

Regional Management of Areas beyond National Jurisdiction in the Western Indian Ocean: State of Play and Possible Ways Forward

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Abstract

In recent years, the international community has become increasingly aware of the growing threats to marine biodiversity in areas beyond national jurisdiction (ABNJ), and international discussions on a new international legally binding are underway. In parallel, some States, through regional organisations, have progressively extended their activities into ABNJ, particularly through the development of area-based management tools (ABMTs). In this *article*, we consider how actors in the Western Indian Ocean (WIO) might engage in ABNJ governance. In particular, we develop some possible scenarios for developing ABMTs in the WIO, including through the development of fisheries closures, the establishment of marine protected areas (MPAs), and the adoption of ABMTs under the auspices of relevant international organisations. We conclude that while the WIO is currently not the most advanced region in terms of ongoing efforts to improve the governance of ABNJ, there are already some positive signals and promising options for the future.

Keywords

Areas beyond National Jurisdiction (ABNJ) – Western Indian Ocean (WIO) – regional ocean governance – area-based management tools – marine conservation

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Introduction

Marine areas beyond national jurisdiction (ABNJ)¹ represent around half of the planet's surface and host a significant portion of its biodiversity. These areas are under increasing pressure from intensifying human activities, with impacts including: overexploitation of living marine resources, especially fisheries;² destruction of habitats;³ effects of climate change and ocean acidification;⁴ pollution of the marine environment;⁵ and emergence of threats linked to deep-sea mining⁶ and geo-engineering.⁷ At the same time, interest in exploiting the rich genetic resources in ABNJ is increasing.⁸

- 1 According to the United Nations Convention on the Law of the Sea, ABNJ encompass the "high seas" and "the Area". The high seas are "all parts of the sea that are not included in the exclusive economic zone, in the territorial sea or in the archipelagic waters of an archipelagic State" (Article 86); the Area is "the seabed and ocean floor and subsoil thereof, beyond the limits of national jurisdiction" (Article 1(1)). United Nations Convention on the Law of the Sea (Montego Bay, 10 December 1982, in force 16 November 1994) 1833 UNTS 396.
- 2 A Merrie, D C Dunn, M Metian, A M Boustany, Y Takei, A O Elferink, Y Ota, C Villy, P N Halpin and H Österblom, 'An Ocean of Surprises—Trends in Human Use, Unexpected Dynamics and Governance Challenges in Areas beyond National Jurisdiction' (2014) 27 *Global Environmental Change* 19–31, doi:10.1016/j.gloenvcha.2014.04.012; A Bensch, M Gianni, D Gréboval, J Sanders and A Hjort, *Worldwide Review of Bottom Fisheries in the High Seas*, 1st ed. (FAO Fisheries and Aquaculture Department, Rome, 2009).
- 3 A Pusceddu, S Bianchelli, J Martin, P Puig, A Palanques, P Masque and R Danovaro, 'Chronic and Intensive Bottom Trawling Impairs Deep-Sea Biodiversity and Ecosystem Functioning' (2014) *Proceedings of the National Academy of Sciences* 1–6, doi:10.1073/pnas.1405454111.
- 4 O Hoegh-Guldberg, 'The Impact of Climate Change on the World's Marine Ecosystems' (2010) 328 (5985) *Science* 1523–29, doi:10.1126/science.1189930; U Riebesell and J-P Gattuso, 'Lessons Learned from Ocean Acidification Research' (2014) 1(5) *Nature Climate Change* 12–14, doi:10.1038/nclimate2456.
- 5 E Ramirez-Llodra, P A Tyler, M C Baker, O A Bergstad, M R Clark, E Escobar, L Levin, L Menot, A A Rowden, C R Smith and C L Van Dover, 'Man and the Last Great Wilderness: Human Impact on the Deep Sea' (2011) 6(8) *PLoS ONE*, <http://dx.plos.org/10.1371/journal.pone.0022588>.
- 6 J Halfar and R M Fujita, 'Danger of Deep-Sea Mining' (2007) 316 (5827) *Science* 987.
- 7 P W Boyd, 'Ocean Fertilization for Sequestration of Carbon Dioxide from the Atmosphere' in T Lenton and N Vaughan (eds), *Geoengineering Responses to Climate Change* (Springer, New York, 2013) 53–72, doi:10.1007/978-1-4614-5770-1_5; M Lukacs, 'World's Biggest Geoengineering Experiment 'Violates' UN Rules' *The Guardian*; available at <http://www.theguardian.com/environment/2012/oct/15/pacific-iron-fertilisation-geoengineering>; accessed 25 February 2017.
- 8 A Broggiato, S Arnaud-Haond, C Chiarolla and T Greiber, 'Fair and Equitable Sharing of Benefits from the Utilization of Marine Genetic Resources in Areas beyond National

In recent years, the international community has become increasingly aware of the growing threats to marine biodiversity in ABNJ. To address this issue, the United Nations General Assembly (UNGA) created a working group on biodiversity beyond national jurisdiction (BBNJ Working Group)⁹ to discuss the conservation and sustainable use of marine biodiversity in ABNJ. At the ninth meeting of the BBNJ Working Group (20–23 January 2015), States took the historic step of recommending to the UNGA that it open negotiations for a legally binding instrument under the United Nations Convention on the Law of the Sea (LOSC). This recommendation was endorsed by the UNGA through a specific resolution adopted in June 2015,¹⁰ and four meetings of a Preparatory Committee (PrepCom) took place in between March 2016 and July 2017.¹¹

In parallel, some regional organisations have progressively extended their activities into ABNJ, particularly through the development of area-based management tools (ABMTs).¹² Some Regional Seas programmes developed specific

Jurisdiction: Bridging the Gaps between Science and Policy' (2014) 49 *Marine Policy* 176–185, doi:10.1016/j.marpol.2014.02.012; D Leary, 'Marine Genetic Resources: The Patentability of Living Organisms and Biodiversity Conservation' in L Tubiana, P Jacquet and R K Pachauri (eds), *Oceans: The New Frontier—A Planet for Life 2011* (TERI Press, New Delhi, India, 2011) 183–193; A Broggiato, 'Exploration and Exploitation of Marine Genetic Resources in Areas beyond National Jurisdiction and Environmental Impact Assessment' (2013) 429 (178) *European Journal of Risk Regulation* 237–241.

- 9 Full title: *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.
- 10 UNGA Resolution A/69/292, Development 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 biodiversity in areas beyond national jurisdiction (19 June 2015).
- 11 Information available at <http://www.un.org/depts/los/biodiversity/prepcom.htm>; accessed 25 February 2017. See also the IISD Earth Negotiations Bulletin reports at <http://enb.iisd.org/oceans/bbnj/prepcom4/>; accessed 23 May 2017.
- 12 There is no universally accepted definition of ABMTs but "they are generally understood to include spatial and non-spatial tools that afford a specified area higher protection than its surroundings due to more stringent regulation of one or more or all human activities": T Greiber, 'An International Instrument on Conservation and Sustainable Use of Biodiversity in Marine Areas beyond National Jurisdiction. Exploring Different Elements to Consider. Paper V: Understanding Area-based Management Tools and Marine Protected Areas', available at https://cmsdata.iucn.org/downloads/paper_v__understanding_abmt_and_mpa.pdf; accessed 26 April 2017. ABMTs are considered as a major tool for the governance of ABNJ, and are part of the Package Deal agreed in 2011 within the BBNJ Working Group.

initiatives to conserve marine biodiversity in ABNJ, through the creation of Marine Protected Areas (MPAs).¹³ Moreover, following UNGA Resolutions 61/105 (2006) and 64/72 (2009), some Regional Fisheries Management Organisations (RFMOs) instituted fisheries closures to protect vulnerable marine ecosystems (VMEs) from the impacts of high seas bottom fishing.¹⁴ To be efficient and comprehensive, these regional initiatives need to be coordinated among themselves,¹⁵ but also with the various international organisations that have a mandate covering ABNJ,¹⁶ especially the International Maritime Organization (IMO) and the International Seabed Authority (ISA).

In the Western Indian Ocean (WIO), the ocean governance framework is complex and multifaceted, with various regional powers, sovereign States and regional and international organisations contributing different pieces of the

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- 13 J Rochette, S Unger, D Herr, D Johnson, T Nakamura, T Packeiser, A Proelss, M Visbeck, A Wright and D Cebrian, 'The Regional Approach to the Conservation and Sustainable Use of Marine Biodiversity in Areas beyond National Jurisdiction' (2014) 49 *Marine Policy* 109–117, doi:10.1016/j.marpol.2014.02.005; K M Gjerde, L L N Reeve, H Harden-Davies, J Ardron, R Dolan, C Durussel, S Earle, J A Jimenez, P Kalas, D Laffoley, N Oral, R Page, M C Ribeiro, J Rochette, A Spadone, T Thiele, H L Thomas, D Wagner, R Warner, A Wilhelm and G Wright, 'Protecting Earth's Last Conservation Frontier: Scientific, Management and Legal Priorities for MPAs beyond National Boundaries' (2016) 26 *Aquatic Conservation: Marine and Freshwater Ecosystems* 45–60, doi:10.1002/aqc.2646; 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'; available at <http://www.iddri.org/Publications/Governance-of-marine-biodiversity-in-areas-beyond-national-jurisdiction-at-the-regional-level-filling-the-gaps-and-strengthening>; accessed 25 February 2017.
- 14 G Wright, J Ardron, K Gjerde, D Currie 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* 134–148, doi:10.1016/j.marpol.2015.06.030.
- 15 Rochette *et al.* (n 13); R Billé, L Chabason, P Drankier, E J Molenaar and J Rochette, 'Regional Oceans Governance: Making Regional Seas Programmes, Regional Fishery Bodies and Large Marine Ecosystem Mechanisms Work Better Together' (UNEP Regional Seas Report and Studies, 2016) available at <https://www.cbd.int/doc/meetings/mar/soiom-2016-01/other/soiom-2016-01-unesp-06-en.pdf>; accessed 25 February 2017.
- 16 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, doi:10.1016/j.marpol.2014.02.011; N C Ban, N J Bax, K M Gjerde, R Devillers, D C Dunn, P K Dunstan, A J Hobday, S M Maxwell and P N Halpin, 'Systematic Conservation Planning: A Better Recipe for Managing the High Seas for Biodiversity Conservation and Sustainable Use' (2014) 7(1) *Conservation Letters* 41–54, doi:10.1111/conl.12010.

puzzle. To date, despite some sectoral initiatives, there is no concerted regional strategy for the conservation and sustainable use of marine biodiversity in ABNJ. In this article, we discuss possible ways for WIO stakeholders to engage more deeply in the governance of ABNJ, particularly by taking steps to use ABMTs at the regional level.¹⁷ To this end, we first present the key institutional actors in the region and highlight the activities they are currently undertaking in relation to ABNJ. We then introduce some possible scenarios for developing ABMTs in the WIO, including through the development of fisheries closures, the establishment of MPAs, and the adoption of ABMTs under the auspices of relevant international organisations. We end with some concluding thoughts.

Key Regional Organisations and Activities relating to ABNJ

Many organisations, mechanisms and projects are dedicated to the conservation and sustainable use of marine biodiversity in the WIO,¹⁸ but few of them are currently addressing policy issues related to the conservation and sustainable use of marine biodiversity in ABNJ. The institutional landscape includes the Nairobi Convention and a number of fisheries bodies.

The Nairobi Convention

Legal and Institutional Framework

In the early 1980s, recognising the uniqueness of the coastal and marine environment of the region and the need to take action to protect it against

17 J Rochette, G Wright, K Gjerde, T Greiber, S Unger and A Spadone, 'A New Chapter for the High Seas? Historic Decision to Negotiate an International Legally Binding Instrument on the Conservation and Sustainable Use of Marine Biodiversity in Areas beyond National Jurisdiction' (IDDRI Issue Brief 15, Paris, 2015) available at http://www.iddri.org/Publications/Collections/Syntheses/IB0215_JR%20et%20al_new%20chapter%20for%20the%20high%20seas.pdf; accessed 25 February 2017.

18 Including, e.g., the Nairobi Convention for the protection, management and development of the marine and coastal environment of the Western Indian Ocean; Regional Fisheries Bodies such as the Indian Ocean Tuna Commission (IOTC) and the Southern Indian Ocean Fisheries Agreement (SIOFA); the Indian Ocean Commission; the Consortium for the Conservation of Coastal and Marine Ecosystems in the Western Indian Ocean (WIO-C); the Western Indian Ocean Coastal Challenge (WIO-CC); and projects developed within the framework of the Western Indian Ocean Marine Science Association (WIOMSA) and the Coastal Oceans Research and Development in the Indian Ocean (CORDIO).

emerging threats, the Governing Council of the United Nations Environmental Programme (UNEP) requested the inclusion of the East African and South-West Atlantic regions within the Regional Seas Programme “with a view to initiating and carrying out (...) a programme for the proper management and conservation of marine and coastal resources in these areas”.¹⁹ UNEP subsequently supported the development of the Eastern African Action Plan. A meeting of governmental experts was held in September 1982 in the Seychelles in order to prepare a first draft of the East African Action Plan and to identify priority environmental issues. A Conference of Plenipotentiaries was then convened by the UNEP Executive Director from 17 to 21 June 1985 and led to the adoption of:

- The Action Plan for the Protection and Development of the Marine and Coastal Environment of the Eastern African Region;²⁰
- The Convention for the Protection, Management and Development of the Marine and Coastal Environment of the Eastern African Region (Nairobi Convention);²¹
- The Protocol Concerning Protected Areas and Wild Fauna and Flora in the Eastern African Region, entered into force on 30 May 1996;²²
- The Protocol Concerning Co-operation in Combating Marine Pollution in Cases of Emergency in the Eastern African Region, entered into force on 30 May 1996.²³

19 UNEP, Report of the Governing Council on the work on its eighth session, 16–29 April 1980, United Nations, New York, 1980, Decision 8/13C: Extension of the Regional Seas Programme to the East African Sea and the South-west Atlantic.

20 Action Plan for the protection, management and development of the marine and coastal environment of the Eastern African Region (21 June 1985). Available at: <http://www.unep.org/nairobiconvention/sites/unep.org.nairobiconvention/files/rsrso61.pdf>; accessed 19 July 2017.

21 Convention for the Protection, Management and Development of the Marine and Coastal Environment of the Eastern African Region (Nairobi, 21 June 1985, in force 30 May 1996). Available at: <http://www.unep.org/nairobiconvention/convention-protection-management-and-development-marine-and-coastal-environment-eastern-african>; accessed 19 July 2017.

22 Protocol concerning protected areas and wild fauna and flora in the Eastern African Region (Nairobi, 21 June 1985, in force 30 May 1996). Available at: <http://www.unep.org/nairobiconvention/protocol-concerning-protected-areas-and-wild-fauna-and-flora-eastern-african-region>; accessed 19 July 2017.

23 Protocol concerning cooperation in combating marine pollution in cases of emergency in the Eastern African Region (Nairobi, 21 June 1985, in force 30 May 1996). Available at: <http://www.unep.org/nairobiconvention/protocol-concerning-co-operation-combating-marine-pollution-cases-emergency-eastern-african-region>; accessed 19 July 2017.

The Nairobi Convention geographical area extends from Somalia in the North to South Africa in the South, covering 5 mainland States (Somalia, Kenya, Tanzania, Mozambique, South Africa) and 5 island States (Comoros, France through La Réunion Island, Madagascar, Mauritius, Seychelles). The implementation of the Action Plan, Convention and protocols later stalled, largely due to a lack of adequate funding and political commitment. The regional system then underwent a period of revitalisation beginning in the late 1990s. The most recent illustrations of this “new start” is the March 2010 adoption of two new legal instruments:

- The Amended Nairobi Convention for the Protection, Management and Development of the Marine and Coastal Environment of the Western Indian Ocean (not yet in force).²⁴
- The Protocol for the Protection of the Marine and Coastal Environment of the Western Indian Ocean from Land-Based Sources and Activities, hereafter Land-Based Sources and Activities (LBSA) Protocol (not yet in force).²⁵

The Nairobi Convention Secretariat is at the centre of these activities and coordinates the implementation of the Convention's work programme. Located at UNEP Headquarters in Nairobi, Kenya, it is guided by the decisions of the Conference of the Parties (COPS) held every two years, and supported by National Focal Points (NFPS) that serve as the channel for all formal communications between States and the Secretariat. A Regional Coordinating Unit (RCU) was established in 1997 in order to provide leadership and encourage partnerships by inspiring, informing and enabling nations and people of the Eastern African Region and their partners to protect, manage and develop their marine and coastal resources in a sustainable manner. The RCU is not currently functional.

24 Amended Nairobi Convention for the protection, management and development of the marine and coastal environment of the Western Indian Ocean (Nairobi, 31 March 2010). Available at: <http://www.unep.org/nairobiconvention/amended-nairobi-convention-protection-management-and-development-marine-and-coastal-environment>; accessed 19 July 2017.

25 Protocol for the protection of the marine and coastal environment of the Western Indian Ocean from land-based sources and activities, (Nairobi, 31 March 2010). Available at: <http://www.unep.org/nairobiconvention/protocol-protection-marine-and-coastal-environment-wio-land-based-sources-and-activities>; accessed 19 July 2017.

Current Activities in ABNJ

Neither the original Nairobi Convention nor the amended text explicitly includes ABNJ in its geographical mandate. However, Contracting Parties have recently demonstrated an increasing interest in ABNJ-related issues.

The Nairobi Convention is a partner in two projects dealing with the governance of ABNJ. In 2014, the “Sustainable Fisheries Management and Biodiversity Conservation of Deep-sea Living Marine Resources and Ecosystems in the Areas Beyond National Jurisdiction (ABNJ)” project, funded by the Global Environment Facility (GEF), was launched to (i) test the applicability of area-based planning tools to deep-sea ABNJ; (ii) share lessons learned from regional experiences; and (iii) test appropriate area-based planning tools in the WIO.

Also in 2014, the French Global Environment Facility (Fonds Français pour l’Environnement Mondial—FFEM) funded the project “Conservation and sustainable exploitation of seamount and hydro-thermal vent ecosystems of the South West Indian Ocean in areas beyond national jurisdiction” (FFEM-SWIO Project), whose objective is to strengthen the ABNJ governance framework in the region.

At the political level, during the Eighth COP to the Nairobi Convention, held in Mahé, Seychelles, 22–24 June 2015, Contracting Parties adopted Decision CP8/10²⁶ urging States:

to cooperate in improving the governance of areas beyond national jurisdiction, building on existing regional institutions including the Nairobi Convention and developing area based management tools such as marine spatial planning to promote the blue economy pathways in the Western Indian Ocean Region.

Following the adoption of this decision, a workshop was held in Quatre Bornes, Mauritius, 24–25 March 2016, to highlight the importance of ABNJ for the States and communities and to explore the possible ways for regional stakeholders to engage in the governance of ABNJ. Several other workshops are planned, especially in the framework of the two above-mentioned projects.

26 Available at: http://www.unep.org/nairobiconvention/sites/unep.org.nairobiconvention/files/adopted-_cop-8_decisions-_24-june-2015.pdf; accessed 19 July 2017.

Fisheries Bodies

Legal and Institutional Framework

Regional Fisheries Bodies (RFBS) are the key international organisations dedicated to the sustainable management of fishery resources. Member States of RFBS cooperate to ensure the effective conservation and sustainable use of fish stocks. Although some RFBS are purely advisory, most have the mandate to adopt binding management measures.²⁷ These bodies are called RFMOs and they either cover highly migratory species, such as tuna, or other pelagic and demersal species. International instruments, including the LOSC, the 1995 United Nations Fish Stocks Agreement (UNFSA)²⁸ and various UNGA resolutions, oblige RFMOs to take a range of actions in relation to the conservation and sustainable use of fish stocks.

Three fisheries bodies operate in the WIO region, each with different mandates and competences:

- The Indian Ocean Tuna Commission (IOTC), which promotes cooperation with the aim of ensuring management, conservation, and optimum utilisation of stocks of tuna and tuna-like species in the Indian Ocean. The IOTC covers both national waters and ABNJ of the Indian Ocean.
- The South Indian Ocean Fisheries Agreement (SIOFA), which aims to ensure the long-term conservation and sustainable use of fishery resources²⁹ in the Indian Ocean through cooperation among the Contracting Parties. The SIOFA's geographical coverage excludes waters under national jurisdiction.
- The Southwest Indian Ocean Fisheries Commission (SWIOFC), an advisory fisheries body which promotes sustainable utilization of the living marine resources of the SWIO region. The SWIOFC only covers waters under national jurisdiction.

27 E.g., fishing limits and quotas; technical measures (such as gear restrictions); measures on monitoring and surveillance (MCS); and measures to combat illegal, unreported and unregulated (IUU) fishing.

28 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, 4 December 1995, in force 11 December 2001) 2167 *UNTS* 3.

29 I.e., fish, molluscs, crustaceans and other sedentary species within the competence area, excluding those on the continental shelf of States (LOSC, Article 77(4)) and highly migratory species (LOSC, Annex 1).

In addition, the Southern Indian Ocean Deep Sea Fishers Association (SIODFA), an industry association, is an important player in the WIO fisheries sector. The Association aims to promote responsible management of the deep-water fishery while conserving biodiversity, especially the deep-water benthos.

Current Activities in ABNJ

As set out above, two RFMOs have a specific mandate to adopt legally binding conservation and management measures (CMMS) in ABNJ: the IOTC and the SIOFA.

At each session of the IOTC, Contracting Parties adopt CMMS concerning the management of tuna and tuna-like species under the IOTC mandate as well as the fisheries targeting them. These decisions take the form of either resolutions or recommendations. Unless there is a specific objection, the former are binding on the Commission Members and require a two-thirds majority; the latter are non-binding and may be adopted by a simple majority. Currently 53 CMMS are in place under the auspices of the IOTC, 50 of which are binding resolutions.³⁰ There is, however, limited experience with area-based measures: the IOTC instituted a small time-limited closure of tropical tuna fisheries between 2010–2014, though this has since been superseded by Resolution 14/02 which requires the establishment of an allocation system (quota) and steps to improve reporting of artisanal fisheries.³¹

In relation to bottom fisheries, in 2006 the UNGA called on RFMOs “with the competence to regulate bottom fisheries to adopt and implement measures (...) as a matter of priority”. Resolution 61/105 (2006) specifies the following measures to be implemented in order to protect vulnerable marine ecosystems (VMEs) from significant adverse impacts (SAIs):

- Impact assessments to manage and prevent SAIs on VMEs;
- Improvement of scientific research and data collection and sharing;
- Regulation of new and exploratory fisheries;
- “Move-on” rules and encounter protocols to require vessels to cease bottom fishing in an area where VMEs are encountered and to report the encounter so that the RFMO can adopt appropriate management measures; and

30 IOTC, “Compendium of Active Conservation and Management Measures for the Indian Ocean Tuna Commission (as of October 2014)” 2016, available at: <http://www.iotc.org/cmms>.

31 Resolution 10/01, superseded by Resolution 12/13, then Resolution 14/02; D M Kaplan, E Chassot, J M Amade, S Dueri, L Dagorn and A Fonteneau, ‘Spatial Management of Indian Ocean Tropical Tuna Fisheries: Potential and Perspectives’ (2014) 71(7) *ICES Journal of Marine Science* 1728–49.

TABLE 1 *Summary of VME closures*

Body	Closures
North East Atlantic Fisheries Commission (NEAFC)	13 closures (approx. 375,000 km ²)
Northwest Atlantic Fisheries Organisation (NAFO)	20 closures (approx. 379,000 km ²)
South East Atlantic Fisheries Organisation (SEAFO)	12 closures (approx. 504,000 km ²)
North Pacific Fisheries Commission (NPFC)	Formal closures not yet implemented. Tentative agreement on two small seamount closures (approx. 550 km ²).
South Pacific Regional Fisheries Management Organisation (SPRFMO)	Formal closures not yet implemented.
Commission for the Conservation of Antarctic Marine Living Resources (CCAMLR)	4 closures (approx. 2,200 km ²), 76 VME risk areas closed pursuant to encounter protocols (approx. 820 km ²), 1 marine protected area (approx. 94,000 km ²). Blanket closure in relation to toothfish fisheries; commercial bottom trawling prohibited throughout the CCAMLR region.
South Indian Ocean Fisheries Agreement (SIOFA)	Formal closures not yet implemented. The South Indian Ocean Deepsea Fisheries Association (SIODFA) has declared 13 voluntary "Benthic Protected Areas".
General Fisheries Commission for the Mediterranean (GFCM)	3 closures (approx. 16,000 km ²). Prohibition of bottom trawling activities in waters deeper than 1000 m.

- "In respect of areas where [VMES] are known to occur or are likely to occur based on the best available scientific information, to close such areas to bottom fishing and ensure that such activities do not proceed unless conservation and management measures have been established to prevent [SAIS]" (para. 83(c)).

Against this background, some RFMOs have closed VMEs to bottom fishing.³² During their first meeting in October 2013, Contracting Parties to the SIOFA recognised the need to give effect to the UNGA resolutions prior to the next meeting in 2015. At the second meeting of the SIOFA, in March 2015, the parties failed to agree on binding conservation measures, though it was agreed that “each Contracting Party would endeavour to limit the deep sea trawl fishing effort to recent historical levels until the 2016 annual session of the Meeting of the Parties”.³³ An interim recommendation in favour of the prohibition of gillnets was also adopted.³⁴ At the third meeting in July 2016, parties adopted a Conservation and Management Measure for the Interim Management of Bottom Fishing in the SIOFA Agreement Area, but did not adopt any VME closures.³⁵

So far, the most complete initiative in terms of area-based management of fisheries comes from the fishing industry. Following the meetings to establish the SIOFA, some commercial fishery operators were concerned that little more could be achieved at the political level until a fisheries agreement was ratified; yet this process was proving time-consuming and offered no certainty as to when an agreement would be concluded.³⁶ In the meantime, fishing operations continued unabated with no leadership or direction regarding capturing catch-and-effort data. Realising that they would play the major role in implementing an eventual agreement, three of the four operators in the region approached the United Nations Food and Agriculture Organization (FAO) to seek its assistance in organising informal meetings to advance management and prepare for implementation of the SIOFA.³⁷

In 2006, the four operators formed the SIOFPA and held two meetings to discuss management actions for the fishery. A key outcome of these meetings was the decision to declare eleven areas in the southern Indian Ocean as “benthic protected

32 See Wright *et al.* (n 14).

33 ‘Report of the Second Meeting of the Parties to the Southern Indian Ocean Fisheries Agreement’ (Mauritius, 17–20 March 2015), paragraph 27, available at <https://www.iattc.org/StaffVacancies/2-Final%20Report%20of%20the%20SIOFA%20Second%20Meeting.pdf>; accessed 25 February 2017.

34 *Ibid.*

35 ‘Report of the Third Meeting of the Parties to the Southern Indian Ocean Fisheries Agreement’ (La Reunion, 3–8 July 2017), available at <http://www.siofa.org/sites/www.siofa.org/files/documents/meetings/MoP%20Report%20III%202016%20La%20Reunion.pdf>; accessed 23 May 2017.

36 R Shotton, ‘Management of Demersal Fisheries Resources of the Southern Indian Ocean’ (FAO Fisheries Circular 1010, Rome, 2006), 3, available at <http://www.fao.org/3/a-a0726e.pdf>; accessed 25 February 2017.

37 *Ibid.*

areas” (BPAs).³⁹ Overall, 94.5% of seamounts and 93.3% of the seafloor of fishable depth using current technology (less than 1500m) remain available to fishing (see Fig. 1). However, as the trend of fisheries is to fish progressively deeper over time,⁴⁰ it is reasonable to conclude that deeper areas left accessible to fishing may be targeted in the future. The SIOFPA itself has expressed its concern that fishing effort will expand in the coming years.⁴¹ In October 2013, the organisation announced

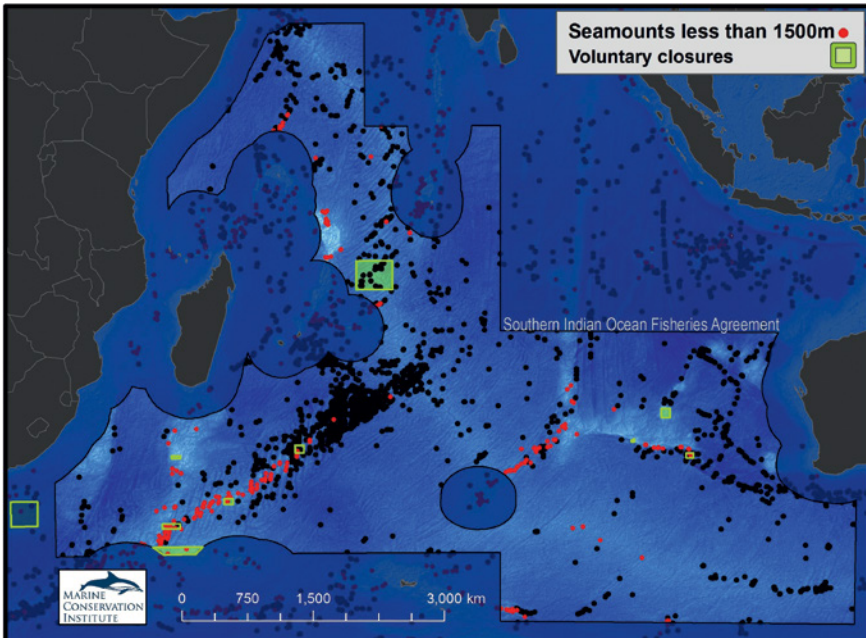


FIGURE 1 SIOFPA Benthic protected areas as of 2011 and seamounts at fishable depths within the Southern Indian Ocean Fisheries Agreement area³⁸

38 Source: Marine Conservation Institute (Seattle, WA, USA), 2011.

39 SIOFPA & IUCN, 'Fishing Companies Announce World's First Voluntary Closures to High-seas deepwater trawling. Marine species protected in Eleven Deep-sea Areas of the Indian Ocean' (2006). Available at: <http://www.scoop.co.nz/stories/BU0607/S00061.htm>; accessed 19 July 2017; and SIOFPA & IUCN 'Fishing Companies Announce World's First Voluntary Closure to High-seas deepwater trawling. Questions & answers about the Deep Seas and Benthic Protected Areas' (2006). Available at: <http://img.scoop.co.nz/media/pdfs/0607/SIOFPAQA.pdf>; accessed 19 July 2017.

40 R A Watson and T Morato, 'Fishing down the Deep: Accounting for within-Species Changes in Depth of Fishing' (2013) 140 *Fisheries Research* 63–65, doi:10.1016/j.fishres.2012.12.004.

41 See (n 33).

that a further two areas were to be closed.⁴² Unlike RFMO closures, the SIODFA BPAS apply only to member companies,⁴³ with no means of compelling non-members or new operators to comply,⁴⁴ and, as with other closures, the SIODFA closures cannot control other activities in these areas.

Developing Area-based Management Tools in the Western Indian Ocean: Some Possible Scenarios

Developing Fisheries Closures

Adoption of Fisheries Closures by the IOTC

There are currently few operational examples of fisheries closures for highly migratory pelagic species, though in recent years interest has been growing in understanding and developing such measures.⁴⁵ Pelagic ecosystems are

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- 42 SIODFA, 'Two New Benthic Protected Areas come into Existence in the Southern Indian Ocean' (29 October 2013). Available at: <http://www.siodfa.org/index.php/news/article/two-new-benthic-protected-areas-come-into-existence-in-the-southern-indian>; accessed 19 July 2017.
- 43 Under the UNFSA, non-members of RFMO/As are obliged to comply with their CMMS.
- 44 Note that SIODFA membership is predicated on acceptance of the closures (see SIODFA, 'GEFS/UNDP/IUCN/Indian Ocean Seamounts Project' available at <http://www.siodfa.org/programmes/iucn-project/>; accessed 25 February 2017).
- 45 E T Game, H S Grantham, A J Hobday, R L Pressey, A T Lombard, L E Beckley, K Gjerde, R Bustamante, H P Possingham and A J Richardson, 'Pelagic Protected Areas: The Missing Dimension in Ocean Conservation' (2009) 24(7) *Trends in Ecology & Evolution* 360–369, doi:10.1016/j.tree.2009.01.011; K D Hyrenbach, K A Forney, and P K Dayton, 'Marine Protected Areas and Ocean Basin Management' (2000) 10 *Aquatic Conservation: Marine and Freshwater Ecosystems* 437–458; H S Young, S M Maxwell, M G Connors and S A Shaffer, 'Pelagic Marine Protected Areas Protect Foraging Habitat for Multiple Breeding Seabirds in the Central Pacific' (2015) 181 *Biological Conservation* 226–235, doi:10.1016/j.biocon.2014.10.027; S M Maxwell and L E Morgan, 'Examination of Pelagic Marine Protected Area Management With Recommendations for the Pacific Remote Islands Marine National Monument' (2012) Marine Conservation Institute, available at: https://marine-conservation.org/media/filer_public/2012/11/21/pri_mpa_mgmt_report_-_final.pdf; D Kaplan, E Chassot, A Gruss and A Fonteneau, 'Pelagic MPAs: The Devil Is in the Details' (2010) 25(2) *Trends in Ecology and Evolution* 62–63, doi:10.1016/j.tree.2009.09.003; S J Harley and J M Suter, 'The Potential Use of Time-Area Closures to Reduce Catches of Bigeye Tuna (*Thunnus obesus*) in the Purse-Seine Fishery of the Eastern Pacific Ocean' (2007) 105(1) *Fishery Bulletin* 49–62; E Torres-Irineo, D Gaertner, A Delgado, De Molina and J Ariz, 'Effects of Time-Area Closure on Tropical Tuna Purse-Seine Fleet Dynamics through Some Fishery Indicators' (2011) 24 *Aquatic Living Resources* 337–350, doi:10.1051/alr/201143; D M Kaplan, E Chassot, J M Amande, S Dueri, L Dagorn and A Fonteneau, 'Spatial Management of Indian Ocean Tropical Tuna Fisheries: Potential and Perspectives' (2014)

generally characterized by high levels of species mobility, large spatial scales, and limited scientific knowledge, such that existing practice in relation to fisheries closures and MPAs cannot simply be applied to this context. Some have called for development of pelagic MPAs,⁴⁶ noting that: “recent advances across conservation, oceanography and fisheries science provide the evidence, tools and information to address these criticisms and confirm MPAs as defensible and feasible instruments for pelagic conservation.”⁴⁷ However, few scientific studies accurately determine if such measures are effective⁴⁸ and no consensus exists as yet on effectiveness and good practice: some commentators have tentatively noted the success of certain measures,⁴⁹ but others have argued that the benefits of closures and area-based measures decrease significantly for mobile species.⁵⁰

Dueri *et al.* (2014) reviewed the abovementioned IOTC time-area closure. Overall they conclude that:

strong environmental fluctuations, regular seasonal variability in catch, large observed tuna displacement distances, relatively uniform catch-per-unit-effort and bycatch rates over space, and high fisher mobility all suggest significant variability and movement in [Indian Ocean] tropical tuna fisheries that are simply not well adapted to spatial management.⁵¹

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- 71(7) *ICES Journal of Marine Science* 1728–1749, doi: 10.1093/icesjms/fst233; R J Toonen, T A Wilhelm, S M Maxwell, D Wagner, B W Bowen, C R C Sheppard, A M Friedlander, ‘One Size Does Not Fit All: The Emerging Frontier in Large-Scale Marine Conservation’ (2013) 77(1–2) *Marine Pollution Bulletin* 7–10, doi:10.1016/j.marpolbul.2013.10.039.
- 46 L E Morgan, S M Maxwell and N C Ban, ‘Pragmatic Approaches for Effective Management of Pelagic Marine Protected Areas’ (2014) 26 *Endangered Species Research* 59–74. doi:10.3354/esro0617; Young *et al.* (n 44); Game *et al.* (n 44); B H Robison, ‘Conservation of Deep Pelagic Biodiversity’ (2009) 23(4) *Conservation Biology* 847–858. doi:10.1111/j.1523-1739.2009.01219.x.
- 47 Game *et al.*, *ibid.*
- 48 Kaplan *et al.*, ‘Spatial Management’ (n 44).
- 49 *Ibid.*; Torres-Irineo *et al.* (n 44).
- 50 A Grüss *et al.*, ‘Relative Impacts of Adult Movement, Larval Dispersal and Harvester Movement on the Effectiveness of Reserve Networks’ (2011) 6(5) *PLoS ONE*, doi:10.1371/journal.pone.0019960 [note: this paper has ~150 authors, hence citation shows only first author]; W J F Le Quesne and E A Codling, ‘Managing Mobile Species with MPAs: The Effects of Mobility, Larval Dispersal, and Fishing Mortality on Closure Size’ (2008) 66(1) *ICES Journal of Marine Science* 122–131, doi:10.1093/icesjms/fsn202; E A Moffitt, L W Botsford, D M Kaplan and M R O’Farrell, ‘Marine Reserve Networks for Species That Move within a Home Range’ (2009) 19(7) *Ecological Applications* 1835–1847, doi:10.1890/08-1101.1.
- 51 Kaplan *et al.*, ‘Spatial Management’ (n 44).

Nonetheless, they note that the time-area closure could have been effective, given that it targeted prime fishing areas with high bycatch and juvenile catch levels, but that such a short temporal scale (one month, off peak) is of limited effectiveness.⁵² They note:

Developing effective space-based conservation plans for these species will require additional investment in fundamental behavioural research, as well as careful identification of anthropogenic and non-anthropogenic threats. Furthermore, space-based conservation must be integrated into and weighed against other conservation options, such as gear modification and terrestrial impact mitigation.

Given the foregoing, it may be most effective for the IOTC to focus its efforts on overall sustainable management in the short term,⁵³ with a view to considering how spatial management measures might be developed in future. It is clear that any such area-based measures or closures should correspond to a well-defined set of goals specific to a particular ecosystem (either by being large and carefully placed to cover prime fishing areas or by carefully tailoring closures to a specific species using studies of population dynamics and movement),⁵⁴ and should account for projected effort displacement effects.⁵⁵ As Kaplan *et al.* (2010) note, the devil is in the details and although “pelagic MPAs merit a scientific examination of their potential uses as part of a diversified approach to marine management, reasonable caution must be applied to their implementation and expected benefits”.⁵⁶

Adoption of Fisheries Closures by the SIOFA

In contrast to the nature of pelagic ecosystems, benthic ecosystems are well suited to ABMTs. Although the BPAs currently in place will remain in force for the members of the SIODFA, it is clear that the SIOFA is also obliged to

52 *Ibid.* Similarly, Torres-Irineo *et al.* (n 44) reviewed both an area-based moratorium on fisheries aggregation devices (FADs) and a time-area closure established by ICCAT and found that the former increased use of FADs outside the moratorium area, whereas the latter, though generally fulfilling its objectives, was not respected during the last years of this regulation and caused displacement of fishing effort.

53 See, e.g., The Pew Charitable Trusts, ‘Policy Priorities for the Indian Ocean Tuna Commission’ (2016), available at http://www.iotc.org/sites/default/files/documents/2016/05/IOTC-2016-S20-NGO05_-_PEW_Position_Statement_2016_0.pdf; accessed 25 February 2017.

54 Kaplan *et al.*, ‘Spatial Management’ (n 44).

55 Torres-Irineo *et al.* (n 44); Grüss *et al.* (n 49).

56 Kaplan *et al.*, ‘Pelagic MPAs’ (n 44).

take certain measures: the UNFSA makes it clear that RFMOs are the primary vehicle for collaboration on fisheries management, whereas UNGA resolutions require the parties to the SIOFA to implement closures, and other measures, for the protection of VMES. In addition, although the SIODFA BPAs may have been a commendable voluntary effort in the absence of a competent international organisation, experience suggests that voluntary measures undertaken by fishers are not the best mechanism for marine protection in the long term.⁵⁷

Pressure on the SIOFA is mounting to take such measures as soon as possible. At the second meeting of the SIOFA, the SIODFA submitted an “Expression of Concern” at the failure to adopt measures,⁵⁸ and the Deep Sea Conservation Coalition (DSCC) argued:⁵⁹

The draft measure CMM 14.02 for the protection of VMES circulated last year falls far short of the commitments to protect VMES that States Parties to SIOFA have repeatedly made through the UNGA resolutions over the past 11 years. A new measure or measures for the protection of VMES should be drafted, adopted and implemented on an urgent basis.

One relatively simple route for the adoption of VME closures within the SIOFA framework would be to study the feasibility of converting the SIODFA’s BPAs into formal VME closures. Alternatively, the SIOFA could undergo its own process, taking heed of the UNGA resolutions, experiences in other RFMOs,⁶⁰ and the literature on good practice.⁶¹

57 See, e.g., Rieser *et al.* (2013): “the protection of both benthic ecosystems and essential fish habitat (EFH) are marginal at best when quota owners have primacy in determining the boundaries of bottom trawl closures”. A Rieser, L Watling, and J Guinotte, “Trawl Fisheries, Catch Shares and the Protection of Benthic Marine Ecosystems: Has Ownership Generated Incentives for Seafloor Stewardship?” (2013) 40 *Marine Policy* 75–83, doi:10.1016/j.marpol.2012.12.028.

58 See (n 32).

59 *Ibid.*

60 See Wright *et al.* (n 14).

61 See, e.g., M W Lodge, D Anderson, T Løbach, G Munro, K Sainsbury and A Wilock, ‘Recommended Best Practices for Regional Fisheries Management Organizations’ (Chatham House, London, 2007), available at <https://www.oecd.org/sd-roundtable/papersandpublications/39374297.pdf>; accessed 25 February 2017; J A Ardron, M R Clark, A J Penney, T F Hourigan, A Rowden, P K Dunstan, L Watling, T M Shank, D M Tracey, M R Dunn and S J Parker, ‘A Systematic Approach towards the Identification and Protection of Vulnerable Marine Ecosystems’ (2014) 49 *Marine Policy* 146–154, doi:10.1016/j.marpol.2013.11.017.

Unilateral Declaration by States

A further possibility is that States could unilaterally declare that they will prohibit or restrict fishing by vessels flying their flag. There is already some precedent for such unilateral action in the Southwest Atlantic and in the Pacific.

In the Southwest Atlantic, Spain, the only State known to conduct significant bottom fishing activities, published a list of authorised vessels⁶² and, in the absence of a RFMO for the region, unilaterally declared nine areas closed to bottom fishing by its vessels in July 2011 (pursuant to a European Union (EU) regulation that implemented the UNGA resolutions).⁶³ Between 2007–2009, Spain's Oceanographic Institute (Instituto Español de Oceanografía; IEO) conducted a series of 11 multi-disciplinary research cruises with the aim of identifying VMES on the high seas of the region and making a preliminary assessment of how fishing activity was affecting these areas.⁶⁴ The research found that bottom trawling probably has a small adverse impact on VMES in the region,⁶⁵ but suggested that nine areas should be designated as VMES and be closed to bottom trawling. Beginning in July 2011, these areas were closed for bottom fishing for a period of six months.⁶⁶ Spain also restricted its bottom fishing footprint to two areas already fished for 25 years.⁶⁷

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- 62 FAO 'Deep-Sea High Seas Fisheries: Vessels Authorized to Conduct Bottom Fisheries in Areas beyond National Jurisdiction (UNGA 61/105, Paragraph 87)', available at ftp://ftp.fao.org/Fi/DOCUMENT/UNGA/deep_sea/UNGA61_105.pdf; accessed 25 February 2017.
- 63 Council Regulation (EC) No 734/2008 of 15 July 2008 on the Protection of Vulnerable Marine Ecosystems in the High Seas from the Adverse Impacts of Bottom Fishing Gears 2008, preamble 2. It was envisaged that this regulation would mainly apply to the South West Atlantic (and to the SIO, as no RFMO was in the region at that time). European Union Report on the Implementation of Measures Pertaining to the Protection of Vulnerable Marine Ecosystems from the Impact of Bottom Fishing on the High Seas in UNGA Resolution 61/105 of 2006 and UNGA Resolution 64/72 of 2010 (2010) 2.
- 64 J M Portela, G J Pierce, J L del Río, M Sacau, T Patrocinio and R Vilela, 'Preliminary Description of the Overlap between Squid Fisheries and VMES on the High Seas of the Patagonian Shelf' (2010) 106(2) *Fisheries Research* 229–238, doi:10.1016/j.fishres.2010.06.009.
- 65 *Ibid.* at p. 237.
- 66 M Gianni, D Currie, S Fuller, L Speer, J Ardron, B Weeber, M Gibson, G Roberts, K Sack, S Owen and A Kavanagh, 'Unfinished Business: A Review of the Implementation of the Provisions of United Nations General Assembly Resolutions 61/105 and 64/72, Related to the Management of Bottom Fisheries in Areas beyond National Jurisdiction' (Deep Sea Conservation Coalition, 2011), available at: http://www.savethehighseas.org/publicdocs/DSCC_review11.pdf (citing personal communication from Carmen Paz Marti, Ministry of the Environment, Spain).
- 67 European Union, 'EU Report on the Implementation of Measures Pertaining to the Protection of Vulnerable Marine Ecosystems from the Impact of Bottom Fishing on the High Seas in UNGA Resolution 61/105 of 2006 and UNGA Resolution 64/72 of 2010' (2010) at

In New Zealand, the Government worked in consultation with industry, environmental NGOs and government departments to implement closures in its footprint area in advance of measures being formally taken by the competent RFMO for the region (the South Pacific RFMO (SPRFMO)).⁶⁸ Lightly trawled areas were closed to bottom fishing, moderately trawled areas were opened subject to application of a move-on rule, and heavily trawled blocks generally remained open to bottom fishing.⁶⁹ Although these closures no doubt represent an improvement on a business-as-usual scenario, Penney and Guinotte (2013) conducted a detailed analysis of the New Zealand closures, concluding that the existing sites are “sub-optimal for protecting likely coral VMES”,⁷⁰ and Penney *et al.* (2009) concluded that “effective protection of benthic VMES in the Pacific Ocean high seas will probably require the establishment of a series of international spatial closures designed to protect adequate and representative areas of habitats and ecosystems”.⁷¹

Cooperation on Fisheries Management

The above discussion of fisheries management suggests a need for greater collaboration between the various bodies operating in the WIO, and with fisheries bodies in adjacent waters and elsewhere. In particular:

- Cooperation between the SIOFA and the IOTC to understand benthopelagic ecosystems and interactions, and to manage fisheries impacts.
- Likewise, cooperation between the SIOFA and the Convention for the Conservation of Antarctic Marine Living Resources (CCAMLR)⁷² could be helpful in understanding and managing the North-South interactions of these ecosystems.

p. 6, available at https://ec.europa.eu/fisheries/sites/fisheries/files/docs/body/20110520_report_en.pdf; accessed 25 February 2017.

68 New Zealand Government, ‘Report on New Zealand’s Implementation of Operative Paragraphs 80 and 83–90 of Resolution 61/105’ at pp. 7–12, available at http://www.un.org/depts/los/general_assembly/contributions_fisheries/new_zealand.pdf; accessed 25 February 2017.

69 *Ibid.* at p. 8. Additional precautionary closures of representative blocks in the moderately and heavily trawled areas may be implemented and further blocks may be closed in any area found to contain significant evidence of VMES.

70 A Penney, J Andrew, and J Guinotte. ‘Evaluation of New Zealand’s High-Seas Bottom Trawl Closures Using Predictive Habitat Models and Quantitative Risk Assessment’ (2013) 8(12) *PLoS ONE*, doi:10.1371/journal.pone.0082273.

71 A Penney, S Parker, and J Brown, ‘Protection Measures Implemented by New Zealand for Vulnerable Marine Ecosystems in the South Pacific Ocean’ (2009) 397 *Marine Ecology Progress Series* 341–354, doi:10.3354/meps08300.

72 Convention on the Conservation of Antarctic Marine Living Resources (Canberra, 20 May 1980, in force 7 April 1982) 1329 *UNTS* 48.

- The SIODFA, recognising the limited application of its voluntary BPAs, has stated that “a decision by the members of the IOTC to observe the [BPAs] would be welcome” and that it hopes that “other agencies would observe and support this initiative and not undermine its intent”.⁷³ This represents an opportunity for the IOTC and the SIOFA to build on these voluntary measures and work with an enthusiastic industry association to ensure implementation of international commitments on high seas fisheries.

Establishing MPAs

MPAs are widely acknowledged as an important tool for biodiversity conservation, and ecologically connected networks of MPAs are crucial for sustaining high seas ecosystems.⁷⁴ The international community has committed, in numerous global fora, to establish a network of MPAs covering a significant percentage of the oceans.⁷⁵ Therefore interest in the establishment of multi-purpose MPAs in ABNJ is strong,⁷⁶ yet currently no global mechanism exists to make this possible.

73 Shotton (n 35).

74 U R Sumaila, D Zeller, R Watson, J Alder and D Pauly, ‘Potential Costs and Benefits of Marine Reserves in the High Seas’ (2007) 345 *Marine Ecology Progress Series* 305–310, doi:10.3354/meps07065; The level of protection may vary depending on the pressures on the area to be protected and on the conservation needs. Some MPAs may be entirely or partly “no-take zones”, whereas in others certain activities, such as fishing or tourism, could be regulated, though not necessarily prohibited. Definitions of MPAs are generally broad so as to incorporate this variety, though the basic idea remains that MPAs will have “a special status in comparison with the surrounding area due to their more stringent regulation of one or more human activities [...] by one or more measures [...] for one or more purposes”. E J Molenaar and A G Oude Elferink, ‘Marine Protected Areas in Areas beyond National Jurisdiction—The Pioneering Efforts under the OSPAR Convention’ (2009) 5(1) *Utrecht Law Review* 5–20.

75 See, e.g., The Plan of Implementation of the World Summit on Sustainable Development (2002) available at: https://www.un.org/esa/sustdev/documents/WSSD_POI_PD/English/WSSD_PlanImpl.pdf; accessed 7 July 2017; The Strategic Plan for Biodiversity 2011–2020 (‘Aichi Targets’), available at: <https://www.cbd.int/doc/strategic-plan/2011-2020/Aichi-Targets-EN.pdf>; accessed 7 July 2017 (target 11 states: “By 2020, at least 17 per cent of terrestrial and inland water, and 10 per cent of coastal and marine areas, especially areas of particular importance for biodiversity and ecosystem services, are conserved through effectively and equitably managed, ecologically representative and well connected systems of protected areas and other effective area-based conservation measures, and integrated into the wider landscape and seascapes”); and the Rio+20 “Future We Want” outcome document (UNGA Resolution of 27 July 2012, A/RES/66/288).

76 I.e., MPAs which regulate a large variety of human activities with the ultimate objective of conserving marine biodiversity.

Nonetheless, some efforts have been made to develop specific initiatives to conserve marine biodiversity in ABNJ through the creation of MPAS. Below we consider how such efforts could be advanced in the WIO region.

Extension of the Nairobi Convention

Four Regional Seas Programmes currently have a mandate covering ABNJ (in the Mediterranean Sea, the Southern Ocean, the North-East Atlantic, and the South West Pacific), and the United Nations Environment Assembly of the United Nations Environment Programme adopted in 2016 a resolution that “encourages the contracting parties to existing regional seas conventions to consider the possibility of increasing the regional coverage of those instruments in accordance with international law”.⁷⁷

As noted above, the Nairobi Convention Contracting Parties are increasingly interested in developing initiatives in ABNJ, and the opportunity of extending the geographical coverage of the framework convention into ABNJ is currently being considered. This step could be the precursor to the eventual establishment of MPAS in the ABNJ of the region.

There is a precedent for such action, with the most extensive efforts of a Regional Seas organization to date being by the OSPAR Commission in the Northeast Atlantic. In 2010, the parties agreed to the establishment of six MPAS in ABNJ⁷⁸ and have followed up with an assessment of ecological coherence.⁷⁹ A seventh MPA was agreed in 2012 (see Fig. 2).⁸⁰ The OSPAR Commission has also initiated a process to advance cooperation and coordination between the different sectoral bodies competent in the region.⁸¹

77 United Nations Environment Assembly of the United Nations Environment Programme, Resolution 2/10: Oceans and Seas, UNEP/EA.2/Res.10 (2016).

78 OSPAR Decisions 2010/1–6 and OSPAR Recommendations 2010/12–17. OSPAR Commission, 2012 Status Report on the OSPAR Network of Marine Protected Areas (2013), available at <http://www.ospar.org/documents?d=7335>; accessed 25 February 2017.

79 D Johnson, J Ardron, D Billett, T Hooper and T Muller, “An Assessment of the Ecological Coherence of the OSPAR Network of Marine Protected Areas in 2012” (OSPAR Commission, 2013), available at <http://www.ospar.org/documents?d=7346>; accessed 25 February 2017.

80 OSPAR Decision 2012/1 on the creation of the Charlie Gibbs North High Seas Marine Protected Area.

81 See NEAFC and OSPAR, ‘On the Process of Forming a Cooperative Mechanism Between NEAFC and OSPAR: From the First Contact to a Formal Collective Arrangement’ (UNEP Regional Seas Reports and Studies No. 196, 2015); D Johnson, ‘Can Competent Authorities Cooperate for the Common Good: Towards a Collective Arrangement in the North-East Atlantic’ in *Environmental Security in the Arctic Ocean*, P A Berkman and A N Vylegzhanin (eds), (2013) *NATO Science for Peace and Security Series C: Environmental*

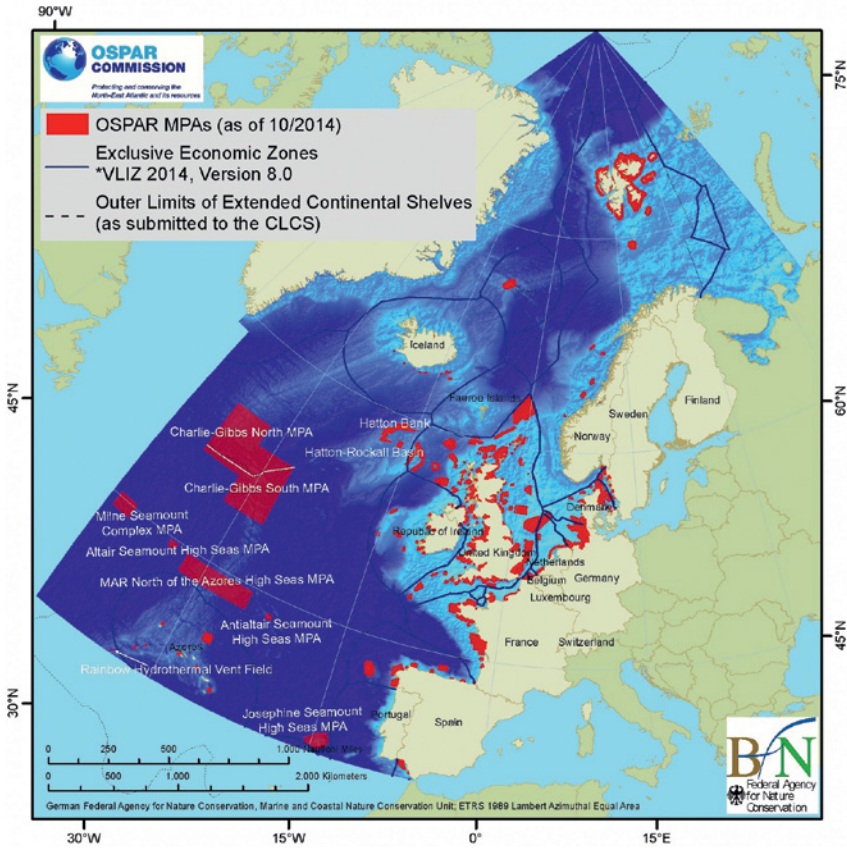


FIGURE 2 The OSPAR network of MPAs in ABNJ⁸²

Initial expansion of the mandate of the Nairobi Convention would in theory allow for such action to be taken in the wIO region; however, some important limitations are to be noted. First, such MPAs are binding only on the parties to the Regional Seas Programme and not on third parties. This means that even

Security 333–343, doi:10.1007/978-94-007-4713-5_29; D Freestone, D Johnson, J Ardron, K K Morrison and S Unger, 'Can Existing Institutions Protect Biodiversity in Areas beyond National Jurisdiction? Experiences from Two on-Going Processes' (2014) 49 *Marine Policy* 167–175, doi:10.1016/j.marpol.2013.12.007; N Matz-Lück and J Fuchs, 'The Impact of OSPAR on Protected Area Management beyond National Jurisdiction: Effective Regional Cooperation or a Network of Paper Parks?' (2014) 49 *Marine Policy* 155–166, doi:10.1016/j.marpol.2013.12.001; Molenaar and Oude Elferink (n 72).

82 Source: OSPAR Commission.

if the Nairobi Convention were to take this step, the MPAs would not be applicable to non-States parties. Second, it is clear that the creation of such MPAs, if they are to be more than “paper parks”, requires considerable effort, resources, and political will. Such MPAs also require coordination and cooperation with other bodies. As the Nairobi Convention’s mandate is limited, it would need to cooperate with other bodies to ensure that complementary protective measures were taken, by, e.g., the SIOFA on fisheries, the ISA on deep-sea mining, and the IMO on shipping. Without cooperation between these organisations, any MPA declared under a Regional Seas Programme would be little more than “lines on maps”. Such coordination and cooperation are not easy. Within OSPAR, for example, despite promising developments, it has been “time- and labour-intensive, particularly in the global bodies, IMO and ISA, to move such an idea forward, with organisations’ different levels of technical scrutiny and sometimes complex and mutually incompatible annual meeting cycles”.⁸³

Given the foregoing, the best course of action for the region is the continuation of discussions on the extension of the Nairobi Convention mandate, with a view to eventually instituting a process to develop management measures.

Coalition-based Approaches

An alternative to the Regional Sea approach would be the use of a coalition-based approach. Inspiration could be taken from the Pelagos Sanctuary in the Mediterranean, a small-scale, State-led effort focussing on cetacean conservation, and the efforts of the Sargasso Sea Alliance (SSA) (now the Sargasso Sea Commission), a broad and cooperative initiative launched and led by civil society and a champion territory.

The Pelagos Sanctuary for Mediterranean Marine Mammals was established by France, Monaco and Italy in 1999 to protect the eight resident cetacean species in the area,⁸⁴ incorporating both the territorial waters of these three States and areas that were ABNJ at the time. In 2001, the Sanctuary was recognised as a Specially Protected Areas of Mediterranean Importance (SPAMIS) by the Parties to the Protocol concerning Specially Protected Areas and Biological Diversity in the Mediterranean;⁸⁵ consequently all contracting parties to this Protocol must abide by the regulations adopted for the Sanctuary. A joint

83 Freestone *et al.* (n 78).

84 Agreement concerning the creation of a marine mammal sanctuary in the Mediterranean, adopted in Rome, Italy, 25 November 1999. See: <https://www.tethys.org/activities-overview/conservation/pelagos-sanctuary/>; accessed 6 July 2017.

85 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

management plan was approved in 2004 and steps have been taken to respect the MPA.⁸⁶ The founding States have also committed to seeking recognition as a Particularly Sensitive Sea Area by the IMO (see below), though this has not yet come to fruition.⁸⁷

In comparison to other regional marine areas, the institutional landscape in the Sargasso Sea is underdeveloped. No Regional Seas Programme and no broad-based RFB cover the region.⁸⁸ The only land in this area is Bermuda,⁸⁹ a British overseas island territory. The SSA, a partnership between the Government of Bermuda, NGOs, scientists and private donors, was launched in 2011 with the aim of establishing a management regime using existing sectoral bodies and measures and to act as an example of what can and cannot be delivered through existing institutions in ABNJ.⁹⁰ Bermuda, with the support of the Alliance, has already submitted information regarding the Sargasso Sea

protocols, Monaco; 14–17 November 2001, UNEP(DEC)/MED IG.13/8, 30 December 2001, Annex IV.

- 86 S Christiansen, 'Background Document for the High Seas MPAs: Regional Approaches and Experiences' (Side Event at the 12th UNEP Global Meeting of the Regional Seas Conventions and Action Plans, 20 September 2010, WWF Germany, 2010).
- 87 P Mayol, H Labach, J Couvat, D Ody and P Robert, 'Particularly Sensitive Sea Area (PSSA): An IMO Status as an Efficient Management Tool of Pelagos, in *IMPAC 3* (Marseille, 2013), available at: http://www.souffleursdecume.com/docs/SE_2013-abstract-zmpv-impac3.pdf; accessed 6 July 2017; A Mangos and S André, "Analysis of Mediterranean Marine Environment Protection: The Case of the Pelagos Sanctuary" (Plan Bleu, 2008), available at: http://planbleu.org/sites/default/files/upload/files/4p20_PelagosEN.pdf; accessed 6 July 2017. A list of declared PSSAs is available on the IMO's website: <http://www.imo.org/ourwork/environment/pollutionprevention/pssas/Pages/Default.aspx>; accessed 23 May 2017.
- 88 The International Commission for the Conservation of Atlantic Tunas (ICCAT) is the only competent RFMO in the region: its area of competence covers a much greater area than the Sargasso Sea alone, and it is only responsible for the conservation of tunas and tuna-like species. The North Atlantic Fisheries Organization (NAFO) regulatory area may overlap very slightly with the Sargasso Sea, but this is insignificant.
- 89 Interestingly, Bermuda is also engaged in the establishment of a proposed marine reserve that will encompass much of its EEZ. See www.bermudabluehalo.org.
- 90 See Sargasso Sea Alliance website, <http://www.sargassoalliance.org/about-the-alliance>; accessed 25 February 2017. See also Freestone *et al.* (n 78); and D Freestone and K Gjerde, 'Lessons from the Sargasso Sea: Challenges to the conservation and sustainable use of marine biodiversity beyond national jurisdiction' (IUCN), <https://www.iucn.org/id/node/27049>; accessed 23 May 2017.

for its potential designation as an EBSA,⁹¹ and a range of additional actions for advancing the conservation of this region are currently being considered.

The Pelagos and Sargasso Sea experiences demonstrate that an initiative from a limited number of States can be decisive. Based on this approach, some WIO States could champion a process towards a better conservation of ABNJ ecosystems, through voluntary commitments.

Area-based Management Measures from International Organisations

Sectoral measures under existing global institutions could be implemented as a complement to, or as part of, other approaches to improve management of the WIO. The two key sectoral measures in this regard are those taken by the IMO and the ISA.

Particularly Sea Sensitive Areas (PSSAs)

The IMO is the United Nations specialised agency with responsibility for the safety and security of shipping and the prevention of marine pollution by ships. IMO member States can designate PSSAs where particular regulations apply to protect the marine environment from the environmental impacts of navigation and marine pollution. The criteria for designation of PSSAs refer to the identification of PSSAs both within and beyond the limits of the territorial sea,⁹² thereby including the possibility that a PSSA could be identified in ABNJ.⁹³ Though no PSSAs are currently designated in ABNJ, the possibility of using this tool for management of the high seas has been discussed.⁹⁴

According to Roberts *et al.* (2010):⁹⁵

91 Decision Adopted by the Conference of the Parties to the Convention on Biological Diversity at its Eleventh Meeting, XI/17. Marine and Coastal Biodiversity: Ecologically or Biologically Significant Marine Areas, UNEP/CBD/COP/DEC/XI/17, p. 23, item 13.

92 Revised guidelines for the identification and designation of particularly sensitive sea areas. A 24/ Res.982, 6 February 2006. PSSA Proposal Review Form approved by MEPC 55/23, 10 October 2006. Paragraph 4.3. Available at: <http://www.imo.org/en/OurWork/Environment/PSSAs/Pages/Default.aspx>; accessed 6 July 2017.

93 Though LOSC Article 211(6) refers to “a particular, clearly defined area of their respective EEZs”, DOALOS was of the opinion that this phrase did not include the entire EEZ and that there is no maximum restriction on size: IMO, LEG 87/17, Annex 7, 2.

94 J Roberts, A Chircop, and S Prior, ‘Area-Based Management on the High Seas: Possible Application of the IMO’s Particularly Sensitive Sea Area Concept’ (2010) 25 *The International Journal of Marine and Coastal Law* 483–522.

95 *Ibid.*

it seems clear, in principle at least, that a PSSA could be designated on the high seas, either in isolation or in combination with a high seas MPA (...) any State could submit such a proposal to the IMO, although approval will require broad consensus among IMO member States, which, based on previous experience in IMO, is likely to be contentious.

The designation of a sea area as a PSSA is made by a non-legally binding resolution from the IMO Marine Environment Protection Committee (MEPC). Therefore, the interest of a PSSA lies largely in the “associated protective measures” (APMs) adopted. These include: pollution control measures, such as the designation of Special Areas under Annexes I–V of the MARPOL Convention, where discharges from ships are more strictly controlled or prohibited;⁹⁶ declaration of the proposed PSSA as an “area to be avoided” by ships; navigation measures, such as ship routeing and reporting systems;⁹⁷ pilotage schemes; and vessel traffic management systems. The IMO may also pursue the development and adoption of other measures, provided they have an identified legal basis.

As any State can propose a PSSA, there is clearly an opportunity for one or more of the WIO States to submit a proposal to the IMO, though such a proposal is likely to require active promotion to shepherd it through the process. It should be noted that few PSSAs are in existence, and this general scarcity, coupled with the novelty of proposing one in ABNJ, suggests that such an action may take considerable investment by and political will from States.

Areas of Particular Environmental Interest

The ISA is the competent international organisation responsible for regulating and controlling activities associated with the exploration for, and the exploitation of, the mineral resources⁹⁸ of the deep seabed in ABNJ (“The Area”). The ISA is constituted pursuant to the provisions of the LOSC and the Part XI

96 International Convention for the Prevention of Pollution from Ships (London, 2 November 1973, in force 2 October 1983) 1340 UNTS 184 (MARPOL 73/78). For example, eight Special Areas under Annex V on garbage discharges have been adopted, two include high seas areas (the Mediterranean and the Antarctic) (see <http://www.imo.org/en/OurWork/Environment/SpecialAreasUnderMARPOL/Pages/Default.aspx>; accessed 25 February 2017).

97 The adoption of routeing measures should take into account the IMO General Provisions on Ships’ Routeing (Resolution A.572(14)), as amended. For an example, see the Ships’ Routeing Associated Protective Measures (APMs) for the Galápagos Archipelago PSSA (Resolution A.976(24)).

98 Resources are defined as “all solid, liquid or gaseous mineral resources *in situ* in the Area at or beneath the seabed, including polymetallic nodules”. The resources to which the

Implementation Agreement.⁹⁹ Article 136 of the LOSC provides that the Area and its resources are the common heritage of mankind: all rights in the resources are vested in mankind as a whole, and the ISA acts on its behalf.¹⁰⁰ In this role, the ISA has (at this writing) entered into 26 exploration contracts in the Atlantic, Indian and Pacific Oceans.

In 2012, as part of its Environmental Management Plan for the Clarion-Clipperton Zone,¹⁰¹ the ISA designated nine Areas of Particular Environmental Interest (APEIs) to the marine environment in the Area.¹⁰² No mining is permitted in these areas. These designations were made in advance of contractor-designated “Impact reference zones” and “preservation reference zones”.¹⁰³ At the same time, the ISA Regulations on prospecting and exploration for polymetallic nodules, polymetallic sulphides, and ferromanganese crusts in the Area¹⁰⁴

ISA's mandate for exploitation extends do not include the biological and genetic resources of the Area.

- 99 Agreement relating to the implementation of Part XI of the United Nations Convention on the Law of the Sea of 10 December 1982 (New York, 28 July 1994, in force 28 July 1996) 1836 *UNTS* 3.
- 100 LOSC Article 137 (2).
- 101 ISBA/17/LTC/WP.1, Draft environmental management plan for the Clarion-Clipperton Zone, 28 January 2011, adopted 22 July 2012, ISBA/18/C/22; ISA. Decision of the Council relating to an environmental management plan for the Clarion-Clipperton Zone. 2012. ISBA/18C/22; available at <http://www.isa.org.jm/files/documents/EN/18Sess/Council/ISBA-18C-22.pdf>; accessed 25 February 2017.
- 102 Decision of the Council of the International Seabed Authority relating to amendments to the Regulations on Prospecting and Exploration for Polymetallic Nodules in the Area and related matters. 2013; ISBA/19/C/17; Section V.31.6.
- 103 Impact reference zones are “areas to be used for assessing the effect of each contractor’s activities in the Area on the marine environment and which are representative of the environmental characteristics of the area”. Preservation reference zones are “areas in which no mining shall occur to ensure representative and stable biota of the seabed in order to assess any changes in the flora and fauna of the marine environment”. Regulation 31(7).
- 104 Decision of the Council of the International Seabed Authority relating to amendments to the Regulations on Prospecting and Exploration for Polymetallic Nodules in the Area and related matters ISBA/19/C/17 and Decision of the Assembly of the International Seabed Authority regarding the amendments to the Regulations on Prospecting and Exploration for Polymetallic Nodules in the Area ISBA/19/A/9; Decision of the Assembly of the International Seabed Authority relating to the regulations on prospecting and exploration for polymetallic sulphides in the Area ISBA/16/A/12/Rev.1; Decision of the Assembly of the International Seabed Authority relating to the Regulations on Prospecting and Exploration for Cobalt-rich Ferromanganese Crusts in the Area ISBA/18/A/11. See <http://www.isa.org.jm/mining-code/Regulations>; accessed February 2017.

provide that “prospecting shall not be undertaken if substantial evidence indicates the risk of serious harm to the marine environment”.¹⁰⁵

In the Indian Ocean, including in its Western part, exploration for mineral resources is on-going. Five contracts have been granted to India (polymetallic nodules and polymetallic sulphides), China (polymetallic sulphides), Korea (polymetallic sulphides), and Germany (polymetallic sulphides). No assessment on the opportunity and feasibility to establish APEIS in the region has been conducted so far. This is a step WIO States and stakeholders may be interested in taking in conjunction with the ISA.

Conclusion

The WIO is currently not the most advanced region in terms of ongoing efforts to improve the governance of ABNJ, but there are already some positive signals, as highlighted in Table 2. The discussions within the Nairobi Convention are, at the very least, an opportunity for the coastal States of the WIO region to reflect on their potential interest and role in ABNJ, and the ongoing development of the SIOFA is likely to result in concrete fisheries CMMs being taken in the near future. Moreover, 2016 saw the emergence of coordination between the Nairobi Convention, the SWIOFC and the IOTC, with a joint meeting held to discuss areas of common interest and possible cooperation.¹⁰⁶ A regional conference on ABNJ in the WIO region will be held in 2017, in the framework of the FFEM-SWIO Project, bringing together the relevant regional and sectoral bodies operating in the region with States, scientists and other stakeholders. At this stage, the primary objective of this conference is to share information and exchange ideas on possible regional approaches to conservation and sustainable use of marine biodiversity of ABNJ in the WIO; however, it could also be the first step towards a more concerted effort to ensure coordination and cooperation for ABNJ governance in the region.

105 Regulation 2(2). These regulations apply to prospecting and exploration only, and it remains to be seen whether eventual regulations on the exploitation of these resources will contain similar provisions.

106 UNEP, ‘Scoping Meeting on Collaboration Between Regional Seas Programmes and Regional Fisheries Bodies in Southwest Indian Ocean’ (2016), available at http://www.unep.org/ecosystemmanagement/water/regionalseas40/Portals/50221/UNEP_SWIO_SM1_4_ReportMeeting.pdf; accessed 25 February 2017.

In the North-East Atlantic the OSPAR Commission established MPAs in ABNJ before seeking to involve other competent global and regional organisations. By contrast, in the WIO region an effort appears to be emerging to first strengthen the collaboration between competent organisations and lay the outlines for a regional strategy for the conservation and sustainable use of ABNJ in the region.

TABLE 2 *Possible regional approaches to conservation and sustainable use of marine biodiversity of ABNJ in the Western Indian Ocean*

Approach	Type	Current status in the wio	Key issues for the wio
	MPAs within regional seas programmes	Nairobi Convention currently limited to areas within national jurisdiction.	Study the opportunity and feasibility of extending the Nairobi Convention geographical coverage in ABNJ. If opportunity and feasibility established, consider legal and policy process to develop. Consider opportunities and modalities to develop cooperation and coordination with competent international and regional organisations.
	High seas bottom fisheries closures (HSBFCs) established by Regional Fisheries Management Organisations	Competent RFMOs covering ABNJ in the region: the South Indian Ocean Fisheries Agreement (SIOFA) and the Indian Ocean Tuna Commission (IOCT). No HSBFCs established so far. SIOFA in the early stages of development. 13 Benthic Protected Areas (BPAs) established by the Southern Indian Ocean Deep Sea Fishers Association (SIODEFA), an association of commercial fishing operators in the region.	Study the level of implementation of UNGA Resolutions 61/105 and 64/72 in the wio. Use grey and scientific literatures to identify VMEs in the wio (locations, human uses in these areas). If necessary, establish a process towards the establishment of new HSBFCs. Consider modalities of cooperation between SIOFA and the Nairobi Convention.

Approach based on regional organisations

Approach	Type	Current status in the WIO	Key issues for the WIO
Coalition-based approach	Pelagos Sanctuary early phase and Sargasso Sea Alliance and Commission	Many regional partnerships (e.g. WIO-CC, WIO-C...) but no specific and coordinated actions developed in ABNJ.	Consider the opportunities to build coalitions of States or/and broader stakeholders to develop initiatives in ABNJ. Identify possible “champions” and actions to collectively develop.
	Particularly Sensitive Sea Areas (PSSA)	No PSSA and associated protective measures (APMs) established in the WIO, including in ABNJ.	Study if there are specific threats from shipping activity in the WIO ABNJ. If so, assess the eligibility of the identified area for PSSA designation and identify possible APMs.
Approach based on regionally-based sectoral measures adopted by international organisations	Areas of Particular Environmental Interest (APEI)	Exploration contract for polymetallic nodules signed with the government of India (2002-2017). Exploration contracts for polymetallic sulphides signed with the governments of China (2011–2026), Korea (2014–2029), India (2014–2029) and Germany (2014–2029). No APEI established.	Study the opportunity and feasibility of establishing APEIs.

TABLE 2 Possible regional approaches to conservation and sustainable use of marine biodiversity of ABNJ in the Western Indian Ocean (cont.)

Approach	Type	Current status in the WTO	Key issues for the WTO
Cross-cutting requirements	<ul style="list-style-type: none"> Make the case, by cross-checking data on sensitive ecosystems (using literature and scientific assessments, such as the EBSAs process) and threats to these ecosystems. Identify the best approach to respond to the threats, by securing the legal and policy processes. Champion the process, by building coalitions of like-minded countries and stakeholders. Anticipate the challenges related to the cooperation and coordination between international and regional competent authorities. Secure funding to develop the agreed activities. 		