasons and the ban of utilisation for certain fishing gear), effort level constraints, catch limitations and conservation measures to protect the marine environment.[167] This latter category has a stronger connection with LOSC Part XII, but it influences, likewise, the management for the conservation of living resources.

The panoply of conservation tools may be applied in observance of those management principles, alluded in Article 119, and widely developed since the 1990s through treaty and soft Law.

The on-go principles of my analysis are the precautionary approach and the ecosystem approach, which originate from the principle of 'sustainable use'. Consideration amongst international community on those principles is heterogeneous. They have been estimated as emergent principles

[163] The representative of Switzerland suggested merging articles 2 and 6 of the Revised Agreement on BBNJ, to read 'including through strengthening and enhancing among relevant regional cooperation and coordination'. The representative of New Zealand would prefer 'a clearer, shorter objectives section not limited to international cooperation among States Parties', while Norway expressed its favourable opinion for 'shorter sections and references to cooperation are critical to the agreement and should be retained'. See. --'Delegates Begin Text-Based Deliberations for First-Ever Treaty on Managing Marine Biodiversity beyond National Jurisdiction Areas, at Start of Conference Session (UN Media Press) UNGA Intergovernmental Conference On Marine Biodiversity Third Session, Am & Pm Meetings Sea/2108' ≤https://www.un.org/press/en/2019/sea2108.doc.htm≥ (19 August 2019).

[164] Revised Agreement on BBNJ Article 6(1).

[165] Ibid at Article 6(2).

[166] Ibid at Article 6(3).

[167] Borg (2012) 175.

by a wide range of publicists, whilst as more established by others.[168] To clarify the application of these principles in the conservation management regime it is fundamental to underline the terms, that received for the first time a scientific relevance in article 119 LOSC. The provision poses the theorical bases for the management of living resources in high seas, by spelling out the conservation measures that States are to adopt with respect to Articles 117-118. Article 119(1) states that 'In determining the allowable catch and establishing other conservation measures for the living resources in the high seas, States shall: (a) take measures which are designed, on the best scientific evidence available to the States concerned, to maintain or restore populations of harvested species at levels which can produce the maximum sustainable yield, as qualified by relevant environmental and economic factors, including the special requirements of developing States, and taking into account fishing patterns, the interdependence of stocks and any generally recommended international minimum standards, whether sub-regional, regional or global; take into consideration the effects on species associated with or dependent upon harvested species with a view to maintaining or restoring populations of such associated or dependent species above levels at which their reproduction may become seriously threatened.'

1.3.1 A management based on 'human need'

1.3.1.1 The establishment of the Total allowable catch (TAC) and the Maximum sustainable yield and the influence of the sustainability principles

According to Article 119, the first element that need to be considered when adopting a conservation measure is the allowable catch. The need for the allowable catch is inextricably linked to the notion of maximum sustainable yield (MSY) which presupposes restrictions on the level of the catch to avoid 'over-exploitation'.[169] MSY is a biological concept referring to the maximum catch to be taken from species or stock over an indefinite period.[170] According to WWF , MSY means 'the highest possible annual catch that can be sustained over time, by keeping the stock at the level of

[168] FAO 'Technical guidelines for Responsible Fisheries' (2003) Fisheries Management: 2. the Ecosystem approach to Fisheries Series No 4 Supplement 2.
[169] E Hay *The persistence of a Concept: Maximum Sustainable Yield* in D Freestone (ed) *The 1982 Law of the Sea Convention at 30: Successes, Challenges and New Agendas* (Martinus Nijhoff Publishers2013)89-91; Proelβ (2017) 834.
[170] Proelβ (2017) 838.

maximum growth', referring to 'a hypothetical equilibrium state between the exploited population and the fishing activity'.[171] In respect of Article 119 States must determine when an MSY is achieved. FAO provides that stocks can be exploited at the level of 'maximum physical output and natural rate of increase, preserving their highest resilience'.[172] The widest accepted practice amongst States is the achievement of the MSY when both stock mortality and recruitment to the stock 'are maximised at the same time.'[173] This approach 'is a technique having a priority to maintain the productivity of the oceans by authorizing fishers to take only that number of fish from a stock that it is replaced the annual rate of new recruits (young fish of harvestable size) entering the stock'.[174] This technique requires calculation of TAC on the basis of these biological parameters and its allocation as between fishers. Otherwise, *as a single species management tool*, MSY does not spell out interrelations between targeted species and other species in the ecosystem nor other factors having an impact on sustainable resource exploitation such as the economic value of the catch, the cost of catching and the natural instability of some stocks.[175] At this purpose, maintenance of MSY must be interconnected with the notion of optimum sustainable size (OSY). OSY is in compliance with the purposes of 'sustainable use of living resources', but this definition has been surrounded by uncertainty. First, the 1958 Geneva Convention on Fishing and the Conservation of Living Resources on the High Seas assimilated the concept of 'optimum sustainable yield' to the basic concept to MSY,[176] In turn, the definition of TAC reflects the same uncertainty. Definition of allowable catch in Article 119 could be referred both to individual species, 'individual stocks of species or only to those stock and species commercially exploited'.[177] CBD extends to non-commercial species the concept of biological biodiversity, but it does not provide any other specification.[178] Specifications made about the importance of biological diversity from a

[171] --'Common Fisheries Policy Reform: Getting MSY right'(WWF website) ≤http://awsassets.panda.org/downloads/wwf_msy_oct2011_final.pdf ≥(2011).
[172] FAO Papers presented at the technical Consultation on High Seas Fishing 'High Seas Management: New Concepts and Techniques' (1992) FAO Fisheries Report No.484 Supplement FAO Doc FI/HSF/TC/92/5, 15.
[173] Proelβ (2017) 842.
[174] Ibid.
[175] Ibid.
[176] Geneva Convention on Fishing and the Conservation of Living Resources on the High Seas, Article 2
[177] Proelβ (2017) 838.
[178] I U Jakobsen *Marine protected areas in International Law: an Artic Perspective* (Brill Nijhoff 2016) Vol 25 Queen Mary Studies in International Law, 87.

non-commercial perspective in the Preamble of the Convention[179] and the consolidation of its importance, as 'being of critical importance for meeting the food, health and other needs of the growing world population', does not operate any clarification of the doubts arising in Article 119. To overcome these doubts it was suggested to address the general duty to both to the categories at stake, with a different objective of doing so in each case.[180] For harvested species the main purpose is the maintenance of the MSY ,whilst for 'associated and dependent species' is the maintenance of a certain reproductive rate.[181] This dichotomy of objectives for the two categories of species is the basis for the development of the 'sustainable use' and consequently of the 'ecosytem approach', that will be discussed in the further section of this chapter.

In the absence of a unique *modus operandi*, conflicts arose between States on how to determine the TAC. This was due to two main reasons: the lack of a precise procedure spelt out in Article 119, and the progressive development of the often-cited sustainable principles, which substantially modified State practice. Before the establishment of such principles, two main approaches were applied to determine the TAC: dividing the TAC into national quotas, or compelling States to exploit the stock until the achievement of the quota.[182] For RFMOs the determination of such quota remains one of the most controversy aspects of the topic.[183] Generally such determination takes into account the historic catch of the stock and the scientific advice of experts on the stock status.[184] Over the years this approach faced the prejudices of new entry-States to RFMOs, which saw in numerous occasions denied their allocation, by virtue of their past fishing record, impossibility of entry into a fully allocated fishery or failure to meet other criteria by pre-existing explorers[185].This scenario was at the centre of the dispute amongst Russia and the other members of the SPRFMO, where the former saw its quota allocation for the South Pacific jack mackerel.[186] denied by the Commission of the

[179] Preamble of CBD para 2.
[180] Proelβ(2017) 838.
[181] Ibid.
[182] Proelβ (2017) 837.
[183] Ibid.
[184] Ibid.
[185] E J Molenaar *Participation, Allocation and Unregulated Fishing: The Practice of Regional Fisheries management organisation* (2003) 18 The International Journal of Marine and Coastal Law 457-480.
[186] In I Senina N T Hintzen and P Lehodey 'Modelling South Pacific jack mackerel spatial population dynamics and fisheries' (2017) 25 Fisheries Oceanography 97, was spelt out that ' 'Since the 1970s, South Pacific jack mackerel (Trachurus murphyi) is one of the world's most important commercial exploited fish stock. The peak in the catch was achieved in the 1990s, after which the catch for all fleets steadily decreased due to strong fishing mortality and potentially unfavourable environmental conditions. An application of the

SPRFMO, for the absence of an historical catch record.[187] At the end the refusal by the Commission was considered unjustifiably discriminating against Russia by the Review Panel. Although the TAC had already been fully allocated, Russia was allowed to authorise its vessels to fish, once it was clear that the other members were not going to fill their quota and the overall TAC set by the Commission was reached.[188] This situation brought to an important conclusion: all members of an RFMO willing to obtain an allocation only have to satisfy the 'real interest' criterion, thus becoming members of such regional organisation regardless of their fishing history.[189]

This approach, deprived of modern conservation principles, permitted the take of a stock in a larger quantity that it could have been taken to reach the unqualified MSY.[190] This higher catch per unit of effort translated into lower costs and greater net returns to fishing states.[191]

Since the sustainable principles began to be assessed in this field the legal seascape radically changed. This assimilation of sustainable principles to MSY resulted in fishing at F 0.1 rather than at F. max.[192] As discussed above, this detachment from the concept of MSY as originally formulated, gave raise to new divergences in the determination of TAC.[193] This was the case arising between Canada and Spain, having as object of the dispute fisheries for straddling stocks in the North West Atlantic.[194] Canada attempted to maintain an higher level of abundance than European Community (EC).[195] Canada used F0.1 to calculate the TAC, while the EC used F.max which amounts to

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ecosystem and fish population model SEAPODYM was developed for this species in the South Pacific Ocean to determine the extent of environmental and fisheries drivers on the stock dynamics. We combined publicly available fishing data, acoustic biomass estimates and expert knowledge to optimise fish population dynamics parameters (habitats, movements, natural and fishing mortality). Despite a large proportion of missing catch over the simulation period, the model provides realistic distributions of biomass, a good fit to data and is in agreement with the literature.'

[187] E Tallaksen 'Russia stripped of jack mackerel quota over Lafayette controversy' (Undercurrentnews) ≤https://www.undercurrentnews.com/2013/02/04/russia-stripped-of-jack-mackerel-quota-over-lafayette-controversy≥/ (4 February 2013).

[188] 'In Proceedings Conducted By The Review Panel Established Under Article 17 And Annex II Of The Convention On The Conservation And Management Of High Seas Fishery Resources In The South Pacific Ocean With Regard To The Objection By The Russian Federation To A Decision Of The Commission Of The South Pacific Regional Fisheries Management Organisation' (2013) Findings and Recommendations of the Review Panel 5.

[189] Proelβ (2017) 838.

[190] Borg (2012) 177.

[191] Ibid.

[192] Ibid.

[193] Ibid

[194] See note 138.

[195] Ibid.

noticeably higher allowable catch.[196] The lack of a specific procedure to determine an allowable catch in Article 119 left up States to adopt alternative regional approaches.

As made clear by Simon Borg, an integration of environmental principles in the definition of MSY may 'reflect' the real of the regime conservation and sustainable use of BBNJ, but a lack of harmonization in the establishment of stock levels represent the highest limit.[197]

As a matter of fact, within RFMOs States adopted a range of conservation measures in relation to stock assessment. RFMOs adopted a number of important measures, but were inefficient to contrast stock's depletion .[198] In 2006, FAO reported that 75% of the world's fish stock was fully exploited or overexploited, depleted or recovering from depletion, [199] and in 2014 reported a dramatically increasing rate of exploitation of world's fish stock up to 90.1 %.[200]

Soft law like applicable UNGA Resolutions on driftnet fishing[201]and bottom trawling[202], Agenda

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[196] W T Burke *The new International Law of Fisheries: UNCLOS 1982 and Beyond, Oxford Monographs in International Law* (Oxford: Clarendon Press 1994) 113.

[197] Borg (2012) 177.

[198] 'Review Conference on the Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea of 10 December 1982 relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks' (New York, 24-28 May 2010) (4 January 2010) (UN Doc A/CONF.210/2010/1.

[199] FAO 'The state of World Fisheries and Aquaculture' (2006) ≤http://www.fao.org/3/a-a0699e.pdf≥.

[200] FAO 'The state of World Fisheries and Aquaculture'(2014) ≤http://www.fao.org/3/a-i3720e.pdf≥.

[201] UNGA Res 44/225 (22 December 1989); UNGA Res 45 /197 (21 December 1990); UNGA Res46/215 (20 December 1991); According to FAO in --'Description of driftnets' ≤http://www.fao.org/3/t0502e/T0502E01.htm≥

'Drift gillnets (or driftnets), in common with other types of gillnet, are among the simplest and oldest methods of fishing. Such nets operate by gilling or entangling fish in the meshes of a sheet of netting. The netting is held more or less vertically in the water column by means of a buoyant floatline at the top of the net, and a weighted leadline at the bottom of the net. Nets rigged in this way may be used singly or, by joining them together serially, as a fleet of nets. Usually the floatline floats at the surface of the water, and the net hangs below it. Sometimes the floatline may be rigged in such a way that it floats some distance below the surface. The net then fishes a lower part of the water column. In such cases the net is partly suspended by additional buoys at the surface which are attached to the floatline at regular intervals. In some sandy bottomed areas driftnets are even rigged to fish along the bottom of the seabed, for prawns especially'.

[202] UNGA Res 61/105 (6 March 2007); UNGA Res 64/72 (4 December 2009); An overview on Bottow trawling's is provided by FAO in ≤http://www.fao.org/fishery/geartype/205/en≥ . FAO specifies that 'A bottom trawl is constructed like a cone-shaped net that is towed (by one or two boats) on the bottom. It consists of a body ending in a codend, which retains the catch. Normally the net has two lateral wings extending forward from the opening. The mouth of the trawl is framed by headline and groundrope. It is designed and rigged to catch species living on or near the bottom. Bottom contact with the gear is needed for successful operations. Three categories of bottom trawls can be distinguished based on how their horizontal opening is maintained: beam trawls, bottom otter trawls, and bottom pair trawls. Beam trawls are commonly designed without wings.'

21 [203] , Johannesburg Programme of Implementation and the above cited UN and FAO Agreements[204].played a crucial role. These instruments have been repeatedly submitted to scrutiny by States within and outside RFMOs, given their crucial role in spelling out the general content of Article 119 LOSC.[205] Since 2005, a wide number of RFMOs have been operating such reviews of their Convention in this sense.[206] The influence of these instruments called upon States to apply an 'optimum sustainable yield' to maintain or restore their populations above levels where their reproduction was not seriously undermined. Even if this concept was referred solely to non-harvestable species, later instruments overcome this distinction. CCAMLR set aside this distinction and the FAO Code of Conduct for Responsible Fisheries implicitly extended the application of conservation measures to all species.[207]

The interrelationship of allowable catch limits for target and non-targeted species is a manifestation of the growing importance of the ecosystem approach alluded in the Article 119.

1.3.2 The management of 'non-harvestable' species

1.3.2.1 The Notion of 'associated and the dependent species upon harvested species' and the influence of the ecosystem approach

As already noted, Article 119 does not explicitly recall the ecosystem approach, but the distinguished objectives for the conservation of non-harvestable species and harvested species gave rise to this concept.

While the conservation of harvested species was inextricably linked to human need, the main purpose for the conservation of non-harvestable species was to 'maintain and restore populations above levels at which their reproduction rate may be seriously threatened'. This definition must be read in conjunction with that of associated and dependent species in the text of Article 119.

[203] 'Report of the United Nations Conference on the Environment and Development' UN United Nations Conference on Environment and Development' (Rio de Janeiro, 3-14 June 1992) (1993) UN Doc A/CONF/151/26/REV.1(Vol I) Agenda 21.

[204] UNFSA and FAO Compliance Agreement.

[205] Proel (2017) 839.

[206] FAO 'Performance Reviews by Regional Fisheries Bodies: Introduction, Summaries, Synthesis and Best Practices Vol. 1'(2012) FAO Fisheries and AquaCulture Circular No 1072.

[207] C C Joyner 'The Antarctic Treaty System and the Law of the Sea- Competing Regimes in the Southern Ocean?' (1995) 10 The International Journal of Marine and Coastal Law 301-331; E J Molenaar 'Managing Biodiversity beyond national jurisdiction' (2007) 22 The International Journal of Marine and Coastal Law 89-124.

As well as for allowable catch and MSY, LOSC does not provide any definition of associated and dependent species and it does not provide any definition of harvested species. It does not exist a common definition of associated and harvested species'.[208] Robin Churchill extends the definition of 'dependent species upon harvested species' to predators of 'harvested species' and that of 'associated species' to the prey of harvested species or those species having some other form of association with harvested species.[209] According to this definition, the range of dependent and associated species include marine mammals (dolphins and porpoises), reptiles (marine turtles), and birds (petrels, albatross, gannets), while prey of harvested species may be considered plankton, smaller fish and other life forms.[210] This definition would exclude some of the other marine life forms. The lack of a definition under LOSC is a relevant lacuna. When these species are excluded by the rubric of Article 119(1)(b), they are protected under Part XII LOSC, when affected by human activities such as (cable laying), to Article 87 (1)(c) UNCLOS, or to Article 77 UNCLOS, by seabed mining.[211].

As discussed above, the Article does not provide a definition of ecosystem approach. The ecosystem approach is under a wide number of definitions and descriptions.[212] In 1992, CBD Scientific Technical and Technological Advice (SBTTA) elaborated at scientific level the concept of ecosystem approach in its three-year program,[213]endorsed by the parties to the CBD. CBD defines ecosystem as a 'dynamic complex of plant, animal and micro-organism communities and their non-living environment interacting as a functional unit.'[214] It encompasses a large number of different ecosystems, including marine ecosystems[215] but it does not expressly require an 'ecosystem approach' and it does not give a definition of this last concept. According to Jakobsen it may be argued that obligations on the conservation and sustainable use of biological diversity

[208] Borg (2012) 182.
[209] R Churchill 'The LOSC Regime for the Protection of the Marine Environments- Fit for the 21st Century?' in R Rayfuse (ed) *Research Handbook on International Marine Environmental Law* (Edward Elgar Publishing 2015) 3.
[210] Proelβ (2017) 844.
[211] Ibid.
[212] H Wang 'Ecosystem Management and its application to large marine ecosystems: Science, Law and Politics' (2004) 35 Ocean Development and International Law 43; Jakobsen (2016) 108.
[213] SBBTTA, Reccomendation III/2, amended by COP III, adopted at the fourth session of the Conference of the Parties by Decision IV/5.
[214] CBD Article 2.
[215] Ibid.

provided for the protection of ecosystems, implicitly recall the ecosystem approach.[216] For instance the concept of *in situ conservation*, alluded in the text of CBD, reflects an ecosystem approach.[217] Even if they are broad in scope, *in situ* conservation measures in Article 8 CBD, influenced further Treaties to codify the ecosystem approach .[218] CBD uses the terms 'promote the protection of ecosystems'[219], 'rehabilitate and restore degraded ecosystems'[220] and impair 'the introduction of, controls or eradicate those alien species with threaten ecosystems, habitats or species'[221] Some publicists estimate these provisions to be more than a reflection of the principle, rather, a real adoption of the approach.[222] The Conference of the Parties (COP) to the CBD considers the ecosystem approach a method to implement the obligation on conservation and sustainable use of biodiversity.[223] At this purpose COP lays down the list of guidelines to adopt for implementation of the principles.[224] In brief, COP counterbalanced CBD lack of specific obligations .[225] COP specified that 'in applying the ecosystem approach, all its principles need to be considered in a holistic way, and it must be attributed an appropriate weight to each, according to local circumstances.

UNFSA obliges States to 'assess the impacts of fishing, other human activities and environmental factors on target stocks and species belonging to the same ecosystem or associated with or dependent upon the target stocks'[226]; to adopt, where necessary, conservation and management measures for species belonging to the same ecosystem or associated with or dependent upon the target stocks, with a view to maintaining or restoring populations of such species above levels at which their

[216] Jakobsen (2016) 108.
[217] CBD Article 2; CBD Article 8.
[218] S Johnston 'The convention on Biological diversity: the next phase'(1997) 6 Review of European community and international environmental law 225.
[219] CBD Article 8(d).
[220] CBD Article 8(f).
[221] CBD Article 8(h).
[222] Y Tanaka 'Zonal and Integrated Management Approaches to Ocean Governance: Reflections on a Dual Approach in International Law of the Sea' (2004) 19 The International Journal of Marine and Coastal Law 498.
[223] COP to CBD Decision V/6 'Ecosystem Appraoch', A, para 1.
[224] COP to CBD 'Decision Adopted by The Conference Of The Parties to the Convention on Biological Diversity at its Seventh Meeting' Conference Of The Parties To The Convention On Biological Diversity (Kuala Lumpur, 9-20 and 27 February 2004) (13 April 2004) UNEP/CBD/COP/DEC/VII/11; As noted by Jakobsen (2016) 110, in situ measures in Article 8 became more operational and Contracting States were facilitated to implement this obligation.
[225] A Trouwburst 'The Precautionary principle and the Ecosystem approach in International Law: Differences, Similarities and Linkages' (2009) 18 Review of European Community and International Environmental Law 28.
[226] UNFSA Art.5(1)(d).

reproduction may become seriously threatened;'[227]'[...] to minimize pollution, waste, discards, catch by lost or abandoned gear, catch of non-target species, both fish and non-fish species, (hereinafter referred to as non-target species) and impacts on associated or dependent species, in particular endangered species, through measures including, to the extent practicable, the development and use of selective, environmentally safe and cost-effective fishing gear and techniques.' [228]

As noted in the first paragraph UNFSA specifies the content of LOSC provisions. Article 5 UNFSA is evidently more detailed than CBD and LOSC and it operates a reconciliation between general protection of marine environment (Part XII LOSC) and specific protection of living resources in high seas (Part VII section II LOSC). However, it does not provide for a procedure or a set of specific actions to enhance an ecosystem-based management approach.

In sum, CBD UNFSA and LOSC built up a common base to ensure the effective cooperation amongst States for the application of a species-based regime on the high seas.[229]

UNFSA provisions served as a base at regional level for the development of a specific regime applying the ecosystem approach to a species-based management. Several RFMOs incorporated these principles in their statutes.[230] These principles were provided by CCAMLR before the adoption of the oft-cited conventions. CCAMLR extended its scope to all marine 'living resources' within the AT area.[231] Even if before LOSC, CCAMLR recorded progress in the application of a drafted 'ecosystem approach'. It ruled out the use of MSY to overcome difficulties to maintain stock level, ensuring the greatest net annual recruitment, but it encountered difficulties in determination of the catch level. [232] This was particularly so for harvested species.[233]

The 1986 Convention for the Protection of Natural Resources and Environment of the South Pacific[234] recalled the ecosystem approach. It required States to avoid any activity having an adverse impact on the species, ecosystem or biological processes, protected in the territory of the protected

[227] UNFSA. Art 5(1)(e).
[228] UNFSA. Art.5(1)(f).
[229] Borg (2012) 184.
[230] Convention on the Conservation of Antarctic Marine Living Resources (adopted 20 May 1980, entered into force 7 April 1982) 1329 UNTS 4 (CAMLR Convention).
[231] CAMLR Convention Article 1(2).
[232] Borg (2012) 184.
[233] Ibid.
[234] Convention for the Protection of the Natural Resources and Environment of the South Pacific Region (adopted 24 November 1986, entered into force 18 August 1990) (Noumea Convention).

areas.[235]

The 1998 Annex V on ecosystems and biodiversity to the 1992 Convention for the Protection of Marine Environment of the North-East Atlantic (OSPAR Convention)[236], required States to take conservation measures necessary to protect and preserve the ecosystems and biodiversity of the OSPAR maritime area. In 2004, when OSPAR instituted the Working Group on Marine protected areas and Habitats, the attention was focused on the most reliable ways to ensure an effective conservation regime in the high seas. The influence of the ecosystem approach was particularly evident in this context. The Working Group on MPA and Habitats drew up a plan to identify the sensitivity and vulnerability of marine biodiversity damaged by human activities in the maritime area concerned, with particular attention on the conservation of cold water coral reefs. Contracting States agreed upon the provision of data on the distribution of the *lophelia pertusa*[237], one of the most important species of corals in this ecosystem, and then provided this map to the fisheries management authorities.[238] The increasing attention on the *lophelia pertusa* raised the awareness of the international community on the impact of the ecosystem approach upon 'associated and dependent species upon harvested ones'. While CCAMLR primarily addressed the ecosystem approach to harvested species for the determination of a 'sustainable' catch of the stock, 18 years later OSPAR applied the ecosystem approach disconnected by human needs. A comprehensive consideration of fisheries and corals was a successful example of the application an ecosystem-based approach. Such a comprehensive approach was necessary because the overriding menaces to *lophelia pertusa* extending from North-East Atlantic up to the Mediterranean were represented mostly by fishing-gear's breaking, sedimentation and trawling fishing.[239].

Over the last 15 years many regional agreements such as those for highly migratory species in the

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[235] Noumea Convention Article 14.

[236] Convention for the Protection of Marine Environment of the North-East Atlantic (Adopted 22 September 1992 In Paris, entered into force the 25 March 1998) (OSPAR).

[237] *Lophelia pertusa* is a cold-water coral which grows in the deep waters throughout the North Atlantic Ocean, in the Caribbean Sea and Alboran Sea and Mediterranean.

[238] Borg (2012) 186.

[239] As explained in A D Rogers 'The Biology of Lophelia pertusa (Linnaeus 1758) and Other Deep Water Reef Forming Corals and Impacts from Human Activities'(1999) 84 International review of Hydrobiology, 254 ≤https://onlinelibrary.wiley.com/doi/abs/10.1002/iroh.199900032≥ (17 September 2013) and in --'Lophelia Pertusa' (International Union for Conservation of Nature – Comitato italiano) ≤http://www.iucn.it/scheda.php?id=-428917054≥ (2014), Damages came from natural phenomena like slope failures and changes in ocean circulation and anthropogenic are, rather, endemic of the Atlantic region.

western and central Pacific Ocean[240], as influenced by UNFSA, implemented progressively the duty for ecosystem approach in their Statutes.[241]

1.3.2.2 The influence of the precautionary approach

As for the ecosystem approach, the precautionary approach is not explicitly recalled by article 119. Its definition is inherent to article 119 (2) requiring States to take '[…]available scientific information, catch and fishing effort statistics, and other data relevant to the conservation of fish stock.'[242]

In post-LOSC international fora, discussion over the meaning of precautionary approach has never been homogenous. As inherent in LOSC, the precautionary approach has often been intended as the need for a scientific available information as to prevent harm to marine biodiversity caused by human activities. [243] This definition rose doubts on the applicable extent of the harm rather than to its existence.[244]

CBD Preamble recalls for a precautionary approach as 'where there is a threat of significant reduction or loss of biological diversity, lack of full scientific certainty should not be used as a reason for postponing measures to avoid or minimize such a threat'. [245] As noted by Jakobsen, its codification in the Preamble could reduce the legal value of this principle. [246] However, it is commonly accepted in treaty law to consider the Preamble part of the convention itself, because it projects its finalities and underlying concepts.[247] Outside the Preamble, CBD recalls the application of precautionary principle for MPAs and EIAs [248] As noted by Marr, these references to precautionary approach in Article 8 serve as 'an action-guiding version of the precautionary

[240] The Western and Central Pacific Fisheries Commission (WCPFC) (Established by the Convention for the Conservation and Management of Highly Migratory Fish Stocks in the Western and Central Pacific Ocean, entered into force on 19 June 2004).
[241] Borg (2012) 187.
[242] LOSC Article 119(2)
[243] W T Burke *The new International Law of Fisheries, UNCLOS 1982 and Beyond (Oxford Monographs in International Law)* (Oxford Clarendon Press 1994) 113.
[244] Ibid.
[245] CBD Preamble.
[246] Jakobsen (2016) 97.
[247] The positive consideration for the Preamble follows from VCLT Article 31(2).
[248] CBD Article 8 and Article 14.

principle', which imposes the duty on States to enact a preventing action.[249] Furthermore, States are required to implement provisions on EIAs as a projection of the precautionary approach for 'activities likely to have significant adverse impacts on biological diversity'.[250] Nevertheless, CBD is shrouded by uncertainties in interpretation. It is uncertain when the precautionary principle has relevance and when it plays a decisive role for the balance of legal instruments.[251] Rio Declaration Principe 15 states that 'where there are threats of serious or irreversible damage, lack of full scientific certainty should not be used as a reason for postponing cost-effective measures to avoid environmental degradation'.[252]

UNFSA lays down a list of provision for the implementation of the precautionary principle with respect to highly migratory species and straddling fish stocks. UNFSA requires States to not adopt 'management standards and obligations' in the absence of' significant best available scientific evidence.'[253] The Convention requires States for the application of the precautionary approach for the primary aim of 'conservation, management and exploitation of straddling fish stocks and highly migratory stocks in order to protect the living marine resources and preserve the marine environment'.[254] UNFSA provisions reflected State practice to rely upon scientific evidence, in compliance with Article 119.[255]

The role of these agreements was fundamental for the consecration of the precautionary principle in the management of living resources. However, as well as LOSC, these arrangements remain general in content. There is not any reference to specific measures to be adopted. CBD only states that the taking of measures should not be postponed..[256]

At regional level the precautionary principle was generally applied with some exceptions. This was particularly so in the 1989 Convention for the Prohibition of Fishing with Long Drift nets in the

[249] S Marr *The precautionary principle in the Law of the Sea: Modern Decision Making in International Law* (Martinus Nijhoff Publishers, 2003) 103.
[250] Jakobsen (2016) 98.
[251] Ibid.
[252] 'The 1992 Rio Declaration on Environment and Development'(Rio de Jainero 3-14 June 1992) (14 June 1992) UN Doc A/CONF.151/26.
[253] J Ellis 'The straddling stocks agreement and the precautionary principle as an interpretative device and rule of law' (2001) 32 Ocean Development and International Law 289-312; G J Hewison 'The precautionary approach to fisheries management: an environmental perspective' (2001) 11 International Journal of Marine and Coastal Law, 301-332.
[254] UNFSA Article 6(1).
[255] Borg (2012) 180.
[256] Jakobsen (2016) 99.

South Pacific.[257] Article 119 requires States to take into account the 'scientific evidence' and 'relevant and economic factors' to qualify the conservation measures to take.[258] The 1989 Convention, based the application of the precautionary approach only on these 'relevant and economic factors' rather than on 'scientific evidence'.[259] Such an application was justified by the lack of evidence in data on the linkage between fishing gear and the harm caused to biodiversity. This too restricted interpretation of the principle failed to be adopted in other contexts.[260] Indeed, such an application revealed to be effective in the specific case of drift net fishing.[261] UNFSA does not provide any action to take in case of absence of scientific evidence when an harm is caused by an illegal fishing activity. As above noted, UNFSA only imposes to States the obligation to obtain and share the 'best scientific data available', to improve decision making for fishery resource conservation and management.[262]

The CCAMLR made explicit recourse to the precautionary approach for the stock assessment and annexed decision making. Limits imposed for conservation of the stock in the Convention are considered from a precautionary approach perspective.[263] The innovation brought by CCAMLR concerns the decision on conservation measures relating to the management of fisheries. Management decisions are taken in a 'manner which strives to minimise the risk of long-term adverse effects on the resources concerned rather than delaying decisions until all necessary data are available.'[264] Such an application achieved 'scientific consensus' for the management of living resources. It was highlighted its role to avoid the risks in the absence of certain 'scientific evidence'.[265] Furthermore, it contributed to support decision-making machine both for target species and non-target species new fisheries. Notwithstanding CCAMLR regime has a high degree of complexity , but its validity as a management concept in conservation has been accepted by a wide range of instruments.

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[257] Convention for the Prohibition of Fishing with Long Drift nets in the South Pacific (adopted in Wellington the 24 of November 1989).
[258] Borg (2012) 180.
[259] Ibid.
[260] Burke (1994) 114.
[261] Borg (2012) 180.
[262] UNFSA Article 6(3).
[263] Borg (2012) 181.
[264] R P Hewitt J L Watkins M Naganobu P Tshernyshkov A S Brierley D A Demer S Kasatkina Y Takao C Goss A Malyshko M A Brandon S Kawaguchi V Siegel P N Trathan J . Emery I Everson D G M Miller 'Setting a precautionary catch limit for Antarctic krill' (2002) 15 Oceanography 26-33.
[265] Ibid.

A wide number of RFMOs developed the principle elaborated by the CAMLR Convention. [266] The Northwest Atlantic Fisheries Organisation (NAFO) in 2004 provided for the application of the precautionary approach modelled on the CAMLR Convention. North East Atlantic Fisheries Commission (NEAFC) required ICES to include the precautionary approach in its scientific advice to the Inter-American-Tropical-Tuna-Commission (IATTC), when assessing impacts in fisheries on fish stocks, in the absence of certain scientific information. Further, the precautionary principle was successfully implemented by the Antigua Convention of 2003[267], the General Fisheries Commission for the Mediterranean (GFCM), the Western and Central Pacific Fisheries Commission (WCPFC),[268] in compliance with the analysis of FSA, and the Indian Ocean Tuna Commission (IOTC). This means, according to Borg, that traditional interpretation has received 'acquiescence' by states.[269] Even if broad in scope, the requirement for a precautionary approach in LOSC has successfully received a wide application.

Final Remarks

LOSC provides a common legal base for the conservation of marine biodiversity in high seas. In most of cases, LOSC provisions are limited to dispose the general duty. They do not spell out any specific plan-action to enhance effectively the purposes prospected. These provisions were developed by further Agreements. UNFSA was regarded to be the first occasion to review in detail LOSC provisions and develop a more specific framework for the conservation regime in high seas. A wide number of RFMOs reviewed their Statutes on UNFSA model. Likewise, the FAO Compliance Agreement and the FAO Code of Conduct attempted to develop the content of the duty to 'take conservation measures'. They all provided more specific provisions to pursue the objectives prospected by LOSC. However, lack of compliance, weakness of their legally-binding character, delay in becoming effective did not allow these instruments to succeed as it thought. Regional programs accomplished very encouraging results. They had a primary role for the implementation of

[266] For further discussion see. E Meltzer *The quest for International Sustainable Fisheries regional efforts to implement 1995 United Nations Fish Stock Agreement: an overview of the May 2006 Review Conference* (National Research Council Press 2009) 121-129.
[267] Antigua Convention (was negotiated to strengthen and replace the 1949 Convention establishing the IATTC, entered into force on 27 August 2010) Article 4.
[268] Antigua Convention Article 5(c) and Article 6.
[269] Borg (2012) 180.

the ecosystem and precautionary approach in management of living resources' programs. They highlighted how an ecosystem-based approach was necessary to ensure effectively the purposes of conservation of marine biodiversity beyond national jurisdiction. When adopting conservation measures, regional subjects took into account the relationship between harvested-species and associated and dependent species upon harvested ones. International community progressively moved towards a comprehensive model caring about all marine species, regardless of their commercial value. Even though fisheries and commercial activities remain the primary focus when dealing with conservation issues in high seas, the progressive implementation of ecosystem-based provisions oblige States, IOs and regional organisation to consider the impact on associated and dependent species upon harvested ones too. CBD and Rio Declaration contributed to define the content of LOSC general provisions. Although the conservation of marine biodiversity in high seas is exempted from the scope of these instruments, their requirement for a 'general ecosystem approach' strengthened the utilisation of an ecosystem-based approach for conservation issues. Likewise, regional programs, international post-LOSC agreements and CBD highlighted the centrality of a 'precautionary approach'. The duty to obtain a 'scientific evidence'(precautionary approach) before to take conservation measures was successful implemented in regional conventions and regional management plans. The South Pacific reliance on 'economic and social factors' rather than on 'scientific evidence' when adopting conservation measures against the use of drift nets was only one of the few exceptions.

Seen the positive outcomes attained by these international and regional instruments, there is a huge need for the implementation of these principles in the new ILBI. Regional programs can accomplish very positive outcomes, but are not legally binding upon a large number of subjects. Even though post LOSC agreements are legally binding upon a larger number of States, they are insufficient to ensure an effective protective system of marine biodiversity in high seas by themselves. Moreover, current LOSC regime has important *lacunae* for the regulation of the ABNJ regime. FAO Compliance Agreement developed in detail flag States' duties and require States to operate a strict controls over vessels flying their flag and to oblige them to 'do not engage in any activity that undermines the effectiveness of international conservation and management measures'. It is an extremely important contribute, but the legal nature of the Agreement is weak. It is not legally binding upon a large number of States. These duties should be included in the Revised Agreement on BBNJ. However, it is not only a matter of legal *lacunae.* LOSC provides for an extensive coverage of

flag State's duties, and regardless of the lack of a specific content, the sole reliance upon this principle risks to be ineffective to contrast practices depleting marine biodiversity in high seas. States by themselves have not enough resources to exercise these controls. Destructive fishing practices have contributed to deplete an enormous percentage of fish stock and a large number of associated and dependent species upon them. These practices show how easily States' controls over their vessels can be damned. The practice of flag-hopping is one of the most spread practices. In the lack of an effective system of control the future of BBNJ is not encouraging. In this scenario cooperation amongst States is fundamental to achieve these goals. A recognition of this duty under customary international law has a paramount role, but these efforts in cooperation should bring into existence an effective model into practice.

CHAPTER 2. A SPECIFIC DUTY FOR THE CONSERVATION AND SUSTAINABLE USE OF MARINE BIODIVERSITY ON THE HIGH SEAS THROUGH MARINE PROTECTED AREAS

Foreword

Over the last 20 years MPAs have revealed to be the most effective tool for the conservation and sustainable use of BBNJ. The major contributors for its progress have been regional programs. This chapter primarily aims to conciliate regional models with MPA models elaborated at international level and to propose solutions in this sense to strengthen existing instruments in harmonization with the auspices of the Agreement on BBNJ. The percentage of MPAs established in high seas is extremely low. It is urgent to establish a catalyst for the establishment of an efficient system. The revised Agreement of BBNJ devotes its third part to 'Measures Such as Area-Based Management Tools, including Marine Protected Areas'. Under the Revised Agreement on BBNJ States are required to promote 'cooperation and coordination in the use of area-based management tools, [270] including marine protected areas, among States, relevant legal instruments and frameworks and relevant global, regional, sub-regional and sectoral bodies, which will also promote a holistic and cross-sectoral approach' is promoted.'[271] In specific terms the Agreement requires to 'Establish a system of ecologically representative marine protected areas that are connected [and effectively and equitably managed];' 'Rehabilitate and restore biodiversity and ecosystems, including with a view to enhancing their productivity and health and building resilience to stressors, including those related to climate change, ocean acidification and marine pollution;' 'Support food security and other socioeconomic objectives, including the protection of cultural values;' 'Create scientific reference areas for baseline research;' 'Safeguard aesthetic, natural or wilderness values' and 'Promote coherence and complementarity.'[272]

[270] Area-based planning is a generic concept that describes the process of identifying and agreeing spatially-explicit measures to appropriately manage human activities to meet specific objectives; see. R Fletcher, R Scrimgeour, N Bhola, H Brooks, S Fletcher, J Martin and J Wastell 'Learning from experience: case studies of area-based planning in ABNJ' (2019) UN Environment World Conservation Monitoring Centre (UNEP-WCMC) ≤https://www.unep-wcmc.org/system/comfy/cms/files/files/000/001/491/original/3175_Case_Studies_Report_ARTWORK_WEB.pdf≥ 21.

[271] Revised Agreement on BBNJ Article 14(a).

[272] Revised Agreement on BBNJ Article 14(c)-(i).

2.1 The definition of MPA in international law of the sea

The Marine Protected Area (MPA) concept took place in the absence of a common international framework.[273] At global level, much of the work for the establishment of MPAs came from initiatives undertaken by NGOs.[274] Before the entry into force of LOSC and CBD, the most remarkable activity for the designation of MPAs under international law was the programme developed by IUCN.[275] According to IUCN, MPA is 'an area of intertidal of sub-tidal terrain, together with its overlying water and associated flora, fauna, historical and cultural features, which has been reserved by law or other effective means to protect part or all of the enclosed environment.'[276] The definition given by IUCN seemed to be accepted by several States.[277] Its reference to 'associated flora and fauna' is sufficiently broad to include all the biological diversity.[278] Notwithstanding, this definition is widely accepted, the panoply of definitions of MPA does not reflect a common framework.[279] This relies on the regime of protection differentiating one MPA from the other. MPAs can be created for a wide range of different purposes. At IUCN stage itself, these purposes are: the protection of endangered species; maintenance or restoration of viable populations of native species; 'maintenance or restoration of communities, habitats, nesting and breeding areas, and genetic diversity, especially that which is relevant to living marine resources; exclusion of human-caused species introductions and provision of space to allow distributions of species to shift in response to climatic or other

[273] J Roberts *Marine Environment protection and biodiversity conservation: the application and future development of the IMO's particularly sensitive sea area concept* (Springer 2007) 31.
[274] R Warner 'Marine protected areas beyond national jurisdiction: Existing legal principles and a future international legal framework' in M Harvard (ed) *Integrated Oceans Management: Issues in Implementing Australia's Ocean Policy* (Hobart: Cooperative Research Centre for Antarctica and Southern Ocean 2001) 59.
[275] D Freestone 'The conservation of marine ecosystems under international law' in M Bowman and C Redgell (eds) *International Law and Conservation of Biological Diversity* (Kluwer Law and Conservation of Biological Diversity 1996) 97.
[276] IUCN 'Guidelines for Marine Protected Areas Best Practice' (1999) WCPA Protected Area Guidelines Series No 3, 98.
[277] Jakobsen (2016) 7.
[278] Ibid.
[279] S Wolf and J Asmus Bischoff 'Marine Protected Areas'(2013) in *Max Planck Encyclopedias of International Law*, abstract.

environmental change.'[280]

At regional level, the first MPAs for conservation purposes were already established in the '30s.[281] However, before the entry into force of the above cited agreements, the attention of the International Fora was focused on the protection of the marine environment with regard to shipping and pollution. Therefore, the conservation of living resources seemed doomed to a secondary position.[282] The CBD and the annexed agreements to LOSC played a key role in modifying State practices for the marine environment's protection and its conciliation with the purposes of conservation of marine biodiversity in MPAs.[283] CBD defines a 'protected area' as a 'geographically defined area which is designated or regulated and managed to achieve specific conservation objectives.'[284] Moreover, the COP to the Convention highlighted the importance of the topic for early consideration, even if it did so only in reference to marine and coastal biodiversity. In its Technical 2003 report, the SBSTTA identified the MPA as an 'area within or adjacent to the marine environment, together with its overlying waters and associated flora, fauna and historical and cultural features, which has been reserved by legislation or other effective means, including custom, with the effect that its marine and/or coastal biodiversity enjoys a higher level of protection than its surroundings.[285]

[280] A C de Fontaubert, D R Dowries and T S Agardy 'Biodiversity in the Seas implementing the Convention on Biological Diversity in marine and coastal Habitats'(1996) IUCN Environmental Policy and Law Paper No 32 A Marine Conservation and Development Report, 15.

[281] In reference to the Fort Jefferson National Monument in Florida established in 1935, which is generally regarded as the world's first MPA; T Scovazzi 'Marine Specially Protected Areas under Domestic Legislation' in T Scovazzi (ed) *Marine Specially Protected Areas: The General Aspects and the Mediterranean Regional System* (Kluwer Law International 1999) 6; M I Björklund and F Mag(Lund) *Achievements in Marine Conservation, International Marine Parks* in Committee on Energy and Natural Resources *Readings on the Protection and Management of Marine and Submerged Resources of the National Parks* (U.S. Government Printing Office 1980) 119.

[282] Protection of an 'area' as a deterrent for the damages deriving from shipping was firstly embraced by the International Maritime Organization in the International Convention for the Prevention of Pollution from Ships (Adopted 2 November 1973, entered into force 02 October 1983) (MARPOL). It acquired more importance during the International Conference on Tanker Safety and Pollution Prevention in 1978 at the IMCO Conference on Tanker Safety and Pollution Prevention (London 6-17 February 1978).

[283] J Roberts (2007) 42-43.

[284] CBD Article 2.

[285] UNEP, CBD, SBSTTA 'Marine and Coastal Biodiversity: Review, Further Elaboration and Refinement of the Programme of work: Report of the Ad Hoc Technical Expert Group on Marine and Coastal Protected Areas' (Montreal,10-14 March 2003) (13 February 2003) UNEP/CBD/SBSTTA/8/INF/7 para 30. In para 31 the Report specifies that 'Areas within the total marine environment include permanent shallow marine waters; sea bays; straits; lagoons; estuaries; subtidal aquatic areas (kelp forests, sea-grass meadows); coral

In fisheries management, FAO refers to these temporally and geographically defined areas 'as a means to afford a higher degree of protection in the rest of the area.'[286] This broad concept of 'higher protection' in MPA than in surrounding areas is reflected in several provisions.[287]

In both CBD and annexed instruments, in FAO and IUCN the general principle regulating MPAs is their enjoyment of a special status in comparison to the surrounding area. However, a definition in an IA able to receive an overarching acceptance would represent an important achievement. Such a recognition would avoid any division in interpretation of what it should be identified as an MPA. As a matter of fact, the absence of a common framework has created some doubts over the identification of a 'certain area' as MPA. For instance, fishing closures are not considered MPAs under IUCN definition, but they are according to others.[288]

It is particularly evident that a definition in the Agreement on BBNJ would give raise to a common-shared definition in LBA. In the Revised Agreement of BBNJ, a MPA is 'a geographically defined marine area that is designated and managed to achieve specific [long-term biodiversity] conservation and sustainable use objectives [and that affords higher protection than the surrounding areas]'.[289] Among the textual proposals of revision to the Revised Agreement on BBNJ, presented by the delegations in February 2020, a shared point was the designation of the MPA on the best available sciences, hence their willingness to underline the centrality of the precautionary approach.[290]

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reefs; intertidal mud, sand or marine salt flats and marshes; seamounts, deep water corals, deep water vents, and open ocean habitats'.

[286] --'About MPAs'(FAO website) ≤http://www.fao.org/fishery/topic/4400/en≥ (last access 2020).

[287] G Wright, J Rochette and E Druel *Marine protected areas in areas beyond national jurisdiction* in R Rayfuse (ed) *Research Handbook on International Marine Environmental Law* (Edward Elgar 2017) 275.

[288] IUCN 'Guidelines for applying the IUCN Protected Area Management Categories to Marine Protected Areas' (2012) Best Practice Protected Area Guidelines Series No 19, 16.

[289] Revised Agreement on BBNJ Article 1(10).

[290] These proposals were made by the US and Monaco delegations in 'Textual proposals submitted by delegations by 20 February 2020, for consideration at the fourth session of the Intergovernmental conference on an international legally binding instrument under the United Nations Convention on the Law of the Sea on the conservation and sustainable use of marine biological diversity of areas beyond national jurisdiction (the Conference), in response to the invitation by the President of the Conference in her Note of 18 November 2019 (A/CONF.232/2020/3)' (UN Web Site) ≤https://www.un.org/bbnj/sites/www.un.org.bbnj/files/textual_proposals_compilation_article-by-article_-_15_april_2020.pdf≥ (last access 15 April 2020) 14-19.

2.2 The application of models developed by IOs in ABNJ

As mentioned above, a range of different sectoral-MPAs models applicable on the high seas have been developed by IOs. The first category comprises the International Maritime Organisation (IMO)). The mandate of this Organisation is not primarily focused on addressing an ecosystem-based approach on the high seas. They belong to the first group of IOs that has to ensure firstly the protection of the marine environment, and secondly the conservation of marine biodiversity. However, among all the IOs concerned, IMO has the most incisive impact on the States. In recent years, part of the international community has interpreted their mandate extensively in order to give more attention to the purposes of conservation. Sectoral models developed by FAO and RFMOs belong to the second category. FAO has promoted a model which can only be partially related to an MPA. These models are embraced by RFMOs at regional level and integrated according to their regime. Closures for fisheries are reported in this chapter as an alternative to MPA, when there is no concrete possibility to enhance conservation measures in an MPA . The most recent category was developed by the COP to CBD, and it is the only one taken into account in the formation process of the Conference on BBNJ.. The last model developed by UNESCO is likely to have more consideration in the future years.

2.2.1 MARPOL Special Areas

The International Convention for the Prevention of Pollution from Ships (MARPOL) was adopted through the IMO in 1973 .[291] MARPOL has been updated by amendments over the years.[292] MARPOL applies to all ships operating in marine environments, imposing limitations on discharges for six categories of ship emissions: operational and cargo-related oil waste (addressed in Annex I), noxious liquid substances (Annex II), packaged harmful substances (Annex III), sewage (Annex IV), garbage (Annex V), and air pollution (Annex VI).[293] Five of the annexes

[291] See. note 282.
[292] The MARPOL Convention was adopted on 2 November 1973 at IMO. It was followed by the adoption of the Protocol of 1978 in response to a spate of tanker accidents in 1976-1977. The combined instrument entered into force on 2 October 1983. In 1997, a Protocol was adopted to amend the Convention and a new Annex VI was added which entered into force on 19 May 2005.
[293] MARPOL Annex 1-6.

include provisions for the enhancement of protective measures in designated sea areas. Annexes I, II, IV and V are concerned with 'Special Areas' and Annex VI with 'Emission Control Areas.' A 'Special Area' can be established 'for technical reasons relating to their oceanographical and ecological condition and to their sea traffic.'[294] Emission Control Areas (SECAs) are sea areas in which stricter controls are implemented to minimize airborne emissions from ships.[295] In both cases, no specific criteria are provided for their regulation, and their definitions seem to be focused more on the emissions from shipping activities rather than on any harmful impact specific to any area. To this end, the IMO detected three criteria for the eligibility as Special Area: oceanographic Conditions, ecological Conditions, and vessel traffic characteristics.[296] These criteria must be met cumulatively. For the purpose of this thesis, the meaning of ecological conditions is of paramount importance. These conditions indicate 'that protection of the area from harmful substances is needed to preserve: depleted, threatened or endangered marine species; areas of high natural productivity (such as fronts, upwelling areas, gyres); spawning, breeding and nursery areas for important marine species and areas representing migratory routes for sea-birds and marine mammals; rare or fragile ecosystems such as coral reefs, mangroves, seagrass beds and wetlands; and critical habitats for marine resources including fish stocks and/or areas of critical importance for the support of large marine ecosystems.'[297] The second condition to be respected to obtain the designation of Special Area concerns the adequate reception facilities to be 'provided for ships in accordance with the provisions of MARPOL 73/78'.[298] Among the 14 current Special Areas designed,[299] two are located on the high seas: the Antarctic (more than 50 % beyond national jurisdiction)[300] and the Mediterranean Sea (parts of which lie beyond national jurisdiction).[301]

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[294] MARPOL Annex 5, Regulation 1(3)

[295] MARPOL Annex 6, Regulation ; specifically 'for emissions from ships is required to prevent, reduce and control air pollution from NOx or SOx and particulate matter or all three types of emissions and their attendant adverse impacts on human health and the environment.'

[296] IMO Guidelines for the Designation of Special Areas under MARPOL 73/78 and Guidelines for the Identification and Designation of Particularly Sensitive Sea Areas (adopted 29 November 2001) (15 January 2002) A 22/Res.927, Annex 1, para 2.3

[297] Ibid at para 2.5

[298] Ibid at para 2.7

[299] -- 'Special Areas under MARPOL' (IMO website) ≤http://www.imo.org/en/OurWork/Environment/SpecialAreasUnderMARPOL/Pages/Default.aspx≥ (2020).

[300] IMO 'Amendments to the Annex of the Protocol of 1918 relating to the International Convention for The Prevention of Pollution from ships, 1913 (Designation of the Antarctic area as a special area and lists of

Under the MARPOL convention the whole Mediterranean Sea is considered a Special Area for the purposes of Annexes I and V.[302]

As highlighted by Freestone and Harris, it is nevertheless highly likely that more 'defined areas' would meet Special Area and/or Emission Control Area criteria, by virtue of the crucial role the high seas play in migratory routes, breeding and spawning habitats, and ecosystems of threatened species.[303] However, it is clear how these areas cannot ensure an appropriate ecosystem-based approach that is primarily focused on the conservation of all marine forms. Measures are mainly adopted 'for the prevention of sea pollution by oil, noxious liquid substances, or garbage'.[304] In this context, Conservation of living resources cannot play a central role.

2.2.2 Particularly Sensitive Sea Areas (PSSA)

In 1991, the IMO Assembly adopted the first PPSA Guidelines (Original PSSA Guidelines) revised in 2005.[305] IMO delineated a new form of MPA: the Particularly Sensitive Sea Area (PSSA). A PSSA is as an area 'that needs special protection through action by IMO because of its significance for recognized ecological, socio-economic, or scientific attributes where such

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liquid substances in Annex II)' (adopted 30 October 1992) Resolution Hepc.57(33); The Antarctic MARPOL special area is located south of Latitude 60.

[301] The 'Mediterranean special area' was first adopted in 1973 and become effective under Annex I and consequenlty protected from oil discharges. In addition, it was then amended under Annex V in 2008 a new resolution to extend its regime of protection to garbage discharges. See. IMO MEAPC 'Establishment Of The Date On Which Regulation 5(1)(A) Of MARPOL Annex V In Respect Of The Mediterranean Sea Area Special Area Shall Take Effect' (adopted 4 April 2008) Resolution MEPC.172(57).

[302] A B Alexopoulos 'Particularly Sea-Sensitive Areas and Marine Protection Zones. A Controversial Issue that needs Interpretation' (2013) 63 SPOUDAI Journal Economics and Business 55; T Scovazzi 'Marine Protected Areas on the High Seas: Some Legal and Policy Considerations' (2004) 19 The International Journal of Marine and Coastal Law 8.

[303] D Freestone and V Harris 'Particularly Sensitive Sea Areas beyond National Jurisdiction:
Time to Chart a New Course?' in M H Nordquist, J N Moore and R Long (eds) *International Marine Economy: Law and Policy* (Brill Nijhoff Publishers 2017) vol 20 Center for Oceans Law and Policy, 334.

[304] See. note 321 at Para 2.1

[305] IMO 'Revised Guidelines for the identification and designation of Particularly Sensitive Sea Areas' (1 December 2005) (6 February 2006) A 24/Res.982 (Revised Guidelines on PSSA) ; The conference received Sweden proposal to ensure a protective system against pollution from ships through the creation of Particularly Sensitive Sea Areas (PSSA). The IMO did not take into account the proposal till 1986, when it appeared on the agenda of the Marine Protection Committee (MEPC) as a result of a joint initiative by IUCN and the friends of the Earth. See G Peet 'Particularly Sensitive Sea Areas- a Documentary History' (1994) 9 The International Journal of Marine and Coastal Law 475-477.

attributes may be vulnerable to damage by international shipping activities.'[306] Compared to MARPOL Special Areas, these criteria are not to be met cumulatively. It is sufficient to meet just one of these clusters .[307] This creates a watershed from MARPOL Special Areas, because it means that a PSSA can focus its attention on only one of these elements. As for MARPOL, the key-element is the 'ecological one'. Significance of recognized ecological attributes include: 'uniqueness or rarity' ,[308] 'critical habitat',[309] 'dependency',[310] 'representativeness',[311] 'diversity',[312] ; 'productivity',[313] 'Spawning or breeding grounds',[314] 'naturalness',[315] 'integrity',[316] 'fragility',[317]; 'bio-geographic importance'[318].'[319] One or more Member Parties' government can submit a request to IMO for designation of a PSSA and the adoption of associated

[306] Revised Guidelines on PSSA, para 1.2

[307] P Drankier 'Marine Protected Areas in Areas beyond National Jurisdiction' (2012) 27 The international Law of Marine and Coastal Law 303.

[308] An area or ecosystem is unique if it is 'the only one of its kind'.

[309] 'A sea area that may be essential for the survival, function, or recovery of fish stocks or rare or endangered marine species, or for the support of large marine ecosystems.'

[310] 'An area where ecological processes are highly dependent on biotically structured systems This includes '(e.g. coral reefs, kelp forests, mangrove forests, seagrass beds). Such ecosystems often have high diversity, which is dependent on the structuring organisms. Dependency also embraces the migratory routes of fish, reptiles, birds, mammals, and invertebrates.'

[311] 'An area that is an outstanding and illustrative example of specific biodiversity, ecosystems, ecological or physiographic processes, or community or habitat types or other natural characteristics.'

[312] 'an area that may have an exceptional variety of species or genetic diversity or includes highly varied ecosystems, habitats, and communities.'

[313] An area that has a particularly high rate of natural biological production. 'Such productivity is the net result of biological and physical processes which result in an increase in biomass in areas such as oceanic fronts, upwelling areas and some gyres.'

[314] An area that may be a critical spawning or breeding ground or nursery area for marine species which may spend the rest of their life-cycle elsewhere, or is recognized as migratory routes for fish, reptiles, birds, mammals, or invertebrates'

[315] 'An area that has experienced a relative lack of human-induced disturbance or degradation.'

[316] 'An area that is a biologically functional unit, an effective, self-sustaining ecological entity.'

[317] 'An area that is highly susceptible to degradation by natural events or by the activities of people' 'It is spelt out that 'Biotic communities associated with coastal habitats may have a low tolerance to changes in environmental conditions, or they may exist close to the limits of their tolerance (e.g., water temperature, salinity, turbidity or depth). Such communities may suffer natural stresses such as storms or other natural conditions (e.g., circulation patterns) that concentrate harmful substances in water or sediments, low flushing rates, and/or oxygen depletion. Additional stress may be caused by human influences such as pollution and changes in salinity. Thus, an area already subject to stress from natural and/or human factors may be in need of special protection from further stress, including that arising from international shipping activities.'

[318] 'An area that either contains rare biogeographic qualities or is representative of a biogeographic "type" or types, or contains unique or unusual biological, chemical, physical, or geological features.'

[319] Revised Guidelines on PSSA para 4.4.

protective measures.[320] The associated protective measures included in the proposal are then reviewed by various IMO bodies, including committees, sub-committees, or even the Assembly, depending on the nature of the associated protective measures.[321] If the MPAs are approved by the designated IMO bodies, then the decision is left to the Marine Environment Protection Committee (MEPC): as to whether the PSSA proposal should be approved as a whole or not.[322] Once the PSSA is established, IMO ensures protection from shipping activities and the related environmental hazards, including: operational discharges, accidental or intentional pollution, and physical damage to marine habitats or organisms.[323] Protection from shipping activities does not involve a total ban within the PSSA, but rather the placement of specific controls to limit potential damages. These 'specific controls' generally include the use of compulsory routes, bans on discharging waste, and compulsory reporting of shipping activities.[324]

Designating the PSSA for ecological criteria it is an important conservation tool. Several PSSA designed for their 'ecological importance' within national jurisdiction showed their importance for the conservation of marine biodiversity. Emblematic examples are the Galapagos PSSA, the Canary Island PSSA and the Florida Keys PSSA.[325] For instance, from its designation in 2002, in the Florida Keys PSSA, awareness-raising and promotional activities about the risks posed by the shipping industry to coral reefs have been undertaken.[326] Since their establishment, no incidents

[320] Revised Guidelines On PSSA para 3.1.
[321] Ibid at 8.3.2-4.
[322] Ibid 8.3.6-7.
[323] Revised Guidelines on PSSA para 2.1.
[324] --'Increasing Protection: Particularly Sensitive Sea Areas (PSSA)' (WWF website) ≤https://wwf.panda.org/our_work/oceans/solutions/protection/protected_areas/pssas2.cfm≥.
[325] To date the PSSA which have been designated are: The Great Barrier Reef, Australia (designated a PSSA in 1990), The Sabana-Camagüey Archipelago in Cuba (1997), Malpelo Island, Colombia (2002), The sea around the Florida Keys, United States (2002), The Wadden Sea, Denmark, Germany, Netherlands (2002),Paracas National Reserve, Peru (2003), Western European Waters (2004), Extension of the existing Great Barrier Reef PSSA to include the Torres Strait (proposed by Australia and Papua New Guinea) (2005), Canary Islands, Spain (2005),The Galapagos Archipelago, Ecuador (2005),The Baltic Sea area, Denmark, Estonia, Finland, Germany, Latvia, Lithuania, Poland and Sweden (2005),The Papahānaumokuākea Marine National Monument, United States (2007)The Strait of Bonifacio, France and Italy (2011)The Saba Bank, in the North-eastern Caribbean area of the Kingdom of the Netherlands (2012)Extension of Great Barrier Reef and Torres Strait to encompass the south-west part of the Coral Sea (2015)The Jomard Entrance, Papua New Guinea (2016), Tubbataha Reefs Natural Park and the Sulu Sea, Philippines (2017).
[326] J Roberts and J S H Pullen 'A review of global experience with particularly sensitive sea areas (PSSAs)' in N Oral and F Simard (eds) *Maritime traffic effects on biodiversity in the Mediterranean Sea* (IUCN

related to shipping activities have been recorded. The last incident associated with an oil spill occurred in 2001 in the Galapagos area, three years before its designation as PSSA.[327] Takahiro Asano reported the positive outcomes obtained by the designation of the Canary Islands PSSA, that helped to preserve fish stocks and promote the integrated management of the offshore islands areas and the ocean, and IMO contributed in strengthening the maritime rescue.[328] To date, there is no practical evidence of the outcomes that this designation may have beyond national jurisdiction for conservation purposes. PSSA Guidelines expressly address designation of protected areas to both territorial and high seas , but no PPSAs have been established on the high seas.[329] Several scholars underline the central role IMO would like to play on the high seas, strengthening current management system in regional MPA networks and being a go-to subject in The Conference on BBNJ.[330] However, some problems on designation on the high seas might arise. The first one concerns the determination of the entity responsible for the monitoring of PSSA. In fact, in comparison to the EEZ, there is no direct connection to the coastal State. Secondly, a different situation originates from its geographical location. Marcus J Kachel prospected a threefold scenario. [331] The first case may include the establishment of PSSAs within 200nm zone, where no EEZ has been established. As in the Mediterranean case, in case of IMO's approval of a PSSA, these measures could be applied directly by the coastal state, as the regime for EEZ in LOSC is extended to them.[332] This prospect will be discussed in the following section for a deeper analysis on the Mediterranean Sea. The second category is represented by those areas falling between national and international jurisdiction. In case of IMO's approval such as designation would be in compliance with international law, but two issues are crucial. As a matter of fact, it remains unclear

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Centre for Mediterranean Cooperation 2008) vol 2 Legal mechanisms to address maritime impacts on Mediterranean biodiversity, 79.

[327] UNESCO WH Committee 'State of conservation of properties inscribed on the World Heritage List' (Suzhou 28 June – 7 July 2004) 15 Jun 2004) WHC-04/28.COM/15B, 43.

[328] T Asano *Lessons from the Canary Islands Particularly Sensitive Sea Area (PSSA)* Ocean Policy Research institute Newsletter No.216 (5 August 2009) ≤https://www.spf.org/en/opri/newsletter/216_2.html≥.

[329] Revised Guidelines on PSSA at para 4.3 provide that 'the criteria used [to identify particular sensivity] relate to PSSAs within and beyond the limits of the territorial sea.'

[330] K D Kraabel 'Institutional arrangements in a BBNJ treaty: Implications for Arctic marine science' (2020) Marine Policy 5; V De Lucia 'The BBNJ negotiations and ecosystem governance in the arctic' (2019) Marine Policy 6.

[331] M J Kachel *Particularly Sensitive Sea Areas: the IMO's role in protecting vulnerable marine areas'* (Springer- Verlag 2008) 280.

[332] Kachel (2008) 281.

whether the high-seas part would acquire solely a recommendatory character. Similarly, there is a need to understand the extension of the powers of the State on that part of their territory where the PSSA is partially located.[333] This State could provide for vessel traffic services or other navigational aids to those mariners willing to comply with recommendatory associated protective measures.[334]

These two hypothesis pose less problems in comparison to those PSSAs entirely situated in high seas.[335] A State could argue that a proposal for a PSSA on the high seas must have the unanimous support of all member States, because in compliance with LOSC all States have an interest on the high seas .[336] The case of the Russian Federation is particularly notable. Russia upheld that its support was required for the Baltic Sea proposal because it had an interest in the Baltic Sea. In this case, Russia saw its argument denied because it did not have jurisdiction over any of the areas in the proposal.[337] This statement could be assumed as the evidence that no State has jurisdictional authority on the high seas.[338] At this level, the most affordable way to designate the governing body for a wholly high seas PSSA is the negotiation of a cooperation agreement.[339]

In this case, the exercise of any sovereign power would be exempted from the PSSA, where there is no extension of a sovereign power.[340] The designed governing body would assume a stewardship role to subscribers to the agreement in the PSSA by contrasting conducts causing environmental harm or any damage to marine life in respect of the freedom of high seas.[341]

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[333] Ibid.

[334] Ibid.

[335] A designation of PSSA wholly in high seas was foreseen by the Protection of the Arctic Marine Environment (PAME), one of the six Arctic Council working groups and the focal point of the Arctic Council's activities in the Det Norske Veritas (DNV) 'Report on Specially Designated Marine Areas In The Arctic High Seas' (2014) Report NO/DNV REG NO:. 2013-1442 / 17JTM1D-26 REV 2, 5. The Det Norske Veritas (DNV) proposes three possible solutions. The most feasible may be to establish a "Core sea ice area" as a sanctuary for unique and vulnerable Arctic high seas ecosystems, and to protect this through a PSSA designation with Areas to be avoided as an Associated Protective Measures (APM).

[336] As provided by LOSC in Article 87: 'The high seas are open to all States, whether coastal or landlocked.'

[337] For further discussion see J Kraska and R Pedrozo *International Maritime Security Law* (Brill Nijhoff 2013) 123-124 and --'PSSA In The Baltic Sea : Protection On Paper Or Potential Progress?' (World Maritime University) ≤https://wwf.fi/app/uploads/q/c/6/wmpqmqfelbhkq6bglmtukcg/pssa-in-the-baltic-sea-book_wmu_wwf_2014.pdf≥(May 2014).

[338] D Freestone and V Harris in M H Nordquist and other s (eds) (2017) 345

[339] Kachel (2008) 281.

[340] Ibid.

[341] Warner (2009) 153.

In compliance with the freedom of high seas, Song Guan suggested that IMO may assign its member states to do at least document inspections of PSSAs on the high seas.[342] Even if in this case flag states still exercise their pre-emption, such a designation would reduce the dangers carried out by third parties in these zones.

Overall, there is no IO legitimated to impose a total ban on the high seas to third parties in respect of article 87 LOSC. However, among the IOs enabled to assume the head of a MPA in ABNJ IMO could play a strong role for the enforcement of protective measures for the conservation of marine biodiversity among member parties, and limit the risk posed by third-ones. Due to the obstacles that have to be faced, States still have not shown their willingness to take into account any of the potential solutions prospected above. However, cooperation under the Rubric of the Agreement on BBNJ must assume a more relevant position in the future years. Without a major effort by States, it would be utopian to achieve the objectives prospected for the conservation purposes.

2.2.3 VMEs and the closure of areas under the FAO model

UNGA encouraged the creation of MPAs for fisheries management from 2006, by taking up FAO's proposal to develop technical guidelines '[...]on the design, implementation and testing of marine protected areas for such purposes[…]' urging for '[…]coordination and cooperation among all relevant international organizations and bodies'.[343] In 2009, FAO adopted the 'International Guidelines for the Management of Deep-sea Fisheries in the High Seas' where it provided for the designation of VMEs and Deep-Sea Fisheries (DSFs).[344] The designation of VMEs and DSFs[345] is to be conducted by States or RFMOs, which will be in charge of their management.[346] Under the

[342] S Guan *Enforcement of associated protected measures in Particularly Sensitive Sea Areas* (paper presented at the 22nd International Conference of the Coastal Society 2010) ≤http://aquaticcommons.org/3907/1/Guan_papers.pdf≥ 4.

[343] 'Resolution on 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' (adopted 8 December 2006) UNGA Res 61/105, point 92.

[344] FAO 'International Guidelines for the Management of Deep-sea Fisheries in the High Seas' (2009) ≤http://www.fao.org/3/a-i0816t.pdf≥.

[345] At para 8 the Guidelines refer to Deep Sea Fisheries as 'the total catch (everything brought up by the gear) includes species that can only sustain low exploitation rates and the fishing gear is likely to contact the seafloor during the normal course of fishing operations.'

[346] Ibid at para 21.

auspices of the ecosystem and precautionary approach, the measures adopted are addressed to both target and non-target species.[347] The closure of areas can be disposed where DSFs or VMEs 'are known or likely to occur'.[348] However, as already reported, these closed areas are not qualified as MPAs by IUCN.[349] According to IUCN, to meet the definition of a protected area, the subject responsible for their management would need to address their measures to all marine biodiversity effect.[350] The management regime of RFMOs is generally limited to protect a specific type of resource, in particular fisheries, and do not address marine biodiversity in its entirety. In many instances, the RFMO is concerned only with a particular type of fishery.[351] When these measures adopted by RFMOs are combined with other conservation measures in MPAs, they generally relate to a wider range of species. Even before the establishment of HSMPAs in the Southern Ocean and in the North-East Atlantic, Julian Roberts prospected how the establishment of MPAs in cooperation with RFMOs would have constituted the basis of fishery management reform.[352] In all the regional cases examined in the following section the central role played by RFMOs in assessing measures within MPAs will be highlighted.

However, although combination of MPA management system with RFMOs is the best way to enhance an ecosystem-based approach comprehensive of all marine biodiversity, the closure of areas by RFMOs represented an important means for high fish population recovery. B Halpern and Richard Warner's study reported that the average value was higher within the closed areas than outside, showing a 91% higher population density, 192% higher biomass and 20-30% higher average size of organisms and extent of diversity.[353] Furthermore, these values did not depend on reserve size, hence even small reserves can produce high values.[354]

As matter of fact, closed areas for fisheries on the high seas, which were set independently from the establishment of an HSMPA, reported positive results.

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[347] Ibid.
[348] Ibid at para 63(i).
[349] See.note 287.
[350] Ibid.
[351] See the International Convention on the Conservation of Antarctic Tuna (ICCAT) in Article 4(1) which refers only to 'tuna and tuna-like fishes and other species of fishes exploited in tuna fishing.'
[352] Roberts (2007) 376.
[353] B S Halpern and R Warner 'Marine reserves have rapid and lasting effects' (2002) 5 Ecology Letters 361.
[354] Ibid; D Diz Pereiro *Fisheries Management in Areas Beyond National Jurisdiction: the impact of ecosystem based law-making* (Martinus Nijhoff Publishers 2013) 161.

Generally, these RFMOs have to counterbalance the absence of a regional organisation covering any part of ABNJ.[355] For instance, GFCM, the North-East Atlantic Fisheries Commission (NEAFC) and ICATT coordinated their measures with the authorities at head of a regional HSMPA network, while others South East Atlantic Fisheries Organisation (SEAFO)[356] and the Southern Indian Ocean Deep Sea Fisheries' Association (SIODFA)[357] did not have this opportunity. SEAFO operates in the South Atlantic where the ocean governance framework is quite fragmented with no non-tuna RFMO covering the South-west Atlantic.[358] Despite a poor management system, these RFMOs were able to enhance a protective system within the closing of areas, which turned out to be a valid choice for conservation purposes. For instance, SEAFO closed 11 areas to bottom contact gears and implemented exploratory and encounter fishing protocols.[359] In the Indian Ocean, the SIOFA comprises of the four main bottom-trawling companies in the region, has designated 13 Benthic Protected Areas (BPAs), where bottom trawling[360] and dredging were forbidden.[361] BPAs can be an important tool for planning and managing benthic habitat

[355] R Warner 'Realising Biodiversity Conservation and Sustainable Use in Southern Hemisphere Oceans beyond National Jurisdiction: Challenges and Prospects' in M H Nordquist, J N Moore and R Long (eds) *The Marine Environment and United Nations Sustainable Development Goal 14* (Brill Nijhoff Publishers 2018) vol 22, 127.

[356] Convention on the Conservation and Management of Fishery Resources in the South East Atlantic Ocean (adopted 20 April 2001, entered into force 13 April 2003) 2221 UNTS 189 (SEAFO Convention)

[357] See note 18. SIOFA agreement area covers the high seas between eastern Africa and Western Australia.

[358] Tuna species are expressly excluded by SEAFO Convention Article 1(l); G Wright J Ardron K Gjerde D Curried and J Rochette 'Advancing marine biodiversity protection through regional fisheries management: A review of bottom fisheries closures in areas beyond national jurisdiction' (2015) 61 Marine Policy 140; R Warner in Nordquist and others (eds) (2018) 127.

[359] SEAFO 'Conservation Measure 30/15 on Bottom Fishing Activities and Vulnerable Marine Ecosystems in the SEAFO Convention Area' (adopted 3 December 2015, entered into force 15 February 2016) ≤http://www.seafo.org/Management/VME-Protection≥

[360] SIOFA defines bottom trawling as 'fishing using any gear type likely to come in contact with the seafloor or benthic organisms during the normal course of operation' in 'Conservation and Management Measure for the Interim Management of Bottom Fishing in the Agreement Area (Interim Management of Bottom Fishing)'.(10 October 2019) 2.

[361] 11 areas were first designed in 2006 and in 2013 other two were created. In these seafloor features are comprised a wide range of different species to coldwater corals and sponges, as well as commercially important fish species, such as alfonsino and the orange roughy. Further, they are often hotspots of marine life and support globally significant biodiversity. Sharks, tuna, marine mammals and seabirds congregate over seamounts to feed. This variety raises our attention on a revision of these areas. See --'Biggest zone closed to fishing announced' (IUCN website) ≤https://www.iucn.org/content/biggest-zone-closed-fishing-announced≥ (17 October 2013).

protection. [362] Nonetheless, these areas prohibit only bottom trawling and do not encompass other fishing gear such as bottom long lining and trap fisheries which would need to have observers on board 100% of the time to be properly controlled.[363]

In these cases, the general idea is that 'it is favourable to establish a closure area rather than doing nothing'. If there is not the possibility to enhance conservation measures in an HSMPA or in a HSMPA network, where the purposes of an ecosystem-based approach would be assessed easily, closed-areas, or BPAs represent at least a guarantee in terms of conservation of target-species.

2.2.5 Ecologically or biologically significant marine areas (EBSA)

CBD developed a new model of MPA: new ecologically or biologically significant marine areas (EBSA). Among all the tools illustrated, this scientific process was included in the purposes of the Conference on BBNJ. Among the textual proposals submitted by delegations by 20 February 2020, IUCN individuated EBSAs as a model which should be adapted (usually slightly) and applied ON the high seas.[364] Likewise, United States' delegation manifested the willing for a consistent application of the EBSAs' criteria on the high seas as to 'enable more consistent description and protection of ecosystems and habitats' beyond national jurisdiction.[365]

The criteria for the establishment of EBSAs are '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'.[366] The identification of EBSAs and the selection of

[362] B Spear and J Cannon 'Benthic Protection Areas: Best Practices and Recommendations' (2012) Sustainable Fisheries Partnership 7 ≤https://www.sustainablefish.org/Publications?year=2012-01-01T00:00:00Z≥; for further discussion see. A Fischer, D Bhakta, M Macmillan Lawler, P Harris 'Existing global marine protected area network is not representative or comprehensive measured against seafloor geomorphic features and benthic habitats' (2019) 167 Ocean and Coastal Management 176-187.

[363] --'Progress in the Southern Indian Ocean towards better protection of biodiversity in the high sea' (IUCN website) ≤https://www.iucn.org/news/marine-and-polar/201807/progress-southern-indian-ocean-towards-better-protection-biodiversity-high-seas≥ (3 July 2018).

[364] Textual proposals February the Revised Agreement on BBNJ (2020) 151.

[365] Ibid at 391.

[366] COP to the CBD 'Decision IX/20 on Marine and coastal biodiversity' (Bonn, 19–30 May 2008) (9 October 2008) UNEP/CBD/COP/DEC/IX/20 Annex I; As noted by COP these criteria can be achieved

conservation and management measures is a central matter for States and competent intergovernmental organizations.[367]The main problem related to EBSAs is their lack of immediate legal effect, since they have no legal status. They were developed as a deliberate parallel process to the UN Working Group on BBNJ to raise the awareness on the importance of certain marine areas on the high seas , and hence, appropriate to receive a description as EBSA.[368] This results in a regime whose management remains in the hands of the competent authorities.[369]

In order to facilitate the description of EBSAs, COP requested its Executive Secretary to work with parties and competent organizations at international, regional and sub-regional levels, to convene a series of regional workshops.[370] To date, more than 150 EBSA sites have been 'described', but most of them have not received a wide acceptance. However, as mentioned before, different delegations of the Conference on BBNJ, fostered its development under the auspices of a new ILBI. There is a need to develop this instrument, rather than come back to the square one. To date, EBSA is the most appropriate MPA to pursue the objectives of conservation and sustainable use of BBNJ. All the MPA models submitted have stronger legal value than EBSA, but the latter is the most appropriate under the auspices of the Agreement on BBNJ.

I will discuss the designation of the Sargasso Sea Area as EBSA is of paramount importance. in the next section.

2.2.6 Natural property of Outstanding Universal Value (OUV)

The most recent option foreseen for the creation of an HSMPA was elaborated at UNESCO's stage.

The World Heritage Convention (WHC) encouraged the protection of cultural and natural heritage,

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through a variety of means, including marine protected areas and impact assessments and that the application of the EBSA criteria is an open and evolving process that should be continued to allow ongoing improvement and updating as improved scientific and technical information becomes available in each region, source available at ≤https://www.cbd.int/ebsa/about≥

[367] --'Background on the EBSA Process' CBD ≤https://www.cbd.int/ebsa/about≥.

[368] Freestone in Freestone (ed) (2019) 13.

[369] Wright, Rochette and Druel in Rayfuse (2015) 276.

[370] COP to the CBD 'Marine and Coastal biodiversity' (Nagoya 18-29 October 2010) (29 October 2010) UNEP/CBD/COP/DEC/X/29, para 36.

by including cultural and natural properties of 'outstanding universal value'(OUV).[371] This includes natural areas of outstanding value for their ' point of view of science, conservation or natural beauty.'[372] The request to include an area under the WHC list must be submitted by the State in which the site is designated[373] and then evaluated by the World Heritage Committee.[374]

To include the site on the list, the WH Committee must find that it has outstanding universal value, that is 'cultural and/or natural significance which is so exceptional as to transcend national boundaries and to be of common importance for present and future generations of all humanity.'[375]

In turn, among the criteria required to be met, there are included '[…]outstanding examples representing significant on-going ecological and biological processes in the evolution and development of terrestrial, fresh water, coastal and marine ecosystems and communities of plants and animals[…] and '[…]the most important and significant natural habitats for in-situ conservation of biological diversity, including those containing threatened species of Outstanding Universal Value from the point of view of science or conservation.'[376]

These sites are considered to be the equivalent of MPAs.[377] However, while terrestrial ecosystems are well represented on the WH List, marine environments are not.[378] Secondly, the text of the operational guidelines refers only to 'coastal and marine ecosystem'.

Therefore, it has been remarked that a WH List, which seems to exclude sites on the high seas(nearly half the globe), should perhaps be called 'Half-the-World Heritage'. This issue was raised in 2011, after an audit of the 'Global Strategy for a credible, balanced and representative WH List'.[379] Finally, in 2016, UNESCO in collaboration with IUCN launched a report on 'World heritage on high seas', exploring the different ways the WHC may proceed regarding these

[371] Convention concerning the protection of the World Cultural and Natural Heritage (adopted 16 November 1972, entered into force 17 December 1975) 1037 UNTS 151 (WHC) Article 2.
[372] WHC Article 2(3).
[373] WHC Article 11(1).
[374] WHC Article 11(2).
[375] UNESCO Intergovernmental Committee for the Protection of the World Cultural and Natural Heritage 'Operational Guidelines for the Implementation of the World Heritage Convention' (adopted 10 July 2019) WHC.19/01, Annex 3, para 49.
[376] Ibid at para 77; The last criterium follows the CBD provisions.
[377] J Roberts (2007) 38.
[378] Ibid at 39.
[379] UNESCO WH Committee 'Evaluation of the Global Strategy and the PACT Initiative' (Paris, 27 May 2011) (19-29 June 2011) WHC-11/35.COM/INF.9A.

wonders of the open ocean.[380] In the report, 5 sites were identified as potential OUV on the high seas, including the Sargasso Sea, which will be the object of my discussion in the following section.[381] The lowest common denominator of all these sites is the lack of a strong protective management system, but not the lack of a protective system in the absolute.[382] This is particularly relevant for their recognition in the WH list. The recognition as OUV is only part of the process. It is of paramount importance to obtain a positive response from the WH Committee as far as the current status of this site is concerned. Properties that have an important value in terms of biodiversity without good conditions or effective protection and management, may be considered to have a weaker claim or potential OUV compared with a property in good condition and a high standard of protection and management.[383] Among the 5 sites identified as potential OUV, no management system is currently in place for the Lost City Hydrothermal Field, but the site is qualified as a VME under the criteria of FAO and subject to the management of a RMFO, while the Atlantis Bank was declared a Benthic Protection Area (BPA) by the Southern Indian Ocean Deepwater Fishers Association (SIODFA). [384]

All of them have been described as EBSAs, but they rely solely on the pre-existing management regime. The recognition of these OUV sites on the high seas, would entail important consequences on continued fishing activities in these areas.[385] Nonetheless, as noted by Dunn, Ortuño Crespo and Caddell, such a development would require prior revision of the WHC, a potential integration with the new provisions of the Revised Agreement on BBNJ, or clear consensus on an ambitious evolutionary interpretation of the WHC itself.[386]

[380] D Freestone, D Laffoley, F Douvere, T Badman 'World Heritage in the High Seas: An Idea Whose Time Has Come' (2016) World Heritage Report 44.
[381] The others sites identified are The Lost City Hydrothermal Field, the Costa Rica Thermal Dome, the White Shark Café and the Atlantis Bank.
[382] Freestone and others (2016) 32-40.
[383] Ibid at 28.
[384] Ibid at 32-40.
[385] D C Dunn, G Ortuño Crespo and R Caddell 'Area-based Fisheries Management' in R Caddell and E J Molenaar *Strengthening International Fisheries Law in an Era of Changing Oceans* (1rd edn Hart Publishing 2019) 189-218.
[386] Ibid.

2.3 The application of models developed by regional organisations on the high seas and the integration with the international framework

The first HSMPAs were established at regional level. None of these MPAs was designed in line with the sectorial MPAs models developed by IOs. Further recognition of one these regional HSMPAs in conformity of one these models was prospected by several regional organisations and States. Despite the potential outcomes of this designation, regional HSMPAs highlighted their potential for the enhancement of an ecosystem-based approach. My analysis is focused on the regional frameworks which were able to establish HSMPAs: the Barcelona Convention in the Mediterranean Sea, the OSPAR in North East Atlantic Ocean, the Antarctic Treaty System (ATS) and the Sargasso Sea Alliance (SSA) in the Sargasso Sea. The States Parties to the Noumea Convention[387] have not undertaken yet any action in relation to the establishment of MPAs on the high seas, and my analysis will be focused on the other regional frameworks.

2.3.1 The Mediterranean Sea

2.3.1.1 The Mediterranean treaty system and the Specially Protected Areas of Mediterranean (SPAMI)

17 riparian States of the Mediterranean Sea adopted in 1976 the Mediterranean Action Plan (MAP), the first-ever Regional Seas Programme under the UNEP regional seas' rubric.[388] In 1995, the Action Plan for the Protection of the Marine Environment and the Sustainable Development of the Coastal Areas of the Mediterranean (MAP Phase II) was adopted by 22 Contracting Parties[389] to replace the Mediterranean Action Plan of 1975.[390] The general obligation for Contracting States to the Barcelona Convention to protect and preserve biological diversity

[387] See note 236.
[388] Convention for the Protection of the Mediterranean Sea Against Pollution (adopted on 16 February 1976, entered into force 12 February 1978) 1102 UNTS 27 (Barcelona Convention).
[389] These States are Albania, Algeria, Bosnia and Herzegovina, Croatia, Cyprus, Egypt, France, Greece, Israel, Italy, Lebanon, Libya, Malta, Monaco, Montenegro, Morocco, Slovenia, Spain, Syrian Arab Republic, Tunisia, Turkey, and the European Union; see – 'Mediterranean Action Plan ' (UNEP environment) ≤https://web.unep.org/unepmap/≥ (last access 24 April 2019).
[390] Convention for the Protection of the Marine Environment and the Coastal Region of the Mediterranean (adopted 10 June 1995, entered into force 9 July 2004) 1102 UNTS 27.

posed in Article 10,[391] was supplemented by the SPA/BD Protocol[392], whose main objective was to 'protect, preserve and manage in a sustainable and environmentally sound way areas of particular natural and cultural value, notably by the establishment of specially protected areas.'[393] The Protocol introduced a new category of MPA: the Specially Protected Areas of Mediterranean (SPAMI). The proposal to include an area in SPAMI List must meet the criteria of 'importance for conserving the component of biological diversity in the Mediterranean' or if they contain endemic ecosystems of the Mediterranean of 'the habitat of endangered species' or if they 'are areas of special interest at the scientific, aesthetic, cultural or educational level.'[394] Its geographical coverage includes the seabed and the subsoil, and it is extended up to freshwater limit and to terrestrial coastal areas.[395] Until now, large part of the high seas water column beyond the territorial sea remains part of the high seas overlying the continental shelf, by virtue of the fact that most of the coastal states of member parties have not established yet an EEZ.[396] It has been argued that this could result only in unpleasant consequences. Once all Mediterranean coastal States will have established an EEZ, indeed, any MPA formerly belonging to high seas' jurisdiction will be part of coastal State's jurisdiction or sovereignty.[397] By way of contrast, as evident in the formulation of Article 9, SPA/BD Protocol deliberately avoids this situation. SPA/BD Protocol provides expressly for the establishment of (SPAMI) in zones 'partly or wholly' comprised on the 'high seas',[398] submitted by 'two or more neighbouring Parties' to the Protocol,[399] in 'areas where the limits of national sovereignty or jurisdiction have yet been defined'.[400] These 'neighbouring

[391] Barcelona Convention Article 10 (originally 9a) provides expressly for the Contracting Parties to, take, individually or jointly, '[...]all appropriate measures to protect and preserve biological diversity, rare or fragile ecosystems, as well as species of wild fauna and flora which are rare, depleted, threatened or endangered and their habitats, in the area to which this Convention applies.'

[392] Specially Protected Areas and Biological Diversity Protocol (adopted 10 June 1995, entered into force 12 December 1999) (SPA/BD Protocol).

[393] SPA/BD Protocol Article 3(1).

[394] SPA/BD Protocol Article 8(2).

[395] SPA/BD Protocol Article 2(1); as noted by T Scovazzi (1999) 11, a geographical extension, as such, was justified for the scope of a strict protection of highly migratory species; Article 2 of the SPA/BD Protocol states that that the application of the protocol is extended to any sea of the Mediterranean, regardless the of legal status attached to it.

[396] O Elferink 'Coastal States and MPAs in ABNJ: Ensuring Consistency with the LOSC*'* in (ed) D Freestone (2019) 74; Kachel (2008) 114.

[397] D Freestone (2019) 79.

[398] SPA/BD Protocol Article 9(1).

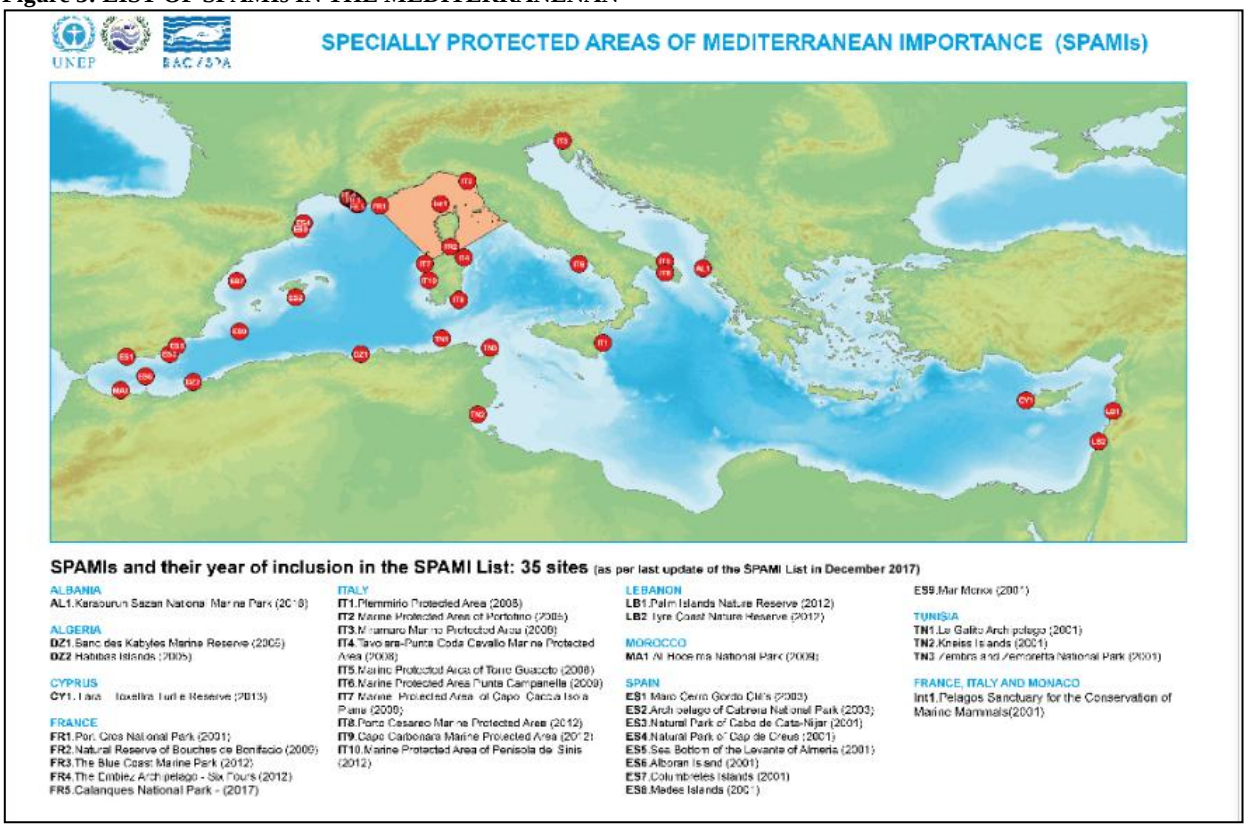
[399] SPA/BD Protocol Article 9(2)(b).

[400] SPA/BD Protocol Article 9 (2)(c).

Parties' must agree on the protection and management measures to be applied in the SPAMI and submit their proposal to the other Contracting States' approval.[401] Once the area is included in the SPAMI list and those measures receive formal approval, the management of the area is subject to the guidelines determined by Member Parties in compliance with Article 16(3) of the Protocol.

To date, 35 sites have been included in the SPAMI List, but the Pelagos Sanctuary in the Mediterranean Sea is the only SPAMI situated partially on the high seas.

Figure 3: LIST OF SPAMIs IN THE MEDITERRANENAN[402]



After an initial phase in 2008, in 2010 the EU contributed to the funding of the implementation by UNEP/Regional Activity Centre for Specially Protected Areas (RAC/SPA) of a program of identification of 'priority conservation areas lying in the open seas to be potentially included in the SPAMIs' list.[403] Only a few of the contracting parties have manifested their willingness to create

[401] SPA/BD Protocol Article 9 (3)(a).

[402] UNEP/ RAC/SPA 'Specially Protected Areas of Mediterranean Importance (SPAMIs) ≤http://www.rac-spa.org/sites/default/files/doc_spamis/spamis2018.pdf≥(last access December 2017).

[403] UNEP Mediterranean Action Plan 'Report of the extraordinary meeting of the focal points for SPAs' (2010) UNEP(DEPI)/MED WG.348/5, Annex III, 18; For an overview of the report see. D Addis 'Aree marine protette all'interno e al di lá della giurisdizione nazionale' (Mare Amico) (2018)

new SPAMIs in the waters adjacent to their territorial seas.[404] Despite the hesitation to implement the results of the first phase of the project, the RAC/SPA initiative is remarkable and may overcome governance issues which characterise the Mediterranean.[405] This occurs by virtue of the ecological value of the areas concerned, in relation to biodiversity productivity, importance for life history and need for protecting endangered species and obtaining a restoration effort.[406] Specifically, the RAC/SPA underlined the importance of establishing HSMPA. This will be an important step towards implementing the ecosystem approach towards the management of the eastern Mediterranean Sea.[407]

Figure 4: LIST OF POTENTIAL SPAMIs[408]

≤https://www.mareamico.it/download/daniela-addis-aree-marine-protette-allinterno-e-al-di-la-della-giurisdizione-nazionale/≥ .

[404] UNEP 12th Global Meeting of the Regional Seas Conventions and Action Plans 'High Seas MPAs Regional Approaches and Experiences'(Bergen 20-22 September 2010) UNEP (DEPI)/RS.12 /INF.6.RS, ≤https://wedocs.unep.org/bitstream/handle/20.500.11822/12700/inf.06-high-seas-side-event.pdf?sequence=1&isAllowed=y≥ 20.

[405] Ibid.

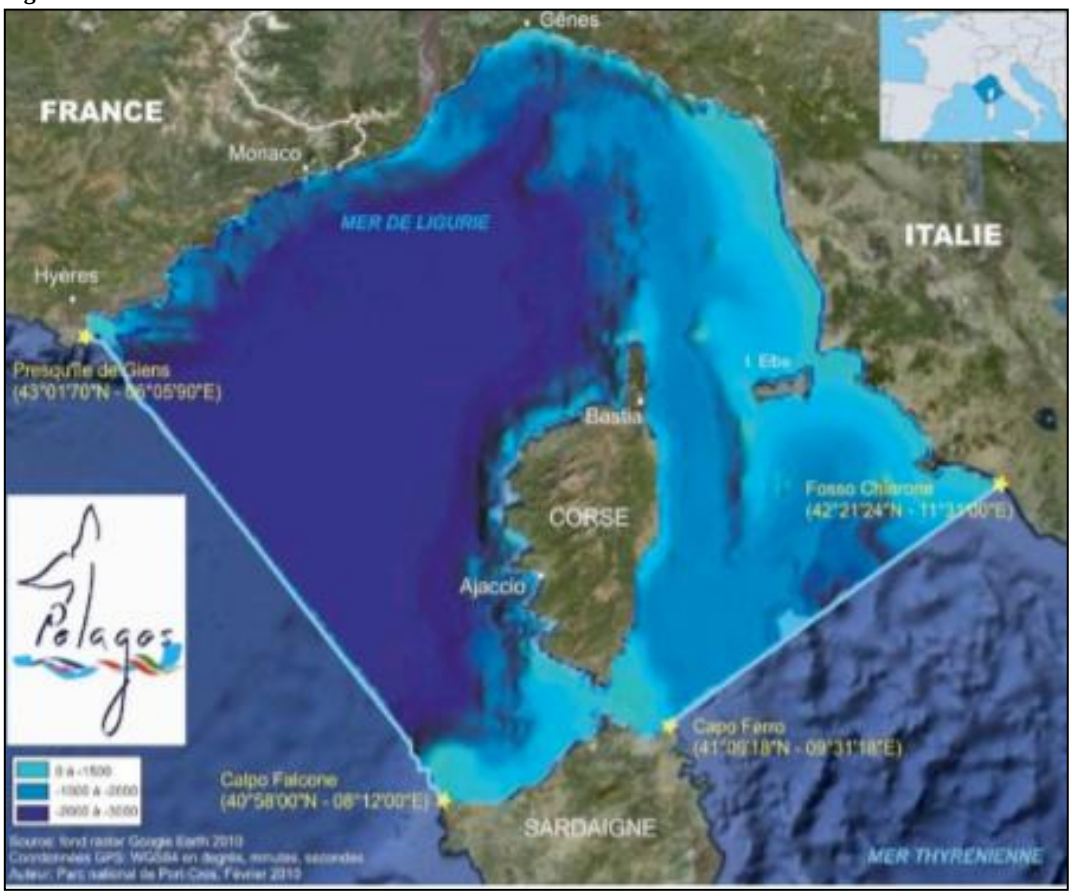
[406] M Grbec *The Extension of Coastal State Jurisdiction in Enclosed or Semi-Enclosed Seas: a Mediterranean and Adriatic Perspective* (Routledge 2014) 203.

[407] B Öztürk 'Marine protected areas in the high seas of the Aegean and Eastern Mediterranean Seas, some proposal' (2009) 15 Journal of the Black Sea/Mediterranean Environment 77.

[408]See. note 407, at 19; 1: Alborán Seamounts, 2: Southern Balearic, 3: Gulf of Lions shelf and slope, 4: Central Tyrrhenian, 5: Northern Strait of Sicily (including Adventure and nearby banks), 6: Southern Strait of Sicily, 7: Northern and Central Adriatic, 8: Santa Maria di Leuca, 9: Northeastern Ionian, 10: Thracian Sea, 11: Northeastern Levantine Sea and Rhodes Gyre, 12: Nile Delta Region (Green area: Pelagos Sanctuary declared as SPAMI in 2001).

2.3.1.2 The Pelagos Sanctuary

Figure 5: THE PELAGOS SANCTUARY AREA[409]



Its extension covers the territorial waters of France, Monaco and Italy, and more than 50% of its waters are part of the high seas. Initially, attention on this area was raised because of the use of driftnets and the accidental capture of cetaceans in the Corso-Ligurian Basin.[410] The first instrument to raise attention on these issues was the joint declaration in 1993 by France and Italy's Environment Ministers and the Principality of Monaco's Ministry of State, that identified on a scientific basis the major stressors in the area. These stressors were: direct capture or intentional disturbance of marine mammals; research activities and whale watching that may cause problems ;the use of large pelagic driftnets; high-speed vehicle competitions; pollution that is harmful to

[409] --'Presentation of the Pelagos Sanctuary' (Pelagos Sanctuary website) ≤https://www.sanctuaire-pelagos.org/en/66-anglais/uncategorised/254-presentation-of-the-pelagos-sanctuary≥ (last access 2020).

[410] Attention was raised by scientists from the Tethys Institute, other universities and by the NGOs SOS Grand Bleu and Greenpeace; for an overall summary see. https://www.sanctuaire-pelagos.org/en/about-us/history.

cetaceans.[411]

After a 13 years-process, in 1999 these three States adopted the final Agreement and they establishing the Sanctuary.[412] The Sanctuary had primary purpose of protect the eight resident cetacean species in the area.[413] The Sanctuary was not only the first SPAMI straddling partially on the high seas in Europe, but also the first MPA of its kind .[414] Therefore, being EEZ absent, the decision to extend up to 53% the high seas part of its total coverage at the time of its creation, was a brave choice.[415] If the three coastal states had established a EEZ in this zone for geographical reasons,[416] the sanctuary would have been be completely within their EEZ.[417] However, the Parties decided not to do so and to submit the status of its waters to the high seas regime beyond 12 nm. At this stage, the situation showed in the previous section referring to PSSAs incorporating both part of the territorial seas and part of the high seas is reflected in practice. The measures for the conservation purposes can be applied directly by the coastal state, as the regime for EEZ in LOSC is extended to them.[418] This facilitated the States' tasks for the purposes of conservation, which would have found more difficulties if the Sanctuary had been established as a whole on the high seas.[419] For instance, important steps were carried out on initiative of the Italian Government. The Italian Navy refrained from conducting naval exercises in the area of Sanctuary (involving the use

[411] Ibid.

[412] Agreement concerning the creation of a marine mammal sanctuary in the Mediterranean (adopted 25 November 1999, entered into force 21 February 2002).

[413] Those species are the Fin Whale, Sperm Whale, Curvier's baked whale, Long- finned piot whale, Risso's dolphin, Common bottlemose dolphin, Common dolphin, Striped dolphin, as well as on the only pinnipeds found in the Mediterranean but not in the Sanctuary: monk seals.

[414] Wright, Rochette and Druel (2015) 278.

[415] M Le Hardy 'La protection des mammifères marins en Méditerranée. L'Accord créant le Sanctuaire Corso-Liguro-Provenca'l in G Cataldi (ed) *La Méditerranée et le Droit de la Mer à l'aube du 21e siècle* (Bruylant Bruxelles 2001) 251; Since the first elaboration of the project in 1992 the Sanctuary's geographical coverage had been gradually extended till the adoption of the Agreement in 1999. This brought to the inclusion of the 'Bocche di Bonifacio' natural reserve (now PSSA), within the territory of the *Pelagos* and to the joint decision (France and Italy) to create an International Marine Park.

[416] T Scovazzi 'Protection of the Marine Environment' in G Cataldi (ed) (2001) 273.

[417] Borg (2012) 186; Y Tanaka 'Reflections on High Seas Marine Protected Areas: A Comparative Analysis of the Mediterranean and the North-East Atlantic Models' (2012) 81 Nordic Journal of International Law 307.

[418] See. note 332.

[419] As above explained, it would had been necessary to establish an authority competent for the management of the Sanctuary since its creation in case the Sanctuary would have been established wholly in high seas. In this scenario it would not have been recognized any extension of powers to Italy, France and Monaco coastal states and by consequence they could not have adopted measures directly applicable on the high seas.

of ordnance or sonar). The Italian Ministry of the Environment provided for a discontinued discharge of certain wastes in those waters[420] of the toxic mud dredged from the area's harbours.[421] In addition to the contribute played by national governments, since its recognition as a SPAMI in 2001, a number of measures have been undertaken to ensure its protection under these auspices.[422] Since the adoption and implementation of the first joint management plan in 2004, the Sanctuary thus developed a new approach based on frequent and effective international cooperation to ensure cohabitation between marine mammals and humans in an environment favourable to them.[423] This was particularly notable in the Mediterranean scenario because few of the several of MPAs in the basin had not any management plan at all.[424] The positive outcomes of this cooperation were confirmed by the fact the all the successful measures were adopted by both organs directly connected to the Agreement, national governments, and organisations addressing their measures to the territory of the Sanctuary.

In relation to regional organisations, one of the first achievement in this sense was the prohibition by the GFCM of towed dredges[425] and bottom trawl nets fisheries in a large circumscribed area of the Sanctuary.[426] This highlighted how a cooperation between GFCM Secretariat and the Sanctuary's Secretariat, on the exchange of data reported to their respective Governing Bodies,

[420] As in Article 6 of the 1999 Agreement 'Taking into account their international obligations, the Parties shall conduct monitoring activities within the Sanctuary and shall intensify the fight against any form of pollution, whether of maritime or land-based origin having or likely to have a direct or indirect impact on the conservation status of marine mammals.'

[421] --' Carta di Partenariato tra Comuni rivieraschi del Santuario ed Autorità nazionale per la Parte italiana' (Ministero dell' Ambiente e della Tutela del territorio del mare) ≤https://www.minambiente.it/pagina/santuario-dei-cetacei≥ (last access 13 July 2017).

[422] UNEP/MAP 'Report of the twelfth ordinary meeting of the Contracting Parties to the Convention for the protection of the Mediterranean Sea against pollution and its protocols' (Monaco 14-17 November 2001) (30 December 2001) UNEP(DEC)/MED IG.13/8, Annex IV.

[423] --Management Plan (Pelagos Sanctuary website) ≤http://www.sanctuaire-pelagos.org/en/about-us/management-plan≥.

[424] G Notabartolo Di Sciara, D Hyrenbach and T Hagardy 'The Pelagos Sanctuary for Mediterranean Marine Mammals'(2008) 2 Lesson in Conservation 101.

[425] As precised by FAO towed dredges are principally of two variants: those which scrape the surface of the bottom and those which penetrate the sea bottom to a depth of 30 cm or more to harvest macro-infauna. The victims are mainly identified in dwelling animals like mussels, oysters, scallops, clams, sea cucumbers. See. – Fishing gear type- Towed dredges (FAO website) ≤http://www.fao.org/fishery/geartype/212/en≥ (last access 2020).

[426] GFCM 'Recommendation for 'Establishment of fisheries restricted areas in order to protect the deep sea sensitive habitats' (2006) GFCM/30/2006/, 10.

was a successful measure to attain the objectives prospected by the Parties.[427] Since the Sanctuary was created, regulation of fisheries was deemed to be one of the factors stretching on the area where cooperation was needed to enhance the effectiveness of the SPAMI.[428] For these reasons, under the Agreement, the Parties are requested to exchange views to promote the adoption of regulations relating to the use of new fishing equipment that could result in the indirect capture of marine mammals or that could endanger their sources of prey.[429] Furthermore, a few shipping companies agreed to use real time plotting of cetacean (REPCET) system[430] to hinder collisions with marine mammals.[431]

Other measures, like the adoption of rules and codes of conduct to regulate whale watching, were adopted by the Member Parties to the Agreement on the Conservation of Cetaceans of the Black Sea, Mediterranean Sea and contiguous Atlantic area (ACCOBAMS) and they reflected their effect on the Sanctuary.[432] As accurately noted by Magali Le Hardy, the evidence of such a positive balance was eased because several obligations in the 1999 Agreement had been already laid down by other Conventions to which France, Monaco and Italy were parties to it (Bern, [433]

[427] GFCM 'Recommendation on the Pelagos Sanctuary for the Conservation of Marine Mammals' General Fisheries Commission for the Mediterranean (2007) GFCM/31/2007/2.

[428] FAO Technical Guidelines for Responsible Fisheries, No. 4, Suppl.4, Fisheries Management 4. Marine Protected Areas and Fisheries, (2011) Annex I.

[429] 1999 Agreement Article 7(c).

[430] This is a network for real-time sharing observations of cetaceans reported on shipping routes. This tool provides navigational assistance to help the captains of vessels to anticipate the presence and paths of cetaceans. Indeed, Marine transport, whether of goods or passengers, exposes marine mammals to acoustic and behavioural disturbances that can lead these animals to change their path, modify their migration routes or interrupt their feeding period, and can even lead to collisions with vessels, which are often fatal for the cetaceans. This is particularly so if we focus on the high-levels of urbanisation in area counting about 8 million inhabitants and intensive tourism. For a complete overview on this subject see. P Mayol 'Collisions entre navires et grands cétacés au sein du Sanctuaire Pelagos' (2005) Soufflers d'Ecume ≤http://www.souffleursdecume.com/docs/collisions_souffleurs_d_ecume.pdf≥ (last access 3 July 2012).

[431] G Wright and J Rochette 'Regional Ocean Governance of Areas Beyond National Jurisdiction Lessons Learnt and Ways Forward' (2019) (Strong High Seas) ≤https://www.prog-ocean.org/wp-content/uploads/2019/03/STRONG-HS_Lessons-Learnt-Report.pdf ≥; As noted by A Mangos and S André 'The use of this system will be increasingly effective as the number of users grows, since the available data is produced collaboratively.'

[432] RAC/SPA and ACCOBAMS 'Guidelines for Commercial Cetacean-Watching Activities in the Black Sea, the Mediterranean Sea and Contiguous Atlantic Area' (2004).

[433] Bern Convention on the Conservation of European Wildlife and Natural Habitats (opened into signature 19 September 1979, entered into force 01 June 1982) (Bern Convention).

ACCOMBAMS, Ramoge[434] and Barcelona).[435] This means that the Sanctuary was born in an already strong regional system.

In addition to this 'institutional' cooperative system, cooperation at 'scientific' level was enhanced. *Pelagos* moved towards a twofold approach. First, it contributed to the dissemination of knowledge about cetaceans through a funding research work, [436] by abiding a cetacean population monitoring network and by supporting public awareness-raising activities. Secondly, *Pelagos* eased the implementation of regulatory systems, by bolstering the dialogue between the various socio-economic stakeholders (private operators, researchers and public bodies).[437] Such a conduct contributed to raise public awareness on the subject.

As noted by Notarbartolo di Sciara, general public in France, Italy, Monaco, and even the scientific community, was almost unaware of the presence of resident whale populations in these waters.[438] The adoption of these measures made the Sanctuary a benchmark in the MPAs context even for the conjugation between 'conservation of marine biodiversity' and 'protection of the environment'. As a matter of fact, even though its focus is on the conservation of the above-mentioned species of cetaceans, indirect consequences are carried out for the protection of the marine environment. As seen before, use of drift nets and invoked mammal casualties, as well as significant pollution from land-based sources and disturbances from seismic investigations, maritime traffic and tourism were seen as the first factors of disturbance for the cetaceans.[439] Hence, the regime of protection in the sanctuary was not limited to the mere the prohibition of "whaling" and of the other activities affecting these species, rather, it aims at reconciling the necessary protection of the habitats and species with socio-economic development. [440] It operates a reconciliation between the

[434] Agreement Concerning the Protection of the Waters of the Mediterranean Shores (adopted 10 May 1976, entered into force 1981) (Ramoge Agreement).

[435] Le Hardy in Cataldi (ed) (2001) 253.

[436] See for instance the GIS3M, a scientific interest group for Mediterranean marine mammals.

[437] A Mangos and S André 'Analysis of Mediterranean marine environment protection: the case of the Pelagos Sanctuary' (20 April 2012) Blue Plan Notes: Environment and Development in the Mediterranean 2; Pelagos holds discussion forums where stakeholders are invited to present their issues regarding the reduction of environmental impacts and to take part in building common solutions.

[438] G Notabartolo, D Hyrenbach and T Hagardy (2008) 100.

[439]-- 'History' (Pelagos Sanctuary) ≤https://www.sanctuaire-pelagos.org/en/about-us/history≥ (last access 2020).

[440] S Christiansen 'High Seas MPAs Regional Approaches and Experiences: side event at the 12th UNEP Global Meeting of the Regional Seas Conventions and Action Plans' (2010) UNEP (DEPI)/RS.12 /INF.6.RS, 20.

'conservation' regime and that of 'protection' of marine environment.

Overall, the Sanctuary has proved to be a model for several reasons. First, it highlighted the importance of NGOs in the creating and cooperative process for the exchange of relevant data. Secondly, it introduced a successful cooperative system at political and scientific level. Thirdly, it constituted the first example of MPA straddling on the high seas and it presented a self-efficient system, alternative to the more comfortable establishment of the EEZ. Fourthly, it overrided the dichotomy between the first generation of MPAs devoted to the protection of the marine environment from pollution and shipping activities and those devoted to the conservation of marine life forms. Fifthly, it encompassed the necessity for a joint management of target and non-target species. It is considered one of the 'few Mediterranean examples of marine spatial planning based on an ecosystem approach, where different stakeholders were engaged to address conflicts between utilisation and conservation objectives'.[441] Even though the main purpose is the conservation of non-target species (cetaceans), the more developed instruments in fisheries law, served as a means to attain the objectives prospected by the Conference on BBNJ more easily.

Albeit these positive outcomes, several scholars manifested their perplexity about the efficiency of its management system. Among the others, Notarbartolo di Sciara, raised the question 'whether a management mechanism appropriate for MPAs in the Mediterranean ABNJ can be envisaged within the existing legislative framework, or whether there is a need for more advanced juridical creativity which will account for the likely multi-national nature of such protected areas'.[442] Several NGOs manifested the need for the implementation of new effective measures.[443] The Sanctuary, has encountered difficulties , due to the lack of a proper management body over several years.[444] For this purpose, in 2013 a Permanent Secretariat was created, contributing to its

[441] Ibid at 19.

[442] G Notarbartolo di Sciara, T Agardy, T Scovazzi 'Governance shift required for the world's first high seas MPA: the Pelagos Sanctuary for Mediterranean Marine Mammals' (paper presented at the International Marine Conservation Congress at George Madison University 2009).

[443] --'Serve un salto di qualità per il santuario Pelagos' (WWF News) ≤http://www.wwf.it/mediterraneo_quality/?18021/Serve-un-salto-di-qualit-per-il-santuarioPelagos)≥ (10 September 2015).

[444] G Notarbartolo di Sciara 'The pelagos sanctuary for the conservation of mediterranean marine mammals: an iconic high sea MPA in dire straits' (Paper presented at the 2nd international conference on progress in marine conservation in Europe, Stralsund 2009).

revitalisation.[445] The existence of the Secretariat represents a first step forward, but not a sufficient measure to accomplish the complex path to reach all the conservation purposes. A first solution prospected was the enforcement of cooperation with RFMOs inside the Sanctuary.

Several scholars, before the entry into force of the Agreement, prospected how the creation of a fisheries reserve inside the Sanctuary would have brought about positive outcomes.[446] More recently, this hypothesis has been embraced by the plan for the adoption of spatial management measures such as the declaration of Fisheries Restricted Areas (FRAs).[447] This led to the adoption by the GFCM Parties of the 'Resolution on area based management of fisheries', including initiatives on the establishment of new SPAMIs, through the establishment of Fisheries Restricted Areas (FRAs) in the GFCM convention area and the coordination with the UNEP-MAP.[448] This would allow for better institutional coordination among all the subjects involved on pursuing a joint strategy that will continue along the project, benefitting from preliminary discussions and bringing to the creation of a Working Group on MPAs.[449] This would lead to an even more important consequence: the application of the UNFSA regime. As noted in Chapter 2, an implementation as such would entail a deep limitation of the flag state rule on the high seas.[450]

However, the regime under the SPA/BD Protocol faces all the limits of regional agreements. States parties to the convention are legally bound by the conservation measures contained in the convention, as 'to comply with the measures applicable to the SPAMIs and not to authorize nor undertake any activities that might be contrary to the objectives for which the SPAMIs were established'.[451] However, non-state parties cannot be subjected to such regime, by virtue of the

[445] J Rochette, S Unger, D Herr, D Johnson, T Nakamura, T Packeiser , A Proelss , M Visbeck , A Wright, D Cebrian 'The regional approach to the conservation and sustainable use of marine biodiversity in areas beyond national jurisdiction'(2014) 49 Marine Policy 112.

[446] Le Hardy in Cataldi (ed) (2001) 266; D Momtaz *L'accord relatif à conservation et la gestion des stoks de poissons chevauchants et grand migraters* in *Annuaire francais de Droit International* (CNRS Editions 1995) vol 41, 676 ss; T Treves *Intervention en haute mer et navires étrangers* in *Annuaire francais de Droit International* (CNRS Editions 1995) vol 41, 667 ss.

[447] Rochette and others (2014) 113.

[448] Recommendation on a multiannual management plan for fisheries on small pelagic stocks in the GFCM-GSA 17 (Northern Adriatic Sea) and on transitional conservation measures for fisheries on small pelagic stocks in GSA 18 (Southern Adriatic Sea) (13–17 May 2013) GFCM37/2013/1.

[449] Rochette and others (2014) 113.

[450] Momtaz (1995) 676; Treves (1995) 667; Le Hardy (2001) 266.

[451] SPA/BD Protocol Article 8(3)(b).

pacta tertiis principle.[452] Only the rules embodied in customary law and LOSC can counterbalance this problem.[453] To bolster this obligation, member parties are requested to call upon non-state parties to the Protocol and IOs 'to cooperate in the implementation'.[454] Consequently, an enforcement of those measures for RFAs, which would entail the application of UNFSA provisions, would limit at least the wide power of third-parties on the high seas. In the absence of cooperation from other States and private stakeholders the efforts carried out by the Sanctuary cannot produce the necessary behavioural changes.[455] With this regard, a similar but harder to reach option, would be the designation of the Sanctuary as PSSA, as mentioned before. 14 years ago, the French delegation prospected its recognition as a PSSA, but to date this objective is still unattended.[456] The recognition of the Sanctuary as a PSSA may facilitate and enhance clearer relationship between the competent authorities of the States around the Sanctuary and the establishment of rules of conduct that apply to ships of all flags that enter the area.[457] Schiano di Pepe and C J Tribe prospected a further collaboration between IUCN with REMPEC and RAC/SPA to ameliorate the process of designation for PSSA.[458] After the national proposal by the French Delegation,[459] the advantages of the recognition of the Sanctuary as a PSSA were evaluated by the NGO Plan Bleu, using the model developed by the Nobel Prize in Economics Elinor Ostrom (2009).[460] In his work, Ostrom listed eight key principles for the stability of institutions that aim at managing ecological services in an adequate and sustainable manner.[461]

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[452] VCLT Article 34 provides that 'treaty does not create either obligations or rights for a third state without its consent'; G Handl *Regional agreements and third state vessels: Is the Pacta tertiis Principle being modified?* In H Ringbom(ed.) *Competing Norms in the Law of Marine Environmental protection- Focus on Ship Safety and Pollution Prevention* (Kluwer Law International 1997) 221.

[453] Kachel (2008) 115.

[454] SPA/BD Protocol Article 28(1).

[455] Mangos and André (2012) 4.

[456] Resoconto di decisioni della 5a Conferenza delle Parti Contraenti all'accordo Pelagos (Rome 4-5 June 2013) PELAGOS_COP5_Doc20, 9.

[457] Mangos and André (2012) 4.

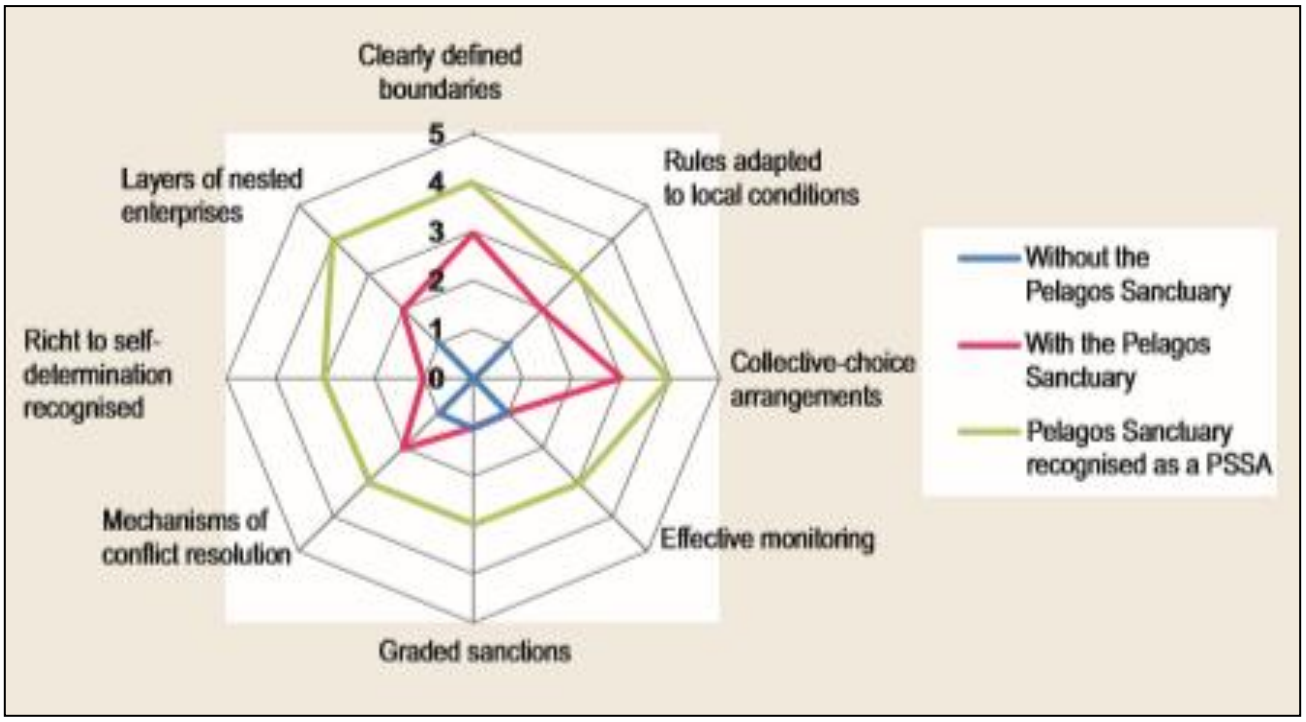
[458] L Schiano di Pepe and C J Tribe 'Risks from Maritime Traffic to Biodiversity in the Mediterranean Sea: identification of issues and possible responses' (2009) IUCN: Center for Mediterranean cooperation 16

[459] see. note due pages prima.

[460] E Ostrom *Governing the Commons. The Evolution of Institutions for Collective Action, Political economy of institutions and decisions* (Cambridge University Press 1990) 280.

[461] The boundaries of the environmental asset and the users addressed by the institution must be clearly defined; the rules laid down by the institution must be adapted to local conditions; the institution's decision-making process must be established and applied; compliance with the rules must be monitored; a scale of graduated sanctions must be applied to those who break the rules; Conflict resolution mechanisms

Figura 6: THE ADVANTAGES OF THE RECOGNITION AS PSSA[462]



2.3.2 The MPA network in the Antarctic Ocean

2.3.2.1 The Antarctic Treaty System (ATS)

Antarctica can be considered a unique region thanks to a wide range of components. 98 % of its surface is covered[463] by ice and its waters are vital to the health of the planet, by virtue of the strong upwelling currents produced, carrying critical nutrients to seas around the world.[464] In this peculiar ecosystem the krill is the centre of the Antarctic marine food web, serving as a main food source for a wide range of different animals living in this region.[465] The central role played by this species

must be effective; the self-determination of the institution must be recognised by the authorities and there must be multiple layers of nested enterprises at various scales.

[462] Mangos and André (2012) 4.

[463]; C C Joyner *Antarctic Law and Politics* (January 1983) 77 American Journal of International Law 180; A complete overview is available at ≤https://www.cia.gov/library/publications/the-world-factbook/geos/print_ay.html≥.

[464] --'A Network of Marine Protected Areas in the Southern Ocean Protecting: one of Earth's last great wilderness areas' (The PEW Charitable Trusts) ≤https://www.pewtrusts.org/en/research-and-analysis/fact-sheets/2017/04/a-network-of-marine-protected-areas-in-the-southern-ocean≥ (11 June 2019) 1.

[465] They are included blue whales; fur seals; and gentoo, chinstrap, and Adélie penguin. See. 'Krill: Key to a Healthy Southern Ocean' (The PEW Charitable Trusts)

contributes to the creation of a unique but even more fragile environment..The close interdependence of these species among each other, curb their resistance to over-exploitation, which consequently need of a higher degree of protection.[466] This uniqueness is reflected in its governance too. The Antarctic region is the subject of a 'special legal and political status': the Antarctic Treaty System (ATS).

The ATS includes four main instruments: The 1959 Antarctic Treaty;[467] the Convention for the Conservation of Antarctic Seals;[468] the Convention on the Conservation of Marine Living Resources (CAMLR Convention);[469] and the Protocol on Environmental Protection to the Antarctic Treaty of 1 December 1959 (Protocol on Environmental Protection) [470]. Albeit their different geographical application, the relative open nature of the ATS system has permitted the achievement of several prospected goals. [471] Any State or regional economic organisation interested in research or in harvesting may accede to the Convention without first being an AT contracting party.[472] Due to the lack of these interests they agree to do nothing contrary to the principles and purposes of the Treaty.[473]

2.3.2.2 The assessment of maritime zones in Antarctica

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https://www.pewtrusts.org/en/research-and-analysis/articles/2019/06/07/krill-key-to-a-healthy-southern-ocean (7 June 2019).

[466] J Yves Costeau and B Charrier 'Introduction: The Antarctic, A Challenge to Global Environmental Policy' in J Verhoeven, Philippe Sands and Maxwell Bruce (eds) *The Antarctic Environment and International Law* (Kluwer Law International 1992) 5-6; C Redwell 'The Protection of the Antarctic Environment and the Ecosystem of Biological Diversity' in M Bowman and C Redgwell (eds) *International Law and the Conservation of Biological Diversity* (Kluwer international 1996) 110; Warner (2009) 200.

[467] The Antarctic Treaty (adopted 1 December 1959, entered into force 23 June 1961) 402 UNTS 71 (AT).

[468] See. note 232.

[469] Convention on the Conservation of Antarctic Marine Living Resources (adopted 20 May 1980, entered into force 7 April 1982) 1329 UNTS 4 (CAMLR).

[470] Protocol on Environmental Protection to the Antarctic Treaty (opened for signature 4 October 1991, entered into force 14 January 1998)2941 UNTS (Madrid Protocol).

[471] There are slight differences in their areas of application: The Antarctic Treaty applies "south of 60 South Latitude" thereby including marine areas within the SO.12;The CAMLR extends beyond 60o S to the area between the latitude and the Antarctic Convergence; The Protocol on Environmental Protection recalls for a potential operation beyond the Antarctic environment by extending its area of focus to "dependent and associated ecosystems."

[472] Regional economic integration organizations are requested to transfer their competence on fisheries matters to CCAMLR and who are also members to CCAMLR.

[473] CAMLR Convention Article 3, 4 and 5.

Before discussing the management system of MPAs and the relative practical examples on the high seas, it is necessary to analyse the jurisdictional problems of this continent. This will raise awareness on the difficulties encountered to define the limits of national jurisdiction and the delayed creation of HSMPAs. As a matter of fact, the uniqueness of the ATS system is evident in the fact that an entire continent is governed by a treaty rather than a number of single sovereign nations as it would be eventually provided by the *res nullius* approach.[474] Nonetheless, at the time of the negotiation of the first Treaty, the majority of States refused to accept US proposal to establish the area as a UN condominium submitted to an IO with a permanent secretariat, as to avoid any territorial claim of sovereignty insisting on the area.[475] Notwithstanding, these claims did not receive a wide-scale acceptance, the territorial seas of United Kingdom , New Zealand, France , Australia, Norway, Chile and Argentina had been already automatically established by International Law on the legal basis of effective occupation.[476] The Antarctic Treaty provided that 'No acts or activities taking place while the present Treaty is in force shall constitute a basis for asserting, supporting or denying a claim to territorial sovereignty in Antarctica or create any rights of sovereignty in Antarctica.' However, this provision was limited to 'new claims.'[477] All these claims were formulated before the adoption of the AT and cannot be considered to be a 'new'

[474] B P Herber *The Common Heritage Principle: Antarctica and the Developing Nations* (1991) 50 The American Journal of Economics and Sociology 396; for a further discussion on the assimilation of Antarctica to res nullius see P C Jessup and H J. Taubenfeld *Controls for Outer Space*; P C Jessup *The Use of International Law* (Ann Arbor: University of Michigan Law School 1959).

[475] The claimant states are: United Kingdom (1908), New Zealand (1923), France (1924), Australia (1933), Norway (1937), Chile (1940) and Argentina (1942), while Russia and USA each maintain the right to claim Antarctic territory in the future.; G Triggs 'The Antarctic Treaty Regime: A Workable Compromise or a Purgatory of Ambiguity' (1985) 17 Case Western Reserve Journal of International Law 197 ≤https://scholarlycommons.law.case.edu/jil/vol17/iss2/2≥ .

[476] S Paterson *Maritime Claims in Antarctica* (LLM Thesis Victoria University of Wellington 1997) ≤ http://researcharchive.vuw.ac.nz/handle/10063/5662≥.

[477] AT Article 4(2); as prospected by R J Dupuy in 'Le Traité sur l'Antartique' in Annuaire de Droit Francais (Centre National de la Recherche Scientifique 1960) vol 6, 125 ≤https://www.persee.fr/doc/afdi_0066-3085_1960_num_6_1_898≥ (last access 9 April 2018) 'L'hibernation du contentieux apparaît nettement dans l'engagement des signataires de ne présenter, pendant la même durée, aucune revendication nouvelle, aucune extension d'une revendication précédemment affirmée. Le gel des revendications est ainsi réalisé à la date d'entrée en vigueur du Traité. Ce dernier, tout en immobilisant le problème de la valeur juridique des titres, tolère l'exercice de compétences d'administration par les autorités étatiques là où elles existent effectivement à ce moment. Le Traité, par le gel du contentieux, consacre ainsi, dans une certaine mesure, la position des Etats à secteur. On a pourtant soutenu que " par sa simple signature, il marque une diminution des droits de souveraineté revendiqués à l'heure actuelle par les Etats intéressés." '

claim.[478] All claimant states asserted jurisdiction over a three-mile territorial sea adjacent to the claimed Antarctic territory. Today, Antarctica is fragmented in 8 sections, and only one of them is unclaimed. This regime was extended to the continental shelf of some States too but for different reasons. The Continental Shelf concept was elaborated before the Antarctic Treaty, but its application was post-dated.[479] According to Crawford and Rothwell, the reasons for such a recognition are to be found in the fact that international law would have 'done the deed' without the claimant state having had to do anything.[480] If the extension of coastal state till 3 nm and the continental shelf were established for the historical circumstance above, explained doubts would have arisen on the consequences for the creation of an EEZ. Specifically, the main question was whether this creation would fall under the meaning of 'new territorial claim' in Article 4 and consequently prohibited.[481] Such a framework highlights the impossibility to generate EEZ and consider all the waters beyond existing territorial seas and continental shelf, part of the high seas.[482] However, declarations of a EEZ by some States seemed to overcome these problems, even its regime cannot be extended to non-nationals.[483] This could be due to a twofold reason. First, in relation to the territoriality, the rights of a state in the EEZ are arguably more limited than territorial sovereignty.[484] As stated by Brownlie, there is a distinction between rights which are 'owned' and 'territorial sovereignty'.[485] Secondly, in relation to the term 'new', the establishment of an EEZ, more than an enlargement of an existing claim would be considered as a recognition but inherent

[478] United Kingdom (1908), New Zealand (1923), France (1924), Australia (1933), Norway (1937), Chile (1940) and Argentina (1942).
[479] See. Convention on the Continental Shelf (adopted 29 April 1958, entered into force 10 June 1964) 499 UNTS 311.
[480] S Kaye and D R Rothwell 'Australia's Antarctic Maritime Claims and Boundaries' (24 January 1995) 26 Ocean Development and International Law 81; Paterson (1997) 20.
[481] Gautier in Verhoeven, Sands and Bruce (eds) (1992) 126.
[482] E J Molenaar *Coastal State Jurisdiction over Vessel-source Pollution* (Kluwer Law International 1998) 444; Kachel (2008) 126.
[483] The claims were formulated by France and Australia. Concerning France see. 'Areas of France's maritime spaces of sovereignty and jurisdiction' French National Portal of Maritime Limits ≤https://maritimelimits.gouv.fr/resources/areas-frances-maritime-spaces-sovereignty-and-jurisdiction≥ (09 May 2019); Concerning Australia see. Maritime Legislation Amendment (Australian Government) Act 1994 20.
[484] See. LOSC Article 56
[485] I Brownlie, *Principles of Public International law* (Clarendon Press Oxford 1990) 110; Paterson (1997) 21.

right to territorial sovereignty, even if latent.[486] This interpretation was confirmed by the UN Secretary-General's word in 1986. According to UN Secretary General, 'the extent to which the various type of maritime jurisdiction can be exercised relies on Member Parties' interpretation of Article 4'.[487]

Article 4 brought about a radical change in the approach of those States. This framework seems not to be totally compatible with the *relatively* open nature of the Antarctic Treaty.[488] The number of Member Parties to ATS has increased constantly over the years, albeit its limited geographical application.[489] As already noted in the 1980s by Giulian Triggs, this compromise was possible primarily because the Parties shared common interests and values in Antarctica.[490] Secondly, Member Parties became aware of the fact that, if their system regulating resource exploitation and environmental concerns had failed, the international community would have discussed the possibility to confer the control of Antarctica to a more representative organization, assimilating the area to common heritage of mankind.[491] For these purposes, this complex system was adapted to this peculiar situation. The ATS was thus developed as to compensate these gaps.[492] Therefore, even though nowadays the boundaries of territorial seas, continental shelves and EEZs are well-defined, except from the case of Norway, LOSC maritime zones model loses its elegancy in Antarctica and precludes the approach based on maritime zones from becoming effective [493]

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[486] R F Frank 'Convention on Antarctic Living Resources' 13 Ocean Development and International Law 307; Paterson (1997) 21.

[487] UNGA Report of the Secretary-General 'Question of Antarctica' (17 November 1986) UN Doc A/41/722; as noted by C Johnson in 'The relevance of the Southern Ocean to the development of a global regime for marine areas beyond national jurisdiction-an uncommon commons' (2017) 32 International Journal of Marine and Coastal Law 715, even if the LOSC regime on EEZ and continental shelf were applied in the Antarctic land territory, these zones did not occupy all of the waters within the area of application of the ATS.

[488] P Gautier *The Maritime Area of the Antarctic and the New Law of the Sea* in Verhoeven, Sands and Bruce (eds) (1992) 129-130; see. AT Article 9(1).

[489] From an initial number of 12 signatories, the total number of Parties to the Treaty is now 54.

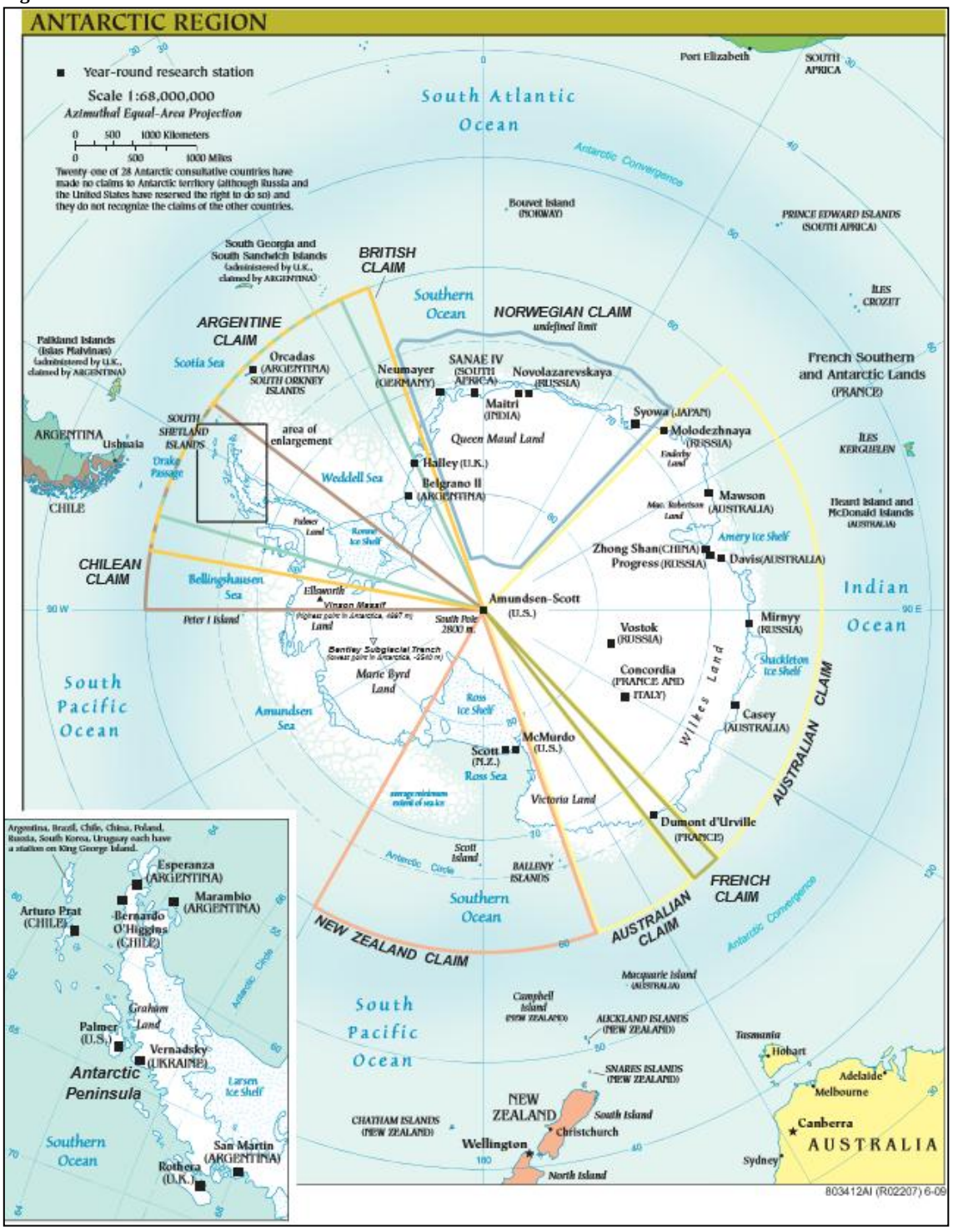
[490] Triggs (1981) 1999.

[491] Ibid.

[492] According to Paterson (1997) 11, the joint application of CAMLR Convention and the Madrid Protocol with the Antarctic Treaty, with the aim of conserving living resources and protecting the environment of Antarctica, has originated a sort of coastal state with the exception that the measures are not enforceable against non-members of the ATS.

[493] Kachel, 126-127;D R Rothwell and C C Joyner 'Domestic perspectives and regulations in protecting the polar marine environment: Australia, Canada and the United States' in D Vidas (ed) *Protecting the Polar Marine Environment: Law and Policy for Pollution Prevention* (Cambridge University Press 2000) 162-163 ; Warner (2009) 201; Gautier in Verhoeven, Sands and Bruce (eds) (1992) 125.

Figure 7: MARITIME ZONES AND TERRITORIAL CLAIMS IN ANTARCTICA[494]



[494] The map shows the actual maritime division of Antarctica in relation to territorial claims; 'Regional and World Maps' (Central Intelligence Agency) ≤https://www.cia.gov/library/publications/the-world-factbook/docs/refmaps.html≥ (last access 21 August 2018).

The only area that does not put obstacles in this sense is the 'unclaimed area'. This situation delayed the creation of MPAs in high seas. The first HSMPA was established 50 years after the adoption of the Antarctic Treaty. In fact, by 2009, CCAMLR had established the first HSMPA around the South Orkney Islands,[495]and in 2016 the largest HSMPA of the World: the Ross Sea MPA.[496]

2.3.2.3 The transversal management system and the role of a hybrid RFMO

In this 50-year process, the CAMLR and then the Madrid Protocol have played a relevant role for these achievements.

The Madrid Protocol strengthened pre-existing environmental standards and developed a more structured framework of MPAs within the ATS. First, it created the Committee for the Environmental Protection (CEP),[497] to which States are obliged to send their annual report on the implementation of the Protocol,[498] and annexed report on monitoring underway activities on the Antarctic environment and dependent and associated ecosystems.[499] Secondly, it provided for the creation of two new categories of MPAs: the Antarctic Specially protected Areas (ASPA)[500] and the Antarctic Specially Managed Areas (ASMA)[501], superseding the model of the Special

[495] CCAMLR 'Conservation Measure 91–03: Protection of the South Orkney Islands southern shelf' (2009).
[496] CCAMLR 'Conservation Measure 91-05: Ross Sea region marine protected area (2016).
[497] Madrid Protocol Article 11.
[498] Madrid Protocol Article 3(2)(d).
[499] Madrid Protocol Article 17.
[500] Under Madrid Protocol, Annex V Article 3(2) ASPA, in order to be recognized as such, must be 'areas kept inviolate from human interference so that future comparisons may be possible with localities that have been affected by human activities; (b) representative examples of major terrestrial, including glacial and aquatic, ecosystems and marine ecosystems; (c) areas with important or unusual assemblages of species, including major colonies of breeding native birds or mammals; (d) the type locality or only known habitat of any species;(e) areas of particular interest to ongoing or planned scientific research; (f) examples of outstanding geological, glaciological or geomorphological features; (g) areas of outstanding aesthetic and wilderness value; (h) sites or monuments of recognised historic value; and (i) such other areas as may be appropriate to protect the values set out in paragraph 1 above.'
[501] Under Madrid Protocol, Annex V Article 4(2) ASMA may include '(a) areas where activities pose risks of mutual interference or cumulative environmental impacts; and (b)sites or monuments of recognised historic value.'

Protected Area (SPA) adopted by the AT Consultative Meeting in 1964.[502] The element differentiating the two is the degree of protection. Access to an ASPA requires a special permit under Article 7,[503] while ASMA does not.[504] In order to grant an equal degree of protection the Protocol provided for the possibility to include ASPA in ASMAs.[505] For the designation All the organs within ATS system work jointly.

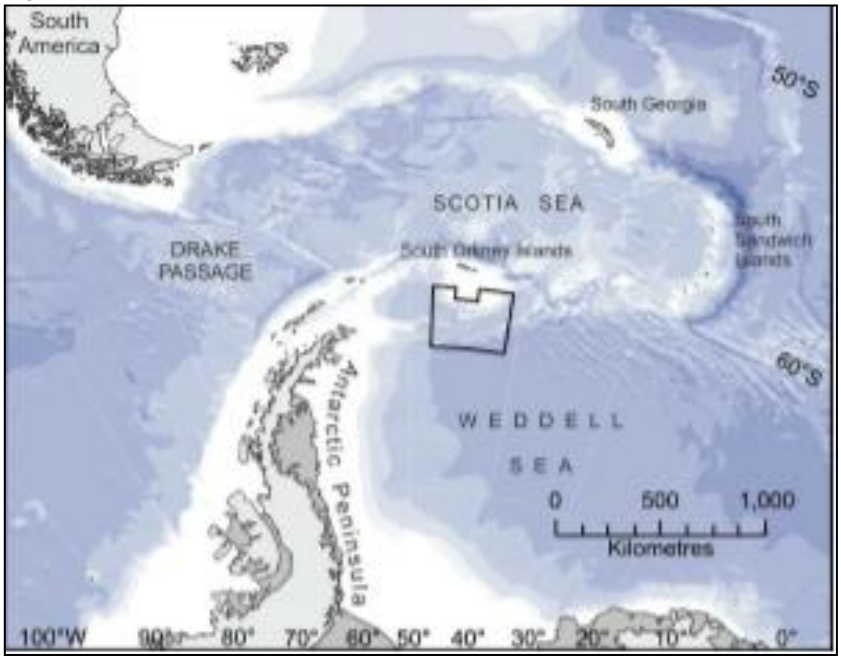
The establishment of an ASPA or an ASMA depends on the Antarctic Treaty Consultative Meeting (ATCM) approval of a management plan drawn up by CEP or the Scientific Committee for the Antarctic Research (SCAR) or the CCAMLR.[506] In 2009, the CEP agreed to develop a strategy for the establishment of 'effective, representative and coherent' spatial protection of marine biodiversity within the Antarctic Treaty Area within the next three years, through the designation of ASPAs and ASMAs.[507] Cooperation with SCAR and CCAMLR was enhanced to ensure the implementation of such measures on a scientific basis, and 'with the aim of achieving harmonised protection for Antarctic marine biodiversity across the Antarctic Treaty System'.[508] The enhancement of this cooperative system bolstered the CCAMLR powers for the purposes of conservation of marine biodiversity. This latter has been the major contributor for the achievement of the goals prospected, even before 2009. Since its creation in 1982, CCAMLR has highlighted the potential of a regional organisation for the development of conservation of living resources' regime. As already analysed in Chapter 1 its successful contribution for the application of the ecosystem approach was widely recognized. The realisation of these purposes is attributed by several scholars to its hybrid nature. Even if CCAMLR is not technically a RFMO, it reflects a useful exception to the fisheries-specific management approach used by RFMOs.[509] The mandate of CAMLR is addressed broadly to 'the conservation of Antarctic marine living resources' [510] and

[502] Agreed Measures for the Conservation of Antarctic Fauna and Flora (signed 2 June 1964, entered into force 1 November 1982) Article 8.
[503] Madrid Protocol Annex V Articles 3(4).
[504] Madrid Protocol Annex V, Articles 4.
[505] Madrid Protocol Annex V Article 4(4).
[506] Madrid Protocol Annex V Article 5(1).
[507] ATCM Secretariat of the Antarctic Treaty Buenos Aires 'Final Report of the Thirty-second Antarctic Treaty Consultative Meeting' (Baltimore 6-17 April 2009) 119.
[508] Ibid.
[509] D Tladi 'The Proposed Implementing Agreement: Options for Coherence and Consistency in the Establishment of Protected Areas beyond National Jurisdiction' in Freestone (ed) (2019) 149.
[510] CAMLR Convention Article 11(1).

could be referred to 'all other species of living organisms.'[511] In comparison to the majority of RFMOs, CAMLR does not address its conservation policy solely to a certain type of fisheries. Its reference to all marine living resources eased the implementation of an ecosystem-based approach. Although CCAMLR does not provide expressly a specific duty of the conservation of marine biodiversity through MPAs, it gives the parties a mandate to create an instrument in this sense.[512] Since 2009, CCAMLR has attempted to pursue an ambitious agenda towards establishing a network of Antarctic marine protected areas.

2.3.2.4 The South Orkney island ASPA

Figure 8: THE SOUTH ORKNEY MPA[513]



In 2009, the ASPA in South Orkney Islands southern shelf was created. In the same year CCAMLR became the ATS's lead body for MPAs. Since the earliest moment, a consistent part of scientific community demonstrated their positive impression for the creation of the HSMPA in the Antarctic and for its future development.[514]

[511] CAMLR Convention Article 1(1).
[512] C Hislop and J Jabour 'Quality Counts: High Seas Marine Protected Areas in the Southern Ocean' (2015) 29 Ocean Year Book 170.
[513] Brasier and ot. (2018) 2.
[514] See. --'Southern Ocean protected area to shield marine region more diverse than Galapagos' (WWF webiste)

In this 94,000 km2 high seas area fishing, scientific research related to fishing, and discharges and dumping from fishing vessels were the sectors submitted to a strict regulation. Even if the ecosystem-based management of the area was not reflected in a high-level structure like in the 8-year later established Ross sea ASPA, today it still plays a paramount role for all marine species (non-target and target ones). It is true that the Weddell Scotia Confluence (one of the zones comprised in the Area) is the key habitat for the krill, one of the main species harvested in the Antarctic and 'a key focus for CCAMLR because of its importance in the Southern ocean ecosystem'.[515] Likewise, measures are addressed to non-target species, given that a large part of the area as a vital value for a wide number of animals. The MPA includes important foraging areas for Adélie penguins that breed at the South Orkney Islands and important submarine shelf areas and seamounts, including areas of high-valued biodiversity, particularly in the benthos.[516]

Fleets of positive outcomes in the context of bottom fishing have been collected. In this context, attention is focused on how conservation measures have positively affected both target and targeted species.[517] This was possible primarily through the individuation of VMEs like including seamounts, hydrothermal vents, cold water corals and sponge fields.[518]

In this sense several limitations were imposed upon vessels. CCAMLR required their Members to '[...]require their vessels to clearly mark fishing lines into line segments and collect segment specific data on the number of VME indicator units' and if 'five or more VME indicator units are recovered within one line segment, to immediately communicate to the Secretariat and to their Flag State the location of the midpoint of the line segment from which those VME indicator units were recovered along with the number of VME indicator units recovered'.[519] This requirement served as

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https://wwf.panda.org/?181481/Southern-Ocean-protected-area-to-shield-marine-region-more-diverse-than-Galapagos≥ (20 November 2009).

[515] --'South Orkneys Marine Protected Area' (British Antarctic Survey) ≤ https://www.bas.ac.uk/media-post/south-orkneys-marine-protected-area/≥ (20 November 2009).

[516] M J Dunn, J R Silk, P N Trathan 'Post-breeding dispersal of Ade ´lie penguins (Pygoscelis adeliae) nesting at Signy Island, South Orkney Islands' (2010) 34 Polar Biology 205 ≤DOI 10.1007/s00300-010-0870-4≥ .

[517] CCAMLR ' Conservation Measure 22-05: Restrictions on the use of bottom trawling gear in high-seas areas of the Convention Area'(2008) ≤https://www.ccamlr.org/measure-22-05-2008≥.

[518] CCAMLR 'Conservation Measure 22-06: Bottom fishing in the Convention Area' (2012) ≤https://www.ccamlr.org/measure-22-06-2012≥.

[519] CCAMLR 'Conservation Measure 22-07 Interim measure for bottom fishing activities subject to Conservation Measure 22-06 encountering potential vulnerable marine ecosystems in the Convention Area' (2013) Definition 2(3) and 2(5) ≤https://www.ccamlr.org/measure-22-07-2013≥.

an effective instrument primarily to collect a wide range of data on benthos recovered in a daily period, and secondarily to avoid significant adverse impacts on benthic habitats from bottom fisheries.[520] Even though those measures were addressed to all the AT areas, data showed a divergence between areas beyond and within the South Orkney area. The amount of benthic fauna in the South Orkney MPA was reported larger in number than that living in outside zones of AT area. Even if the presence of such a rich biodiversity was attributed to intrinsic reasons, by incorporating two of the least productive regions sampled, the higher degree of protection in the area vested a crucial role. This is mainly due to the minor level of disturbance of bottom gears experienced in the area compared to outside zones.[521] As a matter of fact, the only active fisheries surrounding the South Orkney MPA concern krill, which is unlikely to impact the benthos.[522] Considering the increasing pressure on demersal fisheries, these data provided an important means to assess potential future impacts on benthic communities.[523] The successful outcome of these measures provided a valuable tool to support the management system in the Southern Ocean, particularly in unprotected zones, where there is a higher likelihood of encountering these VMEs.[524] These models had already been applied in different regions of the Antarctic shelf and slope, before the creation of the first MPA.[525] The Ross Sea MPA itself widely benefited from these measures. However, This last MPA management system was not just limited to benefit from past measures.

[520] CCAMLR 'Conservation Measure 22-07, Definition 7 and 8.

[521] M J Brasier, S M Grant, P N Trathan, L Allcock, O Ashford, H Blagbrough, A Brandt, B Danis, R Downey, M P Eléaume, P Enderlein, C Ghiglione, O Hogg, K Linse, M Mackenzie, C Moreau, L F Robinson, E Rodriguez, V Spiridonov, A Tate, M Taylor, C Waller, H Wiklund and H J Griffiths 'Benthic biodiversity in the South Orkney Islands Southern Shelf Marine Protected Area' (2018) 19 Biodiversity Conservancy International 13 ≤ https://doi.org/10.1080/14888386.2018.1468821≥.

[522] A J Constable, W K de la Mare, D J Agnew, I Everson and D Miller 'Managing fisheries to conserve the Antarctic marine ecosystem: practical implementation of the Convention on the Conservation of Antarctic Marine Living Resources (CCAMLR)'(2000) 57 ICES Journal of Marine Science 781 ≤https://doi.org/10.1006/jmsc.2000.0725≥.

[523] Brasier and others (2018) 13.

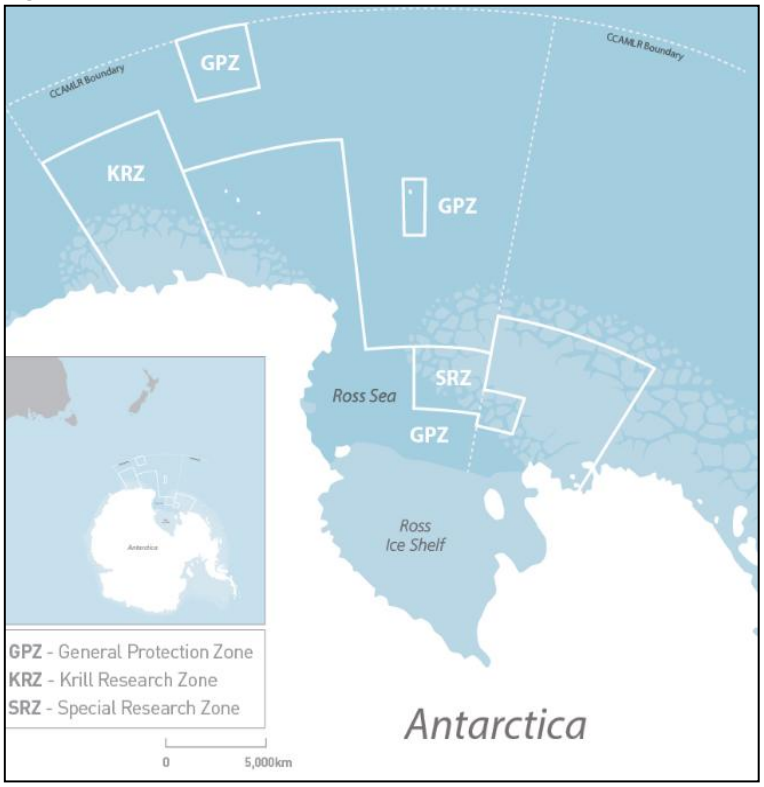
[524] A L Post, P E O'Brien , R J Beaman , M J Riddle and L De Santis 'Physical controls on deep water coral communities on the George V Land slope, East Antarctica' (2010) 22 Antarctic Science 371-378 ≤doi:10.1017/S095410201000018≥ .

[525] R J Beaman and P T Harris 'Bioregionalization of the George V Shelf, East Antarctica' (2005) 25 Continental Shelf Research 1657-1691 ≤ https://doi.org/10.1016/j.csr.2005.04.013≥ ; S Thrush, P Dayton, R Cattaneo-Vietti, M Chiantore, V Cummings, N Andrew, I Hawes, S Kim, R Kvitek, 'Broad-scale factors influencing the biodiversity of coastal benthic communities of the Ross Sea' (2006) 53 Deep Sea Research Part II: Topical Studies in Oceanography 959-971 ≤https://doi.org/10.1016/j.dsr2.2006.02.006.≥

2.3.2.5 The Ross Sea Region

The Ross Sea MPA, covering a total area of 1.55 million km^2, is the largest HSMPA in the worldThe 'No-take' zone, which forbids all type of fisheries, covers 72% of the total area.[526]
The Ross Sea region MPA comprises three discrete zones serving for conservation purposes. This tripartition in internal protected zones responds to three different objectives: protection the region's ecosystems from threats (threat mitigation); protection of an adequate proportion of the marine environments in the region(Representativeness) and scientific reference in areas with little or no fisheries as to understand how marine ecosystems work.[527]

Figure 9: THE STRUCTURE OF THE ROSS SEA MPA[528]



[526] --'Achievements and challenges' (CCAMLR website) ≤https://www.ccamlr.org/en/organisation/key-challenges-and-achievements≥ (20 March 2020).
[527] --'Ross Sea region Marine Protected Area' (New Zealand Foreign Affairs and Trade) ≤https://www.mfat.govt.nz/en/environment/antarctica/ross-sea-region-marine-protected-area/≥ (last access 26 October 2016).
[528] --'Ross Sea region Marine Protected Area' (New Zealand Foreign Affairs and Trade) ≤https://www.mfat.govt.nz/en/environment/antarctica/ross-sea-region-marine-protected-area/≥ (last access 26 October 2016).

The General Protection Zone, which is the largest of the zones, includes three different areas itself, aims at protecting different representative habitats and bioregions, to mitigate or eliminate specified fishing-sourced ecosystem threats and support scientific research and monitoring. The duration for the General Protection Zone has been set at 35 years. The Special Research Zone includes an important continental slope fishing area and includes a area deveoted to scientific research on the relationship between climate change and fisheries and the management of the relevant toothfish fishery. The creation of this zone is particularly important for undermined harvested species like the toothfish. Notwithstanding the sea's remoteness of the area has largely impaired global-impacting phenomena like heavy fishing and shipping pressure, in recent years a some fishermen have individuated these areas as potential new grounds, by virtue of rising prices for seafood and the low cost of fuel.[529] This zone also contributes to representative protection, particularly to some pelagic conservation objectives. As highlighted by the Southwest Fisheries Science Center, studies in this zone improve the knowledge about toothfish and krill and increase the ability to sustainably manage these type fisheries.[530] The duration agreed for this zone is instead 30 years, at the end of which the Scientific Committee will consider whether other measures are required to meet agreed science and protection objectives.[531] The third zone, the Krill Research Zone is concerned with research activities related to Antarctic krill.[532].

This fragmentation of conservation zones could contribute to make The Ross Sea Region a model for MPAs international fora. Its conservation purposes are both addressed to fisheries and so to target-species and to associated species upon target-species and none-target species. CCAMLR monitors the managing of harvested species, either verifying the potential impacts on dependent species and associated species.

In relation to associated species, over the past 15 years, seabird mortality caused by fishing operations has been reduced from thousands of birds annually to almost zero.[533] The achievement

[529] There are witnesses of Toofish fishing in the area, which is sold as the highly prized Chilean sea bass; B C Howard 'World's Largest Marine Reserve Created Off Antarctica' (National Geographic website) ≤https://www.nationalgeographic.com/news/2016/10/ross-sea-marine-protected-area-antarctica/≥ (27 October 2016).

[530] --'The Ross Sea region Marine Protected Area (RSRMPA)' (NOAA Fisheries: Southwest Fisheries Science Center) ≤ https://swfsc.noaa.gov/contentblock.aspx?Division=AERD&id=22203&ParentMenuId=42≥.

[531] See note 528.

[532] CCAMLR 'Conservation Measure 91-05: Ross Sea region marine protected area' (2016) 12-13.

[533] See note 513.

of these goals was possible thanks to the enforcement of a combination of measures including seasonal closures, night setting, the deployment of streamer lines, additional line weights to increase sink rates, prohibition on the discharge of offal during setting and hauling and the use of bird exclusion devices around the hauling point interactions in Antarctic ecosystems. [534]

These measures related to the conservation of the foraging habits of penguins, marine mammals and other seabirds such as albatrosses and petrels, are crucial in the decision-making process. As a matter of fact, they provide important information on ecosystem dynamics, ranging far beyond the mere knowledge of commercial fish stocks.[535]

Overall, through the creation of these two MPAs CCAMLR has brought into existence two unprecedented models in the high sea context. No other high seas management body has achieved this level of conservation, exceeding the global average of protected areas in ocean to 7.91% and to 1,8 % in high seas.[536] The greatest successes have consisted in total compliance with conservation measures, undertaking important conservation measures under the auspices of scientific progress.

CCAMLR model has shown that measures for conservation purposes are more effective when they are heterogenous, thus addressed to all forms of life (target and non-target species). This specific conformation became even more necessary in this region for the close interdependence between all forms of marine life. The process generally involves as first step the regulation of fisheries, and then it regulates all the other species associated to it. Doubtlessly, as foreseen for the Mediterranean too, cooperation between RFMOs and organs devoted to the conservation of non-target species is a catalyst for a better conservation of the latter ones. This is particularly so in the case concerned because of the hybrid nature of CCAMLR. In fact, RFMOs are very often limited to the management of a specific type of resource, in particular fisheries, and do not address marine biodiversity in general,[537] whereas CCAMLR created a linkage between an RFMOs' approach and the ecosystem based-management principles. For all these reasons, albeit its uncommonness, the ATS to date has been estimated the most advanced of the regional frameworks

[534] Ibid.
[535] Hislop and Jabour (2015) 172.
[536] UNEP-WCMC. 'World Database of Protected Areas' ≤https://www.protectedplanet.net/marine≥ (2020).
[537] Tladi in Freestone (ed) (2019) 149.

for conservation purposes on the high seas.[538]

2.3.2.6 Limits of the Antarctic network

However, not all the goals prospected have been accomplished and problems remain.
First, the measures adopted in order to contrast IUU fishing are insufficient.[539] This is mainly due to the lack of sufficient data on fishing operations, particularly concerning removals by IUU vessels and the impact of IUU operations on species taken incidentally including on VMEs.[540]
Although the situation is under control for vessels flying parties' flag, the main problem remains for third-parties. This is the main problem any regional organisation faces.
The treaty expressly provides that 'nothing in the present Treaty shall prejudice or in any way affect the rights, or the exercise of the rights, of any State under international law' in their regards.[541] In compliance with this provision the ATS parties will be obliged to comply with Annex V Rules and cooperating in the achievement of its preservation objectives. Vessels flying their flag will be seen denied their access to a marine ASPA without the prior permission of the competent authority, but non-state parties will not..[542] By consequence, third parties are not obliged to comply with the conservation measures.[543]
Furthermore, in relation to conservation purposes, it was argued that, even including no-take and multi-use zones, the Southern Ocean MPA network is still not representative of all benthic ecoregions and pelagic clusters, thus of Southern Ocean biodiversity.[544] This is in line with global MPA trends where, while there has been an overall increase in representation, overall 61% of the

[538] E Druel, P Ricard, J Rochette and C Martinez 'Governance of Marine Biodiversity in Areas Beyond National Jurisdiction at the Regional Level: Filling the Gaps and Strengthening the Framework for Action: Case Studies from the North-East Atlantic, Southern Ocean, Western Indian Ocean, South West Pacific and the Sargasso Sea' (2012) IDDRI 4; Johnson (2017) 720.
[539] According to CCAMLR's information up to seven IUU vessels are still active in the Convention Area. There is some evidence to suggest that these vessels are supported by a reefer vessel and cooperate with each other.
[540] Note 513.
[541] Antarctic Treaty Article 6.
[542] Madrid Protocol Article 4(1).
[543] Kachel (2008) 126.
[544] C M Brooks, S L Chown, L L Douglass, B P Raymond, J D Shaw, Z T Sylvester and C L Torrens 'Progress towards a representative network of Southern Ocean protected areas'(21 March 2020) Plos One 14 ≤ https://doi.org/10.1371/journal. pone.0231361≥.

benthic ecoregions in national waters remain unprotected, and globally most large marine ecosystems do not have greater than 10% representation.[545] Cooperation involving both States and organisations remains the most effective instrument to improve this system. Distrust can only lead to 'social traps' where actors refuse cooperation, despite potential mutual benefits.[546] As highlighted by several scholars, even in failure, high profile meetings can help open political windows of opportunity to achieve solid commitments.[547] Successfully expanding the current network of MPAs in the Southern Ocean would exemplify global cooperation in the face of increasing environmental challenges. It was suggested that the creation of many small HSMPAs rather than large ones like the Ross Sea MPA would be less enforcing and would be more efficient in addressing conservation measures.[548] Part of the scientific community has suggested that a single MPA, even of great dimension, could not extend across all depth ranges, and consequently could represent a wide range of local species' distribution.

2.3.3 The North-East Atlantic MPA Network

2.3.3.1 The North-East Atlantic treaty system

The North-East Atlantic MPA Network is, perhaps, the less-articulated treaty system among all the regional cases taken in consideration. The 1992 Convention for the Protection of the Marine Environment of the North-East Atlantic, (OSPAR Convention)[549] was the foundation stone of the North-East Atlantic network. It could be considered as a merger of two former treaties: the 1972

[545] K Jantke, K Jones, J Allan, A Chauvenet, J Watson and H Possingham 'Poor ecological representation by an expensive reserve system: Evaluating 35 years of marine protected area expansion'(2018) 11 Conservation Letters ≤DOI: 10.1111/conl.12584≥ .

[546] For discussion see. B Rothstein *Social traps and the problem of trust* (Cambridge University Press 2005).

[547] C M Brooks, L B Crowder, H Österblom and A L Strong 'Reaching consensus for conserving the global commons: The case of the Ross Sea Antarctica' (2019) Conservation Letter 6 ≤https://doi.org/10.1111/conl.12676≥;R O Keohane and J Nye *Power and interdependence* (4nd ed Pearson 2011); R O Young *The effectiveness of international environmental regimes* (Cambridge 1999).

[548]D E Johnson, S Rees, D Diz, P J S Jones, C Roberts, C Barrio Froján 'Securing effective and equitable coverage of marine protected areas: The UK's progress towards achieving Convention on Biological Diversity commitments and lessons learned for the way forward' (2018) Aquatic Conservation: Marine and Freshwater Ecosystems 8 ≤https://doi.org/10.1002/aqc.3065≥ .

[549] Convention for the protection of the marine environment of the North-East Atlantic (opened for signature 22 September 1992,entered into force 25 March 1998) 2354 UNTS 67 (OSPAR Convention).

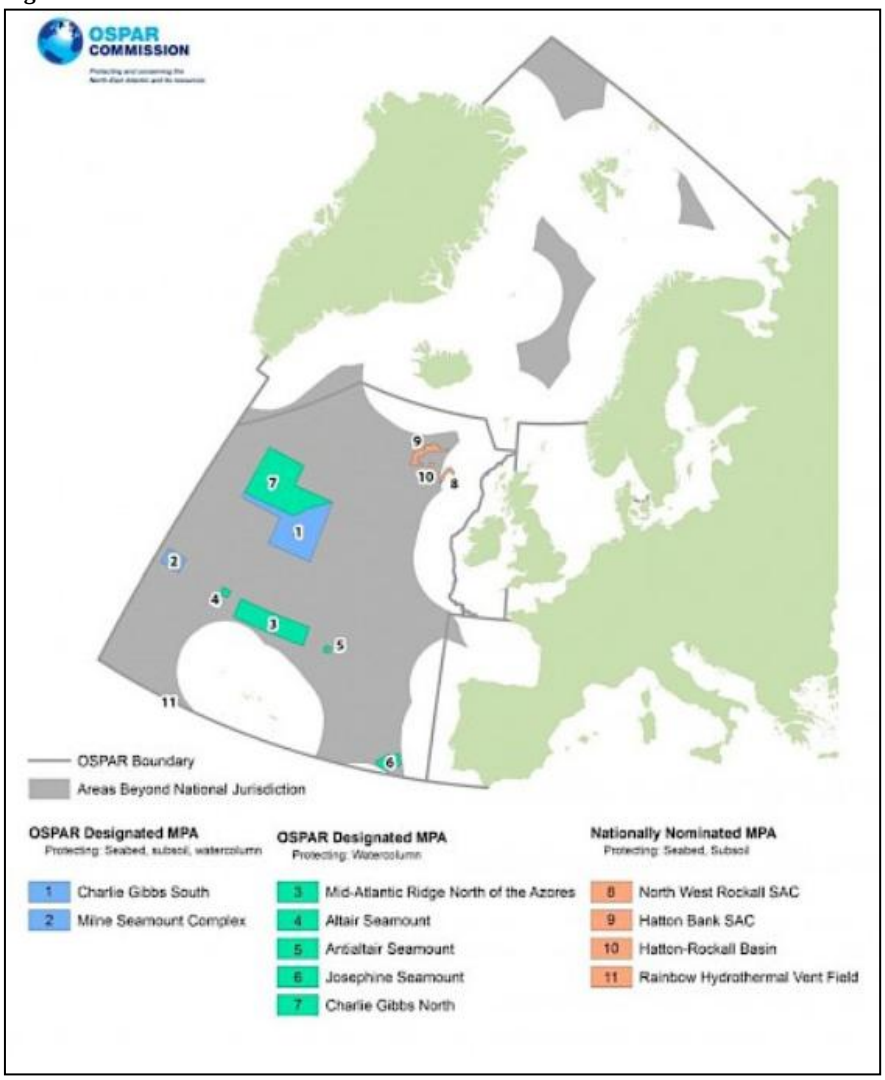
Oslo Convention[550] and the 1972 Paris Convention[551]. While originally providing only for a general obligation to protect the marine environment, in 1998 the contracting States at the Ministerial Meeting of the OSPAR Commission in Portugal, adopted the Annex V aiming at concretize the principles of CBD.[552] According to the Annex V, the Convention Parties shall 'take the necessary measures to protect and conserve the ecosystems and the biological diversity of the maritime area, and to restore, where practicable, marine areas which have been adversely affected; and cooperate in adopting programmes and measures for those purposes for the control of the human activities identified by the application of the criteria in Appendix 3'.[553]

The OSPAR Convention has contributed to an enormous progress in the creation of MPAs beyond national jurisdiction. In 2009, the document 'OSPAR's Regulatory Regime for establishing MPAs beyond national jurisdiction (ABNJ) of the OSPAR maritime area (OSPAR's regulatory regime)'[554]was drawn up in Brussels. OSPAR's regulatory regime introduces the legal basis and legal competence of the OSPAR Commission to establish MPAs in ABNJ. It established eight areas as potential MPAs on the high seas, and in 2010, 6 of those eight were created:[555] Charlie-Gibbs South MPA (146,032 km2);[556] Milne Seamount Complex MPA (20.914 km2);[557] Mid-Atlantic Ridge north of the Azores High seas MPA (93.570 KM2);[558] Altair Seamount High seas MPA (4384 km2);[559] Altair High seas MPA and the Josephine Seamount Complex High seas

[550] Convention for the prevention of marine pollution by dumping from ships and aircraft (Adopted 15 February 1972, entered into force 7 April 1974) 932 UNTS 3 (Oslo Convention).
[551] Convention concerning the Protection of the world Cultural and natural heritage (adopted 16 November 1972, entered into force 17 December 1975) 1037 UNTS 151 (Paris Convention).
[552] OSPAR Convention, Annex V on the Protection and Conservation of the Ecosystems and Biological Diversity of The Maritime Area.
[553] OSPAR Convention Annex V, Article 2 (a) and (b).
[554] OSPAR Commission 'OSPAR's regulatory Regime for establishing Marine protected areas (MPAs) in ABNJ of the OSPAR Maritime Area' (Brussels 22-26 June 2009) Meeting of the OSPAR Commission OSPAR 09/22/1-E, Annex 6.
[555] OSPAR Commission, Status Report on the OSPAR Network on Marine protected areas (2014) 18.
[556] OSPAR 'Decision 2010/2 on the establishment of the Charlie-Gibbs South Marine Protected Area' (2010)OSPAR 10/23/1-E, Annex 36.
[557] OSPAR 'Decision 2010/1 on the Establishment of the Milne Seamount Complex Marine Protected Area (2010) OSPAR 10/23/1-E, Annex 34.
[558] OSPAR 'Decision 2010/6 on the Establishment of the MAR North of the Azores High Seas Marine Protected Area' (2010) OSPAR 10/23/1-E, Annex 44.
[559] OSPAR 'Decision 2010/4 on the Establishment of the Antialtair Seamount High Seas Marine Protected Area' (2010) OSPAR 10/23/1-E, Annex 40.

MPA.[560] As last, in 2012 was established the Charlie Gibbs north MPA.[561]

Figure 10: OSPAR MPA NETWORK[562]



This HSMPA network covers nearly 40% of the OSPAR maritime area.

Their geographical coverage is heterogenous. Charlie Gibbs South MPA and Milne Seamount Complex MPA are situated entirely in ABNJ, where the seabed, the subsoil and the water column are protected collectively by all OSPAR Contracting Parties; Mid Atlantic Ridge north of the

[560] OSPAR 'Decision 2010/5 on the Establishment of the Josephine Seamount High Seas Marine Protected Area' (2010) OSPAR 10/23/1-E, Annex 42.

[561] OSPAR 'Decision 2012/1 on the establishment of the Charlie-Gibbs North High Seas Marine Protected Are'a (2010) OSPAR 12/22/1, Annex 6.

[562] --'MPAs in areas beyond national jurisdiction' (OSPAR Commission) ≤https://www.ospar.org/work-areas/bdc/marine-protected-areas/mpas-in-areas-beyond-national-jurisdiction≥ (last access 2020).

Azores HSMPA, Altair Seamount HSMPA, Antialtair HSMPA and Josephine Seamount HSMPA are situated within an area subject to a submission by Portugal to the UN Commission on limits of the Continental Shelf (CLCS) for an extended continental shelf (ECS). Portugal declared the intention to assume the responsibility to take measures for the protection of the seabed and the subsoil within these areas and the OSPAR Commission agreed to collectively protect the water column of these MPAs; Charlie- Gibbs North High Seas MPA is partly situated within an area subject to a submission by Iceland to the UN CLCS for an ECS. The water column is protected collectively by all contracting parties, while the seabed and the subsoil remain unprotected.[563] These latter aspects are not relevant for the sake of our thesis, since the seabed and subsoil are part of the Area.

2.3.3.2 The Transversal management system and the role of RFMOs

The management of MPAs is regulated by separated recommendations. The implementation of the management plan is ensured trough a twofold way. First, contracting parties are obliged report the measures within the competency of OSPAR to OSPAR Commission. Secondly, it is promoted cooperation with other competent authorities where management action is appropriate for human activities outside the legal competency of OSPAR. In this regard, the Collective Agreement embodies a central role. It provides for the exchange of information on each other's activities and achievements, taking into consideration all those measures in the North-East Atlantic area by scope of facilitating dialogue on the area between legally competent and organs outside the OSPAR competence.[564] At this stage many organisations have been involved. Even if it has a different objective, the foundation stone of this high-efficient-system was the bilateral Memorandum of Understanding (MOU) between OSPAR and NEAFC in 2008.[565] As evident in the role of CCMALR in the Southern Ocean, working jointly with a RFMO to address conservation measures conservation both to target and non-target species has proved to be the most suitable way to reach

[563] Ibid.
[564] OSPAR Collective arrangement between competent international organisations on cooperation and coordination regarding selected areas in areas beyond national jurisdiction in the North-East Atlantic (September 2014) ≤https://www.ospar.org/documents?v=33030≥ (2018).
[565] Memorandum of Understanding between the North East Atlantic Fisheries Commission (NEAFC) and the OSPAR Commission (2008) ≤https://www.ospar.org/site/assets/files/1357/mou_neafc_ospar.pdf≥.

best outcomes. Likewise, cooperation amongst OSPAR and NEAFC produced similar results. In comparison to the CCAMLR NEAFC it is a full-fledged RFMO. This joint working group resorts to a twofold approach. OSPAR delivers ease of implementation of an ecosystem-based management of all relevant human activities in the marine environment, whilst NEAFC adopts measures to protect the marine ecosystem from the potential adverse impacts of fisheries.[566] OSPAR embraces NEAFC's objectives as to enhance protective, restorative and precautionary measures for a more efficient protection and conservation of species, habitats and ecosystems of the North-East Atlantic marine environment. In 2008 The NEAFC Commission individuated the measures required for these purposes: mapping of all bottom fishing activity from the last 20 years; regulating fisheries by exploratory protocols in areas where previous bottom fisheries activities did not take place; mapping of VMEs; and providing an obligation for NEAFC contracting parties to have interrupt vessels fisheries operation when a VME is encountered in the course of fishing activitities.[567]

As a result of this first decision, in 2014 NEAFC individuated VMEs within Charlie-Gibbs Fracture Zone, Altair Seamount and the Antialtair Seamount, and there bottom fishing was prohibited.[568] The most relevant aspect was that in the selection process of VMEs in the North-East Atlantic, a member of NEAFC was also a member of the OSPAR MPA group, and this contributed to enhance a geographically aligned link between the closures established by NEAFC and OSPAR.[569] Cooperation between NEAFC and OSPAR has achieved positive outcomes and represents a model of effective cooperation at regional level for the conservation purposes.

However, while CCAMLR had integrated the conservation of both target and non-target species in compliance with an ecosystem-based approach, NEAFC, addressed its measures in OSPAR solely to fisheries. NEAFC is largely limited to managing fishing activities, whereas any question relating to the management of fisheries is explicitly excluded from OSPAR's legal competence.[570] NEAFC

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[566] --'Collective Arrangement' (OSPAR Commission)≤https://www.ospar.org/about/international-cooperation/collective-arrangement≥(last access 2020).

[567] FAO 'Worldwide review of bottom fisheries in the high seas'(2009) FAO Technical Paper 522 Rev 1, 25.

[568] NEAFC 'Recommendation 19 on the protection of vulnerable marine ecosystems in the NEAFC Regulatory Area' (2014) Article 5 ≤https://www.neafc.org/managing_fisheries/measures/current≥.

[569] Tanaka (2012) 319.

[570] S Ásmundsson and E Corcoran 'The Process of Forming a Cooperative Mechanism Between NEAFC and OSPAR: From the First Contact to a Formal Collective Arrangement'(2015) UNEP Regional Seas Reports and Studies No. 196, 7.

undertook a plan to include in its mandate the management of all marine biodiversit.[571] OSPAR Commission noted how cross-sectoral and cross-regional coordination is essential for the application ecosystem-based approach.[572] This is particularly important for the conservation of the large number of non-target species living in those areas.[573]

A cooperation is the best way to enlarge participation to third parties and a way to enhance a stronger regime of conservation. For these reasons, invitation has been opened to ICCAT and ISA under the collective agreement. Participation of this latter would play a crucial role for the peculiar situation of this network, by virtue of the establishment of the MPAs in the Josephine Seamount, the Antialtair Seamount and the Altair Seamount on the extended continental shelf.

2.3.3.3 The cooperation with the Coastal State in the Extended Continental Shelf: the MAR North of the Azores HSMPA

Even before considering of cooperating with the ISA, OSPAR had enhanced a strong cooperation with a State involved in the creation-process (Portugal). As noted by Ribeiro, the practice under the OSPAR Convention shows the confer of a special position to coastal states where the high seas overlap with their continental shelf beyond 200 nautical miles.[574] She further upheld the inviolability of coastal states' rights over the continental shelf in case of overlap,[575] on the base of OSPAR Decision according to which such a designation 'does not in any way prejudice the sovereign rights and obligations of the coastal State over the continental shelf in accordance with [the LOSC]'.[576] This decision confirms the jurisdictional framework in the LOSC, according to which States cooperating at the regional level can designate an MPA on the

[571] K D Kraaber 'Institutional arrangements in a BBNJ treaty: Implications for Arctic marine science'(2020) Marine Policy 5≤https://doi.org/10.1016/j.marpol.2019.103807≥.
[572] Ibid.
[573] This wide range of biodiversity include seamount habitats, *Lophelia pertusa* reefs, coral gardens, deep-sea sponge aggregations, several deepwater shark species, orange roughy, leatherback turtles, and blue whales.
[574] M C Ribeiro 'South Atlantic Perspectives on the Future International Legally Binding Instrument under the LOSC on Conservation and Sustainable Use of BBNJ' (2017) 32 International Journal of Marine and Coastal Law 758; literally 'as demonstrated by the practice of OSPAR Contracting Parties, it is difficult to conceive of the designation of high seas MPAs without the […] consent' of these coastal States.
[575] Ibid.
[576] OSPAR '2003 Strategies of the OSPAR Commission for the Protection of the Marine Environment of the North-East Atlantic' (Summary Record OSPAR 03/17/1-E) Annex 31.

high seas, leaving the rights of the coastal State over the continental shelf unaffected.

As highlighted by Oude Elferink, an affordable solution to balance national rights and the high seas regime is the application of the 'due regard' principle, in compliance with the LOSC.[577] According to this scheme the "due regard" requirement is part of the rights and obligations of the coastal State in relation to its continental shelf to which the decision refers. This situation has come into existence for the first time in this context, considering the contribution of Portugal. Generally, States are wary with this kind of proposals, seen that they tend to prefer the 'adjacency' approach rather than the 'due regard' one. As noted by Treves, States avoid the application of the 'due regard' approach, because its application would imply an international review of their compliance with international obligations in managing their maritime zones.[578] A recourse to 'due regard' implies maturity in cooperation, meaning that both States involved must do their part. In addition, as highlighted by Ribeiro, the exclusive competence of the coastal State to protect the environment in the outer continental shelf entails a great responsibility for the State regardless of the competence is carried out in its own interest and/or on behalf of the international community.[579] This level of difficulty increases in the outer continental shelf under high seas.

Despite these limits, In Azores HSMPA case, Portugal and the OSPAR Commission worked jointly, moving towards this direction. The case had a special importance and attracted international attention, namely by being referred in the Report of the Secretary-General of 22

[577] O Elferink in Freestone (ed) (2019) 80; see. In the context of high seas see. LOSC Article 87; Definition of due regard has been developed by both International and regional tribunals. For the purposes of this discussion, I refer to the definition given in the *Chagos* case for its highly specific character and for having been supported by the ILC. It formulated three criteria: balancing of the rights involved; consideration of alternative approaches; assessing the need for consultation with the other State concerned in *Chagos Marine Protected Area Arbitration (Mauritius v United Kingdom)* (18 March 2015) 31 Rep Intl Arbitral Award 571, para 519; for the support of the ILC on Article 71 of its 1956 Draft Articles on the Law of the Sea, reporting the words 'unjustifiable interference' see. The Yearbook of the International Law Commission Volume 2 'Documents of the eighth session including the report of the Commission to the General Assembly'(November 1956) A/CN.4/SER.A/1956/Add.l 1956, 299.

[578] T Treves 'Principles and Objectives of the Legal Regime Governing Areas Beyond National Jurisdiction' in E J Molenaar and A G Oude Elferink (eds) *The International Legal Regime of Areas beyond National Jurisdiction: Current and Future Developments* (Martinus Nijhoff 2010) 7–25 at p. 2; Elferink in Freeston (ed) (2019) 83.

[579] M C Ribeiro 'Marine Protected Areas: the Case of the Extended Continental Shelf' (paper presented at Conference: 30 years after the signature of the United Nations Convention on the Law of the Sea: the protection of the environment and the future of the Law of the Sea at Faculty of Law of University of Porto 16 November 2012) 200-201.

March 2011.[580] Portugal reported to the OSPAR Commission on the selection of the seabed of the MAR North of the Azores as a component of the OSPAR Network of MPAs. Portugal engaged itself to determine the programmes and the measures necessary for the achievement of the conservation purposes regarding the seabed (legally qualified as part the ECS) of the MAR North of the Azores.[581] At the same time, Portugal requested that the OSPAR Commission took the necessary measures for the waters superjacent to the MAR North of the Azores area.[582] As highlighted in the Recommendation 'The establishment of MPAs encompassing the seabed and the superjacent waters of the MAR North of the Azores seabed by the Portuguese Republic and the OSPAR Commission respectively, is essential to maintain the integrity of the ecosystems of the MAR North of the Azores by providing for coherence, compatibility and complementarity of the management measures to be taken beyond and within national jurisdiction.' [583] A similar situation is reflected in the Josephine Seamount, the Antialtair Seamount and the Altair Seamount MPAs.

2.3.4 The Sargasso Sea network

2.3.4.1 The legal and environmental framework

The Sargasso Sea area is the most recent institutional landscape among all the regional programs discussed and consequently the one which needs to be developed the most.

The Sargasso Sea is a unique part of the world's ocean, located within the North Atlantic sub-tropical gyre with its boundaries defined by the surrounding currents, which makes it the only sea without boundaries. About 64% of this watery coverage is classified as high sea.[584]

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[580] UNGA Report of the Secretary General 'Oceans and the law of the sea' (22 March 2011) UN Doc A/66/70 para 174.

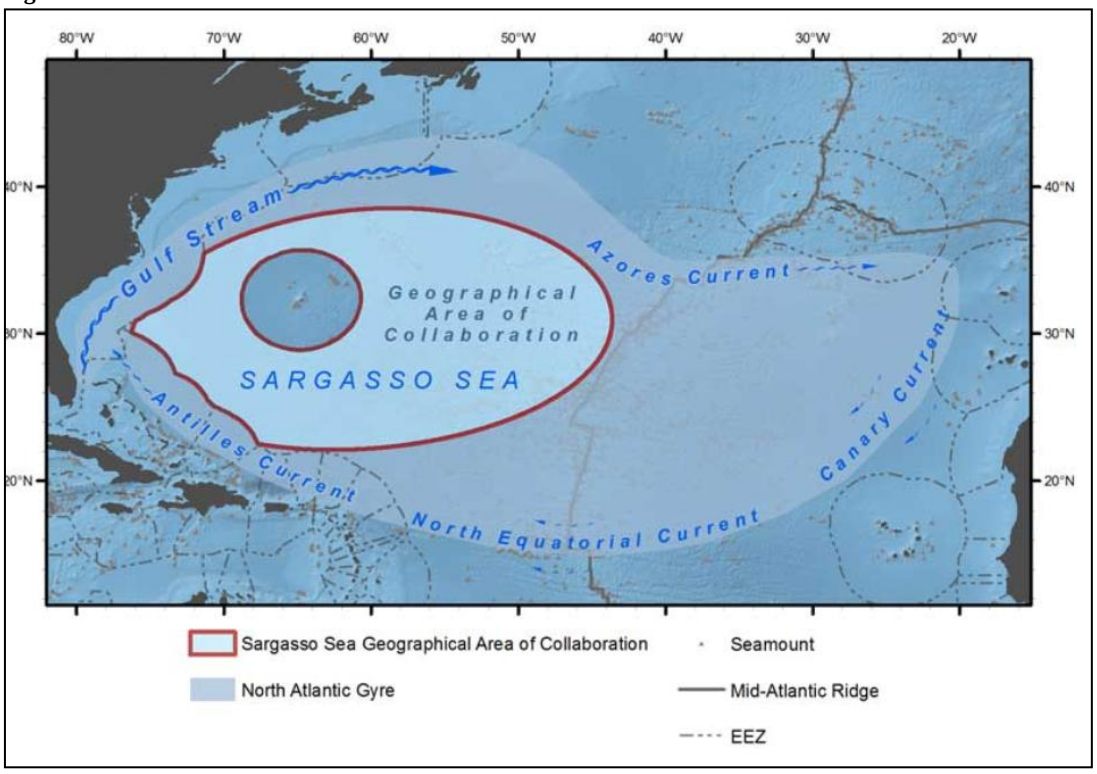
[581] OSPAR Commission 'Recommendation 2010/17 on the Management of the MAR North of the Azores High Seas Marine Protected Area' (2010) OSPAR 10/23/1-E, Annex 45, Preamble 2.

[582] Ibid at para 12. It is spelt out in the at para 13 that '[T]he establishment of this MPA does not create any precedent regarding the establishment by the OSPAR Commission of other MPAs in waters superjacent to areas of the seabed subject to submission to CLCS or prejudice the sovereign rights and obligations of coastal States to the continental shelf. The establishment of such MPAs will be decided on a case by case basis'.

[583] Ibid at para 12.

[584] D D Laffoley, H S J Roe , M V Angel, J Ardron , N R Bates, I L Boyd, S Brooke, K N Buck, C A Carlson, B Causey, M H Conte, S Christiansen, J Cleary, J Donnelly, S A Earle, R Edwards , K M Gjerde , S J Giovannoni, S Gulick , M Gollock, J Hallett, P Halpin, R Hanel, A Hemphill, R J Johnson , A H Knap, M W Lomas, S A McKenna, M J Miller, P I Miller, F W Ming, R Moffitt, N B Nelson, L Parson, A J Peters, J

Figure 11: SARGASSO SEA AREA[585]



Bermuda, at the centre of the Sargasso Sea, is an overseas territory of the United Kingdom. It claims a 200 nm EEZ of some 180,000 square nm.[586] The remainder is largely beyond national jurisdiction.

It is a unique ecosystem built around the floating Sargassum seaweeds, the world's only holopelagic algae.[587] It is the most important spawning site for eels in the world and it includes a wide range of iconic species and rare or threatened species like whales, turtles, sharks and emblematic species like the Sargassum Angelfish as well as potential option values for organisms

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Pitt ,P Rouja, J Roberts, J Roberts, D A Seigel , A N S Siuda, D K Steinberg, A Stevenson, V R Sumaila , W Swartz, S Thorrold, T M Trott and V Vats 'The Protection and Management of the Sargasso Sea: The golden floating rainforest of the Atlantic Ocean'(2011) SSA and Government of Bermuda Summary Science and Supporting Evidence Case ≤http://www.sargassoseacommission.org/storage/documents/Sargasso.Report.9.12.pdf≥ iv.

[585] --'Sargasso Sea' (The Ocean Fondation) ≤https://oceanfdn.org/sargasso-sea/≥

[586] Fisheries Amendment Act 1996 (Bermuda) section 1

[587] D Laffoley and D Freestone 'World Heritage in the High Seas: An idea whose time has come' in R Casier and F Douver (eds) 'The Future of the World Heritage Convention for Marine Conservation Celebrating 10 years of the World Heritage Marine Programme' (2016) World Heritage Papers 45, ≤https://unesdoc.unesco.org/ark:/48223/pf0000246839≥ 128.

that are as yet undiscovered.[588] It plays an important part of life cycle of commercial species as well non-target species.[589] The Sargasso Sea is important for us to understand the relationship between oceans and climate change too. Plastic waste is one of the most relevant stressors in ocean gyres, the rotating current systems which include the Sargasso Sea.[590] This highlights how, in some cases, places identified as having high irreplaceability, such as the Sargasso Sea, might form stand-alone MPAs.[591] However, the biggest challenge that the Sargasso Sea has to face the is a legal one. In the absence of a defined regional framework in 2010, the Sargasso Sea Alliance (SSA) was created as a Partnership among the Government of Bermuda, NGOs, international marine conservation groups, scientists and private donors to ensure recognition of the ecological significance of the Sargasso Sea.[592] and to enhance a range of conservation measures for parts of or all the Sargasso Sea to trough existing regional, sectoral and international instruments. These purposes have recently been incorporated by the Contracting Parties to the Hamilton Declaration.[593]The Hamilton Declaration is the result of a two-year negotiation between interested governments that are either located in the broad Sargasso Sea area or have an interest on the high seas conservation.[594] The Declaration established a Meeting of Signatories and endorsed the establishment of a Sargasso Sea Commission with a Secretariat and supporting financial

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[588] --'Infographic: Ecosystem services of the Sargasso Sea' (WWF website) ≤https://wwf.panda.org/?251750/INFOGRAPHIC-Ecosystem-services-of-the-Sargasso-Sea≥ (1 September 2015) .

[589] The large presence of both high commercial-value species as well as non-target threatened species has a strong economical impact too. As reported by WWF in its study (see note supra) concerning fisheries: revenues of 66 million dollars are registered for Commercial eel harvests in North America and Europe, born in the Sargasso Sea, of 0.6 million dollars from recreational fishing and of 100 million dollars from commercial fisheries caught in this sea, whereas in relation to non-harvestable species revenues of 500 million dollar are counted from the Atlantic whale watching industry and of 15 million from turtle tourism.

[590] --'The Sargasso Sea Commission: High seas conservation' (Open Access Government)≤https://www.openaccessgovernment.org/high-seas-conservation/68511/≥ (23 September 2019)

[591] C M Roberts, R W Page, B C O'Leary, H L Allen, K L Yates, R W Page, A W Tudhope, C McClean, A D Rogers, J P Hawkins, C M Roberts '30 x 30 A blueprint for ocean protection: How we can protect 30 % of our oceans by 2030' (April 2019) ≤https://www.greenpeaceoceanblueprint.org/pdfDocs/Greenpeace_30x30_Blueprint_Report_web.pdf≥79

[592] --'About the Alliance' (Sargasso Sea Alliance) ≤https://www.sargassoalliance.org/about-the-alliance.html≥

[593] Hamilton Declaration on Collaboration for the Conservation of the Sargasso Sea (adopted 11 March 2014) (the Hamilton Declaration).

[594] --'The Hamilton Declaration' (Sargasso Sea Commission) ≤http://www.sargassoseacommission.org/about-the-commission/hamilton-declaration≥.

mechanism.[595] The Sargasso Sea Commission, composed of 'distinguished scientists and other persons of international reputation committed to the conservation of high seas ecosystems' can operate only as a steward for the Protection of the Sargasso Sea and keep its 'health, productivity and resilience under continual review.'[596] Despite the recognition of this role, the Commission has no legal personality, nor will it have management authority per se.

This is implicit in the Hamilton Declaration nature, being a non-binding political statement.[597] Management of activities on the high seas remains with the existing international and regional obligations. Compared to the Mediterranean, the North-East Atlantic or the Southern Ocean, the Sargasso Sea lacks a new-binding instrument to promote conservation. It relies on the pre-existing international and regional instruments.

Therefore, the key relevant IOs that have regulatory authority for the Sargasso Sea in ABNJ are the IMO and the ISA, while in the fisheries sector the North-West Atlantic Fisheries Organization (NAFO) having a regulatory authority over part of the area[598] and the ICCAT having it over the whole area, but only over fisheries of 'tuna and tuna-like species.'[599] Regarding fisheries, positive achievements have been obtained even before the creation of the SSA. First, *Sargassum* had already been the subject of a 2005 ICCAT Resolution requesting its contracting parties to provide to the Standing Committee on Research and Statistics (SCRS – the ICCAT Science body) information and data on activities that had a direct or indirect impact on pelagic Sargassum, which is now part of high seas by the Hamilton Declaration area.[600] Secondly, from January 2007 NAFO closed four seamounts chains to bottom trawling and imposed restrictions on mid-water trawling to avoid bottom contact[601] and significant adverse impact on the VMEs.[602] Another instrument used

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[595] The Hamilton Declaration, Point 5.

[596] Hamilton Declaration, Annex 2 (a).

[597] As noted by D Freestone and K K Morrison in 'The Signing of the Hamilton Declaration on Collaboration for the Conservation of the Sargasso Sea: a New Paradigm for High Seas Conservation?' In Freestone (ed)(2019) 160, it is historic that the Hamilton Declaration is the first non-binding instrument designed to provide a framework for intergovernmental collaboration to promote measures, through existing IOs to minimize the adverse effects of human activities in an ecosystem that is primarily on the high seas.

[598] Its regulatory area extends as far south as 35°N into the northern-most part of the Bermuda EEZ

[599] International Convention for the conservation of Atlantic Tunas (signed 14 May 1966, enter.ed into force 21 March 1969) 673 UNTS 63 (ICCAT Convention) Article 4.

[600] ICCAT Resolution On Pelagic Sargassum (2005) Res 05-11 ≤https://www.iccat.int/Documents/Recs/compendiopdf-e/2005-11-e.pdf≥.

[601] NAFO SCS 'Report of the 6th Meeting of the NAFO Scientific Council Working Group on Ecosystem Science and Assessment' (WGESA) (Dartmouth 2013) NAFO SCS Doc 13/024 .

to assess successful conservation measures was the Convention on Migratory Species (CMS). As a matter of fact, the most emblematic species in the Sargasso sea is a migratory species and it is not protected in international waters under this Convention. Under the Convention, Parties that are Range States of migratory species listed in Appendix II 'shall endeavour to conclude' agreements and/or MOU to protect one or more of the migratory species that are listed in the Convention's Appendices, within their full migratory range.[603] In 2014, Monaco, which is a member party to the Hamilton Declaration, successfully proposed the listing of the European eel (spawning in the Sargasso Sea) under Appendix II of the CMS.[604]

2.3.4.2 The description as EBSA

The most innovative profile was the description of the area as EBSA.

In March 2012, Bermuda submitted a proposal for the 'description' of the Sargasso Sea as an EBSA.[605] Then, in 2014 in a separated workshop two seamounts within the Sargasso area (Corner Rise Seamounts, as well as to the New England Seamounts) were also described as EBSAs.[606] Unusually, therefore, these two seamount chains have been described by two separate EBSA workshops and considered by two different COP decisions, welcoming the scientific information in the workshop reports.[607] This is particularly notable because the SSA was the first to use the EBSA description in proposals in such 'international processes'.[608] EBSA description was required to seek appropriate conservation measures within the relevant existing international and

[602] This is accomplished through the adoption by the NAFO Fisheries Commission of fisheries regulations; these are revised annually. See NAFO Conservation and Enforcement Measures <http://www.nafo.int/fisheries/frames/fishery.html>.

[603] CMS Article 4(3) and 4(1).

[604] UNEP CMS 'Second Meeting of Range States for the European Eel' (Malmo 15-16 May 2018) UNEP/CMS/Eels2/Report, ≤https://www.cms.int/en/meeting/2nd-meeting-range-states-european-eel≥ 5.

[605] CBD 'Ecologically or Biologically Significant Marine Areas (EBSAs) Special places in the world's oceans Areas described as meeting the EBSA criteria at the CBD Wider Caribbean and Western Mid-Atlantic Regional Workshop in Recife, Brasil' (28 February- 2 March 2012).

[606] CBD 'Report of the North-West Atlantic Regional Workshop to Facilitate the Description of Ecologically or Biologically Significant Marine Areas' (Montreal, 24-28 March 2014) (26 May 2014) UNEP/CBD/EBSA/WS/2014/2/4, 6.

[607] COP to the CBD 'Marine and coastal biodiversity: ecologically or biologically significant marine areas' (Hyderabad 8-19 October 2012) (5 December 2012) UNEP/CBD/COP/DEC/XI/17 paragraph 3; COP to the CBD 'Marine and coastal biodiversity: ecologically or biologically significant marine areas (EBSAs)' Pyeongchang 6-17 October 2014) (17 October 2014)UNEP/CBD/COP/DEC/XII/22, paragraph 1.

[608] Freestone and Morrison in Freestone (ed) (2019) 162.

regional sectoral organizations. Notwithstanding, as anticipated in the previous section, 'description' as an EBSA has no legal significance, it is intended that the CBD process will be taken into account by other international processes charged with managing and conserving ocean resources.[609] For example, information shared through the EBSA identification process may help strengthen the scientific basis for conservation measures to be taken by other sectorial entities.[610] In this sense the regional organisation and IOs utilised the CBD/ Recife description.

In 2012, the NAFO Fisheries Commission was the first to use this description to request the NAFO Scientific Council to comment and advise to individuate forage area or other types of Sargasso Sea habitats that could be impacted by different type of fisheries and on whether there was a need of the adoption of conservation measures, including a closure of these areas for fishing.[611] The proposal was then considered in 2013. The proposals formulated were then sent for consideration to the new joint FC/SC Working Group on Ecosystem Approach Framework to Fisheries Management.[612] Furthermore, in 2019 EU proposed the implementation of special conservation measures for the areas inside the NAFO Regulatory Area.[613] Likewise, ICCAT was influenced by the description of the Sargasso as EBSA. in 2012 adopted a resolution which invited the Standing Committee on Research and Statistics (SCRS*)* 'to examine available and accessible information and data on the status of pelagic *Sargassum* and its ecological importance to tuna and tuna-like species.' [614]

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[609] D Diz 'The Seamounts of the Sargasso Sea: Adequately Protected?' (3 June 2016) 31 International Journal of Marine and Coastal Law ≤https://doi.org/10.1163/15718085-12341399≥; Freestone and Morrison in Freestone (ed) (2019) 162.

[610] D Freestone 'The Sargasso Sea Alliance: Working to Protect the "Golden Floating Rainforest of the Ocean"' (2014) 44 Environmental Policy and Law 153.

[611] NAFO FC 'Fisheries Commission's Request for Scientific Advice on Management in 2014 and Beyond of Certain Stocks in Subareas 2, 3 and 4 and Other Matters' (2012) NAFO/FC Doc. 12/24.

[612] NAFO FC Working paper 13/20 (2013) ≤http://sargasso.nonprofitsoapbox.com/storage/documents/Scientific_Council_Advice_Sept_2013_-_FC_WP13-20.pdf≥.

[613] Opinion of the European Economic and Social Committee on 'Proposal for a Regulation of the European Parliament and of the Council laying down conservation and control measures applicable in the Regulatory Area of the Northwest Atlantic Fisheries Organisation and repealing Council Regulation (EC) No 2115/2005
and Council Regulation (EC) No 1386/2007' (COM (2018) 577 final — 2018/0304 (COD)) [2019] OJ C159/09, 61-62.

[614] Resolution By ICCAT On The Sargasso Sea (2012) Res 12-12 in ICCAT 'Report for biennial period Part I 2012-13' (Madrid 2013) (Vol 1) Annex 6, 215 ≤https://www.iccat.int/Documents/BienRep/REP_EN_12-13_I_1.pdf≥; Before the adoption of this resolution, UK had the impetus for (on behalf of its Overseas Territories) a proposal and explanatory note to

As above discussed, in addition to the EBSA description, another innovative hypothesis prospected was the inclusion of the *Sargassum* as an OUV site. The Sargasso Sea would include all the elements in this list. As highlighted above, the process to include high seas under the WH List is underway.[615] the Sargasso Sea would be an ideal "poster child" for such a development.[616]

2.3.4.3 The limits of the current framework

On one hand, the experience of the Sargasso Sea project over the last seven years has evidenced that RFMOs can play a crucial role for the implementation of conservation measures in high seas, especially if in coordination with an innovative designation like EBSA. On the other hand, these RFMOs are still narrowly focused on their own objectives and they failed to implement measures for a correct enhancement of an ecosystem-based approach. Likewise, the other sectorial organizations involved (such as the IMO) are too focused on their particular sectorial concerns to perform a wider biodiversity or ecosystem-stewardship role.[617] The IMO PSSA Guidelines, for example, state that it is 'helpful' to have 'any evidence that international shipping activities are causing damage and whether damage is of a recurring or cumulative nature.'[618] Many influential delegations at IMO treated this provision as an evidentiary requirement, and they refused to take action without convincing proof.[619] The real weakness is the lack of co-ordination between these separate sectors.

There is a clear need for a more holistic and integrated system of governance in order to preserve and sustain biodiversity and ecosystem functions on the high seas. The description as EBSA could seem to be an excellent solution, but as noted by Freestone EBSAs have not as yet seemed to have

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enhance preliminary work with a view to the possible creation of conservation areas within the Sargasso Sea.

[615] See. note.

[616] Freestone (2014) Environmental Policy Law 155.

[617] D Freestone 'Governance of Areas beyond National Jurisdiction: An Unfinished Agenda ?' in J Barrett and R Barnes (eds) *Law of the Sea: UNCLOS as a living treaty* (1rd edn British Institute of International and Comparative Law 2016) 231.

[618] PSSA Revised Guidelines Article 5.2(1)

[619] D Freestone and K Gjerde 'Lessons from the Sargasso Sea Challenges to the conservation and sustainable use of marine biodiversity beyond national jurisdiction' ≤http://www.sargassoseacommission.org/storage/SargassoBrochure.FIN.pdf≥ (2016).

garnered credibility or broad acceptance within the various sectorial organisations.[620] Likewise, its designation as OUV would constitute a step forward, but the WH regime needs to be developed to be addressed on the high seas.

Overall, the Sargasso sea's experience could be a model for achieving protective status for the high seas, but there is a need to enhance a more efficiently- cooperative system. Reliance on pre-existing international and regional instruments has proven evidence of its limits. There is a need of a central governing body able to coordinate the different subjects at stake and to develop a new model legally binding on a wider number of subjects or to strengthen acceptance of the current system (EBSA).

Final remarks

Over the last 20 years MPAs have brought into light the evidence of a positive management system on the high seas under the auspices of the ecosystem approach. To date, a common framework on MPAs in international law of the Sea has not been developed. Its progress has been tracked out separately by IOs, regional organisations and States through multi-lateral agreements. IMO, FAO and COP to CBD developed a range of MPA models that are suitable for high seas. However, the designation of most of these models on the high seas has not been implemented. The establishment of PSSA on the high seas is generally regarded as one of the most appreciated solutions in this context. This is particularly so because of the mandate of IMO. It has been prospected that IMO would play the important role of governing body of the area concerned. This model could be the most appropriate to reconcile the protection of marine environment and the conservation of marine biodiversity. In addition, PSSA model provides a very efficient regime to enhance a strong control system the high seas. To date the application of this modes has been hampered by States' unwillingness to enter into cooperation and to attribute these powers to these IOs. The designation of VMEs and of the consequently closure of marine areas by RFMOs is one of the most effective means to ensure a high degree of protection on the high seas. However, RFMOs tend to be too narrowly focused on fisheries and thus, unable to address the same attention to non-target species. When designed within the borders of a larger MPA, instead, they evidenced

[620] Freestone in Barrett and Barnes (eds) (2016) 25

how they can effectively enhance an ecosystem-based approach. When the measures adopted in a closed-area are coordinated in harmony with the management system of a HSMPA, extremely positive outcomes on the status of marine biodiversity are registered. The EBSA model has been developed under the auspices of the on-going process on BBNJ. The description of an area as EBSA appears to the most appropriate for the purposes of the conservation and sustainable use of BBNJ. However, it relies upon existing instruments and the lack of an efficient system on the high seas risks to affect its success. The Sargasso Sea is one of most representative sites beyond national jurisdiction described as EBSA. Its biological value is one of the most notable in the context of ABNJ. It was also foreseen the inclusion of the Sargasso Sea area in the WH list as an OUV. Since 2011 at UNESCO stage a number of sites have been described as potential OUV on the high seas. However, to date this model has not encountered yet a wide acceptance. The other regional programs have been the major contributors to increase the creation of HSMPAs. The Pelagos Sanctuary in the Mediterranean was the first MPA straddling partially beyond national jurisdiction. The successful implementation of this instrument was possible thanks to the creator States' efforts in cooperation. The Pelagos Sanctuary reached important results both for the conservation of associated and dependent species (above all marine mammals) and the harvested- species. Seen the increasing need to protect high seas, Barcelona Convention Contracting Parties are in the underway process to describe a wide number of sites in Mediterranean as SPAMI. The AT model is, perhaps, the most representative regional model. In the Southern Ocean it was established the first MPA wholly located on the high seas. The management system of Antarctic HSMPAs was particularly efficient for the implementation of an ecosystem-based approach. Equally, the large number of MPAs established in the North-East Atlantic network revealed to be extremely effective for the long-term conservation and sustainable use of BBNJ. The successful outcome of these models was feasible thanks to a range of factors: a consistent number of multi-lateral agreements working in the same area, the cooperation with RFMOs and other regional organisations devoted to the conservation of marine biodiversity living in the same area, and the cooperation with the coastal State in the particular case of a MPA declared in the extended continental shelf. However, regional programs have deep limits. Regional provisions applicable to regional MPA do not extend their effects on a wide number of Parties. The AT system is an exception, given the large number of State Parties to the Antarctic treaties. In my opinion the promotion of new regional programs for the creation of new MPAs in ABNJ is extremely important, seen that the geographical extension of

MPAs on the high seas is under-developed. However these programs need to be coordinate with international models. Their recognition as PSSA, OUV, APEI or EBSA would be a turning point. If the head of the MPA is conferred to IMO, a larger number of States will be obliged to respect the measures adopted in the MPA. At the stage the Conference on BBNJ national delegations should force to attribute these powers to an IO like IMO. Furthermore, the Agreement on BBNJ should define specific provisions to realise this integration. MPAs have been revealed to be the most effective tool to enhance the conservation and sustainable use of BBNJ, but a new international model must be defined to ensure effectively the goals prospected by the Agreement on BBNJ.

CHAPTER 3. A SPECIFIC DUTY FOR THE CONSERVATION AND SUSTAINABLE USE OF MARINE BIODIVERSITY ON THE HIGH SEAS THROUGH ENVIRONMENTAL IMPACT ASSESSMENT (EIA)

Foreword

This chapter discusses the effects of the Environmental Impact Assessment(EIA) for the conservation and sustainable use of BBNJ. They are regarded to be very effective means for these purposes. In my analysis we will highlight the advantages of cumulative application of the EIA with the Strategic Environmental Assessment (SEA). At the national level and in transboundary context it is a well-established practice to conduct EIAs for activities that are likely to cause significant adverse impacts to the environment. However this is not the case of the high seas, where the requirement to carry out EIAs is implemented in a fragmented way. Soft Law instruments provide important provisions for the development of this tool. The Reviewed Agreement on BBNJ enshrines these principles and it could attribute them higher importance to consolidate these practices for the conservation and sustainable use of BBNJ. Furthermore, it will be highlighted how either at regional level these tools could be implemented effectively.

3.1 The definition of EIA

EIA was first observed at domestic level and introduced by US in 1969 as part of the National Environmental Policy Act (NEPA).[621] In comparison to MPAs the framework on EIA is less fragmented. According to the Convention on Environmental Impact Assessment in a Transboundary Context (ESPOO Convention) EIA is a '[...] national procedure for evaluating the likely impact of a proposed activity on the environment.'[622]

[621] National Environmental Policy Act 1969 (US) 42 USC para. 42 USC 4332 Sec. 102.(i)(v).

[622] Convention on Environmental Impact Assessment in a Transboundary Context (adopted 25 February 1991, entered into force 10 September 1997) 1989 UNTS 309 (ESPOO Convention) .Article 1(vi); As noted by E Druel in 'Environmental impact assessments in areas beyond national jurisdiction' (February 2013) IDDRI 11 ≤https://www.iddri.org/fr/publications-et-evenements/etude/environmental-impact-assessments-areas-beyond-national≥,'Since the development of national frameworks for the conduct of EIAs which started in the late 1960s, a number of international instruments, whether legally binding or not, included and further defined this requirement. Some of them are of a general nature, whereas others apply specifically, although in a sectorial or regional manner, to marine biodiversity on the high seas.'. See. UNEP Governing Council Decision 'Goals and Principles of Environmental Impact Assessment' (17 June 1987)

CBD and UNEP have integrated the principles of sustainable use and ecosystem approach to EIAs. UNEP defines EIA as 'an examination, analysis and assessment of planned activities with a view to ensuring environmentally sound and sustainable development'.[623]

CBD enshrines the obligation for an EIA stating that 'States shall[…]identify processes and categories of activities which have or are likely to have significant adverse impacts on the conservation and sustainable use of biological diversity, and monitor their effects through sampling and other techniques'[624] and 'introduce appropriate procedures requiring environmental impact assessment of its proposed projects that are likely to have significant adverse effects on biological diversity with a view to avoiding or minimizing such effects and, where appropriate. allow for public participation in such procedure.'[625]

From these statements, EIA results in a 'comprehensive process and assessment tool which aims to promote sustainable development as to ensure the impacts of humans upon the "environment" arising out of projects, programmes, and policies would be disclosed before the choice are made.[626] EIAs bring together scientists, policymakers and other stakeholders, including civil society, to identify and potentially prevent activities that may cause environmental harm.[627] The information gathered during an EIA should help to better understand the adverse impacts of the proposed activity before deciding if the project should be allowed to proceed, and if so on what terms.[628] EIAs may play a crucial role for the conservation of marine biodiversity on the high seas. To date, delegations of the Conference on BBNJ have prospected two definitions of EIA. First, it is '[…]a process to evaluate the environmental impact of an activity [to be carried out in areas beyond national jurisdiction [, with an effect on areas within or beyond national jurisdiction]] [, taking into

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UNEP/GC/DEC/14/25 at 1, that state that '[…] The EIA goals and principles set out below are necessarily general in nature and may be further refined when fulfilling EIA tasks at the national, regional and international levels.'; for further discussion see. K Hiscock *Marine Biodiversity Conservation: A Practical Approach: a practical approach* (1rd edn Routledge 2014) 178.

[623] UNEP Governing Council Decision 'Goals and Principles of Environmental Impact Assessment' (17 June 1987) UNEP/GC/DEC/14/25, 1.

[624] CBD Article 7(c).

[625] CBD Article 14(a).

[626] Gillepsie (2011) 472.

[627] --'High Seas Environmental Impact Assessments: the importance of evaluation in areas beyond national jurisdiction' (PEW Charitable Trust) ≤https://www.pewtrusts.org/-/media/assets/2016/03/high-seas-eia-policy-brief_artfinal.pdf≥ (March 2016).

[628] B Carroll and T Turpin *Environmental Impact Assessment Handbook: A Practical Guide for Planners, Developers and Communities* (2rd edn Thomas Telford 2009) 1.

account [, inter alia,] interrelated [socioeconomic] [social and economic], cultural and human health impacts, both beneficial and adverse].]'[629] Secondly, it means a 'process for assessing the potential effects of planned activities, carried out in areas beyond national jurisdiction, under the jurisdiction or control of States Parties that may cause substantial pollution of or significant and harmful changes to the marine environment.'[630]

3.2 The relationship with the Strategic Environmental Assessment (SEA)

Beside EIA it has been developed the Strategic Environmental Impact Assessment (SEA). The development of SEA as a process was first enhanced by the ESPOO Convention . The ESPOO requires States parties to 'apply the principles of environmental impact assessment to policies, plans and programmes'.[631] SEA is defined by COP to CBD as '[…]the formalized, systematic and comprehensive process of identifying and evaluating the environmental consequences of proposed policies, plans or programmes to ensure that they are fully included and appropriately addressed at the earliest possible stage of decision-making on a par with economic and social considerations'.[632] SEA is generally regarded to better integrate a wider range of factors into the EIA. [633] As noted by Gillepsie, EIAs tend to look at alternatives 'through much smaller prism which ranges from different technological options through the "no action approach".[634]' Despite this, to date most of

[629] Revised Agreement on BBNJ Article 1(7)(1).
[630] Revised Agreement on BBNJ Article 1(7)(2).
[631] ESPOO Convention Article 2(7).
[632] COP to CBD Decision on the 'Identification, monitoring, indicators and assessments' (7-19 April 2002) UNEP/CBD/COP/DEC/VI/7, Annex Paragraph 1(b).
[633]; R Barnes 'The Proposed LOSC Implementation Agreement on Areas beyond National Jurisdiction and Its Impact on International Fisheries Law' in Freestone (ed) (2019) 134; O Elferink 'Environmental Impact Assessment in Areas beyond National Jurisdiction' (2012) 27 The International Journal of Marine and Coastal Law 471.
[634] Gillepsie (2011) 481; Concerning the no-action approach see for instance the Protocol on Strategic Environmental Assessment to the Convention on Environmental Impact Assessment in a Transboundary Context (adopted 21 May 2003, entered into force 11 July 2010) 2685 UNTS 140 (Kiev Protocol) Annex 4(8) Article 7, stating that 'An outline of the reasons for selecting the alternatives dealt with and a description of how the assessment was undertaken[…] includes […]difficulties encountered in providing the information to be included such as technical deficiencies or lack of knowledge.'; see. Council Directive 97/11/EC of 3 March 1997 amending Directive 85/337/EEC on the assessment of the effects of certain public and private projects on the environment [1997] OJ L 73/5, Annex 4.

SEAs are still largely focused on assessing impacts based on EIA type methodologies.[635] Integration of SEA into EIA focuses its attention on the environmental and social management rather than been limited to predict impacts of alternative policy action.[636] Such an integration implies a comparison between past activities and more recent factors, which are not necessarily generated by the conduct of an activity (sea water acidification, climate change, migration of species) having an impact on the same area.[637] For instance, in 2002 the Parties to the CMS come to value the cumulative utilisation of SEAs and EIAs and their relation with migratory species listed in Appendix I .[638]

The 2009 Manila Report underlines that SEA has a '[…]number of distinct advantages that are particularly appropriate for planning the management of marine ABNJ.'[639] 'Such plans can be formulated to maintain species, habitats and ecosystem structure in space and time over the full water column down to and including the seabed and the subsoil thereof with regard to individual and cumulative impacts by users and in relation to natural environmental change.'[640] In 2010 COP

[635] D Slunge, S Nooteboom, A Ekbom, G Dijkstra and R Verheem 'Conceptual Analysis and Evaluation Framework for Institution-Centered Strategic Environmental Assessment' (2009) 7 ≤https://www.semanticscholar.org/paper/Conceptual-Analysis-and-Evaluation-Framework-for-Nooteboom-Ekbom/b7925f004bb6d1a14d8fafc44a932532503dea3a≥ (last access 2019); Authors are substantially divided on identification of SEA. Some authors (Partidario) distinguished between a 'decision-centred model of SEA' and 'an EIA-based SEA model', and others (Fischer) distinguished between 'administration-led SEA' and 'cabinet SEA.' At this purpose see. M R Partidário 'Elements of an SEA framework – improving the added value of SEA' (2000) 20 Environmental Impact Assessment Review 647-663 and T B Fischer *The Theory and Practice of Strategic. Environmental Assessment: towards a More Systematic Approach* (Earthscan 2007).

[636] D S Do Nascimento *The Obligation to Conduct Environmental Impact Assessment in Areas Beyond National Jurisdiction: Proposals for a New Legal Regime* (Master's Thesis The Arctic University of Norway 2018) 11.

[637] Ricard (2019) 223.

[638] CMS SC Resolution 7.2 'Impact assessment and Migratory Species' (2002) CMS/ScC12/Inf.8; This incorporation of EIA and SEA is evident in the Agreement of Conservation of Albatrosses and Petrels (ACAP) Action Plan at 3.1 pertaining albatrosses and petrels and in ACCOBAMS 'Conservation Plan' s.2, ACCOBAMS Recommendation SC4.3 'Anthropogenic Noise' (2006) 49; ACCOBAMS Resolution 2.16 on the 'Assessment and Impact Assessment of Man-Made Noise' (2004)pertaining cetaceans. In the North Atlantic case the parties to CMS established whale-watching ventures as EIAs as forms of control on activities likely to cause significant noise pollution.

[639] UNEP and CBD Report of the Expert Workshop on scientific and technical aspects relevant to environmental impact assessment in marine areas beyond national jurisdiction (Manila 18-20 November 2009) UNEP/CBD/EW-EIAMA/2 (20 November 2009) (Manila Report) Annex 4 (2).

[640] Ibid at Annex 4 (3). As then spelt out at point 5 'SEAs can be set up to address the large scale of ocean ecosystems such as abyssal plain muds and the vast mountain ranges of mid-ocean ridges, and the connectivity of localized and separated ecosystems, such as hydrothermal vents, cold-water coral reefs and seamounts. SEAs can take into account the topography of the seafloor, latitudinal change, depth zonation

to CBD recalled the Manila Report and developed the 'Voluntary guidelines for a consideration of biodiversity in environmental impact assessments and strategic environmental assessments in marine and coastal areas', recognizing the role a cumulative impact assessment will play on the high seas'for activities that are currently unregulated, with no procedures for assessing impacts'.[641] To date, there is no obligation to enhance a SEA on the high seas. The Revised Agreement on BBNJ, provides expressly for a SEA,[642] but a wide number of delegations have manifested their willing to develop more specific rules and conditions for SEAs which 'would help to "future-proof" the new treaty against emerging challenges.'[643]

3.3 The international framework

3.3.1 A general obligation to conduct EIA in ABNJ

3.3.1.1 The duty under LOSC

Under LOSC 'When States 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, they shall, as far as practicable, assess the potential effects of such activities on the marine environment[…].[644] As noted by Craik, requiring States to perform an EIA under State jurisdiction or control does not exclude the high seas, because LOSC refers to

(e.g., the effects of temperature and pressure on the physiology of fauna) and food input (from photosynthetic and/or chemosynthetic sources)'.

[641] COP to CBD Decision 'Marine and coastal biodiversity: sustainable fisheries and addressing adverse impacts of human activities, voluntary guidelines for environmental assessment, and marine spatial planning' (Hyderabad, 8-19 October 2012) (5 December 2012) UNEP/CBD/COP/DEC/XI/18, B(1).

[642] Revised Agreement on BBNJ Article 28.

[643] Nigeria's representative voiced support for the inclusion of two proposed text options on that topic and for the development of a list of criteria for the types of activities which would necessitate SEAs. EU's representative 'supported language that would allow Sates Parties to develop more specific rules and conditions for strategic environmental assessments'. As a matter of fact, several delegations (Uruguay, USA, Trinitad and Tobago and Russia) have manifested the lack of clarity on that concept. See.--'Delegates Discuss Guidelines for Content of Environmental Impact Assessment Reports, as Negotiations on New High Seas Treaty Enter Second Week' (UN Press) SEA/2098 ≤https://www.un.org/press/en/2019/sea2098.doc.htm≥(1 April 2019)

[644]The report is conducted in the manner provided in LOSC article 205, according to which States shall publish reports of the results obtained during the monitoring of the risks or effects of pollution, providing such reports at appropriate intervals to the competent IOs, which should make them available to all States.

jurisdiction over the activity, not over the maritime area.[645] However, there is no explicit reference to the high seas. As explained in Chapter 1, the only provisions devoted specifically to the conservation of living resources on the high seas are general in scope and they only require States to take actions, to cooperate and to provide for the management of living resources and they must be read in conjunction with the provisions contained in annexed international agreements and regional instruments to enhance properly an ecosystem-based approach. The character of Article 206 faces the same issue: the provision remains general and needs to be read jointly with specific environmental principles and procedural provisions.[646]

It is not further specified in the Convention what is intended by 'reasonable grounds', 'substantial pollution' or 'significant and harmful changes' and above which threshold a pollution or a change are deemed to be substantial or significant and harmful. Secondly, there is no mention of a specific methodological or procedural measure to take neither on high seas nor in territorial maritime zones.[647] States Parties have a duty to provide reports of assessments to 'competent international organisations', but there is no specification about the competent IOs other than any timescale for the provision of reports.[648] As noted by Boyle Article 206 'is silent on the question of what is required in an EIA, and in contrast to Articles 207–211 it makes no reference to internationally agreed rules and standards.'[649] The results of the reports of EIAs for most of the activities undertaken on the high seas, mentioned in Article 205, have evidenced their shortcomings of scientific information.[650] In the absence of these information, it remains uncertain when interested or possibly affected parties may require EIAs for activities on the high seas.

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[645] N Craik *The International Law of Environmental Impact Assessment* (Cambridge University Press 2008) 98.

[646] See discussion in Chapter 1.

[647] R Warner 'Environmental impact assessment in marine areas beyond national jurisdiction' in Rayfuse (ed) (2015) 293.

[648] Ibid.

[649] A Boyle 'The Environmental Jurisprudence of the International Tribunal for the Law of the Sea' (2007) 22 The International Journal of Marine and Coastal Law 377; In the UNGA Report of the Secretary-General 'Oceans and the law of the sea'(2011) UN Doc A/66/70 'The European Union stated that information concerning assessments undertaken with respect to planned activities in areas beyond national jurisdiction, including capacity-building aspects, was still disperse and scarce. Some European Union States had reported that they did not carry out activities in areas beyond national jurisdiction, while in the case of those who may have carried out some activities in those areas there was no information on any environmental impact assessment undertaken, except where such assessments were compulsory under international agreements, rules of international organizations or European Union regulations'.

[650] Druel (2013) 14.

Thirdly, the provision remains general in scope too. There is a general reference to the marine environment and no specific reference to marine biodiversity or to fauna and flora. However, as before evidenced for MARPOL Special Areas, the mandate of the provision could be interpreted to address the effects of EIA to all marine life forms, but it is clear that this is not the most appropriate tool for the purposes of conservation and sustainable use.

3.3.1.2 .A duty under Customary International Law

EIA obligation has been widely recognized under Customary International Law. The EIA obligation has been embodied in both ITLOS and ICJ jurisprudence.[651] First, ICJ enshrined the EIA obligation to prevent environmental harm in the transboundary context, now strongly established.[652] In the *Pulp Mills* case, the ICJ stated that 'It may now be considered a requirement under general international law to undertake EIA where there is a risk that the proposed industrial activity may have significant adverse impact in a transboundary context, in particular, on shared resources'.[653] Although there is no specific reference to the high seas, ICJ includes 'shared resources'. It has been argued that in this definition high seas can be included, given that all the States share high seas' natural resources since they all have certain freedoms and rights, including the freedoms of navigation, fishing, and scientific research.[654] Specific reference to ABNJ was made by ICJ in the Advisory Opinion on *Legality of the threat or of use of nuclear weapons* recalling Principle 21 of the Stockholm Declaration and Principle 2 of the Rio Declaration stating that States have a duty 'to ensure that activities within their jurisdiction or control do not cause damage to the environment of other states or of areas beyond the limits of national jurisdiction'. [655]

[651] *Gabcikovo-Nagymaros Project (Hungary v Slovakia) (Judgement)* [1997] ICJ Rep 7; *Pulp Mills on the River Uruguay Case (Argentina v Uruguay) (Provisional Measures)* [2006] ICJ Rep 14; *Certain activities carried out by Nicaragua in the border area (Costa Rica V. Nicaragua) and Construction of a road in Costa Rica along the San Juan River (Nicaragua V. Costa Rica*) *(Judgement)* [2015] ICJ Rep 665.
[652] N Bremer 'Post- environmental Impact Assessment Monitoring of Measures or Activities with Significant Transboundary Impact: An Assessment of Customary International Law' (2017) 26 Review of European Comparative & International Environmental Law 81.
[653] *Pulp Mills* [2006] para 204.
[654] Do Nascimento (2018) 20.
[655] *Legality of the threat or of use of nuclear weapons* (Advisory Opinion) [1996] ICJ Rep 226, para 27; Declaration Of the United Conference on the Human Environment (adopted 19 June 1972) 11 ILM 1416 (Stockholm Declaration) Principle 21; Rio Declaration on Environment and Development (1992) UN Doc A/CONF.151/5/REV.1 31 ILM 876 Principle 2.

In practice this entails that if an EIA comes to the conclusion that significant harm is likely in marine ABNJ, the State conducting such an EIA would be under the obligation to mitigate that harm or refrain from that activity in respect of the international law duty to prevent transboundary harm.[656] Judge Palmer in his dissenting opinion in the *Request for an examination in the Nuclear Tests* specified that an EIA obligation arises when '[...] activities may have a significant effect on the environment'.[657] However, it is not spelt out what 'significant' means. As in LOSC, the threshold to require an EIA is to be significant but there is no specification of its meaning in detail and its development has been left to further international agreements and regional treaties. ITLOS seems to suggest that provisional measures can be used as a tool to enforce such an obligation in transboundary context. In the *Land reclamation* case ITLOS required Malaysia and Singapore 'to establish promptly a group of independent experts with the mandate[...]' to conduct a study on '[...]the effects of Singapore's land reclamation and to propose, as appropriate, measures to deal with any adverse effects of such land reclamation and '[...]to exchange, on a regular basis, information on, and assess risks or effects of Singapore land reclamation's works.[658] In this case the effect of provisional measures seemed to be tantamount to effectuate a joint EIA.[659] In the *Mox Plant* case UK was required to refrain from authorizing or failing to prevent its operation of the MOX Plant '[...]until such time as there has been carried out a proper assessment of the environmental impact of the operation of the MOX plant as well as related international movements of radioactive materials, and it is demonstrated that the operation of the MOX plant and related international movements of radioactive materials will result in the deliberate discharge of no radioactive materials, including wastes, directly or indirectly into the marine environment of the Irish Sea'.[660] From these cases, it emerges that if an EIA is not set down before and it exists a

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[656] N Craik *The International Law of Environmental Impact Assessment* (Cambridge University Press 2008) 67.

[657] *Request for an Examination of the Situation in Accordance with Paragraph 63 of the Court's Judgment of 20 December 1974 in the Nuclear Tests (New Zealand v. France) (Dissenting opinion by Judge ad hoc Sir Geoffrey Palmer)*[1995] ICJ Rep 288 *(Request for an examination in the Nuclear Tests)* para 412; for further discussion see. S Marr 'The Southern Bluefin Tuna Case: the Precautionary approach and conservation and management of fish resources' (2000) 11 European Journal of International Law 826 ss.

[658] *Land reclamation by Singapore in and around the Straits of Johor (Malaysia v Singapore) (Provisional Measures)* ITLOS Case No 12 (Order of 8 October 2003) para 106 (1)(a)(b).

[659] Y Tanaka *The Peaceful Settlement of International Disputes* (Cambridge University Press 2018) 319.

[660] *Mox Plant Case (Ireland v United Kingdom) (Provisional Measures)* ITLOS Case No 10 (3 December 2001) para 26 (5).

serious risk to damage the environment, even if uncertain or solely potential, an order requiring parties to co-operate in prior assessment will be likely to be already included in the provisional measures .[661] International Tribunals have not limited the requirement of an EIA in the transboundary context. In the Advisory Opinion on the *Responsibilities and obligations of States sponsoring persons and entities with respect to activities in the Area* ITLOS pointed out that '[…]the obligation to conduct an environmental impact assessment is a direct obligation under the Convention and a general obligation under customary international law.'[662] Overall, the recognition of EIA as general obligation under customary international law is of high relevance, because it is applicable to all States even if they are not parties to any EIA's legal instrument. Such a recognition in customary international law counterbalances the weakness of the provision in LOSC, shrouded with uncertainties in interpretation.

3.3.2 Guiding instruments in Soft Law

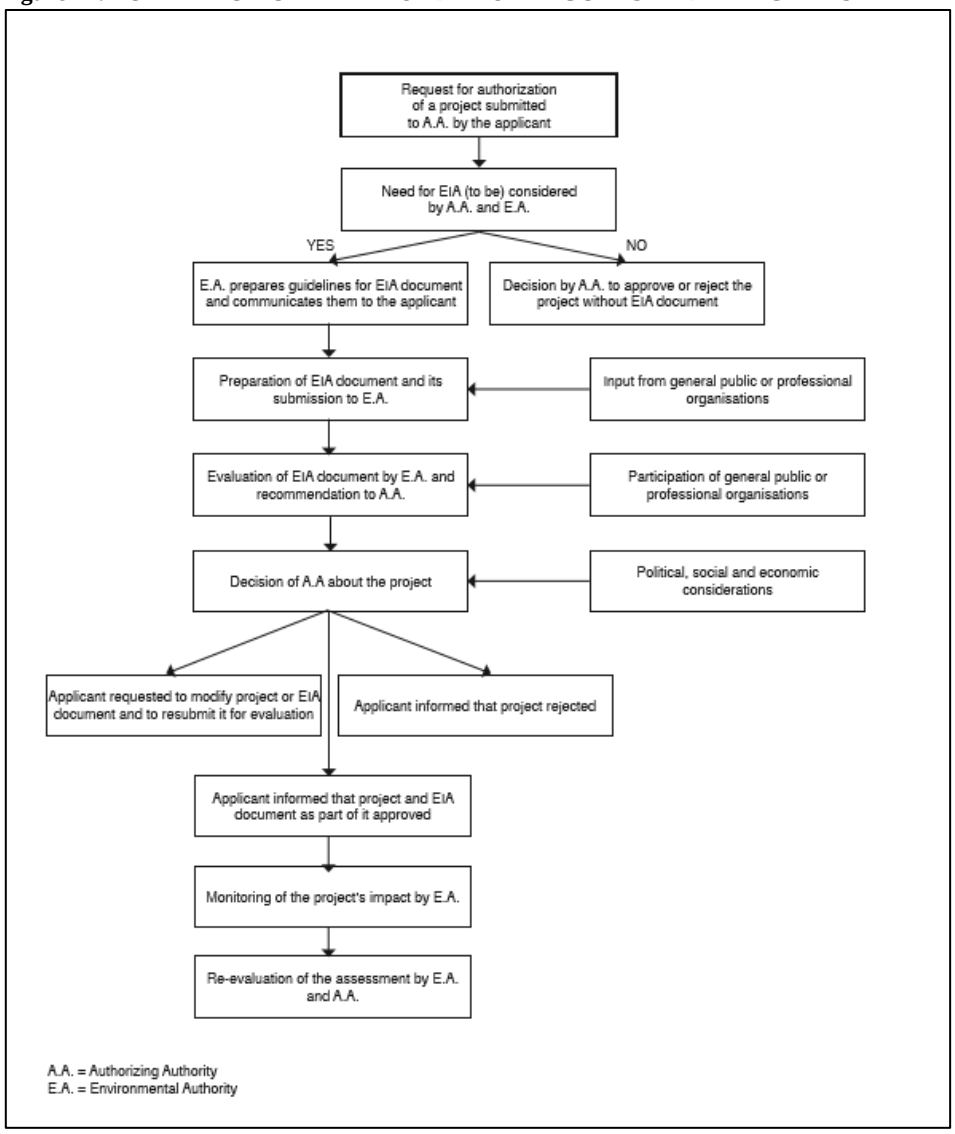
3.3.2.1 UNEP Goals and Principles

A general guidance on the conduct of EIAs was then developed in the 1987 UNEP Goals and Principles of Environmental Impact Assessment.[663] UNEP guidelines are the go-to model for international community to schedule an EIA. Even if UNEP Goals and Principles are not legally binding, they provide minimum requirements for effective EIA which have been widely accepted.[664] However, these 'minimum requirements only requires' the proponent of the activity to offset adverse environmental effects, recalling the 'diligence approach'.[665] 'Before a decision is

[661] A Boyle *Southern Bluefin Tuna Cases* (2008) in Max Planck Encyclopedia of Public International Law (Oxford University Press 2012) vol 9 362.
[662] *Responsibilities and obligations of States sponsoring persons and entities with respect to activities in the Area (Request for Advisory Opinion Submitted to the Seabed Disputes Chamber) (*Advisory opinion) ITLOS Case No 17 (1 February 2011) para 145.
[663] UNEP Governing Council Decision 'Goals and Principles of Environmental Impact Assessment' (17 June 1987) UNEP/GC/DEC/14/25.
[664] Warner in Rayfuse (2015) 294.
[665] These minimum requirements according to UNEP Goals and Principles Principle 4 include '[…]a description of the proposed activity; a description of the potentially affected environment, including specific information necessary for identifying and assessing the environmental effects of the proposed activity; (c) A description of practical alternatives, as appropriate; an assessment of the likely or potential environmental impacts of the proposed activity and alternatives, including the direct, indirect, cumulative, short-term and long-term effects; an identification and description of measures available to mitigate adverse environmental

made on an activity, government agencies, members of the public, experts in relevant disciplines and interested groups should be allowed appropriate opportunity to comment on the EIA.'[666]. The following scheme resumes the formation of an EIA under UNEP Principles and Goals.

Figure 12: FORMATION OF AN EIA UNDER UNEP GOALS AND PRINCIPLES[667]



impacts of the proposed activity and alternatives, and an assessment of those measures; an indication of gaps in knowledge and uncertainties which may bev encountered in compiling the required information; an indication of whether the environment of any other State or areas beyond national jurisdiction is likely to be affected by the proposed activity or alternatives; a brief, non-technical summary of the information provided under the above headings';

[666] UNEP Goals and Principles Principle 7; As noted by Rayfuse this has raised the question on who can be qualified as 'Experts in rel.disciplines or intested groups' and which organisation regardless regional or global is allowed to respond to such consultation.

[667] Druel (2013) 19; UNEP 'An approach to environmental impact assessment for project affecting the coastal and marine environment' (2000) Regional Seas Reports and Studies No 122, 13.

These guidelines do not extend the proponent's obligations beyond this due 'diligence approach'. They need to be applied in conjunction with developed procedural scheme.

3.3.2.2 The elements for the application of a cumulative impact assessment under the Manila Report and their codification under the Agreement on BBNJ

I have already discussed about the role played by the Manila Report for the progress of the cumulative assessment on the high seas. At the same time the Manila Report provides for a set of steps to take for the formation of an EIA, now become a common understanding of the international community:[668] As a matter of fact all these element are now embodied in the text of the Revised Agreement on BBNJ. These elements are the screening, scoping, assessment of impacts and reporting, public notification and consultation and. post EIS decision-making. First, as expressly provided by the Report its provisions are valid in ABNJ.[669] Secondly, these elements have been developed at regional level and addressed expressly to the conservation of marine biodiversity.

-Screening

Screening is the first element to start an EIA process. Screening is the determination of the projects or developments requiring a full or partial impact assessment study.[670] The subjects conducting the study for an EIA must consider first the characteristics of the marine area. The characteristics to take into account are generally the area covered (size) and the sensitivity of the biodiversity affected (protected species).[671] Under an ecosystem-based-management approach this would result in a consideration of EBSAs or VMEs as potential sites where to carry out an EIA.[672] Secondly, proponent subjects must determine the likelihood of a certain activity to 'significantly affect the environment'(threshold criteria).[673] This criteria has been widely accepted at the

[668] Manila Report, Annex 3.
[669] Ibid.
[670] Manila Report, Annex 3 at A(a)
[671] Fischer (2007) 28
[672] Manila Report Annex 3 6-19.
[673] Manila Report, Annex 3 B 1(6); G Sander *International Legal Obligations for Environmental Impact Assessment and Strategic Environmental Assessment in the Arctic Ocean* in Freestone (2019) 215; R Warner in Rayfuse (2015) 308; E Druel (2013) 34.

international, regional and national level with few alternatives.[674] Beside the threshold criteria and the model provided by the Madrid Protocol, another alternative is the determination of pre-set list of activities .[675] In this case, when one of these pre-set activities is carried out, it will be automatically subject to an EIA. These activities in ABNJ generally include deep sea fishing, aquaculture, dumping of waste, marine geo-engineering, offshore hydrocarbon production, bio-prospecting, marine scientific research, laying of submarine cables and pipelines, ballast water exchange, deep sea mining expeditions and ocean energy operations.[676] For the purposes of conservation and sustainable use of marine biodiversity the most appropriate way to assist States in determining the criteria for the activities to be subject to an EIA would be a conformation with the CBD 2006 Guidelines.[677]

-Scoping

'The scoping stage is considered critical in the process as it defines the issues to be studied and it provides the reference information on which the review of the study results will be based'.[678] This study is generally based on those issue that have the most significant impact on the environment and on the alternatives to avoid, reduce or counterbalance the adverse impacts on the environment.

-Assessment of impacts and reporting

The environmental impact report (EIA report) or the Environmental Impact Statement (EIS) document the results of the assessment of the various proposed alternatives and the foreseen impacts upon the environment, and biodiversity. Generally regarded elements include a description of the proposed activity inclusive of its purpose, location, duration and intensity, the initial environmental reference state and a prediction of the future environmental reference state in the absence of the proposed activity.[679]

As pointed out by Fischer the EIS '[…]should not only establish the significant environmental impacts of the different development options and alternatives, but should also fulfil a range of other

[674] One of the few exceptions to this is the Madrid Protocol. According to Article 1(1) In Annex 1 of the Madrid Protocol the screening process is not limited to the assessment of the likelihood of significantly effects to the environment, but it requires the assessment of three more elements which they will be discussed in the following section.

[675] Craik ( )132; Warner in Rayfuse (2015) 308.

[676] Ibid

[677]

[678] Manila Report, Annex 3 at 4.

[679] Warner in Rayfuse (2015) 309

tasks'.[680] This range of other tasks could include a description of ecosystems influenced by the changes prospected by the EIA and the spatial and temporal scale of influence of each biophysical change, including the effects and connectivity between ecosystems.[681] The role of EIS is not only relevant for the conservation of marine biodiversity but also for its restoration. In this sense EIS could assess potential alternatives to the proposed activity like 'no net biodiversity loss' or 'biodiversity restoration'.[682] The Manila Report spells out that in an EIS for activities carried out in ABNJ, conclusions are likely to be less complete and more uncertain, justifying a need for greater precaution.[683]

-Review of the EIS

'The purpose of the review of the EIS is to ensure that the information for decision makers is sufficient, focused on the key issues, and is scientifically and technically accurated[…]'and '[…]an evaluation on whether: the likely impacts would be acceptable from an environmental viewpoint[…]' and '[…]the design complies with relevant standards and policies, or standards of good practice where official standards do not exist'.[684] The reviewing stage includes a public consultation with biodiversity specialists for the review and '[…]information on official standards and/or standards for good practice to be compiled and disseminated.[685]

-Decision-making

Decisions that authorise a potentially harmful activity should not be taken before the EIA allows the effects to be fully taken into account.[686] For the purposes of conservation and sustainable use of BBNJ the Manila report recalls for […]clear criteria for taking biodiversity into account in decision-making[…]'[687] and for the use of the precautionary approach in cases of scientific

[680] Fischer (2007) 29.

[681] These adverse effects on biodiversity and ecosystem include an analysis on the expected biophysical changes in terms of composition, spatial and temporal structure and all those processes showing an evidence of irreversible impacts and irreplaceable loss; Warner in Rayfuse (2015) 309- 310.

[682] Ibid.

[683] Manila Report B 31(4).

[684] Manila Report B 34(a)(b).

[685] Manila Report B 34(c); On this part it has been specified at point 35 that 'Public involvement, including the full and effective participation of indigenous and local communities, is important in various stages of the process and particularly at this stage. The concerns and comments of all stakeholders are adequately considered and included in the final report presented to decision makers. The process establishes local ownership of the proposal and promotes a better understanding of relevant issues and concerns.'

[686] Sander in Freestone (2019) 216.

[687] Manila Report B 41; At this purpose it has been spelt out by the Report that The EBSA framework is considered practical for application now and provides a sound basis for decision-making.

uncertainty concerning the risk of significant harm to biodiversity.[688] The recourse to the precautionary approach plays a central role to bolster the effectiveness of an EIA.[689]. At the stage of the Conference on BBNJ the High Seas Alliance highlighted the need of a review and recommendation from a scientific/technical body prior to a state's decision if the proposed activity is expected to exceed the threshold.[690] In the absence of this scientific certainty EIAs are less effective and when they do not fulfil their objectives are considered to be more decision-aiding tools, or a mere procedural step, rather than decision-making tools.[691] This means that often, the decision-making authority considers that the role of EIA is to identify and mitigate significant adverse impacts and not to prevent the enhancement of the activity in case such impacts are identified and cannot be adequately prevented.[692]

-Post EIS Decision Making

This post-decision phase includes monitoring, compliance, enforcement and environmental auditing. Monitoring and auditing are used to compare the actual outcomes after project implementation has started with those anticipated before implementation.[693] Monitoring focuses on those components of biodiversity most likely to be altered by the project and on the use of indicator organisms or ecosystems that are most sensitive to the predicted impacts in order to provide the earliest possible indication of undesirable change.[694] The report highlighted how monitoring would be technically difficult and costly on the large scale of ecosystems on the high seas, and only the incremental development of activities by industries may offer opportunities for cost-effective monitoring, and be more important on the high seas than within national jurisdiction.[695] As highlighted by Warner, given this uncertainty, post-EIA decision-making

[688] Ibid at 42.

[689] As noted S Jay, C Jones, P Slinn , C Wood 'Environmental impact assessment: Retrospect and prospect' (2007) 27 Environmental Impact Assessment Review 298, 'the effectiveness of EIA would be bolstered if a specific aim was to deliver "no net environmental deterioration" and, if this could not be demonstrated, to require the application of the precautionary principle in decision-making'; At this purpose the Manila Report has expressly recalled for Fauna & Flora International, IUCN-The World Conservation Union, Resource Africa and TRAFFIC Guidelines.

[690] 'BBNJ IGC-2 Highlights' (1 April 2019) 25 Earth Negotiations Bulletin 191 ≤https://enb.iisd.org/vol25/enb25191e.html≥ (2 April 2019) 1-2.

[691] Jay and others (2007) 298.

[692] E Druel (2013) 37.

[693] Manila Report B 45.

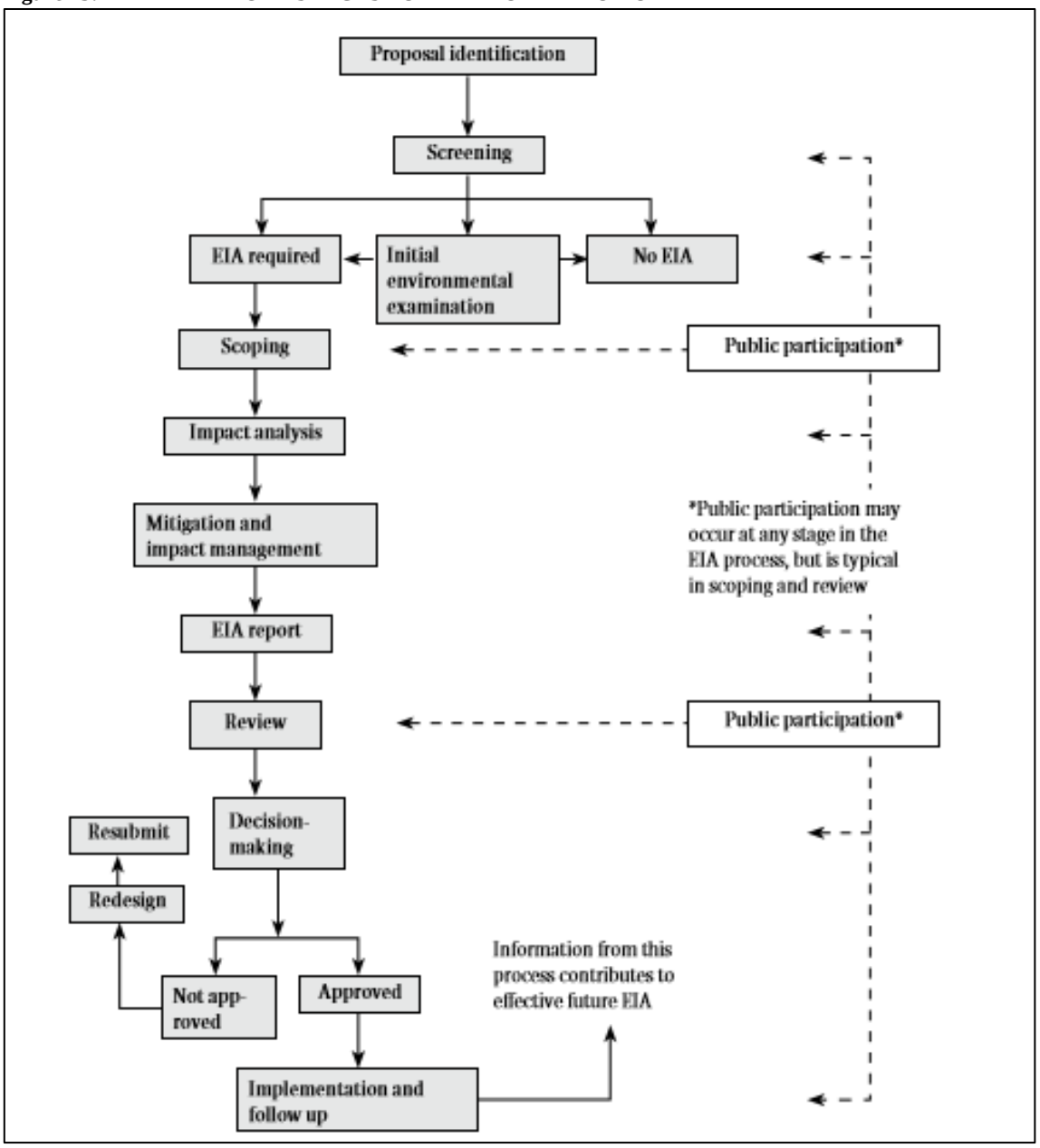
[694] Ibid at 47.

[695] Ibid.

options should include not authorizing an activity to proceed if significant adverse impacts on ABNJ are likely.[696]

The following image illustrates the complete process.

Figure 13: MANILA REPORT STAGES FOR THE FORMATION OF AN EIA[697]



The CBD secretariat host annual Conferences of the International Association for Impact

[696] R Warner 'Oceans beyond boundaries: environmental assessment frameworks'(2012) 27 Internation Journal of Marine and Coastal Law 490.

[697] Sander in Freestone (2019) 216.

Assessment 'to discuss approaches to improve biodiversity-inclusive impact assessment in the context of the 2030 Agenda and COP13 decisions'.[698]

3.4 The regional framework

3.4.1 The North East Atlantic

The OSPAR Convention does not make any specific reference to EIA and it only requires States Parties to '[...] take the necessary measures to protect the maritime area against the adverse effects of human activities so as to safeguard human health and to conserve marine ecosystems'.[699] In addition to this, OSPAR Commission has 'to develop means, consistent with international law, for instituting protective, conservation, restorative or precautionary measures related to specific areas or sites or related to particular species or habitats'.[700] Nonetheless, several recommendations and decisions on EIAs and SEAs on the high seas were adopted in the framework of OSPAR Commission.[701] In 2008, OSPAR Contracting Parties adopted the Code of Conduct for Responsible Marine Research in the Deep-Seas and High Seas of the OSPAR Maritime Area requiring States to complete a risk assessment if research is planned in an area that contains features on the OSPAR list of threatened and/or declining species and habitats,[...] 'before equipment that may have adverse effects is deployed[…] and a pre-assessment of the site '[…]to determine possible impacts and suitable mitigation measures. If necessary, the operator should consider modifying equipment and/or approaches to be employed in order to reduce risks to an

[698] UNEP CBD 'Biodiversity-Inclusive Impact Assessment in the context of the Convention on Biological Diversity and the 2030 Agenda: Ways Forward' (2017) Draft Agenda of the SCBD workshop in IAIA 17.
[699] OSPAR Convention Article 2(1).
[700] OSPAR Convention Annex V Article Article 3 (1)(b)(ii).
[701] As correctly noted by Druel (2013) 'Development of EIAs and SEAs requirements in the OSPAR Commission context was certainly facilitated by the fact that the vast majority of Contracting Parties ties to the OSPAR Convention are EU Member States and that specific requirements on EIAs and SEAs were developed at the EU level through two Directives (Council Directive 85/337/EEC of 27 June 1985 on the assessment of the effects of certain public and private projects on the environment, amended in 1997, 2003 and 2009 and codified in Directive 2011/92/EU of the European Parliament and the Council; and Directive 2001/42/EC of the European Parliament and the Council on the assessment of the effects of certain plans and programmes on the environment). Although these directives contain provisions on EIAs and SEAs in a transboundary context, they are limited in their scope to potential impacts on territories in other Member States and do not include ABNJ.'

acceptable level'.[702] The reference to threatened and/or declining species and habitats is particularly relevant for the purposes of conservation and sustainable use of marine biodiversity. It was further highlighted by OSPAR in 2010 'when assessments of environmental impacts of human activities that may affect the marine environment of the OSPAR maritime area are prepared, Contracting Parties should ensure they take account of the relevant species and habitats on the OSPAR List of threatened and/or declining species and habitats'.[703] These measures are more effective if applied in MPAs. As explained in the previous section, an harmonisation of HSMPAs' management with EIAs and SEAs increase the level of conservation and sustainable use of marine biodiversity. In this sense, with respect to the 7 MPAs established by OSPAR, States were invited to 'ensure, where appropriate that a human activity in the […] MPA, or any measure outside the area that may be potentially conflicting with the conservation objectives of the […] MPA is subjected to an Environmental Impact Assessment (EIA) or Strategic Environmental Assessment (SEA) and that appropriate measures are taken, taking into account relevant OSPAR or other international standards and guidelines for the specific activity under consideration.'

3.4.2 The Antarctic Ocean

In this brief paragraph the content of the obligations in the Protocol will be explained more precisely. As above anticipated, The EIA system developed within the AT is considered to be one of the most developed regional systems, even though it is rather limited in its extent because whaling, sealing and fishing are not concerned by the procedures established under the Madrid Protocol.[704] It is one of the most complex regime applying a peculiar threshold for the assessment of the EIA (the less and transitory impacts' threshold). The above cited activities are subject to an EIA '[…] when the impacts of those activities on the Antarctic environment or on dependent or

[702] OSPAR Code of Conduct for Responsible Marine Research in the Deep-Seas and High Seas of the OSPAR Maritime Area, Article 10 and 18.
[703] OSPAR 'Recommendation 2010/5 on assessments of environmental impacts in relation to threatened and/or declining species and habitats' (2010).
[704] Whales are specifically excluded by Article 2 of the Agreed Measures for the Conservation of Antarctic Fauna and Flora, whilst sealing is regulated by separated recommendations ('Voluntary regulation of pelagic sealing' adopted 1964, entered into force 1 September 1966) Recommendation III-11; for further discussion see. O Elferink and D R Rothwell *The Law of the Sea and Polar Maritime Delimitation and Jurisdiction* (Brill Nijhoff 2001) vol 37, 208 ss.

associated ecosystems according to whether those activities are identified[...] have less than a minor or transitory impact; a minor or transitory impact; or more than a minor or transitory impact'.[705] Annex I specifies three levels to process an EIA: the preliminary assessment level, the initial environmental evaluation level and the comprehensive environmental evaluation level.[706] At the preliminary assessment the national competent authorities consider if a proposed activity is likely to have less than a minor or transitory impact, and if so, authorise it to proceed forthwith .[707] Then, if an activity is determined as having at least a minor or transitory impact, it is subjected to an Initial Environmental Evaluation.[708] All the steps at this stage are carried out by the competent national authorities of the States undertaking the proposed activities in the AT area. When the activity has more than a minor or transitory impact, a comprehensive environmental evaluation is required by all the Parties and submitted to the CEP of the Madrid Protocol.[709] This is the only stage where an international scrutiny is needed.

As highlighted by Richard Warner this is a 'potential option for screening thresholds in ABNJ, at least for activities intended to occur in sensitive areas of the ABNJ marine environment such as identified vulnerable marine ecosystems (VMEs) and ecologically and biologically significant

[705] Madrid Protocol Article 8(1).
[706] Madrid Protocol Annex 1.
[707] Madrid Protocol Annex 1 Article 1.
[708] Madrid Protocol Annex 1 Article 2(1),The Initial Environmental Evualuation must contain a '[…]description of the proposed activity, including its purpose, location, duration and intensity; and consideration of alternatives to the proposed activity and any impacts that the activity may have, including consideration of cumulative impacts in the light of existing and known planned activities.'
[709] Madrid Protocol Annex 1 Article 3; The comprehensive impact evaluation includes '[…](a) a description of the proposed activity including its purpose, location, duration and intensity, and possible alternatives to the activity, including the alternative of not proceeding, and the consequences of those alternatives; (b) a description of the initial environmental reference state with which predicted changes are to be compared and a prediction of the future environmental reference state in the absence of the proposed activity; (c) a description of the methods and data used to forecast the impacts of the proposed activity; (d) estimation of the nature, extent, duration, and intensity of the likely direct impacts of the proposed activity; (e) consideration of possible indirect or second order impacts of the proposed activity; (f) consideration of cumulative impacts of the proposed activity in the light of existing activities and other known planned activities; (g) identification of measures, including monitoring programmes, that could be taken to minimise or mitigate impacts of the proposed activity and to detect unforeseen impacts and that could provide early warning of any adverse effects of the activity as well as to deal promptly and effectively with accidents; (h) identification of unavoidable impacts of the proposed activity; (i) consideration of the effects of the proposed activity on the conduct of scientific research and on other existing uses and values; (j) an identification of gaps in knowledge and uncertainties encountered in compiling the information required under this paragraph; (k) a non-technical summary of the information provided under this paragraph; and (l) the name and address of the person or organization which prepared the Comprehensive Environmental Evaluation and the address to which comments thereon should be directed'.

areas (EBSAs)'.[710]

However, this regime has been generally considered weak, especially as a certain number of marine activities are excluded from the scope of Annex I to the Madrid Protocol.[711]

3.4.3.The Arctic Ocean

The natural sensitivity of the Arctic Ocean presents similar conditions to that of the Southern Ocean illustrated above. In comparison to the Antarctic, there is no complex system of treaties and collaboration with organisations which can ensure efficiently the conservation of BBNJ. Given the lack of such a regime, it emerged the need for the adoption of a specific guidance for the conduct of EIAs. To this end, Guidelines for Arctic EIAs were therefore adopted by the ministers of the Arctic countries[712] in 1997.[713] By virtue of the degree of sensitivity of the Arctic, the Parties decided for an application of lower threshold levels for EIA since the Guidelines main objective was to raise issues that are unique to Arctic assessments.[714] On one hand, specific arrangements are provided for the unique ecosystem in the Arctic, on the other hand, these guidelines are not intended to replace existing procedures adopted by international, national or provincial laws, land claim agreements, regulations or guidelines and they must be read in conjunction with the above

[710] R Warner in Rayfuse (2015) 308.

[711] Concerning the application of SEAs in Antarctica it was noted by R Roura and A Hemmings 'Realising Strategic Environmental Assessment in Antarctica' (2011) 13 Journal of Environmental Assessment Policy and Management 495, that 'typically, the decision to conduct an activity and the activity's characteristics, timing and location precede the initiation of EIA. Project-specific EIA processes generally commence after many decisions have (albeit often informally) in fact already been taken, alternatives discounted and a sense of inevitability inculcated in participants to the process […] The consideration of alternatives to the proposed activity is generally a pro-forma component of the EIA document rather than a serious consideration of the process'.

[712] Countries that are members of the Arctic Council are: Canada, Denmark (also representing the Faroe Islands and Greenland), Finland, Iceland, Norway, the Russian Federation, Sweden and the USA.

[713] Guidelines for Environmental Impact Assessment (EIA) in the Arctic (adopted 1997)(Arctic Guidelines); As spelt out by T Koivurova in 'Implementing guidelines for environmental impact assessment in the Arctic' in Bastmeijer and Koivurova (eds) *Theory and Practice of Transboundary Environmental Impact Assessment* (Martinus Nijhoff Publishers 2008) 165-167, The Arctic EIA Guidelines must be viewed against the commitments to EIA by the Arctic states in the 1990s and against the expectation of obtaining a pan-Arctic EIA treaty if all of them were to ratify the ESPOO Convention.

[714] Arctic Guidelines at 5; G Sander 'International Legal Obligations for Environmental Impact Assessment and Strategic Environmental Assessment in the Arctic Ocean' (2016) 31 The International Journal of Marine and Coastal Law 101.

presented rules embodied in conventional and customary international law.[715]. The 5 States deliberately decided to not develop a new comprehensive legal order for the Arctic analogous with the Antarctic.[716] The guidelines are limited to provide suggestions and examples of good practice to enhance the quality of EIAs and the harmonization of EIA in different parts of the Arctic.[717] The Voluntary guidelines cannot guarantee a sufficient degree of conservation of biodiversity, if not applied in conjunction with a general obligation in LOSC and customary international law and the developed system in CBD and ESPOO.

We believe that the development of a more specific regional regime is complementary to the provisions in existing international instruments and it helps to progress the conservation and sustainable use of marine biodiversity in the area concerned, as evident in the Antarctic. This is particularly so if we think that the majority of the sectors in the Arctic Ocean related to the conservation and sustainable use of marine biodiversity have no or uneven assessment obligations. There is no regional fisheries management organisation providing for EIA, apart from the NEAFC sector of the Arctic Ocean. In 2015 the 5 Arctic States signed a declaration on research cooperation and measures to combat unregulated fishing in the international part of the central Arctic Ocean[718] which was followed by the Agreement to Prevent Unregulated High Seas Fisheries in the Central Arctic Ocean.[719] With the signing of such agreement, the five coastal states together with China,

[715] In the Ilulissat Declaration (28 May 2008) 48 ILM 382, the five States bordering the Arctic Ocean (Canada, Denmark, Norway, Russian Federation, United States) expressed the following position on how international law of the sea applies to Arctic waters: 'The law of the sea provides for important rights and obligations concerning the delineation of the outer limits of the continental shelf, the protection of the marine environment, including ice-covered areas, freedom of navigation, marine scientific research, and other uses of the sea. We remain committed to this legal framework and to the orderly settlement of any possible overlapping claims. This framework provides a solid foundation for responsible management by the five coastal States and other users of this Ocean through national implementation and application of relevant provisions. We therefore see no need to develop a new comprehensive international legal regime to govern the Arctic Ocean. We will keep abreast of the developments in the Arctic Ocean and continue to implement appropriate measures.' As noted by T Scovazzi 'Sovereignty over Land and Sea in the Arctic Area' (2016) 34 Agenda Internacional 171, 'The reference in the declaration to "law of the sea" seems to cover not only the UNCLOS, but also other applicable treaties and international customary rule'.

[716] For further discussion see. I Winklemann 'Fixed rules of play for dividing up the Arctic Ocean: the Illulisat Declaration of the Arctic Coastal States' (2008) SWP Comments 18.

[717] Guidelines at 5; for further discussion see. P Drankier 'Impact Assessment in the Marine Arctic'(2016) 14 Oil Gas & Energy Law Intelligence.

[718] Declaration Concerning the Prevention of Unregulated High Seas Fishing in the Central Arctic Ocean (signed 16 July 2015).

[719] Agreement to Prevent Unregulated High Seas Fisheries in the Central Arctic Ocean (signed 3 October 2018)

the EU, Iceland, Japan, and South Korea decided to forbid fishermen from their countries to fish in the international part of the central Arctic Ocean.[720] The Agreement recalls the precautionary approach to avoid potential adverse impacts of fishing on the ecosystem, as part of a long-term strategy to safeguard healthy marine ecosystems, and to ensure the conservation and sustainable use of fish stocks.[721] However, it does not provide any obligation for EIA and it is limited to assert a general obligation to 'minimize the impacts' on fish stocks and ecosystems.[722]

Final Remarks

EIAs represent an important advocacy for the conservation and sustainable use of marine biodiversity on the high seas and for the protection of the marine environment in its entirety, but they have been implemented by States and by regional or sectorial organizations with little consistency.[723] States have proved to not accept existing instruments on a wide scale. Specifically, several States likely to play a central role for the progress of EIA for the conservation and sustainable use of BBNJ cannot implement the instruments listed above. For instance, the US is not a party to the LOSC, the CBD and the two ESPOO Convention, Russia is not a party to the ESPOO Convention, and Canada is not a party to the Kiev Protocol. The existence of an obligation for EIA in customary law can guarantee a general respect by the international community in the lack of an efficiently functioning conventional regime. As noted by Sander, in LOSC, States can conduct domestic EIA for any type of activity and any type of environmental harm on the high seas, if it is seen as a due diligence obligation according to their capabilities.[724] The rule regarding the ban of causing transboundary harm in customary law strengthens the degree of protection of the marine

[720] In --'Coastal states decide on measures to combat unregulated fishing in the Arctic Ocean'(Norwegian Government Security and Service Organisation (G.S.S.O.) News story). ≤https://www.regjeringen.no/en/aktuelt/fishing-arctic-ocean/id2427705/≥ (16 July 2015), it was spelt out that 'Commercial fishing in the international part of the central Arctic Ocean is unlikely in the near future, so there is no need to establish new management regimes at present. However, developments must be followed closely, and the coastal states have therefore agreed to cooperate on research.'. See. --'Central Arctic: EU to enter agreement against unregulated fishing' (Council of the European Union Press Release). ≤https://www.consilium.europa.eu/en/press/press-releases/2019/03/04/central-arctic-eu-to-enter-agreement-against-unregulated-fishing/≥ (4 March 2019).

[721] Agreement to Prevent Unregulated High Seas Fisheries in the Central Arctic Ocean Article 5(1)(c).

[722] Ibid at Article 5(1)(d).

[723] Druel (2013) 42.; Gillepsie (2011) 478.

[724] Sander in Freestone (2019) 237.

ecosystems. However, the obligations enshrined by customary international law cannot counterbalance all the gaps in LOSC and the other international instruments. The provision for EIA in LOSC results limited in scope and inappropriate to guarantee an efficient system of conservation and sustainable use of marine biodiversity in ABNJ.

There is no obligation under LOSC to conduct a SEA and because of the low accession to the Kiev Protocol, relevant international law contains only weak and or unelaborated SEA obligations.[725] Therefore, an obligation in customary international law and in LOSC serves as a base to ensure the respect of a general EIA obligation, but it needs to be read in conjunction with more specific instruments to enhance an effective ecosystem-based approach.

The other international instruments such as the ESPOO Conventions seem to be inappropriate to enhance a comprehensive approach on the high seas.

Many activities affecting the conservation and sustainable use of marine biodiversity are not under any obligation for a prior EIA. These activities include shipping, fishing, and more specifically bottom fishing, marine scientific research, cable or other installations and marine bio-prospecting.[726] Concerning shipping, many activities exercised from a vessel are not subject to any EIA obligation and concerning fishing, only few sectors like aquaculture are regulated at the international level for the disposal of an EIA, leaving out important sectors such as bottom fishing.[727] All the regional seas programmes are limited to their geographical scope, and they face all the limits of the current high seas regime illustrated above. They did not prove to be effective in the conservation of marine biodiversity in ABNJ as in the MPA context. There is a high need of harmonisation between the management system of MPAs and EIA framework. In several cases, application of EIA and SEA in a HSMPA gave evidence to better accomplish the objectives prospected for the conservation and sustainable use of BBNJ.

There is no global institution responsible for all activities in ABNJ and the institution of a global organ through the Revised Agreement BBNJ would be a turning point to enhance effectively the

[725] Ibid.

[726] K M Gjerde 'Regulatory and Governance Gaps in the International Regime for the Conservation and Sustainable Use of Marine Biodiversity in Areas beyond National Jurisdiction' (2008) IUCN Environmental Policy and Law Papers online – Marine Series No 1 ≤https://portals.iucn.org/library/sites/library/files/documents/EPLP-MS-1.pdf≥ 8.

[727] See. FAO 'Environmental impact assessment and monitoring in aquaculture Requirements, practices, effectiveness and improvements' (2009) FAO Fisheries and Aquaculture Technical Paper 527 ≤http://www.fao.org/3/i0970e/i0970e.pdf≥.

obligation for an EIA for the conservation and sustainable use of marine biodiversity. As noted above, the Revised Agreement on BBNJ provides for a SEA obligation and for the application of a cumulative impact assessment. The cumulative impact assessment will be addressed more properly as an ecosystem-based tool to the conservation and sustainable use of marine biodiversity. As underlined by several delegations, there is a need to develop more scientific rules to regulate a SEA. A high scientific level resulting in the text of the Revised Agreement(precautionary approach) will be more in line with the objectives foreseen by the Conference. At procedural level, the scheme proposed by CBD in the Manila Report was embodied in of the Revised Agreement on BBNJ. Such a scheme has reached a wide acceptance among the international community and its codification in the Revised Agreement would confer to it a overarching character.

CHAPTER 4 A SPECIFIC DUTY FOR THE CONSERVATION AND SUSTAINABLE USE OF MARINE BIODIVERSITY ON THE HIGH SEAS THROUGH THE TRANSFER OF MARINE TECHNOLOGY AND THE RELATIONSHIP WITH THE DUTY OF BENEFIT-SHARING

Foreword

Capacity development and technology transfer are cross-cutting issues which will play an essential role for the success of the Agreement on BBNJ. The Revised Agreement on BBNJ devotes part V to 'Capacity-building and transfer of marine technology'. The transfer of marine technology and especially marine scientific research could arguably be two of the most effective tools among all the elements further defined to enhance the purposes of the conservation and sustainable use of BBNJ. Amongst the specific tools provided by the Revised Agreement on BBNJ, this is the one which needs to be developed more. In this section it will be discussed the likelihood to attribute a central role to the International Oceanographic Commission (IOC) and improve its functions in research programs involving the usage of marine technology through a conjugation with the new provisions in the Agreement on BBNJ. In the South-West Pacific regional program, the positive role the IOC would be likely to play has become evident. In this regional context, as highlighted in the AT area, the harmonisation amongst the MPA management, EIA and SEA measures and this latter tool would be fundamental to effectively enhance the purposes of conservation and sustainable use of BBNJ. Moreover, these aspects will be discussed in the context of benefit sharing. The options for a monetary or non-monetary benefit-sharing system and the annexed issue of access to MGR will be highlighted.

4.1 Definition of the various concepts

4.1.1 Capacity Building

Although capacity building is associated solely to the transfer technology in the Revised Agreement on BBNJ, it is a general concept related to any of the specific tools discussed in this

chapter (MPAs, EIAs and SEAs).[728] The UNDP defines capacity building as 'the process by which individuals, organisations, institutions and societies develop abilities (individually and collectively) to perform functions, solve problems and set and achieve objectives.'[729] The World Bank similarly defines 'capacity' (as opposed to the activity of capacity building) as 'the combination of people, institutions, and practices that permits countries to achieve their development goals' and capacity building as the 'investment in human capital, institutions, and practices.'[730] Hence, as noted by Schacter, the term Capacity-building is indistinguishable from a common understanding of 'development'.[731] Since it is associated with developing programs, its reference to all the specific tools in the context of BBNJ is justified.

4.1.2 Technology Transfer

First appeared in international law in the 1960s,[732] a precise definition of technology transfer in international law remains contentious outside of the Revised Agreement on BBNJ. Although marine technology has received an extensive coverage in LOSC, it does not provide for any definition of transfer or of marine technology. The IPCC Special Report on Methodological and

[728] B Cicin-Sain, M Vierros, M Balgos, A Maxwell, M Kurz, T Farmer, A Sunami, M Maekawa, I Fujii, A Benham, Ju Barbiere, S Aricò, K Isensee, W Appeltans, H Harden-Davies, A Gonzales, S Adrian Ross, A Ascencio Herrera, C Mwango, A Mason, R Long, L Hildebrand, P Vallette, J Appiott, Y Yadava, K K Afachawo, O C Margaret, A R Bin Abdul Wahab, A Polejack, L Aching, J Bowie-Wilches, R Hermes, D Benzaken, L Davis-Mattis, N Chu Hoi, A Bamba, R Lesley Kautoke and B Butale, 'Policy Brief on Capacity Development as a Key Aspect of a New ≤International Agreement on Marine Biodiversity Beyond National Jurisdiction (BBNJ)'(2018) http://www.fao.org/fileadmin/user_upload/common_oceans/docs/policy-brief-on-bbnj-capacity-development-aug-2018.pdf≥ 1.

[729] UNDP 'Capacity Development' (1997) Technical Advisory Paper 2 Management, Development and Governance Division.

[730] World Bank 'Partnership for capacity building in Africa - strategy and program of action' (1996) ≤http://documents.worldbank.org/curated/en/276431492622379296/Partnership-for-capacity-building-in-Africa-strategy-and-program-of-action≥ (last access 21 September 2017) 2.

[731] It has been specified in M Schacter '"Capacity Building": A New Way of Doing Business for Development Assistance Organizations' (2000) Policy Brief No 6: Institute of Governance, Ottawa ≤https://www.files.ethz.ch/isn/103082/policybrief6.pdf≥ 1, that 'Use of the term has spread beyond organizations providing assistance to developing countries. Within the Canadian federal government, for example, Departments such as Indian Affairs and Northern Development, and Human Resources Development, refer increasingly to the importance of "building the capacity" of the communities or partners with which they work.'. For further discussion see. C Potter and R Brough 'Systemic capacity building: a hierarchy of needs' (2004) 19 Health Policy and Planning 336–345 ≤doi: 10.1093/heapol/czh038≥.

[732] UNGA Res 1713 (XVI) (19 December 1961).

Techno-logical Issues on Technology Transfer ' defined the term 'technology transfer' as a broad set of processes covering the flows of know-how, experience and equipment[…]'.[733] In a wider sense, IPCC defined the term 'transfer' as a means which encompasses 'diffusion of technologies and technology cooperation across and within countries', also '[…]comprising the process of learning to understand, utilize and replicate the technology, including the capacity to choose and adapt to local conditions and integrate it with indigenous technologies[…].'[734] Michael Waibel and William Alford suggested that technology transfer concerns the efficient and equitable allocation of existing technology in the world rather than the creation of new technology, even though it may enable further technological developments.[735]

The temporary definition of the transfer of marine technology provided by the Revised Agreement on BBNJ includes 'the transfer of the instruments, equipment, vessels, processes and methodologies required to produce and use knowledge to improve the study and understanding of the nature and resources of the ocean.'[736] Several delegations manifested their willing to include the term expertise in this definition.[737] As spelt out by the South-African delegation, the lack of this element in the definition of marine technology entails that processes and methodologies would simply be manuals or instructions.[738]

4.1.3.Marine technology

[733] IPCC 'The international dimension in technology development and deployment: technology transfer' (2007) IPCC Fourth Assessment Report: Climate Change 2007 ≤https://archive.ipcc.ch/publications_and_data/ar4/wg3/en/ch2s2-7-3.html≥.

[734] IPCC 'Methodological and Technological Issues in Technology Transfer: A Special Report of IPCC Working Group III' (2000) 55. IPCC concluded at para 17, that 'although there are numerous frameworks and models put forth to cover different aspects of technology transfer, there are no corresponding overarching theories' Consequently there is no framework that encompasses such a broad definition of technology transfer.'

[735] M Waibel and W Alford 'Technology Transfer' (2014) Max Planck Encyclopedias of International Law ≤https://opil.ouplaw.com/view/10.1093/law:epil/9780199231690/law-9780199231690-e1548≥.

[736] Revised Agreement on BBNJ Article 1(14).

[737] Such a proposal has been foreseen by IUCN and South-Africa delegation. See. Textual proposals on the Revised Agreeement on BBNJ 18 and 23.

[738] Textual proposals on the Revised Agreeement on BBNJ, 18.

There is a wide range of elements included in the definition of the marine technology, including marine scientific research. For the sake of my thesis, I will not define marine technology nor marine scientific research outside the Revised Agreement on BBNJ.

The temporary definition provided by the Revised Agreement on BBNJ includes: 'information and data, provided in a user-friendly format, on marine sciences and related marine operations and services; manuals, guidelines, criteria, standards, reference materials; sampling and methodology equipment; observation facilities and equipment (e.g., remote sensing equipment, buoys, tide gauges, shipboard and other means of ocean observation); equipment for in situ and laboratory observations, analysis and experimentation; computer and computer software, including models and modelling techniques; and expertise, knowledge, skills, technical, scientific and legal know-how and analytical methods related to marine scientific research and observation'.[739]

According to the Agreement on BBNJ, the list of typologies of marine technology includes: 'The sharing of relevant data, information, knowledge and research; Information dissemination and awareness-raising, including with respect to relevant traditional knowledge of indigenous peoples and local communities; the development and strengthening of relevant infrastructure, including equipment; the development and strengthening of institutional capacity and national regulatory frameworks or mechanisms; the development and strengthening of human resources and technical expertise through exchanges, research collaboration, technical support, education and training and the transfer of technology; 'The development and sharing of manuals, guidelines and standards'; 'The development of technical, scientific and research and development programmes, including biotechnological research activities.'[740]

4.1.4Benefit-sharing

'The question on the benefit-sharing is regulated separately in the Agreement on BBNJ (PART II). The transfer of technology is expressly listed as one of the objectives of the Parties for the

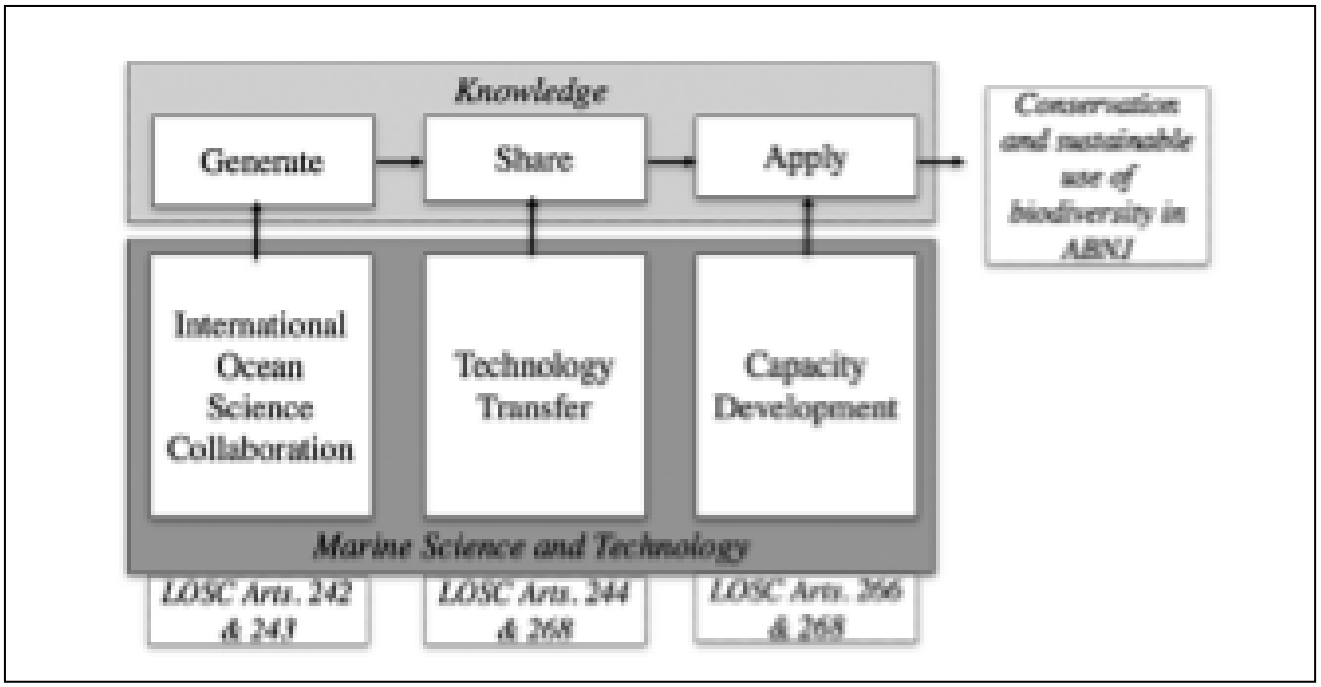
[739] Revised Agreement on BBNJ Article 1(11).

[740] Revised Agreement BBNJ Article 46(1); It has been manifested by a number of delegations that this list would risk to be too specific and fail to meet the needs of all parties, see in --'Delegates Tackle Parameters, Definitions for Capacity-Building, Transfer of Marine Technology, as Intergovernmental Negotiations on New High Seas Treaty Continues' (UN Media Press) SEA/2099 ≤https://www.un.org/press/en/2019/sea2099.doc.htm≥ (2 April 2019).

benefit of sharing.[741] The Agreement on BBNJ does not provide expressly a definition of benefit-sharing. In general terms, it is the action of giving a portion of advantages/profits to others.[742] In the lack of a definition in CBD, national delegations provided separately a definition of benefit-sharing. UK definition has reached a wide acceptance according to which benefit-sharing means 'the sharing of benefits arising from the use, whether commercial or not, of genetic resources, and may include both monetary and non-monetary returns'.[743] The Agreement on BBNJ provides expressly for both monetary and non-monetary benefit-sharing of marine generic resources, but for the sake of our thesis, we will focus on non-monetary benefits, in which is included the transfer of marine technology.

The relationship between these three elements is explained in the following scheme.

Figure 14: THE RELANTIOSHIP BETWEEN THE TECHNOLOGY TRANSFER, THE BENEFIT-SHARING AND THE CAPACITY DEVELOPMENT[744]



[741] See Revised Agreement on BBNJ Article 7(d) according to which one of the Objectives of the States is to 'Promote the development and transfer of marine technology [, subject to all legitimate interests, including, inter alia, the rights and duties of holders, suppliers and recipients of marine technology].]'.

[742] D Schroeder 'Benefit sharing: it's time for a definition' (2007) 33 Journal of Medical Ethics 205.

[743] CBD UNEP Ad Hoc Open-Ended Working Group On Access And Benefit-Sharing 'Further Consideration Of Outstanding Issues Related To Access And Benefit-Sharing: Use Of Terms, Definitions And/Or Glossary, As Appropriate' (Bangkok, 14-18 February 2005) (15 November 2004) UNEP/CBD/WG-ABS/3/4, II.

[744] H R Harden-Davies 'Research for Regions: Strengthening Marine Technology Transfer for Pacific Island Countries and Biodiversity beyond National Jurisdiction' in Freestone (ed) (2019) 315.

4.2 The transfer of marine technology and the role marine scientific research

4.2.1.The International framework: current obligations and further proposals

4.2.1.1The coverage under LOSC

LOSC provides for an extensive coverage of the transfer of technology. It devotes thirteen articles of Part XIV to this subject. The basic requirement for States is to cooperate directly or through competent international organizations to promote: the acquisition, evaluation and dissemination of marine technological knowledge and facilitate access to such information and data; the development of appropriate marine technology; the development of the necessary technological infrastructure to facilitate the transfer of marine technology; the development of human resources through training and education of nationals of developing States and countries and especially the nationals of the least developed among them; international cooperation at all levels, particularly at the regional, subregional and bilateral levels.'[745] This framework established by the LOSC for the development and transfer of marine technology is inextricably linked to scientific capacity development. Scientific capacity is identified as an aim of technology transfer, and the development of technological infrastructure and human resources are among the basic objectives of transfer of technology.[746] International cooperation in marine scientific research through scientist exchanges and conferences[747] is the primary means to achieve technology transfer identified under the LOSC.[748] Either in this case, LOSC provides for 'strong conceptual treaty basis' for the given issue, but it does not goes beyond the general statement.[749]

Notwithstanding transfer of technology and marine scientific research received a wide coverage in LOSC, they are , perhaps, the ones to have progressed the less since the conclusion of LOSC among the specific tools to ensure the conservation and sustainable use of BBNJ listed in this

[745] LOSC Article 268.
[746] LOSC Article 266(2).
[747] LOSC Article 269, 277(d).
[748] LOSC Arts. 266(1), 268(e), 269(a), 270, 272, 273, 278.
[749] S Minas 'Marine Technology Transfer under a BBNJ Treaty: A Case for Transnational Network Cooperation' (2018) 112 American Journal of International Law 145; R Long 'Marine Science Capacity Building and Technology Transfer: Rights and Duties Go Hand in Hand under the 1982 UNCLOS' in M Nordquist, R Long, T Heidar and J N Moore (eds) *Law, Science & Ocean Management* (Brill Nijhoff 2007) vol 2, 299-308.

chapter.[750] In this sense, the Intergovernmental Oceanographic Commission (IOC) has a mandate to assist States in the implementation of both LOSC Parts XIII and XIV and it can play a central role for the development of the ILBI.

4.2.1.2 The role of the Intergovernmental Oceanographic Commission (IOC)

The Intergovernmental Oceanographic Commission of UNESCO (IOC) was recognised through the LOSC as the competent IO in the fields of marine scientific research and transfer of marine technology.[751] Its purposes are aligned with those prospected by the Revised Agreement on BBNJ, seen that its mission 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.' [752] IOC includes as part of marine technology 'Information and data (marine sciences, operations and services); – expertise, knowledge, skills, methods (technical/scientific/legal); equipment (in situ sampling and observation, laboratory analysis and experimentation); computer software, models and modelling techniques and manuals, guidelines, criteria, standards, reference materials.[753] In this regard, the role played by UK[754] has

[750] See for further discussion S Arico 'Making Progress with Marine Genetic Resources' in: H D Smith, J L Suarez de Vivero,. T S Agardy (eds) *Handbook of Ocean Resources and Management* (Routledge 2015) 310-329.

[751] The IOC is the primary international organization responsible for marine science in the UN system, as recognized in LOSC Annex 8 Article 2.IOC plays a central role for the intermediation with other important organs for the marine scientific research such as the International Oceanographic Data and Information Exchange (IODE). The role of this latter is to ease international cooperation on data format standards to harmonise the use of data between states; for further discussion T Vanagt, A Broggiato, E Laura Lallier, M Jaspars, G Burton and D Muylderman *Mare Geneticum: towards an Implementing Agreement for Marine Genetic Resources in International Water* in Freestone (2019)

[752] IOC 'IOC Medium-Term Strategy: 2014-2021'(2014) IOC/INF-1314, ≤http://www.ioc-unesco.org/index.php?option=com_oe&task=viewDocumentRecord&docID=13388≥ (last access 27 June 2014) Article 2.

[753] IOC 'Reports of Meetings of Experts and Equivalent Bodies of The Advisory Body of Experts on the Law of the Sea(ABE-LOS)' (Paris 11 - 13 June 2001) (3 October 2001) UNESCO IOC/ABE-LOS I/3 para A(2).

[754] The UK was a founding member of IOC and has participated fully in every aspect of IOC's work from the earliest days. It has been noted that in case of UK leaving IOC it would be less capable to carry out marine scientific research outside of the UK's territorial waters, consequently damaging its international

been of paramount importance. It is one of the leading global marine science nations, obtaining value from IOC membership to promote international cooperation, the access to international marine science data centres, the enhancement of agreed standards and knowledge exchange and capacity building. In relation to cooperation and promotion, multidisciplinary science and consistent methodologies IOC has played a central role since its creation. Since then, Marine science has progressed enormously through a progressive application of an ecosystem-based approach.[755] As we will see in the regional analysis in the South-West Pacific, IOC conducts a wide number of programs and projects in order to foster international marine scientific cooperation.

In relation to the access and sharing of data, IOC and the Information Exchange network (IODE) englobe 'all of global marine science' and provide '[...]the information that enables governments to run their new marine spatial planning systems, operational oceanography services and emergency response systems.'[756] In relation to the training and capacity building, IOC has one of the most efficient system in training ocean scientists in the developing world and in encouraging the most developed nations to share best practice and ideas.[757] In 2005 IOC adopted the 'Criteria and Guidelines on the Transfer of Marine Technology (CGTMT), 'providing a critical tool to promote capacity building in ocean and coastal matters through international cooperation.'[758] The CGTMT provides a solid, internationally recognised foundation for marine technology transfer on which the Agreement on BBNJ should be built. However, the CGTMT have received a scant application for activities on the high seas. In 2016, FAO conducted a survey asking national competent institutions whether they utilized the IOC's criteria and guidelines on the Transfer of Marine Technology for activities on the high seas at national level and it resulted that less than 50 % of the respondents had used the guidelines. Only 5% had received requested marine technology after

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scientific reputation, and in the long term, the UK's ability to inter-operate effectively with the wider international community; UNESCO 'An evaluation of the Intergovernmental Oceanographic Commission's role in global marine science and oceanography' (2015) Policy Brief 13 ≤http://www.unesco.org/new/fileadmin/MULTIMEDIA/HQ/NATCOM/pdf/UKNC_Policy_Brief_13.pdf ≥ 7-8.

[755] As spelt out in Ibid at 15 'few scientists would advocate a return to single-discipline marine science – looking only at marine physics, or chemistry or biology in isolation from the wider ecosystem.'

[756] Ibid at 16..

[757] Ibid at 16.

[758] IOC/ ABE-LOS 'IOC criteria and guidelines on the transfer of marine technology (2005) IOC/INF-1203 ≤https://unesdoc.unesco.org/ark:/48223/pf0000139193≥ 9.

having submitted the marine technology application and only 2 % had submitted a transfer of marine technology application.[759] UNESCO suggested that this could probably be justified by IOC's low profile, and a lack of awareness among Members States on the role that IOC could play on the global stage. [760] Sometimes, this has been due to a reluctance of IOC to get involved with such policy advice.[761]

This is not the only challenge IOC has to face to effectively play a central role for the conservation and sustainable use of BBNJthrough, the transfer of marine technology and marine scientific research in general. As pointed out by UNESCO, there is a bit of confusion over which agency should take the lead on this issue, seen that to date IOC is now just one of some 20 and more other bodies who all contribute to the work of UN-Oceans which has now emerged as the 'competent body and focal point for ocean science in the UN system'.[762] However, given its functions, it has been prospected that 'IOC can have a role as an 'honest broker' able to facilitate the gathering of high quality data and provision of unbiased policy advice to help manage the ocean areas outside of national jurisdiction, since there is no body established to do that, but it is an area where the UN could mandate a specific role for IOC.'[763]

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[759] FAO 'Workshop on Capacity Development to Improve the Management of Marine Areas Beyond National Jurisdiction (ABNJ): Needs, Experiences, Options, and Opportunities' (St. George's, 18-21 May 2016) (Rome 2017) ≤http://www.fao.org/3/a-i7970e.pdf ≥ 36.

[760] In UNESCO Report (2015) 10.

[761] It has been spelt out that 'Attempts by members to encourage IOC to embrace a role at the heart of the Operational Oceanography revolution have frequently met with some reticence from other Member States .For example, the introduction of marine autonomous systems as platforms to gather data has been met with some reservations at IOC. Some Member States appear to be unhappy with the concept that robot systems might be making measurements from within their waters without any ability to take on board an observer or have the data screened before it passes into the public domain. There appears to be a preference for IOC to stick to traditional, ship-based methods of data collection, which are resource intensive and are likely to become insufficient to provide the necessary quantities of data to inform new legislation.'

[762].'UNESCO Report (2015) 10.

[763] Ibid at 15; As noted by Peter Haugan, IOC Chair, in 2018 the potential contributions to BBNJ objectives form IOC encompass: the development of ocean data sharing mechanism; the promotion of a mechanism for coordinating targeted and cooperative marine scientific research; a global seafloor mapping campaign; reinforced coordination of ocean observation efforts especially in the deep ocean; Improved transfer of marine technology to regions and groups that are presently limited in capacity and capability, especially SIDS and LDCs, through dedicated training programmes and initiatives.', see in --'Linking the UN Decade of Ocean Science and the new UN agreement on the high seas'(UNESCO Media Services) ≤http://www.unesco.org/new/en/media-services/single-view/news/linking_the_un_decade_of_ocean_science_and_the_new_un_agreem/≥ (18 April 2018).

As noted by Harden-Davies Strong political advocacy from Member States will be the most important factor to maximise the potential contribution of IOC at the stage of the Conference on BBNJ.[764]

4.2.2 The regional framework

Several regional systems have enhanced programs involving the use of marine technology and marine scientific research in respect of LOSC provisions. However, in only few cases they proved to be able to reach important results for the conservation and sustainable use of BBNJ. Hereinafter, I will discuss the impact of these programmes in the Antarctic, having been the most notable regional framework to address effectively the purposes of the conservation of BBNJ and in the South-West Pacific, which is likely to produce important contributions in the next future for the development of this subject.

4.2.2.1 The harmonisation of MPA management, EIAs with the transfer of technology and research programs in The Antarctic Ocean

In the AT area it was given prove of an harmonisation among MPAs, EIAs, and marine technology's management. It is, perhaps, the most effective regional system to ensure the conservation and sustainable use of BBNJ through a comprehensive combination of these tools. Access to the ASPA for marine scientific research is conditional upon the authority's permit[765] and these permits must be obtained where research is likely to interfere with Antarctic wildlife or where it will have impact on a protected area.[766] This obligation is inextricably linked with the EIA obligation, reported in the previous section. In the case concerning the activity of marine scientific research which is likely to have more than a minor or transitory impact on the environment, it will

[764] H Harden-Davies 'Marine science and technology transfer: can the Intergovernmental Oceanographic Commission advance governance of biodiversity beyond national jurisdiction?'(2016) 74 Marine Policy 260-267.
[765] Madrid Protocol Annex V Article 7(2).
[766] K Scott 'Marine Scientific Research and the Southern Ocean: Balancing Rights and Obligations in a Security-Related Context' (2008) 6 New Zealand Yearbook of International Law 111 ≤http://www.nzlii.org/nz/journals/NZYbkIntLaw/2008/22.html≥ (last access 7 February 2019).

be required a comprehensive EIA circulated among the Antarctic Treaty Consultative Parties (ATCP), sent to the CEP and put before the ATCM.

We have widely discussed all the activities carried out in the HSMPAs in the Southern Ocean for the purposes of the conservation and sustainable use of marine biodiversity, but I would focus on the outcomes of marine scientific research operations. As highlighted in the MPA section, within the AT area the protection of scientific research may have priority over all other activities This becomes particularly so since the CCAMLR agreed that each MPA should have a research and monitoring plan in 2011.[767] As seen in the Ross Sea ASPA, in every of its three zones are carried out relevant marine scientific research activities (general protected zone, krill zone, special research zone). The five year research 'Ross Sea Region Research and Monitoring Programme' run by the National Institute of Water and Atmospheric Research (NIWA) aims at demonstrating the impacts of the MPA on the conservation and sustainable use of BBNJ.[768] The main four research methods of the program are: research voyages to the Ross Sea region, Antarctic fieldwork, the usage of Fishing vessels to provide information on toothfish, skates, rat-tails and icefish, Computer modelling and satellite remote sensing of the climate-oceanographic system, phytoplankton and microbial processes. The Ross sea HSMPA is the perfect example of an ASPA created to protect scientific marine research that is planned to bolster the level of conservation of marine biodiversity.

[767] According to CCMALR 'General framework for the establishment of CCAMLR Marine Protected Areas' (2011) Conservation Measure 91-04 Para 5 'This plan shall specify, to the extent necessary, the scientific research to be undertaken in the MPA, including, inter alia: (a) scientific research pursuant to the specific objectives of the MPA; (b) other research consistent with the specific objectives of the MPA; and/or (c) monitoring of the degree to which the specific objectives of the MPA are being met. (ii) Research activities not in the research and monitoring plan shall be managed according to Conservation Measure 24-01 unless otherwise decided by the Commission. (iii) All Members may undertake research and monitoring activities in accordance with this plan. (iv) The data as specified in the research and monitoring plan will be submitted to the Secretariat and made available in accordance with the Rules for Access and Use of CCAMLR Data for analyses by Members pursuant to this plan. (v) Unless otherwise agreed by the Commission, every five years, Members conducting activities according or related to the research and monitoring plan will compile a report on those activities, including any preliminary results for review by the Scientific Committee.'

[768] --'Ross Sea Region Research and Monitoring Programme' (NIWA website) ≤https://niwa.co.nz/our-science/antarctica/ross-sea-region-research-and-monitoring-programme≥.

In the South Orkney ASPA, the research project included extensive telemetry work on chinstrap penguins,[769] further telemetry work on post breeding Adelie penguins and chinstrap penguins,[770] collaborative work on male Antarctic fur-seals, [771] telemetry work on leopard seals,[772] an international benthic survey[773] and an international pelagic survey focused on krill. It is particularly remarkable that all these activities were addressed to associated and dependent species and in some cases their interdependence with the main harvested species in the Antarctic: the krill. This is feasible only under an ecosystem-based management approach. As explained in the previous section, enhancing a program which deals with target species and none-target species separately is counterproductive. In this sense, it has been proved that a large number of species (marine mammals and seals), being krill predators, are more vulnerable to changes in krill growth as a result of climate change and that consequently reducing fishing effort may moderate these impacts in some locations.[774]. These examples taken from the Antarctic demonstrate the potential for ecosystem consequences of changes in one critical prey species and associated and dependent species.[775] An even more important point is that these research projects are not limited to existing

[769] P N Trathan, V Warwick-Evans, T Hinke, E F Young, E J Murphy, A P B Carneiro, M P Dias, K M Kovacs , A D Lowther,O R Godø, N Kokubun, J H Kim, A Takahashi and M Santos 'Managing fishery development in sensitive ecosystems: identifyingpenguin habitat use to direct management in Antarctica' (2018) 9 Ecosphere 2; --'Chinstrap Penguin Tracking' (British Antarctic Survey) ≤https://www.bas.ac.uk/project/chinstrap-penguin-tracking/≥ (2020).

[770] V W-Evans, N Ratcliffe, A D Lowther, F Manco, L Ireland, H L Clewlow, P N Trathan 'Using habitat models for chinstrap penguins Pygoscelis antarctica to advise krill fisheries management during the penguin breeding season' 24 Diversity and Distributions 1756-1771 ≤https://doi.org/10.1111/ddi.12817≥.

[771] K A Jones, N Ratclife, S C Votier, J Newton, J Forcada, J Dickens, G Stowasser and Iain J Staniland 'Intra-specific Niche Partitioning in Antarctic Fur Seals, Arctocephalus gazella' (2020) 10 Scientific Reports 3238 ≤https://www.nature.com/articles/s41598-020-59992-3≥.

[772] It has been underlined in I J Staniland ,N Ratcliffe ,P N Trathan, J Forcada 'Long term movements and activity patterns of an Antarctic marine apex predator: The leopard seal' (2018) 13 Plos One e0197767 7 ≤https://doi.org/10.1371/journal.pone.0197767≥, that 'the seals' movements between, and behaviour within, areas important to breeding populations of birds and other seals, coupled with the dynamics of the region's fisheries, shows an understanding of leopard seal ecology is vital in the management of the Southern Ocean resources'.

[773] Brasier and others(2018).

[774] It has been suggested that Limiting the overlap between vulnerable predator colonies and the krill fishery, during the breeding season, could then allow constraints surrounding more robust populations. See in Emily S Klein , L S . Hill ,J T Hinke, T P George, M Watters 'Impacts of rising sea temperature on krill increase risks for predators in the Scotia Sea' (2018) 13 Plos One 16 ≤https://doi.org/10.1371/journal.pone.0191011≥.

[775] Ibid.

HSMPAs but they are addressed also to increase understanding, provide additional baseline data, and to inform the development of proposal for further candidate MPAs in the region.[776]
For these reasons, Antarctic provisions on marine scientific research are generally regarded as current best practice in this context and should be adopted at the international level – perhaps in the form of a 'Marine Science Research Code'.[777]

4.2.2.2.The South-West Pacific

A focus on this area is particularly relevant, because it could be prospected a scenario similar to the Antarctic. As a matter of a fact all the marine scientific programs involving the usage of marine technology were carried out in the territory of the Noumea Convention and here it arises the possibility to combine the framework for marine technology with the future establishment of a HSMPA network.
As noted by Harden-Davies, the recourse to multi-use technologies provided positive outcomes in the South Pacific on marine biodiscovery and ecological survey.[778] For instance, tools such as 'shot-gun DNA sequencing'[779] could be used for marine biodiscovery research.[780] Low technology, low-key and long-term approaches to technology transfer and capacity development are regarded as being more effective in Pacific Island Countries than short-term, high-technology approaches.[781] The main problem in the South-West Pacific is its limited scientific and technological capacity, such as a lack of offshore ocean research vessels and sampling

[776] J Humphreys and R Clark *Marine Protected Areas: science, policy and management* (1rd edn Elsevier 2019),85.
[777] Scott (2008) 101.
[778] H R Harden-Davies 'Research for Regions: Strengthening Marine Technology Transfer for Pacific Island Countries and Biodiversity beyond National Jurisdiction' (2017) 32 International Journal of Marine and Coastal Law 806.
[779] The 'Shotgun sequencing is a technique for determining the sequence of entire chromosomes and entire genomes based on producing random fragments of DNA that are then assembled by computers that order fragments by finding overlapping ends', in P Raghavendra and T Pullaiah in *Advances in Cell and Molecular Diagnostics* (Academic Press 2018) 185.
[780] Harden Davies (2017) 806.
[781] C Kaluwin and A Smith 'Coastal vulnerability and integrated coastal zone management in the Pacific Island region' (1997) 24 Journal of Coastal Research 95–106.

equipment[782] and of onshore laboratory equipment and information technology infrastructure, which limits the capacity of Pacific Island Countries to access, use or benefit from marine genetic resources on the high seas.[783] Few Pacific Island Countries established marine scientific research institutions, and scientific research capacity in the South-West Pacific region remains largely in the hands of regional organisations and institutions, which are not currently capable of undertaking research on the high seas.[784] This signifies that Pacific Island Countries must rely on foreign institution and IOs. Cooperation with IOs, as highlighted in the previous sections, is a key-process to enhance effectively these measures on the high seas. At this stage, a relevant role was embodied by the IOC regional Sub-Commission for the Western Pacific (IOC-WESTPAC) which has a mandate to promote and coordinate international cooperation in marine scientific research and capacity development in the region.[785] Regular specific-topics were developed and organized in WESTPAC Member States on a rotation basis by scope of enhancing the capacity of its Member States for conservation and sustainable use marine biodiversity and resources.[786] In detail, attention was focused on harmful algal blooms, toxic marine organisms and their toxins, marine alien species, coral reef conservation and restoration.[787]. Furthermore, in 2008 The IOC Regional

[782] C Salpin, V Onwuasoanya, M Bourrel and A Swaddling 'Marine Scientific Research in Pacific Small Island Developing States' (2016) 95 Marine Policy, online, https://doi.org/10.1016/ j.marpol.2016.07.019HY.

[783] S K Juniper 'Technological, Environmental, Social and Economic Aspects. Information Paper 3' in IUCN 'Information Papers for the Intersessional Workshop on Marine Genetic Resources 2–3 May 2013: United Nations General Assembly Ad Hoc Open-ended Informal Working Group to study issues relating to the conservation and sustainable use of marine biological diversity beyond areas of national jurisdiction'(2013)≤https://www.un.org/Depts/los/biodiversityworkinggroup/documents/IUCN%20Information%20Papers%20for%20BBNJ%20Intersessional%20Workshop%20on%20MGR.pdf≥ 15-16.

[784] One of the most important regional institutions is the University of the South Pacific (USP) jointly owned by the governments of twelve member countries. It is the main centre for international marine research collaborations. It provides education and training, and represents all Pacific Island Countries in the International Council for Science; for further information see. ≤https://www.usp.ac.fj/≥.

[785] IOC-WESTPAC capacity development activities include: training courses and summer schools; and international scientific symposia held every three years with associated young scientist awards, travel grants and internship programs in IOC-WESTPAC 'WESTPAC Approach to Capacity Development in Marine Science'(2014) ≤http://iocwestpac.org/online%20doc/Capacity%20Development.pdf≥, 1-10.

[786] Ibid at 5.

[787] Ibid.

Network of Training and Research Centres on Marine Science (RTRCs) was established to improve regional capacity on marine science. [788]

Increasing the participation of Pacific Island Countries in IOC could help promote regional capacity development at the international level. To date only 3 Pacific island countries are IOC-WESTPAC member parties. [789] IOC-WESTPAC manifested his concern '[…]over the long-time overloaded and unstable staffing situation in the WESTPAC Office against the overwhelming demands from IOC and Member States in the region for the Office to deliver a wide range of activities.'[790] IOC-WESTPAC has not been active in capacity-development activities in Pacific Islands until now and their progress will be largely reliant on enhanced resources and coordination.[791] The main limit faced by IOC is economical. The IOC Capacity Development fund (CDF) relies on voluntary Member State contributions.[792]

Beside the CDF, the other tool to support capacity development are the ad-hoc international research collaborations.[793] As underlined by Harden Davies 'Strengthening and enhancing these types of collaborations and capacity-development initiatives would be crucial to ensure long-term meaningful technology transfer to Pacific Island Countries and equitable participation in the implementation of an ILBI.'[794]

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[788] WESTPAC Recommendation 'UNESCO/IOC Regional Network Of Training And Research Centres In The Western Pacific' (26-29 May 2008) Annex to Recommendation SC-WESTPAC-VII.3, available ≤http://iocwestpac.org/file/1641/ref/Adopted%20Guideline%20and%20Procedure.pdf≥.

[789] Samoa, Solomon Islands, Tonga; see WESTPAC Member Countries (IOC Sub-Commission for the Western Pacific (WESTPAC)) ≤http://iocwestpac.org/page/275.html≥.

[790] IOC Reports of Governing and Major Subsidiary Bodies (Phuket, 12–15 May 2015) (Paris, August 2015)IOC/SC-WESTPAC-X/3, 5, available at ≤https://unesdoc.unesco.org/ark:/48223/pf0000234134≥.

[791] Harden Davies (2017) 809.

[792] The projects upheld by this fund range from monitoring ocean acidification impacts to tsunami preparedness. Proposals under the IOC CDF are small scale (up to US$ 100,000) and short-duration activities (days, weeks, few months) that have a strong capacity development focus, see in –'IOC Capacity Development Fund' (IOC-CD website) ≤http://www.ioc-cd.org/index.php?option=com_content&view=article&id=52&Itemid=179≥.

[793] By scope of supporting international research engagement in the SouthWest Pacific the USP and the Centre of Drug Discovery and Conservation has been the recipient of three consecutive International Cooperative Biodiversity Grants from the US National Institutes of Health (2005–2018) in collaboration with the Georgia Institute of Technology and Scripps Institute of Oceanography. Another example is the memorandum of understanding between the Republic of Korea Institute of Ocean Science and Technology (KIOST) and the Secretariat of the Pacific Community (SPC), see in -'Korea strengthens ocean science collaboration with Pacific region' (Pacific Community News) ≤ https://www.spc.int/updates/news/2016/06/korea-strengthens-ocean-science-collaboration-with-pacific-region≥ (28 June 2016).

[794] Harden-Davies (2017) 810.

4.3 The relationship with benefit-sharing

4.3.1 Advantages and limits of non-monetary and monetary benefit-sharing

4.3.1.1 Non-monetary benefit-sharing

As already mentioned, transfer of technology is expressly labelled by the Agreement on BBNJ as a form of non-monetary benefit. The non-monetary benefit-sharing will create direct, quasi-immediate benefits compared to monetary benefit-sharing.[795] They contribute to attain all the objectives above illustrated: building capacity, the creation of the opportunities, and the promotion of research and development in all countries.[796] Beside the transfer of technology non-monetary benefits include training of scientists, transfer of research results and scientific information and access to *ex situ* collections.[797] As particularly evident at regional level, most of these advantages emanate from research practice, thus, it has been concluded that the scientific community would be one of the main stakeholders to cooperate with in the context of BBNJ.[798]

If marine scientific research of marine biodiversity is considered as monetary benefit-sharing, underlined its contributions to public health, bioremediation or food security must be underlined.[799] Otherwise, there are no certain monetary benefits arising from the utilisation of MGR.[800] As a matter of fact, only seven pharmaceutical products derived from sea species all the over the world

[795] Vanagt and others in Freestone (ed) (2019) 288.

[796] T Greiber 'Types of Benefits and Benefit-sharing' in IUCN (2013) 29-37; A Broggiato, T Vanagt, E Laura Lallier, M Jaspars, G Burton and D Muylderman 'Mare Geneticum: Balancing Governance of Marine Genetic Resources in International Waters' (2018) 33 International Journal of Marine and Coastal Law 24.

[797] Vanagt and others in Freestone (2019) 288.

[798] M Vierros, C Salpin, C Chiarolla and S M Arico 'Emerging and unresolved issues: The example of seabed and open ocean genetic resources in areas beyond national jurisdiction' in SM Arico (ed) *Ocean sustainability in the 21st century* (Cambridge University Press 2015) 212.

[799] F O Glöckner, L J Stal, R A Sandaa, J M Gasol, F O'Gara, F Hernandez, M Labrenz, E Stoica, M M Varela, A Bordalo, and P Pitta 'Marine Microbial Diversity and its role in Ecosystem Functioning and Environmental Change' in JB Calewaert and N McDonough (eds) *Marine Microbial Diversity and Its Role in Ecosystem Functioning and Environmental Change, Marine Board Position Paper 17* (Marine Board-European Science Fondation 2012) ≤http://archives.esf.org/fileadmin/Public_documents/Publications/MarineBoard_PP17_microcean.pdf≥17-41.

[800] Juniper in IUCN (2013) 19-20.

are currently on the market, and only six of them-derived from species found in the EEZs of coastal states[801]

Many delegations at the Stage of the Conference on BBNJ seem to prefer non-monetary benefit-sharing, as being more immediate and predictable and more significant in development terms, than monetary benefit-sharing..

4.3.1.2 Monetary benefit-sharing

Despite these conclusions, the majority of the focus remains on monetary benefits.[802] Although, delegates tend to prefer a non-monetary sharing of benefits, there would be a risk that this latter would not beneficiate too much on the provision in the Revised Agreement on BBNJ. As above noted, the non-monetary approach would be reliant on existing good scientific provisions and not change the current ad hoc approach.[803] Secondly, the sharing of data on MGR as an open access resource requires the development of adequate infrastructure, which could be afforded more difficulty in a non-monetary system.[804] As noted by Morgera, 'training has costs related to trainees' travel, precious space/resources on expensive scientific research vessels, trainers' time,

[801] J A Rubiolo, E Alonso, E Cagide 'Marine Compounds as a starting point to drugs' in L M Botana (ed) *Seafood and Freshwater Toxins: Pharmacology, Physiology, and Detection, Third Edition (Food Science and Technology)* (CRC Press Taylor and Francis Group 2014) 1141; The seventh product is a highly purified polyunsaturated fatty acid (Omacor®/Lovaza®) used by patients at risk of heart attack, derived from a range of fish species living both within and beyond national jurisdiction. The advantages of non-monetary benefit sharing have been discussed widely in other flieds of Environmental International Law. See, among the others, Elsa Tsioumani 'Beyond Access and Benefit sharing Lessons from the Emergence and Application of the Principle of Fair and Equitable Benefit-sharing in Agrobiodiversity Governance' in F Girard and C Frison (eds) *The Commons, Plant Breeding and Agricultural Biotechnologies: Challenges for Food Security and Agrobiodiversity* (Routledge 2018) 41, 53.

[802] M Rabone, H Harden-Davies, J E Collins, S Zajderman, W Appeltans, G Droege, A Brandt, L Pardo-Lopez, T G Dahlgren, A G Glover and T Horton 'Access to Marine Genetic Resources (MGR): Raising Awareness of Best-Practice Through a New Agreement for Biodiversity Beyond National Jurisdiction (BBNJ)' (2019) 6 Frontiers in Marin Science 520 <https://doi.org/10.3389/fmars.2019.00520> 7.

[803] UNGA 'Report on the work of the United Nations Open-ended Informal Consultative Process on Oceans and the Law of the Sea at its eleventh meeting' (23 July 2010) 65th session Item 75 (a) of the provisional agenda: Oceans and the law of the sea UN Doc A/65/164 ,para 57.

[804] Morgera (2018) 54.

and scholarships; and the sharing of best practices requires analysis and effective delivery of information'.[805]

According to some scholars, it has become clear in the negotiations, that the understanding that monetary/non-monetary is a false dichotomy, because non-monetary benefits have costs and economic value.[806]

4.3.2 The scheme for the application of the models

4.3.2.1 The approach to access

The first important aspect to consider concerns the establishment of a body on the high seas to which the report on the information collected in marine scientific programs or any other activity involving utilisation of marine technology have to be notified.

As discussed above, the most appropriate IO to play this role would be the IOC. In turn, The ecosystem and scientific information gathered could be shared in an open-access system.[807] At the Conference stage such a central portal to access and exchange information has been identified in a Clearing House Mechanism..[808] The Clearing House Mechanism could 'include global information services such as a website for the instrument, a network of experts and practitioners, mechanisms to exchange information and a network for clearing-house mechanisms at the regional, sub-regional and/or national levels, include information on access to samples and sample collections, access to and transfer of technology and capacity building and funding opportunities, and data and knowledge sharing, facilitate exchange of research results[...].'[809]

Many states have already required the results from publicly funded research to be available and accessible to all.[810] However, as noted by Voigt Hanssen companies 'accessing MGR on the high

[805] Ibid.
[806] Morgera (2018) 54.
[807] G Voigt-Hanssen 'Current 'Light' and 'Heavy' Options for Benefit-sharing in the Context of the United Nations on the Law of the Sea' in Freestone(ed) (2019) 259.
[808] Freestone in Freestone (2019) 45.
[809] --'Chair's streamlined non-paper on elements of a draft text of an international legally-binding instrument under the United Nations Convention on the Law of the Sea on the conservation and sustainable use of marine biological diversity of areas beyond national jurisdiction' (UN Web site) ≤https://www.un.org/Depts/los/biodiversity/prepcom_files/Chairs_streamlined_non-paper_to_delegations.pdf≥ (2017) 19-20.
[810] Broggiato and others (2018) 22.

seas that fund their own research consider information such as genetic sequence data as business-sensitive and may be reluctant to share such information.'[811] At this purpose it has been suggested that the introduction of pre-control of the information by the companies involved would be a suitable solution to secure their interests.[812] A model based on the Nagoya Protocol would be consistent with this purpose.[813] According to this model prior and informed consent will not be an option. States who require informed consent would have to design their measures to 'provide for legal certainty, clarity and transparency of their domestic ABS legislation or regulatory requirements'[814] and 'provide for fair and non-arbitrary rules and procedures on accessing genetic resources.'[815]

4.3.2.2 The approach to benefit-sharing

4.3.2.2.1 Non-monetary benefit sharing

Once the information has been gathered, it would be necessary to share genetic sequence data or information on derivatives, such as information on biochemical components.[816]

The further step consistent with such a light approach would be the mandatory deposit of a sample in public collections in the flag state or in the port state, or alternatively in a collection with regional responsibility under the auspices of the Revised Agreement on BBNJ.[817] Such an approach would be ideal to develop a network in developing countries and guarantee easy access to all.[818]

By embracing this model, the Revised Agreement on BBNJ could either state that collection of MGRs on the high seas is free.[819] This option would be in compliance with article 238 LOSC according to which 'All States, irrespective of their geographical location, and competent international organizations have the right to conduct marine scientific research subject to the rights

[811] Voigt Hansen (2019) 259.
[812] Broggiato and others (2018) 22.
[813] 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 (adopted 29 October 2010, entered into force 12 October 2014) (Nagoya Protocol).
[814] Nagoya Protocol Article 6(3).
[815] Nagoya Protocol Article 6(3)(b).
[816] Voigt Hansen (2019) 259.
[817] Chair streamline paper (2017) 20.
[818] Voigt Hansen (2019) 259.
[819] Ibid.

and duties of other States as provided for in this Convention.'[820] As a matter of fact, this model would be substantially reliant on existing general provisions in LOSC to make research findings available through publication and dissemination, and promote data and information flows, largely non-implemented.[821]

4.3.2.2.2 Monetary Benefit sharing

As prospected by Voigt-Hanssen, this model would require the inclusion of monetary benefit-sharing according to the terms included in individually negotiated contracts based on the Nagoya Protocol provisions.[822] In this hypothesis contracts would be enforceable through the courts, and possibly through arbitration.[823] According to this scheme, there are two main options. First, the State authority could negotiate terms of the contracts with the proposed user on a case-by case basis.[824] Alternatively, the user can sign a standard contract to lower administrative costs, under the condition to renegotiate terms in case the development of a product becomes more certain, or there is a change in permitted use such as a passage from non-commercial to commercial utilisation.[825] The choice of the prospected solutions and the definition of their terms would be an exclusive choice of the Provider Country and the User. It has been highlighted that, in order to be effective, such a system should rely on an efficient tracking and monitoring system and a duty to report back on utilisation.[826]

Final remarks

The transfer of marine technology and marine scientific research are likely to play a central role at BBNJ stage in the future years. LOSC provides for an extensive coverage of it, but it remains too general and it has shown to be insufficient by itself to contribute to the progress in the utilisation of

[820] LOSC Article 238.
[821] E Morgera 'Fair and equitable benefit-sharing in a new international instrument on marine biodiversity: A principled approach towards partnership building?' (2018) 5 Marine Safety and Security Law Journal 54
[822] Voigt-Hanssen in Freestone (2019) 256.
[823] Ibid.
[824] Ibid.
[825] Ibid.
[826] Ibid.

these tools for the purposes of conservation and sustainable use of BBNJ. IOC has been key organisation to the enhancement of these provisions and at the same time is the one who can play more than central role in the next years at this stage. IOC has shown to play a relevant role either at regional level through the enhancement of research programmes and the development of different typologies of marine technology. However, it has not met yet a great participation in the South-West Pacific regional context. The financial and technological requirements of undertaking research on the high seas are, however, beyond the capacity of Pacific Island Countries alone. There is a need to strengthen collaboration programs with this organ and to enlarge the participation of States in IOC initiatives to effectively bring about deep benefits for the conservation of BBNJ. The South-Pacific area is particularly important, given the possibility to establish HSMPA and conjugate these research programs, involving the utilisation of marine technology with the management of MPAs. In the AT treaty, it has been highlighted how an harmonisation among the specific tools discussed in this chapter (MPAs, EIAs and transfer of marine technology) is the most efficient means to attain the objectives prospected by the Revised Agreement on BBNJ. In the Antarctic context it has been highlighted how the MPA management, the plan for an EIA or SEA are to be analysed comprehensively with marine scientific research and the transfer of marine technology.

Furthermore, as highlighted above, addressing marine research program, involving the usage of marine technology to both target-species and associated and dependent species upon target-ones accomplish an ecosystem-based approach. Given the results attained in the AT area, it has been suggested to create a 'Marine Science Research Code' based on the 'Antarctic model'. [827]

To date Delegations at BBNJ stage have prospected well-structured proposals to planning the mechanism to conduct the transfer of technology and research programs to enhance capacity building. Concerning the access of data collected during the programs and consequently sharing of benefits, they have been prospected two main models: an heavy model with monetary benefit-sharing and a light model with non-monetary benefit-sharing. Delegations appeared to prefer a non-monetary model, seen its higher likelihood to attain the goals prospected more quickly. However, it has been highlighted how this 'light' model would be substantially reliant upon existing instruments (LOSC provisions and CGTMT) and could not appropriately afford

[827] Scott (2008) 101.

adequate infrastructure for the collection of data and information to make available to state. For both models, the most suitable solution has been to establish a Clearing House Mechanism as access centre where the information collected during the activities involving the usage of marine technology and the enhancement of marine scientific research programs would be stored. Such a solution would be the most remarkable for the creation of a comprehensive widely accepted system under the auspices of the BBNJ framework. This would amount to the creation of a common database accessible to all the international community on all the information necessary to address an ecosystem-based approach for the purposes of conservation and sustainable use of BBNJ.

CONCLUSIONS

The Revised Agreement on BBNJ could largely contribute to reorganise the current regime and strengthen the specific tools for the conservation and sustainable use of BBNJ itself. The general and special LOSC provisions regulating the high seas have great limitations. Post-LOSC Agreements require States to enact more strict controls over vessels flying their flag on the high seas. However, a scant acceptance of these instruments amongst a large number of States undermined their effectiveness and this issue cannot be justified solely by the weak character of these agreements. A system which relies primarily on the duties of flag States to operate controls in on the high seas is weak and easily damned. States by themselves have not enough resources to guarantee these controls. In the absence of these conditions illegal phenomena will continue to proliferate on the high seas. IUU fishing, over-fishing, bycatch fishing, use of destructive gear in VMEs and other illegal practices are deteriorating year per year the health of marine biodiversity in open ocean. 'Flag-hopping' vessels are the catalyst for the proliferation of these illegal practices and only an effective system of control could counterbalance these practices. The most suitable solution would be the designation of an IO as controlling body of designed protected areas on the high seas . This role could be embodied primarily by IMO and it should be exercised in defined areas. Hence, new MPAs on the high seas need to be designated and and the designation of a PPSSA on the high seas or the recognition of a regional HSMPA as PSSA is generally regarded as one of the most appropriate solutions.

LOSC specific provisions on the high seas provide a common legal base, but they remain too general in content. Post-LOSC Agreements developed the general content of LOSC more in detail. The process of negotiation for the adoption of UNFSA was regarded as the first occasion to review in detail LOSC provisions and compensate its legal gaps. UNFSA played an important contribute for the elaboration of specific provisions on the conservation of living resources on the high seas. Several RFMOs reviewed their Statutes and modelled them on UNFSA. However, an under expected number of signatories and its delayed entry into force deeply limited its likelihood to become the new on-go international agreement for the purposes of conservation of marine biodiversity on the high seas. Moreover, CBD contributed to define the general concepts provided in LOSC. Notwithstanding, its mandate does not include the conservation of ABNJ, CBD helped to

assess an ecosystem-based and precautionary-based approach. Thanks to the progressive implementation of these two approaches by international and regional programs the management of living resources on the high seas was strongly reviewed. Through the application of an ecosystem-based management approach, the scope of conservation measures was extended to marine biodiversity in its entirety. LOSC reference to 'harvested species' and 'associated and dependent species upon them' implicitly raised this concept. To date an ecosystem-based approach is a fundamental principle, which registers a progressive distancing from an anthropocentric approach. Marine biodiversity cannot properly be conserved if it is not considered in its entirety. Likewise, the precautionary approach is an indissoluble principle in the management of marine biodiversity on the high seas. The need for a clear 'scientific evidence' when conducting management plan increased the accuracy of conservation measures and brought about important results for the conservation and sustainable use of BBNJ. The assessment of these general provisions for the regulation of the high seas created the conditions for the adoption of specific tools for the conservation of BBNJ. MPAs, EIAs , marine technology, including marine scientific research itself. These are the best ways to accomplish the goals prospected by the Conference on BBNJ. Regional programs were the major contributors for the creation of HSMPA networks. At this stage, it was highlighted how an harmonisation of the management of MPA, with programs involving the use of marine technology, including marine scientific research and the conduct of an EIA, was the underway process to attain the most positive outcomes for BBNJ. An increasing development of these programs is still key to extend the coverage of MPAs on the high seas, which is still extremely low. However, the development of these tools cannot be left to regional bodies alone. The most suitable solution is the integration between a regional system and an international model like the recognition of the Sargasso Sea as a EBSA and its recognition as OUV. This kind of integration is under the auspices of the Agreement on BBNJ. However, in my opinion, a stronger model to ensure an effective level of protection of MPAs on the high seas should be defined. The description of an MPA as EBSA is the most appropriate solution under the rubric of BBNJ, but it has still a weak legal character. At international level, there are already several models applicable on the high seas. The likelihood to apply successful international models on the high seas for the designation of MPAs is left to States' willingness to cooperate for the purposes of conservation and sustainable use of BBNJ. The designation on the high seas of PSSA is regarded by several States as a turning point to increase the level of conservation of BBNJ. As noted above, this is inextricably

linked to the nature of IMO, which would embody the role of MPA governing body. The management MPA plan should be coordinated with a progressive use of EIA and programs involving the usage of marine technology.

Applied alone, EIA is not a very effective means to increase the level of conservation and sustainable use of BBNJ. However, they showed to be more effective when applied cumulatively with SEAs. When conducted cumulatively these tools extend their focus on a larger-scale. The Revised Agreement on BBNJ embraces the obligation for a cumulative impact assessment and it strengthens the duties of States for the progressive use of SEAs. Furthermore, the Revised Revised Agreement on BBNJ incorporates the framework developed by the Manila Report at CBD stage, defining all the practical stages to conduct a cumulative impact assessment. These stages have now become a common understanding of the international community. Their codification in the Revised Agreement of BBNJ is extremely relevant for a range of reasons. Since they have become a common understanding of the international community, States will not have to adapt to new instruments. Their utilisation for the conduct of an EIA is already consolidated. Secondly, their codification in the Agreement on BBNJ would attribute to these principles a legally-binding character upon a larger number of States in case of the implementation of the ultimate Agreement on BBNJ. Otherwise, these principles will remain soft law instruments and their utilisation will remain a States' choice.

The transfer of marine technology and the increasing involvement of marine scientific research programs would have an enormous potential for the conservation and sustainable use of BBNJ for the next years. Notwithstanding LOSC provides for an extensive coverage of marine scientific research and marine technology, it does not define any practical means to effectively use these tools for the conservation and sustainable use of BBNJ. In continuity with LOSC, IOC is generally regarded to be the best catalyst for the progress of these tools. Its role in regional programs was extremely relevant through the promotion of research programs involving the use of marine technology for the purposes of conservation and sustainable use of BBNJ. Under the auspices of the Conference on BBNJ, IOC could be the 'honest broker' able to facilitate the gathering of high quality data and provision of unbiased policy advice to help manage the ocean areas outside of national jurisdiction, since there is no body established to do that. The results obtained through these programs should be encompassed in a efficient system of access to data and of benefit-sharing. The model prospected by the Revised Agreement on BBNJ is an open-access

model through the establishment of a Clear House-Mechanism. The Clear House Mechanism would serve as 'a centralized platform to enable States Parties to have access to collect , evaluate , make public and disseminate information' on data and scientific information, sharing of benefits, environmental impact assessment and their report and on Opportunities for capacity-building.[828] Since the establishment of this open-access model, it is necessary to define an effective system of benefit-sharing. In my opinion, a non-monetary benefit-sharing model for the purposes of conservation and sustainable use of BBNJ tends to be more effective in the short term period. The monetary benefits arising from marine biodiversity in ABNJ are non elevated. Furthermore, a non-monetary benefit-sharing, model appears to be favoured by delegations at the Conference stage. However, a monetary benefit-sharing model would be more innovative and would not be reliant solely on existing good scientific provisions.

Overall, the Agreement on BBNJ appears to be a unique occasion to strengthen existing instruments for the purposes of conservation and sustainable use of BBNJ. The Text of the Agreement could codify provisions which to date are provided solely by soft law or regional instruments. The role of regional programs remains fundamental, but their framework should be coordinated with an international common scheme. If the negotiation process for the conclusion of the Agreement on BBNJ delays its course, it would risk to face the same unsuccessful outcomes of UNFSA. The current status of marine biodiversity on the high seas is worrying and the lack of a reorganisation of current instruments would risk having important consequences.

[828] Revised Agreement on BBNJ, Article 51(3).

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