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Technical and Legal Implications for Dynamic Legalities: How Can the BBNJ Treaty Accommodate Dynamic Management Decision-Making for Arctic MPAs?

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1 Introduction

The static nature of law—whether showcased in definitions or fixed lines—provides certainty and clarity, but often fails to account for dynamic systems. When mobile features, such as a migrating bowhead whale, defy the static legal structures intended for their conservation, the effectiveness of stationary boundaries and irresponsible law is placed in question. Consequences of climate change, such as the redistribution of species and altered circulation patterns further prompt exploration of more dynamic legalities for an appropriate conservation response under international frameworks.

The rapidly changing Central Arctic Ocean (Central AO) provides a convincing example of the need for dynamic legalities. The Central AO is a naturally dynamic system with variability of light climate, sea-ice extent, and the mobility of species.¹ Newer, unprecedented changes, however, are a result of a warming region. A poignant example of change is the reduction of sea-ice extent, where since 1979, its decline has been during all months of the year.² The implications include ecosystem restructuring and new access for human activities that heighten risks to marine biodiversity. Marine protected areas (MPAs) could be adopted to conserve the biodiversity of the Central AO, yet a static approach (i.e., fixed boundaries and management measures) could prove ineffective if species and habitats move beyond the area meant to protect them.

Instead, the novel approach of dynamic ocean management (DOM) where spatial and temporal management measures change in near real-time based on updated ocean information,³ should be considered. In contrast to static MPAs, a DOM approach would entail a scientific process operationalized to continuously adjust the protected area boundaries and management measures to reflect changes on the water (e.g., a new protected area boundary based on the likelihood that bowhead whales are present in an area). The conservation potential to create more space between species needing protection and risks—due to ongoing assessments and responsive regulatory change⁴—is noteworthy.

¹ e.g., bowhead whales and polar bears.

² M Meredith et al. 'Polar Regions' in H.O. Portner et al. (eds), *IPCC Special Report on the Ocean and Cryosphere in a Changing Climate* (2019).

³ SM Maxwell et al., 'Dynamic Ocean Management: Defining and Conceptualizing Real-Time Management of the Ocean' (2015) 56 *Marine Policy*.

⁴ SM Maxwell et al., 'Mobile Protected Areas for Biodiversity on the High Seas' (2020) 367 *Science*.

Establishing a MPA with a DOM approach is challenging, however, due to a large portion of the Central AO lying beyond the jurisdiction of Arctic coastal States.⁵ The few examples that do exist for area-based protections in ABNJ (e.g., MPAs under the Convention for the Protection of the Marine Environment of the North-East Atlantic (OSPAR) and the Commission for the Conservation of Antarctic Marine Living Resources (CCAMLR)) and sector specific tools, such as the International Maritime Organization's (IMO) Particularly Sensitive Sea Areas (PSSAs)) lack a holistic and cross-sectoral application.

Ultimately, the challenge relates to the fact there is no one instrument or body that has competence to establish and implement MPAs in the high seas portion of the Central AO. The 1982 Convention on the Law of the Sea (UNCLOS) includes the obligation to preserve and protect the marine environment,⁶ however, the framework does not provide competence to establish MPAs for biodiversity beyond national jurisdiction (BBNJ). UNCLOS, in contrast enshrines the principle of the freedom of the high seas⁷ (e.g., fishing and navigational rights), whereby a State must consent to being legally bound to conservation measures that limit those rights. While the Convention on Biological Diversity (CBD) regards conservation, jurisdictional scope for ABNJ is limited to processes and activities regarding the components of biodiversity.⁸ The IMO, the North-East Atlantic Fisheries Commission (NEAFC), and the Convention for the Protection of the Marine Environment of the North-East Atlantic (OSPAR) have sectoral competences, but their distinct limitations will be discussed more in *Chapter 4* of this research.

The negotiations for a global treaty on the conservation of marine biodiversity in ABNJ (BBNJ),⁹ ongoing at the time of this writing,¹⁰ in part seek to fill the legal and governance gap for the establishment of MPAs in ABNJ. The Internationally Legally Binding Instrument (ILBI) that is the likely outcome of the BBNJ negotiations will guide and facilitate the next generation of Arctic (and elsewhere) MPAs through general objectives, principles, and the decided upon function and form of the respective MPA mechanism. To 'future-proof'¹¹ the ILBI, the MPA

⁵ 'Arctic coastal States' include Canada, the National Federation of Russia, Denmark/Greenland, Norway, and the United States.

⁶ United Nations Convention on the Law of the Sea, Art 192.

⁷ *Ibid.*, Art 187(1).

⁸ Convention on Biological Diversity, Art 4; See, also, Art 22.

⁹ Established by United Nations General Assembly, UNGA Res 72/249 (24 December 2017).

¹⁰ UNGA Res 75/570 (25 June 2021).

¹¹ See, e.g., K Gjerde et al., (2020). Area-Based Management Tools in Marine Areas Beyond National Jurisdiction, A Report of the IUCN Workshop 8-10 October 2019. IUCN Headquarters: IUCN.

mechanism should support MPA approaches—current and on the horizon—that appropriately address the rapidly changing marine environment; ones like a DOM approach to MPAs.

However, a DOM approach does raise some legal concerns, especially regarding its ongoing and near real-time adjustments of regulatory measures. Therefore, while DOM may lead to more effective conservation schemes, it also raises questions related to legal (un)certainty that could inhibit its adoption. Further, a DOM approach requires decision-making driven by scientific processes and specialized experts, which raises questions regarding the impacts of foregoing formal international law decision-making processes that ensure a sovereign-based system of State participation and consent. Although these legal considerations are not insignificant, a DOM approach to MPAs should not be taken out of the ‘MPA toolbox’ at the outset. Instead, more dialogue is needed to understand its place in legal frameworks.

Thus, this research explores how a DOM approach to Arctic MPAs can be accommodated in the BBNJ treaty. An Arctic focus will provide a regional delimitation, and at the same time, ground the considerations in the context of unprecedented environmental change. A decision-making focus arises due to the mentioned fundamental dilemma: DOM offers quick and responsive decisions based on scientific methodologies, and in contrast, international law typically requires slow and sovereign-based decision-making processes. While scholars have written on the need for the BBNJ process to enable DOM for area-based management tools,¹² this research carries forward the conversation by providing analysis on decision-making and its legal aspects. Due to this focus, as well as space constraints, DOM implementation concerns (including data and communication needs) will only be addressed at the intersections of decision-making and concepts of international law.

The research approach will be interdisciplinary in nature as it will need to integrate science with legal theory and international law. However, the focus will be on the legal implications of considering a DOM approach for MPAs. As the BBNJ negotiations are still ongoing, the legal analysis will rely on the BBNJ documents, such as the revised BBNJ draft text¹³ and summaries from the BBNJ meetings, while primary and secondary legal sources will be utilized when

¹² GO Crespo et al., ‘Beyond Static Spatial Management: Scientific and Legal Considerations for Dynamic Management in the High Seas’ (2020) 122 *Marine Policy*; Maxwell (2020), n 4.

¹³ 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 (2019), 19-19936 (hereinafter ‘Revised Draft Text’).

discussing other legal instruments and relevant bodies in *Chapter 4*. With regards to a DOM approach for MPAs, the sources will be the scientific literature on dynamic management.

The aim of this research is to provide initial insights that can prompt the discussions necessary for ‘future-proofing’ the BBNJ treaty; discussions on how a DOM approach can be accommodated, and in connection, how law can be more dynamic to meet the complex challenges of climate change and other stressors impacting BBNJ. This research will highlight that the rapid changes of the Central AO require a dynamic approach to MPAs (*Chapter 2*); what decisions are necessary for a DOM approach and the legal implications (*Chapter 3*); how decision-making is currently structured in the BBNJ MPA process and the implications for a DOM approach for Arctic MPAs (*Chapter 4*); followed by concluding remarks (*Chapter 5*).

2 A Changing Arctic Ocean and the Case for a Dynamic Management Approach for MPAs

2.1 A Rapidly Changing Arctic Ocean

The Arctic has warmed at three times the rate of the global average in recent decades.¹⁴ As a result, the Arctic Ocean has undergone rampant sea ice loss and surface temperature change that have had—and will continue to have—severe implications for marine biodiversity and human uses.¹⁵ Given this research focuses on biodiversity beyond national jurisdiction (BBNJ), the Central AO¹⁶ will be of focus. Thus, this chapter will briefly highlight current and projected change of the Central AO. The case for a MPA approach for Central AO biodiversity that can account for such change, expected and unexpected, will then be explored.

2.1.1 Environmental Change

The Arctic Ocean system, including the Central AO is unique due to its light climate and ice-coverage dynamics. Extreme changes due to a warming climate, however, have altered the ocean space and added more elements of unexpected dynamism. According to the International

¹⁴ AMAP, *AMAP Arctic Climate Change Update 2021: Key Trends and Impacts*, Arctic Monitoring and Assessment Programme (AMAP) (2021).

¹⁵ P Wassmann et al. ‘Towards a unifying pan-Arctic perspective: a conceptual modelling toolkit’ (2020) 102455 *Progress in Oceanography*.

¹⁶ The ABNJ of the Arctic Ocean includes the high seas area beyond the exclusive economic zones and the ocean floor and subsoil beyond the state-claimed continental shelf limits of the Arctic coastal States: Canada, Greenland/Denmark, Russia, the United States, and Norway. This present author recognizes that there are parts of the Central Arctic Ocean that are under national jurisdiction.

Panel on Climate Change (IPCC), much of the change can be attributed to solar radiation absorption, sea ice loss, as well as the introduction of ocean heat from lower latitudes.¹⁷

Diminishing sea ice thickness and extent is one example of unprecedented change. In the Central AO, sea ice thickness declined over 65 percent between 1975-2012 and some projections suggest the potential for a largely ice-free summer by 2030.¹⁸ Less ice coverage has implications for ice-dependent and ice-associated species that traverse the Central AO, such as polar bears, polar cod, bowhead whales, and ringed-seals. Declining ice extent can also alter primary production with consequences for ecosystem structure.

The restructuring of marine ecosystems will leave some species and some locations more vulnerable. For example, climate warming is leading to ‘borealization’ or a northward movement of fish species.¹⁹ While sub-Arctic fish species have migrated north, Arctic species—both marine mammals and fish—have contracted their range.²⁰ An increase of primary production is expected along Arctic Ocean shelves, partially resulting from more open water.²¹ In contrast, even with some ice reduction, primary production in the Central AO is projected to remain low due to a limited supply of nutrients.²² Some of these changes suggest heightened shifts in habitats and species abundance, relationships, behavior, and range. Further, it is unclear what the effect of cumulative impacts will be for already vulnerable biodiversity.

2.1.2 Increase in Human Activity

The Central AO has not experienced the same amount of commercial activity as other more accessible parts of the global oceans. However, due to the current and projected state of sea-ice; shipping, tourism, and exploration and extraction activities are anticipated to grow.²³ Shipping over the last 20 years has already seen an increase during the summer months concurrent with the decline in sea ice.²⁴ While there are currently areas of the Central AO that

¹⁷ M Meredith, n 2.

¹⁸ AMAP, Snow Water, Ice and Permafrost in the Arctic (SWIPA) 2017, Arctic Monitoring and Assessment Programme (AMAP) (2017).

¹⁹ Fossheim et al., ‘Recent Warming Leads to a Rapid Borealization of Fish Communities in the Arctic’ (2015) 5(7) *Nature Climate Change*.

²⁰ M Meredith.

²¹ K Arrigo and GL van Dijken. ‘Continued Increases in Arctic Ocean Primary Production’ (2015) 136 *Progress in Oceanography*.

²² D Slagstad, P Wassmann, and I Ellingsen. ‘Physical Constraints and Productivity in the Future Arctic Ocean’ (2015) 2 *Frontiers in Marine Science*.

²³ Commercial fisheries are not expected to occur for 16 years due to the Central Arctic Ocean Fisheries Agreement (CAOFA).

²⁴ M Meredith.

are free of ice in summer months, it should be noted that accessibility is still limited during much of the year.²⁵ That being said, a completely ice-free September is expected before 2050.²⁶ While commercial activities will not be realized overnight, a trend of increasing human activity in the Central AO should be expected.

No matter the rate of change, an increase in human activities will equate to an exacerbation of risks to ecosystems already vulnerable to climate change impacts. David Balton observes, the Arctic, unlike much of the global oceans, still has a unique opportunity to act before large-scale commercial activity intensifies.²⁷ That opportunity to act could take the form of a MPA regime, which anticipates the change and uncertainty facing the Central AO.

2.2 Management Challenges for Arctic Biodiversity

Central AO MPAs will need to address the new ocean users, including their associated impacts—such as whale strikes and noise, light, and other types of pollution—as well as the rapidly shifting dynamics of the Central AO ecosystem exacerbated by climate change. How the scheme is designed and implemented—and the extent the law focuses on protecting biodiversity or States’ interests—will likely reflect the difficult balancing of new economic opportunity and environmental protection in the Central AO; a tension that underpins legal frameworks for ocean governance.²⁸ As an ABNJ, the challenge especially lies in changing an area associated with freedom to an area with regulations for protecting the marine environment.

Scholars also point to how an inadequate comprehension of the Central AO ecosystem will impede the application of effective management.²⁹ This insufficient knowledge base can be partially attributed to harsh conditions limiting access for research. However, two recent international agreements suggest momentum for Arctic science efforts. One is the Scientific Cooperation Agreement which provides provisions on enhancing cooperation for Arctic scientific activities.³⁰ The second is the Central Arctic Ocean Fisheries Agreement (CAOFA)

²⁵ The Arctic Council, ‘Exploring the Arctic Ocean: The Agreement that Protects and Unknown Ecosystem’ (2020), available at <https://arctic-council.org/en/news/exploring-the-arctic-ocean-the-agreement-that-protects-an-unknown-ecosystem/>

²⁶ D Notz and SIMIP Community ‘Arctic Sea Ice in CMIP6’ (2020) 47(1) *Geophysical Research Letters*.

²⁷ D Balton, ‘Moving Forward on Arctic Ocean Governance’ in P Wassmann (ed) *Whither the Arctic Ocean?* (BBVA Foundation 2021), p 58.

²⁸ I Braverman and ER Johnson, *Blue Legalities: The Life and Laws of the Sea* (Duke University Press, 2020), p 14.

²⁹ Wassmann, 15. The scholars refer to the Arctic Ocean as a whole, however, the Central Arctic Ocean is even less well known than other parts of the Arctic Ocean.

³⁰ Agreement on Enhancing International Arctic Scientific Cooperation.

that calls for a Central AO science body with ‘the goal of increasing knowledge of the living marine resources [...] and the ecosystems in which they occur.’³¹

Climate change provides unique management obstacles for the Central AO, suggesting climate resilience be built into any new scheme. Scholarship specifically finds that efforts in ABNJ are likely to be undermined by changes in ocean circulation and the redistribution of species.³² This notion will be accentuated by the fact that the Arctic Ocean governance landscape is not prepared to account for ‘cascading risks and uncertainty’ with existing legal frameworks.³³ The BBNJ treaty could help address this legal and governance vulnerability, but much will depend on the institutional structure decided upon and whether or not a Central AO management body—with a comprehensive mandate—could materialize (topics to be further explored in *Chapter 4*).

2.3 Moving Beyond the Status Quo for Marine Protected Areas: An Arctic Necessity

Merrie et al. highlights that ‘recognizing the obstacles to governing the interacting challenges of our global environment and the naturalness of surprise and unpredictability is only a first step.’³⁴ Recalling that the BBNJ treaty offers an opportunity to envision and guide the next generation of protected areas for BBNJ, this section explores what MPA approach could effectively respond to the unique challenges of the Central AO. As a primer, Arctic experts suggest: ‘the rapidly changing landscape and dynamics of the Arctic marine environment will require multi-faceted, and likely new approaches to planning and mainstreaming adaptive management in MPAs.’³⁵ Further, ‘a better understanding of how knowledge of ecological impacts can inform spatial planning is needed so that necessary adjustments can be made to MPA boundaries, conservation objectives and management measures.’³⁶

2.3.1 Why Static Marine Protected Areas May Miss the Mark

The most common approach for protected areas has been static management regimes, such as national parks for terrestrial settings and MPAs for marine applications. Rooted in the philosophy that can be summarized by the expression ‘cordon off and preserve,’ the main

³¹ Agreement to Prevent Unregulated High Seas Fisheries in the Central Arctic Ocean.

³² E Popova et al. ‘Ecological connectivity between the areas beyond national jurisdiction and coastal waters: Safeguarding interests of coastal communities in developing countries.’ (2019) 104 *Marine Policy*.

³³ M Meredith, n 2, p 208.

³⁴ A Merrie et al., ‘An Ocean of Surprises’ (2014) 27 *Global Environmental Change*, p 29.

³⁵ PAME, ‘Framework for a Pan-Arctic Network of Marine Protected Areas’ (2015), p 20.

³⁶ *Ibid.*

determinants of static protected areas are boundary lines and management measures that are more or less³⁷ fixed in space and time. Although this paper suggests a revamped MPA approach for the Arctic, it should be noted that static MPAs have played an essential role for the conservation of biodiversity and will likely be part of the future ‘MPA toolbox.’

The static approach to MPAs is given foundation in legal definitions, such as ‘a geographically defined area’ under the BBNJ draft text,³⁸ and ‘a clearly defined geographical space’ provided for by the International Union for the Conservation of Nature (IUCN).³⁹ Although there is no agreed upon definition in international law, a clearly delineated space is an essential element in the modern understanding of MPAs. This is supported by the practice of considering the amount of geographic coverage as an indicator of success, which is exemplified by international efforts like ‘30x30’ (i.e., the Convention on Biological Diversity (CBD) initiative to protect 30 percent of the Ocean by 2030⁴⁰).

It is also not surprising that the field of law has chosen a static, well-defined approach to area-based management. As Sarah Marusek observes, law uses a defined place, often demarcated via lines, to purport control, stability, understanding, and governability.⁴¹ The ‘project of ocean inscription’—also exemplified in the fundamental UNCLOS demarcation of sovereignty and jurisdiction through maritime zones—contributes to ‘a world of lines and law.’⁴²

Under the context of climate change, a static approach (typically with management recommendations based on a single assessment of conditions) may not account for current and anticipated climate-related migration of species, restructuring of ecosystems, and especially for the Central AO—an expansion of human activities. When species driven by climate change exit a legally drawn area meant to protect them, conservation efforts, even with the best intentions are foiled. Ultimately, the Arctic circumstance embodies the notion that climate change challenges law’s capacity⁴³ and suggests a rethinking of MPA approaches for the region.

³⁷ Some static MPAs have dynamic elements, such as seasonal closures related to breeding events. These elements, however, can be based on oversimplified assumptions related to a species behavior or whereabouts.

³⁸ Revised Draft Text, n 13, Article 1(10).

³⁹ IUCN, ‘When is a Marine Protected Area Really a Marine Protected Area’ (2012), available at <https://www.iucn.org/content/when-a-marine-protected-area-really-a-marine-protected-area>

⁴⁰ Convention on Biological Diversity (CBD) ‘Update of the Zero Draft of the Post-2020 Global Biodiversity Framework’ (17 August 2020) CBD/POST2020/PREP/2/1.

⁴¹ S Marusek, *Law and the Kinetic Environment* (Routledge 2021), p 58.

⁴² I Braverman and ER Johnson, n 28, p xx.

⁴³ I Braverman and ER Johnson, p 19.

2.3.2 Suggested Management Approaches for Arctic Marine Protected Areas: A Reliance on Adaptive, Ecosystem-Based Management

If a static approach to MPAs is then potentially ineffective for the conservation of Arctic BBNJ, what approach should future MPAs adopt? Experts from the Arctic research and policy community have suggested MPA networks in the Arctic move towards approaches that rely on adaptive, ecosystem-based management.⁴⁴ Also, BBNJ negotiators have already acknowledged the need for the adoption of the ecosystem approach and an adaptive management approach, generally, as well in terms of MPA decisions.⁴⁵

Ecosystem-based management (EBM) and adaptive management are theoretical frameworks for spatial management of (marine) environments often described as key for effective management.⁴⁶ EBM and adaptive management will briefly be explained here with an emphasis on their Arctic applications. Following that overview, the associated third theoretical framework—dynamic ocean management (DOM)—will be put forward for its potential to better fulfill conservation needs under a new Central AO MPA regime.

EBM incorporates ecology insights into law for the purpose of conservation and sustainable use goals. The Arctic region has already established an interest in the application of EBM. Specifically, the Arctic Council has engaged with EBM, especially through its working groups—Protection of the Arctic Marine Environment (PAME), including its Ecosystem Approach to Management Expert Group (EA-EG) and the Conservation of Arctic Flora and Fauna (CAFF). The specific EBM efforts under the direction of the Arctic Council will be outlined in more detail in *Chapter 4*.

EBM relies on the consideration of integration—embodying the idea that everything is connected—and integrity—emphasizing the goal of maintaining key functions and structures.⁴⁷ EBM also relies on information and iteration,⁴⁸ or the need to assess and adapt. The need to adapt, naturally brings adaptive management—an iterative process that offers the decision

⁴⁴ J Eamer et al., ‘Life Linked to Ice’ (2013) 10 *CAFF Assessment*; PAME, ‘Framework for a Pan-Arctic Network of Marine Protected Areas,’ n 35.

⁴⁵ Revised Draft Text, n 13. Article 5 currently includes the ‘ecosystem approach’ as a general principle, while Article 21 (4) makes clear that COP amendments to ABMTs should be based on the ‘ecosystem approach,’ as well as a ‘adaptive management’ approach. For this research, the legal verbiage—‘ecosystem approach’ and ‘adaptive management approach’—will be used interchangeably with the scientific terms of ‘ecosystem-based management’ and ‘adaptive management.’

⁴⁶ SM Maxwell (2015), n 3.

⁴⁷ V De Lucia, ‘The BBNJ Negotiations and Ecosystem Governance in the Arctic’ (2019) 103756 *Marine Policy*.

⁴⁸ *Ibid*.

maker ‘the ability to adapt and change tactics to maximize the environmental benefits of a course of action’⁴⁹—to the forefront. The connection between EBM and adaptive management is explained by the 2004 CBD COP *Decision V/6* that states that the ecosystem approach requires adaptive management to deal with dynamic and complex ecosystems especially when information is insufficient.⁵⁰ Climate change makes this relationship even more necessary.

The implementation of adaptive management requires substantial data and administrative needs due to the reliance on monitoring and assessment cycles. The approach carries the need to respond to information updates, however, decision-making by administrators requires elicitation which can equate to a slow and resource heavy process. The time lost between a data update, expert evaluation, and a respective management decision can, in theory, lead to a missed opportunity to update regulations quickly enough to minimize risk to biodiversity.

The third theoretical framework, dynamic ocean management (DOM)— ‘where management changes rapidly in space and time in response to the shifting nature of the ocean and its users based on the integration of new biological, oceanographic, social and/or economic data in near real-time’⁵¹—goes along well with the goals of EBM⁵² and has the unique ability to overcome some of the noted shortcomings of adaptive management (e.g., expert elicitation and slow decision-making processes). DOM can rapidly implement adaptive management protocols as conditions on the water are changing.⁵³ Consequently, the approach aligns the spatial and temporal scales of MPAs with ‘the spatial and temporal characteristics at which the species, habitats, ecosystems, or processes being managed in ABNJ operate.’⁵⁴ For clarity, it is not suggested that DOM replace adaptive management, but instead the two similar frameworks can be used in concert⁵⁵ for the enhancement of management.

Some of the key characteristics of DOM include its embrace of data and the speed at which management measures can be adjusted. Simply put, DOM relies on science for understanding and predicting change within an ocean space. Based on such change, regulations are adjusted

⁴⁹ J Thrower, ‘Adaptive Management and NEPA’ (2006) 33(3) *Ecology Law Quarterly*, p 873.

⁵⁰ Decision V/6 ‘Ecosystem Approach’ adopted by the Conference of the Parties to the Convention of Biological Diversity at its Fifth meeting, Nairobi, 15–26 May 2000, UNEP/COP/5/23.

⁵¹ SM Maxwell et al. (2015), n 3.

⁵² R Lewison et al. ‘Dynamic Ocean Management: Identifying the Critical Ingredients of Dynamic Approaches to Ocean Resource Management’ (2015) 65/5 *Bioscience*, p 494.

⁵³ SM Maxwell et al. (2015).

⁵⁴ GO Crespo et al., n 12, p 2.

⁵⁵ R Lewison et al., p 494.

to respond appropriately. Those adjustments in regulatory measures can occur rapidly, especially with automation via DOM tools (i.e., the mechanism that operationalizes scientific methodologies at preset intervals resulting in new regulation recommendations⁵⁶). Ultimately, ongoing adjustments and the fluidity of law are inherent to the DOM approach.⁵⁷

Scholars suggest that DOM be utilized in the Arctic,⁵⁸ however, so far, the main examples of DOM application have occurred outside the region. To date, DOM has been deployed for marine settings to limit bycatch (e.g., *EcoCast*, a tool for California swordfish fishers that predicts the likely presence of targeted swordfish, as well as non-targeted species of concern for bycatch⁵⁹); determine the timing of conservation areas (e.g., *TOTAL*, a tool that triggers the consideration of a conservation area when turtles are present⁶⁰); decrease whale strikes (e.g., *WhaleWatch*, a tool that aims to decrease vessel and entanglement risk in relation to blue whale presence⁶¹); as well as predict coral bleaching events (e.g., *Coral Reef Watch* to alert researchers when bleaching events are likely⁶²). Many of the current examples, although sophisticated are still limited either in development or in breadth of application, but scholars find the scientific and technical capacity for DOM to be robust.⁶³

Legal scholars and scientists have implied the need for a DOM approach for conservation and sustainable use of BBNJ,⁶⁴ yet comprehensive cross-sectoral and multi-species applications (aspects that would be needed for a DOM approach for Arctic MPAs) are still merely theoretical. It should be noted that some DOM examples do, however, concern multiple species; targeted and non-targeted. These examples include the aforementioned *EcoCast* tool and the preliminary efforts by the Inter-American Tropical Tuna Commission (IATTC) to apply DOM for various size groups of targeted tunas, as well as other non-targeted species in ABNJ.⁶⁵ This

⁵⁶ H Welch et al., 'Practical Considerations for Operating Dynamic Management Tools' (2019) 56(2) *Journal of Applied Ecology*.

⁵⁷ The timescales for updates can vary. Examples include daily weekly, and monthly DOM updates.

⁵⁸ A Siders, R Stanley, and KM Lewis, 'A Dynamic Ocean Management Proposal for the Bering Strait Region' (2016) 74 *Marine Policy*.

⁵⁹ NOAA, *EcoCast*, available at <https://coastwatch.pfeg.noaa.gov/ecocast/>.

⁶⁰ NOAA, *TOTAL*, available at https://coastwatch.pfeg.noaa.gov/loggerheads/loggerhead_closure.html

⁶¹ NOAA Fisheries, *WhaleWatch*, available at, <https://www.fisheries.noaa.gov/west-coast/marine-mammal-protection/whalewatch>.

⁶² NOAA, *Coral Reef Watch Satellite Monitoring and Modeled Outlooks*, available at <https://coralreefwatch.noaa.gov/>.

⁶³ AJ Hobday et al., 'Dynamic Ocean Management: Integrating Scientific and Technological Capacity with Law, Policy, and Management' (2014) 33 *Stanford Environmental Law Journal*.

⁶⁴ SM Maxwell et al., (2020), n 4.; Crespo et al., n 12.

⁶⁵ GO Crespo, 'Exploring Dynamic Ocean Management for bycatch reduction,' presented at IATTC 10th Meeting of the Working Group on Bycatch (2021) IATTC Dynamic Ocean Management Electronic Meeting, p 9.

research moves forward under the premise of the promising potential for a future DOM approach for MPAs. The following depiction of a DOM approach for Central AO MPAs is merely illustrative and based on current DOM examples and dialogue.

2.4 A Dynamic Management Approach for Arctic Marine Protected Areas and Legal Concerns Regarding Dynamic Legalities

2.4.1 An Illustration of the Approach and Its Benefits

Unlike a static MPA, or a MPA with elements of dynamism (i.e., one with seasonal closures) a DOM approach can avoid oversimplified assumptions related to a species behavior or whereabouts by continuously adjusting boundaries or measures to reflect shifts in the Central AO environment. In other words, as an antithesis to static MPA schemes, a DOM approach equates to management elements that are more fluid in space and time.

The approach could equate to a Central AO MPA boundary appearing, disappearing, or changing in shape or size based on environmental factors (e.g., sea surface temperature bands) or in response to the presence of habitats or species of concern (based on predictive modeling).⁶⁶ Management measures themselves could also change—for example, a new regulation requiring reduced vessel speed in an area due to likely bowhead whale presence. The process and players involved in these decisions to adjust regulations will be further explained in the next chapter (*Chapter 3*).

The potential benefits of a DOM approach to Arctic MPAs are promising. First, the approach is effective for conservation, as it appropriately aligns with the reality of the ocean space as a dynamic and evolving system. The near real-time changes to MPA boundaries and measures following changing conditions can place more ‘space’ between biodiversity and risks. In areas facing extreme changes to the marine environment, such as the Central AO, that ‘extra space’ may be necessary for building climate resilience⁶⁷ and minimizing the pressure of cumulative impacts.

Second, the approach can provide efficiency. Scholars point to how the application of DOM can effectively conserve biodiversity using less space.⁶⁸ This can be a win-win for ocean users,

⁶⁶ See, SM Maxwell et al., (2020), n 4.

⁶⁷ Climate resiliency is referred to in the BBNJ treaty ‘Objectives.’ See, Revised Draft Text Art 5(h).

⁶⁸ DC Dunn et al, ‘Dynamic Ocean Management Increases the Efficiency and Efficacy of Fisheries Management’ (2016) 113 (3) *Proceedings in the National Academy of Sciences*.

the ocean, and regulators with conservation and sustainable use goals. For fisheries, a DOM approach can increase targeted catch and simultaneously decrease bycatch. While this could lead to more regional fisheries bodies adopting a DOM approach, it could also be critiqued for not being purely conservation-based. A DOM approach to MPAs could, however, be implemented solely for conservation purposes, thereby banning activities in areas based on ecological conditions.

The MPA Arctic toolbox has room for several approaches, and a combination of those approaches—static, dynamic, and with different levels of protection—have the potential to work in concert to improve conservation of BBNJ. Generally, however, a DOM approach to MPAs for Arctic BBNJ seems logical, if not a necessary avenue based on the ability of the approach to address the unique circumstances of a rapidly changing Central AO.

2.4.2 Legal Issues for Dynamic Legalities

No matter the efficacy of a DOM approach, the accommodation of a process that continuously adjusts MPA measures and boundaries presents numerous legal issues. First, a DOM approach for multiple sectors, species, and habitats will be a complex undertaking challenged by knowledge aggregation and difficult trade-off decisions. This complexity will be met with the fragmented Arctic legal framework in the form of global instruments and sectoral and regional bodies. Changing regulations with effects concerning the mandates of different and sometimes multiple bodies and instruments raise concerns of capacity, duplication of efforts, and the need to ‘not undermine’⁶⁹ relevant entities—a concept central to the BBNJ process.

Second, regulatory change comes with legal costs. In his writing, Michael P. Van Alstine provides distinct examples of the costs of legal change—both administrative and legal—including the ‘need to learn about the content of new law, as well as from an increased risk of uncertainty about its meaning and effect.’⁷⁰ Consequently, an ongoing adjustment to law, such as provided by a DOM approach places pillars of international law—stability and certainty—under strain. An everchanging multitude of management measures indeed suggests chaos and uncertainty will ensue. Alternatively, a static, clearly defined MPA approach purports order and governability.⁷¹ Recalling, however, that the ability to govern is undermined by climate change

⁶⁹ Revised Draft Text, n 13, Art 4.

⁷⁰ MP Van Alstine, ‘The Costs of Legal Change’ (2001) 49 *UCLA Law Review*, p 793.

⁷¹ S Marusek, 41.

and dynamic marine environments, the legal benefits of static legal structures could be less efficacious than perceived. These points highlight the tension between dynamic, complex systems and law and put forth questions to be addressed. Ultimately, the value of adaptability of law will need to be weighed against the cost of undermining certainty and stability and accordingly, predictive abilities.⁷²

Near real-time regulatory adjustments in ABNJ raise unique legal concerns. Static inscriptions of space have historically signaled sovereignty, authority, and jurisdiction (i.e., maritime zones defined by UNCLOS), however ongoing regulatory adjustments can result in uncertainty regarding States' rights and obligations. This has several implications. First, a DOM approach may leave unclear what measures are legally binding for States, resulting from implementation failures (e.g., communication to end-users) or the effect of the MPA framework (i.e., if a State consents to the MPA, have they consented to every regulatory adjustment?). As sovereignty and jurisdiction are key principles and a feature of international law, an approach that places their extent in question could be deemed as non-viable.

The uncertainty regarding where rights and obligations exist could also increase the potential for conflicts. MPAs in ABNJ already include challenges in overcoming heightened sensitivity to encroachments of high seas freedoms and creeping coastal state jurisdiction,⁷³ and a dynamic approach could exacerbate those concerns. Finally, the near real-time adjustments may not be as feasible for some industries, such as shipping, where certainty and predictability are key to route-planning that ensures safety at sea and vessels meeting port appointments.

The legal aspects introduced here will be woven throughout the subsequent chapters. Although important, those legal concerns are not meant to inhibit the exploration of a DOM approach for Central AO MPAs. To 'future-proof' the BBNJ treaty it is imperative to consider innovative developments in marine management approaches, such as DOM, that have the potential to better incorporate scientific knowledge in a manner that reflects the complexity and dynamic nature of ocean spaces.

⁷² SM Marusek, n 41, p 796.

⁷³ EJ Molenaar, 'Participation in the Central Arctic Ocean Fisheries Agreement' in EJ Molenaar (ed) *Emerging Legal Orders in the Arctic* (Routledge 2019), p 10; UNCLOS, Art 87.

3 Decision-Making for a DOM Approach and Insights for International Legal Frameworks

3.1 Decision-Making for a DOM Approach

To discuss the ability of the BBNJ treaty to accommodate a DOM approach for Arctic MPAs, this research turns to a more technical analysis on the inner workings of DOM. Hobday et al. identifies seven elements needed for DOM: (1) data collection; (2) data upload; (3) data processing; (4) data delivery; (5) decision-making; (6) implementation; (7) and enforcement.⁷⁴ As intended, this research will focus on the element of decision-making, and will only briefly consider the other elements of DOM when they are related to decision-making and concepts of international law.

The focus was chosen due to the intriguing contrast between DOM and international law decision-making processes. DOM provides quick and responsive decisions based on science, and international law has slow and sovereign-based decision-making. The legal issues regarding the BBNJ treaty's accommodation are thus considerable and need of assessment. As a note, if a DOM approach is to be applied in the Central AO, or elsewhere, there are other considerations to be addressed, such as financing, data, communication, and stakeholder input needs. Although they are essential to any direction a DOM approach takes, they will not be the focus of this research due to space constraints and an interest in focusing on the foundational questions of whether a DOM approach—with its unique decision processes—can be accommodated by international legal frameworks.

3.1.1 What Decisions are Being Made, and When?

A DOM approach relies on a DOM tool—a mechanism that operationalizes scientific methodologies to produce recommendations for regulatory adjustments. The tool automates configurations of new ocean data at pre-set intervals (e.g., daily or weekly). When several species, habitat features, and ocean users are being considered, such as with a MPA, the tool can automate prioritization, or tradeoffs under changing conditions.⁷⁵ The tool includes the need for control rules and risk-weightings—a reflection of the relative importance of a certain species or habitat—that correspond with objectives and priorities of the protected area. The DOM tool is developed by specialized experts and guided by the rules of science, however, the

⁷⁴ AJ Hobday et al., n 63.

⁷⁵ H Welch et al., (2020) 'Decision-support Tools for Dynamic Management (2020) 34(3) Conservation Biology.

extent that legal instruments and bodies, as well as end-users (i.e., ocean users) are involved with decisions regarding the tool's parameters can vary.

3.1.1.1 Data Collection and Processing

DOM decision-making processes and outcomes are based on the choices made at two stages: (1) during the development of the DOM tool and (2) the subsequent application of the tool. The development of a DOM tool for Arctic MPAs will require choosing how data is collected, however, the options could depend on what data forms and capabilities are available for the region. Data can be observed sensing (e.g., satellite data), direct sampling (e.g., participant reporting), or modelled (e.g., forecasts based on relationships between species abundance and ocean conditions).⁷⁶

A DOM approach for MPAs will specifically require ecosystem models. Currently, there is no ecosystem model available for the Central AO that would be necessary for a more comprehensive application of DOM for MPAs. Generally, the knowledge base to 'understand the impact of sea ice change and warming on biodiversity and ecosystem sustainability for most of the Arctic Ocean' is insufficient for ecosystem-management.⁷⁷ This shortcoming will need to be addressed if a DOM approach is to be utilized for holistic Arctic MPAs.

Regardless of data collection and processing choices, the result will be a product that communicates recommendations to adjust MPA boundaries and management measures. The resulting product could take the shape of a visual map, coordinates, or text, depending on the needs and capabilities of the end-users.⁷⁸ DOM can therefore 'visualize' legal information, which in a dynamic environment, may be essential for effective management.⁷⁹

3.1.1.2 Decisions Regarding Incorporation of Management Objectives and Other Information

The operationalization of DOM requires decisions on control rules and risk weightings⁸⁰ which reflect management priorities. The decisions may equate to a threshold being set for the number of whale sightings permissible until vessels are prompted to reduce their speed in a defined area. The choices decide how a DOM approach works for a specific MPA, or in other words,

⁷⁶ H Welch et al., (2019), n 56, p 461.

⁷⁷ P Wassmann, n 15, p 31.

⁷⁸ H Welch et al. (2019), p 463.

⁷⁹ S Marusek, n 41, p 49.

⁸⁰ Risk weightings are assigned to species and habitat and based on a rating of vulnerability or concern.

when and how regulatory measures may adjust in space and time. Once the tool is configured, it can produce a data product. The data product is a new regulatory recommendation based on new ocean information, in accordance with the initial control rules and risk weightings.

For the BBNJ treaty, the decision-making body will make upfront decisions on spatial coverage, conservation and sustainable use objectives, and priority elements.⁸¹ These decisions could correspond with DOM tool decisions (i.e., regarding the control rules and risk weightings for species or habitats). These decisions are likely to include the evaluation of difficult tradeoffs. While a purely ecological consideration may be arguably ‘simple,’ under a legal framing, consultations and the incorporation of knowledge and interests of States, industry, competent and relevant legal entities, as well as Arctic Indigenous Peoples and local communities is likely necessary. Due to the value judgements that come with tradeoffs, it may be essential that the underlying decisions for a DOM tool occur under a legal body or framework (with guidance from specialized DOM experts and the input provided during consultations).

At this early stage, other spatial information elements could be included, such as Ecologically or Biologically Significant Areas (EBSAs) to inform the tool and its application.⁸² In the Central AO this may entail the use of the EBSA for the Multi-Year Ice of the Central Arctic Ocean⁸³ or the Large Marine Ecosystem (LME) of the Central Arctic Ocean.⁸⁴ The incorporation of these spatial features may suggest a cooperative process with the Convention on Biological Diversity (CBD) or the Arctic Council, respectfully (explored further in *Chapter 4*).

3.1.1.3 Temporal Intervals

During the development of a DOM tool, decisions will also clarify the temporal intervals for updates to management recommendations, whether it be daily, weekly, monthly, or annually. These timeframes for new regulation updates could be different for various elements of the conservation area depending on the dynamics of species, ecosystems, and ocean users.⁸⁵ Most important is the idea that a decision-making entity could control the frequency that a regulation

⁸¹ Revised Draft Text, Art 17; Art 19.

⁸² AJ Hobday et al., n 63, p 151.

⁸³ CBD, *Ecologically or Biologically Significant Areas (EBSAs): Multi-year Ice of the Central Arctic Ocean* (2015) available at <https://chm.cbd.int/database/record?documentID=204088>.

⁸⁴ PAME, *Central Arctic Ocean LME*, available at https://www.pame.is/images/03_Projects/EA/LMEs/Factsheets/13_Central_Arctic_Ocean_LME_.pdf.

⁸⁵ GO Crespo et al., n 12. The authors of the paper highlight four main temporal scales to consider, including contemporary, intra-annual, multiannual, and multidecadal.

update may occur. This provides some flexibility for legal environments that want a dynamic approach but decide that due to capacity and legal concerns (e.g., loss of certainty), regulation adjustments, for example, occur once a month, instead of once a week. Decisions to restrain responsiveness of regulations based on legal concerns could limit conservation effectiveness, but it could also allow for the better balancing of benefits of adaptability and the costs of ongoing regulatory change.

3.1.1.4 The Option to Automize Decisions

In the development of a DOM approach a choice is presented between two options for how a data product is utilized: (A) as discussed, a DOM tool can automatically produce regulation updates based on ocean conditions and in accordance with the pre-decided control rules and risk weightings, or (B) alternatively, a data product is produced, and experts will evaluate the circumstances before a decision on a new regulation is taken.

‘Option A’ would not require elicitation or decision-making at each potential regulatory update interval. The automatic aspect of this option makes it more distinct from typical adaptive management schemes, as it can rapidly implement adaptive management protocols in near real-time.⁸⁶ Benefits of this route include efficiency and effectiveness in narrowing the ‘space’ between the protected area and the species or habitat in need of protection. Also, a time lag between ‘decisions’ and new regulatory implementation could be built into a legal framework to account for the needs of an industry (e.g., shipping due to its need for predictability to make port appointments).

As discussed,⁸⁷ the Arctic would benefit from an approach that rapidly responds to biodiversity change. However, the benefits must be weighed against the legal concerns for such automatic regulatory change. For instance, there is a question related to how to square the consent-based decision-making, which is the foundation of international law, with automated decision-making that may need to change initially agreed upon measures or geographical scope of the MPA. As international law embodies a sovereign-based system where rules are only binding on States with their consent, Option A could be of concern. The adherence to the rule of law norms may mean problems cannot be addressed directly or independently, but it provides protection from

⁸⁶ SM Maxwell et al. (2020), n 4.

⁸⁷ See, Chapter 2.

arbitrary decisions, limits concentrations of power, and ensures judicial accountability.⁸⁸ This tension between the flexibility of law to better account for ocean dynamics versus upholding concepts central to the rule of law is prevalent with considerations of a DOM approach.

‘Option B’ provides the benefit of a DOM approach in contributing legally relevant information; however, it places more consideration and resource needs at each potential update of regulations. While there are benefits to weighing considerations (especially under a complex cross-sectoral MPA), the time until implementation can be dragged on at the expense of conservation needs. This option, nevertheless, creates another potential compromise option (like longer intervals between regulatory updates) for accommodating dynamic law, while also retaining elements of stability and certainty through standard international law decision-making processes. In this scenario, State consent could be granted at every regulation update, although gathering State parties at every regulatory adjustment may not be feasible.

Both options, although with different processes, revolve around the central need for regular assessment and respective regulatory adjustments inherent in adaptive management regimes. A DOM approach used in concert with adaptive management is no different. A DOM approach allows for MPA regulatory adjustments to be considered and applied more rapidly, and therefore, more in line with the dynamic and complex marine environment of the Central AO.

3.1.2 Who Is Making Decisions?

How the DOM tool is applied also requires a decision on a compliance scheme (i.e., whether there is an obligation for the end-user to abide by new regulations). This simultaneously prompts the inquiry into who makes decisions under a DOM approach to MPAs in the Arctic. When adopting a MPA a legal framework can include a voluntary or a compulsory compliance scheme.

Under a voluntary compliance scheme, the end-users (e.g., fishers) are in control of deciding whether to act on new management recommendations. Current examples of DOM mainly fall under the voluntary compliance category. Effectiveness of voluntary schemes are most ideal if there are incentives to act on the recommendations produced by a DOM tool. An example

⁸⁸ B Pardy, ‘The Pardy-Ruhl Dialogue on Ecosystem Management Part V: Discretion, Complex-Adaptive Problem Solving and the Rule of Law’ (2008) 25(341) *Pace Envtl. L. Rev.* Although relevant here, the concepts of the relationship of science and law under the Pardy-Ruhl Dialogue refer to Ecosystem Based management.

includes fishers incentivized to follow a new DOM-produced recommendation to avoid a higher risk of bycatch (knowing that the fishery could close if bycatch limits are exceeded). Under a legal lens, voluntary decisions, or in other words, non-binding recommendations for a DOM approach to MPAs in the Arctic could mean less abundance, and therefore the potential for a less effective conservation regime.

The second option is a compulsory DOM program where abundance to regulatory updates is mandatory for ocean users. Although there are only a few examples (e.g., *TOTAL* for loggerhead conservation areas), there is potential for the approach to be expanded. This scheme would require a more formal decision-making forum and the relevant legal instrument or body would need competence to adopt conservation measures that limit the activities of its Parties in the Central AO. For an effective MPA regime in the Arctic, a compulsory scheme that is adopted by numerous parties and relevant to numerous sectors is arguably necessary.

However, the legal basis to implement a compulsory scheme under a DOM approach to ABNJ MPAs—with the premise that the boundaries and measures of a protected area are capable of ongoing adjustments—must be considered. Connected is the need to be cognizant of the sovereignty of States and the competence of legal instruments and bodies. These issues will be further addressed in the context of the BBNJ process in *Chapter 4*. While the voluntary compliance scheme may not be viable for the goals of a BBNJ MPA regime, it could be considered for filling gaps in legal coverage (e.g., voluntary for non-commercial fishers of the Central AO, if the flag state is not a party to the BBNJ treaty).

The compulsory compliance scheme again highlights the legal concern regarding who is taking decisions under a DOM approach. For international law, decisions on rules are carried out by States. A State's sovereignty and authority are concepts inherent with the process, and the requirement of their consent to have their rights limited is fundamental. This approach to international law decision-making is logical, in the sense that those affected by legally binding measures should have a say in their fruition.

With a DOM approach, however, scientific experts would likely have key decision-making roles, even if masked behind an automatizing DOM tool. In a way, a DOM approach to Arctic MPAs asks for a shift from a standard international law process of decision-making based in a sovereign-system where rules are only binding on States based on their consent, to an expert-level decision-making process. The expert elicitation may be best from an ecological

perspective, but from a legal perspective there are concerns of arbitrary decisions undermining the rule of law.⁸⁹ The legal issues that arise from a DOM approach could be minimized or alleviated if the framework for a MPA, adopted by a competent legal body or instrument, narrows the extent of possible flexibility with clearly defined parameters (e.g., assessments and regulatory adjustments only taking place once a month).

These concerns exemplify the complex relationship between science and law. As the authors of *Blue Legalities* suggest, science is considered something that occurs prior to and outside the legal process, however, a simultaneous dialogue occurring during the legal process is probably a more realistic characterization.⁹⁰ While there is an interest in harmonizing science and law in some spheres, other scholarship emphasizes the importance of distinguishing science from law; where in contrast to law, science-based decisions evade legal accountability and are based on ‘processes and not a substantive set of directives.’⁹¹

It should be briefly noted that the accommodation of a DOM approach for Arctic MPAs may depend on mechanisms for providing transparency and participation pathways for States, legal bodies and instruments, and other relevant stakeholders. The input and deliberations can support the development of a MPA framework, which will shape the DOM tool; and potentially equate to significant legal effects (e.g., contemplation of control rules that could create threshold levels for a regulation update or assessment intervals that could decide how often adjustments could occur). At least in theory, the extent that affected parties can have a role in the building of a DOM approach for Arctic MPAs, the more likely a broad adoption will transpire.

3.2 Enabling a Framework for a DOM Approach

Before exploring the areas of decision-making addressed in the BBNJ process and how they may accommodate a DOM approach, it is first necessary to reflect on the takeaways from previous chapters. A DOM approach for MPAs in the Arctic is a promising future for conservation of BBNJ in a rapidly changing marine environment. The inherent qualities of such an approach include a process of ongoing decisions to update boundary and management measures based on evolving ocean conditions. According to Maxwell et al., ‘recognizing,

⁸⁹ B Parly, n 88.

⁹⁰ I Braverman and ER Johnson, n 28, p 5-6.

⁹¹ B Parly, p 347.

defining, and enabling flexible dynamic area-based approaches' are the steps necessary for the BBNJ treaty.⁹² Further, and more fundamental, the accommodation depends on the ability of international law to embrace increased regulatory fluidity.

A DOM approach requires decisions for the development of a tool capable of cyclical assessments of new ocean data (i.e., control rules, risk weightings and other elements that align with the objectives and priorities of the MPA). How the tool is implemented also requires deliberation, however, an automated approach to regulation updates turns the typical decision-making process in international law on its head. Regulation adjustments are determined by scientific processes developed by experts. The technical work and procedures that lead to decision outcomes could be perceived as lacking transparency. In contrast, formal decision-making procedures for changing regulations in international law is typically a political process; slow and carried out by the will of States. These points must also be placed in the context of ABNJ, where implementing a holistic MPA is a legal challenge and implementing a DOM approach for a MPA may, at least at first, seem inconceivable.

These points prompt initial ideas on what decision-making mechanisms and functions are needed to accommodate a DOM approach. For a DOM approach, a BBNJ MPA mechanism will need to (1) facilitate an approach, or at least an acceptance of ongoing decisions to adjust the regulatory frameworks (spatial and temporal) based on timely assessments; (2) support the incorporation of ecological insight and science in decision-making processes; (3) allow for decision-making that is expert-centered and automated by scientific processes; and (4) leave the door open for a DOM approach under the ILBI's MPA process, including its development and implementation (i.e., accommodating language in the treaty text).

These chapters also highlighted the tension between dynamic regulatory schemes and principles of international law as central to many of the topics discussed in this research. It is indeed related to structural and procedural differences between DOM (expert and science-based) and international law (State and sovereign-based). The move to a more flexible framework also suggests certainty and stability may be compromised.

However, the discussions on the negative legal impacts of a flexible regulatory scheme may also be connected to long-held assumptions. Law posits that sovereignty and jurisdiction

⁹² SM Maxwell et al. (2020), n 4, p 252.

require confirmation or indication through stable structures (whether by stable demarcated spaces or through formal participatory processes). Some scholars recommend, however, that those ‘invisible...ideological assumptions’ (e.g., sovereignty and jurisdiction) should be critically reexamined.⁹³ There is the possibility that the over-assumed ‘essentialism’ of national sovereignty⁹⁴ in international law is inhibiting the nuances needed to strike the right balance between dynamic law and its legal costs. With these insights, the next chapter will explore how the BBNJ treaty can accommodate decision-making for a DOM approach for Arctic MPAs.

4 Future-Proofing the BBNJ Treaty: Accommodation of a DOM Approach for Arctic MPAs

To address the question of this research—how the BBNJ treaty can accommodate decision-making for a DOM approach to Arctic MPAs—aspects of the BBNJ process will be analyzed. The analysis will be guided by the needs of decision-making for a DOM approach to MPAs, including the ability to facilitate ongoing regulatory decisions based on timely assessments and the incorporation of science. First, aspects of BBNJ negotiations, such as objectives and general principles and MPA-specific decision-making processes will be considered for their ability to support or inhibit accommodation of a DOM approach for Arctic MPAs. Subsequently, a more in-depth look at the role of the ILBI envisioned global bodies, as well as existing regional entities relevant for Central AO conservation of biodiversity will be pursued.

The analysis of this chapter is done under the premise that details of form and function are still being negotiated. The revised draft text of the ILBI⁹⁵ provides the main tool for this analysis, however, its final content is undetermined. Finally, it is unknown which States will become party to the agreement with the answer likely resting on negotiation outcomes.

4.1 An Overview of Decision-Making for MPAs

Before the main analysis, an overview of the aspects relevant to MPA decision-making is provided. Decision-making has been a consistent theme during the BBNJ negotiations, both overall and for the topic of area-based management tools (ABMTs), including MPAs.⁹⁶ The current draft text⁹⁷ addresses decision-making with respect to identifying areas in need of

⁹³ I Braverman and ER Johnson, n 28, p 3.

⁹⁴ *Ibid.*, 15.

⁹⁵ Revised Draft Text, n 13.

⁹⁶ See, IISD. Earth Negotiations Bulletin (ENB) Summaries of the Sessions of the Preparatory Committee.

⁹⁷ Revised Draft Text, Part III.

protection,⁹⁸ proposals,⁹⁹ consultation and assessment of proposals,¹⁰⁰ establishment,¹⁰¹ implementation,¹⁰² and reviews.¹⁰³

Whether decision-making for these components will occur under the envisioned global body (the Conference of the Parties (COP)) or competent regional bodies and instruments, is yet to be determined. Nevertheless, it is expected that a hybrid model that combines regional and global body and instrument decision-making functions and powers will be pursued.¹⁰⁴ During the BBNJ process, negotiations have consistently considered including some global-level version of a decision-making body, a science body, and a secretariat. The current draft fills those roles with a Conference of the Parties (COP) as the global-level decision-making entity; a Science and Technical Body (STB) to provide recommendations to the COP, and a Secretariat for administrative and facilitation purposes. Although their decision-making powers and functions, as well as their relationship with existing regional and sectoral bodies, is still to be determined, some form of the three is expected.¹⁰⁵

The COP is anticipated to serve as the BBNJ treaty decision-making body. According to Article 48, meetings of the COP—when decisions will be discussed and adopted—will occur at ‘regular intervals.’¹⁰⁶ What is meant by regular intervals will be decided at the inaugural meeting of the COP. It is likely, however, that the COP will meet once a year, thus, making decision-making an annual occasion. The provisions also imply that decisions will be taken by consensus voting, with no alternative procedure currently pinpointed.¹⁰⁷ The infrequency of meetings and the voting structure equate to a rigid and formal legal body, with a slow decision-making nature.

The STB, where membership is based on Party representation, will offer recommendations to the COP.¹⁰⁸ The STB will consist of experts from different disciplines, and the body can also

⁹⁸ *Ibid.*, Art 16.

⁹⁹ *Ibid.*, Art 17.

¹⁰⁰ *Ibid.*, Art 18.

¹⁰¹ *Ibid.*, Art 19.

¹⁰² *Ibid.*, Art 20.

¹⁰³ *Ibid.*, Art 21.

¹⁰⁴ NA Clark ‘Institutional Arrangements for the New BBNJ Agreement: Moving Beyond Global, Regional, and Hybrid.’ (2020) 122 *Marine Policy*, p 1.

¹⁰⁵ *Ibid.*, p 4.

¹⁰⁶ Revised Draft Text, Art 48.

¹⁰⁷ *Ibid.*, Art 48(3bis).

¹⁰⁸ Revised Draft Text, Art 49.

call on the advice of other scientists and representatives from existing legal instruments and bodies.¹⁰⁹ Due to its advisory nature, the STB may have some weight in decisions yet it will not possess the authority to take decisions, such as for a DOM approach.

4.1.1 A Potential Process Flow for MPAs

According to the draft text State Parties will submit proposals for MPAs¹¹⁰ and associated measures that will be reviewed by the STB.¹¹¹ Relevant and interested entities will have the chance to provide feedback during the consultation stage.¹¹² The STB will review and provide recommendations to the COP.¹¹³ The COP will then take a decision on the MPA's adoption.¹¹⁴

In theory, the COP could identify the Central AO as an area in need of protection. Subsequently, an Arctic State or several Arctic States jointly could submit a proposal for a MPA with the recommendation to have a DOM approach. The proposal would identify the spatial description, human activities in the area, a description of the conservation and sustainable use objectives, the proposed conservation and sustainable use measures, a monitoring and review plan with priority elements, plus other elements.¹¹⁵ The proposal could even include the suggestion to utilize the Central Arctic Ocean multi-year ice EBSA¹¹⁶ or the LME for the Central AO¹¹⁷ for spatial information. After consultation and review by the STB, the COP could adopt the MPA.

Nonetheless, decision-making for MPAs is still a matter of debate. This notion is especially true for the question of which body or instrument will take decisions or facilitate those listed stages of the MPA process. This is exemplified by Article 19 of the draft text: 'Decision-Making' (for ABMTs, including MPAs). First, bracketed text (suggesting the language is still being negotiated) is used to describe if the COP 'shall' or 'may' take decisions for MPAs.¹¹⁸ Article 19 also has two decision-making scenarios: 'Alt. 1' provides that the COP will have decision-making powers for establishing the area of the MPA, the MPA itself, and related

¹⁰⁹ *Ibid.*

¹¹⁰ *Ibid.*, Art 17(1).

¹¹¹ *Ibid.*, Art 18(2).

¹¹² *Ibid.*, Art 18.

¹¹³ *Ibid.*, Art 18 (6).

¹¹⁴ *Ibid.*, Art 19.

¹¹⁵ *Ibid.*, Art 17.

¹¹⁶ CBD, *Ecologically or Biologically Significant Areas (EBSAs): Multi-year Ice of the Central Arctic Ocean*, n 83.

¹¹⁷ PAME, *Central Arctic Ocean LME*, n 84.

¹¹⁸ Revised Draft Text., Art 19.

measures, while ‘taking into account measures of other relevant entities.’¹¹⁹ ‘Alt. 2’ offers COP decision making powers for identifying potential MPAs and recommending measures, but then leaves the ‘primary authority for adoption of such measures’ with respective mandates of existing legal bodies and instruments.¹²⁰

4.1.2 Keys Concepts Regarding Potential Institutional Arrangements

Who will exercise the powers of decision-making and how depends on the final BBNJ treaty institutional arrangement, or as Nichola A. Clark explains: ‘[...] the architecture of the bodies and subsidiary bodies that will carry forward the work of the BBNJ Agreement, as well as to the relative role of the BBNJ Agreement within the broader constellation of international ocean governance or organizations.’¹²¹ The BBNJ process has presented foundational themes regarding the question of institutional makeup that are worth noting here. These include the mandate to ‘not undermine’ existing bodies and the call for cooperation amongst the ILBI and existing bodies and instruments.¹²² ‘Not undermining’ is particularly a concern for the fisheries sector, although fisheries are not directly addressed in the BBNJ process.

While the concern of duplicating efforts or undermining the mandates of other legal instruments and bodies is essential to overcome, scholars have recommended a spirit of cooperation for navigating the complex lawscape.¹²³ This alternative focus of cooperation already has foundation in the draft text and is highlighted as the pathway to ‘[promoting] a holistic and cross-sectoral approach’ to conservation and sustainable use of BBNJ.¹²⁴ The provision specifically calls for cooperation of ‘States, relevant legal instruments and frameworks and relevant global, regional, subregional and sectoral bodies.’¹²⁵

4.2 Analysis of Key Themes for Enabling a DOM Approach

The previous chapter suggested that the accommodation of a DOM approach would require the BBNJ treaty MPA mechanism to (1) facilitate a regulatory framework for ongoing decisions to adjust management measures (spatial and temporal) based on timely assessments; (2) support

¹¹⁹ Revised Draft Text, Art 19.

¹²⁰ *Ibid.*

¹²¹ NA Clark, n 104, p 1.

¹²² UNGA RES A/RES/69/292 (2004); Also, see, Revised Draft Text, Art 4(3).

¹²³ A Friedman, ‘Beyond ‘Not Undermining’: Possibilities for Global Cooperation to Improve Environmental Protection in Area Beyond National Jurisdiction’ (2019) 76(2) *ICES Journal of Marine Science*; V De Lucia and P Nickels, ‘Reflecting on the Role of the Arctic Council’ (2020) 11 *Arctic Review*.

¹²⁴ Revised Draft Text, Art 14(a).

¹²⁵ Revised Draft Text.

the incorporation of ecological insight and science in decision-making processes; (3) allow for decision-making that is expert-centered and automated by scientific process; and (4) leave the door open for a DOM approach under the ILBI’s MPA process, including its development and implementation through language in the treaty text. These categories highlight main themes to carry through this analysis, including ongoing decisions to adjust regulations; the need for timely assessments; the incorporation of ecological insight and science; expert-centered decision-making; and automated decision-making.

4.2.1 MPA Objectives, General Principles, and Guiding Approaches for Decision-Making

MPA decisions will be guided by overarching BBNJ objectives and general principles, as well as guiding approaches specifically regarding review decisions. These elements are considered for how they can form, guide, or inhibit accommodation of decision-making for a DOM approach for MPAs in the Arctic. The draft text is used for analysis, although many of the provisions referred to are still likely to change.

4.2.1.1 BBNJ Treaty Objectives

Objectives, especially relevant to MPAs, include (1) ‘conserve and sustainably use areas requiring protection [...]’; (2) enhance biodiversity and ecosystem resilience to stressors, such as those brought by climate change; and (3) effectively manage marine protected areas.¹²⁶ Arctic MPAs with a DOM approach would *prima facie* meet those objectives of effectively managing and conserving areas requiring protection through an approach that adequately responds to concerns of stressors, such as climate change. The present author suggests that none of the objectives listed for ABMTs, including MPAs,¹²⁷ seem to outright obstruct the accommodation of a DOM approach to Arctic MPAs or its decision-making process.

However, the objectives could be revised, as Maxwell et al. suggest, to clearly include notions of ‘spatially or temporally viable measures’ and an objective, such as ‘the protection of ecosystems, natural habitats, and populations of migratory species throughout their range.’¹²⁸ The concept of dynamic measures could also be incorporated for responding to climate change impacts. While dynamic measures will not always be acceptable, especially due to legal

¹²⁶ Revised Draft Text, Art 14.

¹²⁷ *Ibid.*, Art 14.

¹²⁸ Maxwell et al. (2020), n 4, p 253.

concerns, they may be necessary for effective management under extreme climate change conditions.

4.2.1.2 BBNJ Treaty General Principles

Current general principles of the draft text and especially relevant to a DOM approach include: ‘an ecosystem approach’¹²⁹; ‘an approach that builds ecosystem resilience to the adverse effects of climate change and ocean acidification and restores ecosystem integrity’¹³⁰; and ‘the use of best available [knowledge].’¹³¹ As discussed, an ecosystem approach and its inherent principles are connected to and foundational to a DOM approach, especially in terms of incorporating ecological insight and iteration into MPA decision-making. The need to incorporate best available science also supports accommodation of DOM which relies heavily on scientific knowledge and on novel scientific processes for updating regulations. To accommodate DOM decision-making, general principles could also emphasize a dynamic approach or an approach that recognizes spatial and temporal changes occurring in the marine environment.

4.2.1.3 Guiding Principles for Decisions Following Review of MPAs

Some of the same concepts are also found under provisions on decision-making that follow reviews of ABMTs, including MPAs.¹³² Decisions taken after assessments of MPAs and respective measures (i.e., for adjustments) shall be taken ‘on the basis of an adaptive management approach and taking into account the best available [science] [scientific information and knowledge, including relevant traditional knowledge of indigenous peoples and local communities] [...] and an ecosystem approach.’¹³³ Again, these approaches that guide decision-making are relevant and supportive of a DOM approach. The weight that ‘taking into account’ the best available science will be given for decisions is not made clear, however.

The inclusion of an adaptive management approach for guidance in decision-making implies the need for ongoing assessments and adjustments which as discussed, are critical components for a DOM approach. How often assessments and adjustments can occur is not addressed by the listing of ‘the adaptive management approach,’ however. To better accommodate a DOM

¹²⁹ Revised Draft Text, Art 5(f).

¹³⁰ *Ibid.*, Art 5(h).

¹³¹ *Ibid.*, Art 5(i). The present author added brackets to account for the two provision options: ‘science’ or ‘scientific information and relevant traditional knowledge of indigenous peoples and local communities.’

¹³² *Ibid.*, Art 19.

¹³³ *Ibid.*, Art 21(4). The brackets around text are included in the draft text to explain where decisions on language are still needed.

approach, specifically, guiding principles for review decisions—presented as obligations or recommendations—could again include ‘a dynamic approach,’ ‘taking into account an expert-created scientific process,’ or even language to suggest the need for decisions to be taken in accordance with rates of environmental change. While these examples are only illustrative, they suggest that guiding principles could expand to better account for DOM decision-making for Arctic MPAs.

4.2.2 MPA Review, Including Decisions for Adjustments

Given that ongoing assessments of ocean data and respective decisions to adjust MPA boundaries or measures is essential to a DOM approach, this analysis will proactively cover the ILBI review process for MPAs and their measures. According to the current draft text, MPAs and their related measures ‘shall be monitored and periodically reviewed by the STB.’¹³⁴ Based on the review, the STB will provide advice and recommendations to the COP.¹³⁵ The COP is then obligated, ‘as necessary, to take decisions on the amendment or revocation’ of MPAs and associated conservation measures.¹³⁶

Recalling that DOM decision-making requires (a) ongoing decisions to adjust regulatory measures and (b) timely assessments, a ‘periodic review’ and the obligation for the COP to make amendments at unstated timeframes and with unstated processes does not suggest DOM decision-making can be accommodated by the ILBI at its current state. Obligations for more frequent assessments of MPA measures could be considered, but as Crespo et al. suggest, the ability to assess and adjust frequently could also, in theory, lead to a rollback of regulations.¹³⁷

Furthermore, assessment and respective regulatory change under a DOM approach revolves around expert-centered and automated decision-making, encapsulated in a DOM tool. It is not surprising the ILBI does not have language to allow for these elements. As stated previously, those elements are contrary to formal decision-making processes of international law that are rooted in State participation and transparent deliberations. To accommodate decision-making for a DOM approach for Arctic MPAs, however, legal pathways for assessments and decisions that are expert-driven, as well as informed or produced by scientific tools could be explored.

¹³⁴ Revised Draft Text., Art 21 (2).

¹³⁵ *Ibid.*, Art 21 (3).

¹³⁶ *Ibid.*, Art 21 (4).

¹³⁷ Crespo et al, n 12.

There is an opportunity for the monitoring and review provisions to expand to account for other MPA scenarios and needs.

4.2.3 Marine Protected Area Definition

Especially relevant to the need for the BBNJ treaty to keep the door open for a DOM approach and its decision-making, is the language the text uses to define MPAs. Currently, the draft text defines a marine protected area as, ‘a geographically defined marine area that is designated and managed to achieve specific conservation and sustainable use objectives.’¹³⁸ The use of the terminology ‘geographically defined’ could inhibit the use of a DOM approach, where boundaries are fluid and changing. To accommodate for a dynamic approach to Arctic MPAs, as well as the related decision-making, a revised definition should be considered.¹³⁹

Changing the MPA definition presents legal issues, such as a need to redefine what success entails for MPAs. Conservation goals set by international legal and policy initiatives, that hinge on the amount of geographical coverage of the ocean would need updating to account for MPAs that are in flux. By altering the MPA definition, the BBNJ treaty could be placing the questions—what counts as an MPA or what is the value of more MPA coverage of ocean space—at the forefront of negotiations. Another potential concern is the unintended outcome of the change relaxing overall protection. It is indeed more difficult to assess and monitor the amount of protection when its form is constantly changing. The lack of a constant clearly defined area could also contribute to legal uncertainty and unpredictability when flag state vessels of Parties to the BBNJ treaty could continuously be subject to MPA boundary changes. Furthermore, enforcement (which is already a challenge for ABNJ MPAs) may be more difficult.

4.3 Navigating the Role of Potential Bodies for Accommodating a DOM Approach

Given there is no answer for what institutional form the new treaty will adopt, this research will explore bodies provided for in the ILBI draft text (bodies envisioned at the global level), as well as existing regional and sectoral bodies relevant to conservation and sustainable use of biodiversity in the Central AO with a focus on the Arctic Council, the OSPAR Commission (OSPAR), and the North-East Atlantic Fisheries Commission (NEAFC). The ability for these entities to accommodate—or contribute—to decision-making for a DOM approach to Arctic

¹³⁸ Revised Draft Text, Art 1(10). The current author removed bracketed text that is still to be decided on.

¹³⁹ Maxwell et al. (2020), n 4.

MPAs and the implications will be addressed. Themes for an enablement of a DOM approach—ongoing decisions to adjust the law; the need for timely assessment; the incorporation of ecological insight and science; expert-centered decision-making; and automated decision-making—will continue to be considered.

4.3.1 Decision-making Envisioned at the Global Level

Global emphasis for decision-making can lead to comprehensive conservation measures. The Arctic States, however, do not support global level institutions receiving too much decision-making power.¹⁴⁰ If too much emphasis for decision-making is placed at the global level, the Arctic States could choose not to become parties of the ILBI. This is especially worrisome since the effectiveness of the ILBI will be contingent on a high number of States becoming parties to it (i.e., more parties under legal obligation).

4.3.1.1 The Conference of the Parties (COP)

Recalling that the COP is a rigid and formal decision-making body, especially due to its low decision-making frequency and consensus-based voting, it is likely not the right entity for decision-making for a DOM approach to Arctic MPAs. Its conceptualization denotes values of stability and political procedures, which are standard embodiments of international law decision-making. A DOM approach, however, requires decision-making for adjusting boundaries and measures that are continuous, in near real-time, and expert driven. Decision-making that is representative of States is ultimately not suitable for a DOM approach that requires experts and scientific processes. This will be an obstacle for accommodation, as sovereignty of States is a foundational aspect of international law. In theory, it is likely that intricate decisions and operationalization of a DOM approach would be taken at a lower institutional level more adept to management needs and capabilities (i.e., regarding data collection and modelling) of the Central AO.

The COP could be the right entity for decisions on identifying the area in need of protection or adopting a MPA framework enabling a DOM approach. This is to say that a regional entity (or another body or instrument) could develop and accommodate a DOM approach, which then could be adopted by the BBNJ COP. Accordingly, the COP will set rules when adopting MPAs that could either support or hinder the accommodation of DOM. An adoption of the MPA with

¹⁴⁰ See, IISD, Earth Negotiations Bulletins (ENB), Summaries of the Sessions of the Preparatory Committee.

a DOM approach, however, could equate to consent of the approach by BBNJ parties; and thus, consent to adjusting boundaries and measures that are legally binding.

If a MPA with a dynamic approach is conceptualized under a proposal submitted by a State or multiple States under the BBNJ treaty, the contents of the proposal—such as the spatial definition, the objectives, priority elements, and the frequency of review—could then inform a DOM tool (e.g., spatial coverage, control rules, risk weightings for species or habitat and frequency of new assessments for adjustments) that would be built and operated by management experts, again, likely at a lower institutional level. Although speculative, this pathway of the COP adopting a MPA with a dynamic approach for the Central AO, where decisions on objectives and other elements would inform a DOM tool and process carried out elsewhere, seems plausible.

If a decision is made where new MPA boundaries or measures produced by a DOM tool are not automatically applied, the COP could take decisions based on the tool's recommendations. This would require the COP to deliberate and make decisions on the adoption of the regulation recommendation at every assessment interval, which to be effective would likely range from daily to monthly for some components. Even if there are benefits to the formal decision-making processes of the COP (e.g., party participation, stability, and certainty), this would likely not be an option due to the low frequency of decision-making opportunities of the COP, as well as capacity concerns regarding the need for ongoing regulatory decisions.

Finally, the COP could be the right body to accommodate a cooperation mechanism necessary for the development of DOM tool considerations and its implementation. This is especially the case due to its resource capacity for such a mechanism.¹⁴¹ The Secretariat could then support the facilitation. Early discussions on how the DOM approach will work (i.e., for tool transparency and how end-users will receive updates), as well as its potential effect on States, relevant institutions and bodies, and end-users will be necessary in terms of effectiveness and the ability to garner buy-in for the approach.

¹⁴¹ 'IUCN Comments on Revised BBNJ Draft Text of Nov 2019' (2020) available at https://www.iucn.org/sites/dev/files/iucn_comments_on_bbnj_draft_text_-_august_2019.pdf.

4.3.1.2 The Science and Technical Body (STB)

The Science and Technical Body (STB) will likely play a role in inhibiting or accommodating a DOM approach to Arctic MPAs, especially in terms of advising the COP on the adoption of DOM. Due to its advisory nature it may have some weight in decisions, but it does not possess the authority to take the decisions necessary for a DOM approach. The fact that the STB will be representative of ILBI Parties means it will also not possess the neutral expertise desirable for DOM decisions and processes. It should be noted, however, that under the direction of the COP, the STB may also establish subsidiary bodies, as well as perform other functions.¹⁴² These options could be utilized to develop a mechanism to support a DOM approach to MPAs in the Arctic and elsewhere.

4.3.2 An Arctic Context: Potential Decision-Making Entities

Arctic regional bodies relevant to conservation and sustainable use of biodiversity in the Central AO will be explored for their role in accommodating a DOM approach to Arctic MPAs. The Arctic Council, the OSPAR Commission (OSPAR), and the North-East Atlantic Fisheries Commission (NEAFC) will be assessed in detail. However, other existing frameworks and bodies that could play some role in accommodating or contributing to a DOM approach to MPAs in the Central AO include the International Maritime Organization (IMO), the International Seabed Authority (ISA), and the 1973 Agreement on the Conservation of Polar Bears.¹⁴³ Also relevant to the Arctic context, the BBNJ treaty could, and in the present author's opinion, should include Arctic Indigenous Peoples (possibly through the six Arctic Indigenous People's organizations) in decision-making processes for a DOM approach to Arctic MPAs.

4.3.2.1 The Arctic Council

The Arctic Council is an intergovernmental high-level forum for facilitating cooperation on Arctic issues (specifically issues regarding environmental protection and sustainable development) amongst the Arctic States—the five coastal Arctic States and Iceland, Finland, and Sweden—and Indigenous Peoples of the Arctic. The Council has 'soft power' meaning it has no competence to establish MPAs or adopt legally binding measures. Even with this legal characterization, the Arctic States under the auspices of the Arctic Council, have carried

¹⁴² Revised Draft Text, Art 49(4).

¹⁴³ 1973 Agreement on the Conservation of Polar Bears.

forward negotiations leading to the adoption of three legally binding agreements.¹⁴⁴ Erik J. Molenaar suggests the connection between the Arctic Council and the three binding agreements ‘comprises a considerable and increasing extent of substantive and institutional integration.’¹⁴⁵ Discussions are ongoing regarding the possibility of transforming the Arctic Council into a body with a comprehensive legal mandate, but political will has been, so far, lacking.¹⁴⁶

The Arctic Council through the 2015 establishment of the Task Force on Arctic Marine Cooperation (TFMAC) led efforts to ‘assess future needs for a regional seas program or other mechanisms, as appropriate, for increased cooperation in Arctic marine areas.’¹⁴⁷ However, those efforts to develop a subsidiary body were suspended in 2018.¹⁴⁸ For now, the legal competence of the Arctic Council to accommodate a DOM approach to Central AO MPAs is inadequate. Furthermore, according to recent scholarship, *prima facie*, the Council should not be considered a relevant existing body in terms of the ‘not undermining’ provisions of the ILBI.¹⁴⁹

Nonetheless, the Arctic Council could provide knowledge and cooperation platforms towards a DOM approach for MPAs in the Central AO. The work of the Arctic Council, primarily focusing on environmental protection and sustainable development, is conducted through six working groups. Working groups consist of representatives of Council member states, permanent participants, observer states and organizations, the research community, and sectoral ministries. This research mainly highlights the efforts of two working groups—the Protection of the Arctic Marine Environment (PAME) and the Conservation of Arctic Flora and Fauna (CAFF)—due to their contributions to conservation of Arctic biodiversity and MPAs more specifically. The examples below are not exhaustive but offer insight into the potential guidance

¹⁴⁴ The three agreements and the dates of signature include: the Agreement on Cooperation on Aeronautical and Maritime Search and Rescue in the Arctic (2011); the Agreement on Cooperation on Marine Oil Pollution Preparedness and Response in the Arctic (2013); and the Agreement on Enhancing International Arctic Scientific Cooperation (2017).

¹⁴⁵ EJ Molenaar, ‘The Arctic, the Arctic Council, and the Law of the Sea’ in RC Beckman et al. (eds) *Governance of Arctic Shipping* (Brill Nijhoff 2017), p 55.

¹⁴⁶ OR Young, ‘If an Arctic Ocean Treaty Is Not the Solution, What is the Alternative?’ (2011) 47(4) *Polar Record*.

¹⁴⁷ ‘Report to Ministers of Task Force on Arctic Marine Cooperation’ (2017).

¹⁴⁸ ‘Recommendations by the Task Force on Arctic Marine Cooperation II for complementary enhancements of the Arctic Council institutions including the SAO based mechanism to coordinate marine issues in the Arctic Council.’

¹⁴⁹ V De Lucia and P Nickels, n 123.

role of the Arctic Council for a DOM approach and its decision-making for MPAs in the Central AO.

The Arctic Council, and especially PAME and CAFF have engaged with Ecosystem-based management (EBM). EBM is a guiding principle for CAFF and is the approach taken by its Circumpolar Biodiversity Monitoring Programme (CBMP). Especially relevant to our analysis is the Expert Group on Ecosystem-Based Management's (EBM) 2013 report recognizing principles on the need to address 'dynamic ecosystems.' PAME also has contributed to EBM developments, especially through their Ecosystem Approach to Management Expert Group (EA-EG) and contributions to Large Marine Ecosystems (LMEs), including the Central AO LME.¹⁵⁰ As mentioned previously, the Central AO LME could be utilized in the development of a DOM tool.

The Arctic Council has also contributed to extensive dialogue on Arctic MPAs. PAME has developed a Framework for a Pan-Arctic Network of MPAs.¹⁵¹ Much of the efforts under the PAME MPA umbrella aim to inform the development of Arctic MPA networks under the national jurisdiction of Arctic States, however, it is noted that 'the principle aspects of the framework are relevant for the entire Arctic Ocean.'¹⁵² Some of those aspects are relevant to a DOM-approach to Central AO MPAs, including that 'the rapidly changing landscape and dynamics of the Arctic marine environment will require multi-faceted, and likely new approaches to planning and mainstreaming adaptive management in MPAs.'¹⁵³ The Framework further highlights the need for knowledge to better inform 'necessary adjustments to MPA boundaries, conservation objectives and management measures';¹⁵⁴ the need for monitoring and adjustments 'on an ongoing basis'¹⁵⁵; and the need for a flexible approach which could include 'dynamic MPAs.'¹⁵⁶ For ABNJ specifically, PAME's Modeling Arctic Oceanographic Connectivity project has recently been extended to include the Central AO.¹⁵⁷

¹⁵⁰ PAME, *Central Arctic Ocean LME*, n 84.

¹⁵¹ PAME, 'Framework for a Pan-Arctic Network of Marine Protected Areas,' n 35.

¹⁵² *Ibid.*

¹⁵³ *Ibid.*, p 19.

¹⁵⁴ *Ibid.*, p 19.

¹⁵⁵ *Ibid.*, p 9.

¹⁵⁶ *Ibid.*, p 20.

¹⁵⁷ PAME, 'Modelling Arctic Oceanographic Connectivity' available at <https://www.pame.is/projects-new/marine-protected-areas/current-mpa-projects/403-modelling-arctic-oceanographic-connectivity-to-further-develop-pame-s-marine-protected-areas-toolbox>

CAFF's efforts on addressing conservation of Arctic biodiversity through monitoring, assessment and expert programs is also pertinent to the discussion of a DOM approach to MPAs in the Central AO. Especially of interest is the efforts of the Circumpolar Biodiversity Monitoring Programme (CBMP). CAFF has also cooperated with the Convention on Biological Diversity (CBD) and the Convention on Migratory Species (CMS) in which the international frameworks, CAFF, and the BBNJ intersect at the objective of the conservation of biological diversity. Although the CBD has limited jurisdiction for areas beyond national jurisdiction,¹⁵⁸ its program on ecological and biologically significant marine areas (EBSAs) could have a role for BBNJ processes and specifically a DOM approach to MPAs. The Multi-Year Sea Ice of the Central AO is an EBSA¹⁵⁹ that could be utilized, for example. Ultimately, the CBD regional projects, such as through the auspices of the Arctic Council, will need to be addressed during BBNJ implementation.¹⁶⁰

At this time, the Arctic Council does not have the legal competence to adopt a DOM approach to Arctic MPAs, yet its knowledge and cooperation platform and programs could support or help establish a DOM tool that could be subsequently adopted by the BBNJ treaty. The Council's close connection to knowledge of ecosystems, as well as management needs and capabilities for the Central AO, make it an ideal place for DOM decisions. If the legal mandate of the Council were to transform to a regional seas organization (RSO), or an entity capable of implementing Central AO MPAs and measures, it could become a unique and ideal host of a DOM approach to MPAs of the Arctic.

4.3.2.2 The OSPAR Commission (OSPAR)

The Convention for the Protection of the Marine Environment of the North-East Atlantic (OSPAR)¹⁶¹ pertains to preventing and eliminating pollution in the Convention Area.¹⁶² The Convention area geographically includes areas beyond national jurisdiction, including a small portion of the Central AO. The contracting parties—including 15 States and the European

¹⁵⁸ 1992 Convention on Biological Diversity, Art 4 and Art 22.

¹⁵⁹ CBD, *Ecologically or Biologically Significant Areas (EBSAs): Multi-year Ice of the Central Arctic Ocean*, n 83.

¹⁶⁰ KD Kraabel, 'Institutional Arrangements in a BBNJ treaty: Implications for Arctic Marine Science (2020) 103807 Marine Policy, p 6.

¹⁶¹ OSPAR Convention for the Protection of the Marine Environment of the North-East Atlantic (hereinafter 'OSPAR Convention').

¹⁶² *Ibid.*, Art 2(1)(a).

Union—have competence to take measures to protect a marine area and conserve marine ecosystems, and in some cases, restore marine areas that have been adversely affected.¹⁶³

In addition, *Annex V*, ‘On the Protection and Conservation of the Ecosystems and Biological Diversity of the Maritime Area’ entered into force for all Contracting Parties in 2006.¹⁶⁴ The Annex obligates Parties to ‘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,’ as well as cooperate for purposes of controlling human activities.¹⁶⁵ It is essential to note that the Convention clarifies that no measure or program can relate to the management of fisheries and when regarding maritime transport, cooperation with the IMO must be sought.¹⁶⁶

Given the focus of this research, OSPAR does indeed have the legal mandate to establish MPAs in high seas areas.¹⁶⁷ OSPAR has acted upon that competence in latitudes below the Arctic Ocean, however, the effectiveness of those MPAs and any related measures within the high seas are limited since they are only legally binding for the 16 parties and sectoral.¹⁶⁸ Although it should be noted that the MPA definition under OSPAR is holistic as it pertains to ‘species, habitats, ecosystems or ecological processes of the marine environment.’¹⁶⁹ Matz-Luck suggests that OSPAR’s approach to MPAs, combining binding and non-binding measures, could however, suggest that OSPAR is exceeding its mandate.¹⁷⁰

OSPAR has attempted to expand cross-sectoral and regional coordination through MOUs and a Collective Arrangement,¹⁷¹ but the efforts have been met with resistance from the IMO and ISA.¹⁷² On the other hand, the effort has worked better for coordination with NEAFC. The Collective Arrangement is arguably an ambitious endeavor, where the goal is to be a forum for all competent entities in the region addressing human activities and aims to ‘facilitate

¹⁶³ OSPAR Convention, Art 2(1)(a).

¹⁶⁴ *Ibid.*, Annex V.

¹⁶⁵ *Ibid.*, Annex V, Art 2(a) and (b).

¹⁶⁶ *Ibid.*, Annex V, Art 4(1) and (2).

¹⁶⁷ OSPAR Recommendation 2003/3 on a network of marine protected areas, OSPAR Ministerial Meeting (2003).

¹⁶⁸ N Matz-Luck and J Fuchs, ‘The Impact of OSPAR on Protected Area Management Beyond National Jurisdiction’ (2014) 49 *Marine Policy*.

¹⁶⁹ OSPAR Recommendation 2003/3.

¹⁷⁰ N Matz-Luck and J Fuchs.

¹⁷¹ ‘Collective Arrangement Between Competent International Organisations on Cooperation and Coordination’ OSPAR Agreement (September 2014).

¹⁷² KD Kraabel, n 160.

cooperation and coordination on area based management between legally competent authorities,' including NEAFC and others.¹⁷³

For the BBNJ treaty, the OSPAR Secretariat plans to cooperate to develop material on the role of the regional seas conventions for the BBNJ Agreement.¹⁷⁴ Although OSPAR has more expertise regarding the Arctic region and experience adopting ABNJ MPAs, similar to the BBNJ COP, decision-making for a DOM approach is unlikely to be accommodated by the OSPAR Commission's (comprised of representatives of the Parties) decision-making processes. The needs of a DOM approach, including ongoing decisions made by scientific experts via an automated process, does not match the abilities of the Commission. For the portion of the Central AO that OSPAR does cover, it could adopt a MPA with a dynamic approach in accordance with its mandate. The Collective Arrangement could be a platform to expand cooperation for a DOM approach in the region beyond its relative success of working with NEAFC.

4.3.2.3 North-East Atlantic Fisheries Commission (NEAFC)

The North-East Atlantic Fisheries Commission is a regional fisheries management organization (RFMO) with the objective 'to ensure the long-term conservation and optimum utilization of the fishery resources in its Convention Area, providing sustainable economic, environmental and social benefits.'¹⁷⁵ The Commission is limited to its fisheries mandate even though provisions obligate Parties¹⁷⁶ to take due account of the impact of fisheries on other species and marine ecosystems and the need to conserve marine biological diversity.¹⁷⁷ An exemplification of ecosystem consideration, includes the 2015 Recommendation concerning the protection of vulnerable marine ecosystems (VMEs) in the NEAFC area from bottom fishing activities, which can include area closures based on advice from the International Council for the Exploration of the Sea (ICES).¹⁷⁸

¹⁷³ 'Collective Arrangement Between Competent International Organisations on Cooperation and Coordination' OSPAR Agreement (September 2014).

¹⁷⁴ 'Work Priorities for OSPAR Secretariat 2018-2020.' OSPAR Commission, OSPAR 18/10/2 Rev.1.

¹⁷⁵ Convention on Future Multilateral Cooperation in North-East Atlantic Fisheries (hereinafter 'NEAFC Convention), Art 2.

¹⁷⁶ 'NEAFC Contracting Parties include, Denmark, the European Union, Iceland, Norway, the Russian Federation, and the United Kingdom.

¹⁷⁷ NEAFC Convention, Art 4(2).

¹⁷⁸ 'Recommendation on the Protection of Vulnerable Marine Ecosystems in the NEAFC Regulatory Area.' Recommendation 19/2014: Protection of VMEs in NEAFC Regulatory Areas as Amended by Recommendation (2015) available at <http://extwprlegs1.fao.org/docs/pdf/mul165665.pdf>.

NEAFCs sectoral mandate limits the ability of the organization to provide comprehensive coverage for the establishment of MPAs. Further limiting the legal relevance of NEAFC is the fact that it only covers a part of the Central AO. That being said, NEAFC has made clear its current conservation and management relevance in the Central AO, at least within the NEAFC Convention Area including a scheme of control and enforcement, the protection of vulnerable marine ecosystems, deep-sea fisheries, and annual regulations on fish stocks.¹⁷⁹ Since NEAFC is competent to adopt fisheries specific measures, including those for closed seasons and closed areas,¹⁸⁰ it could adopt at least some complementary fisheries measures for a DOM approach to MPAs spanning the NEAFC Commission area of the Central AO. This is also an interesting potential endeavor, considering the BBNJ process does not directly address fisheries.

Finally, NEAFC could contribute to a BBNJ DOM approach to MPAs as a model for science advisory for decision-making. NEAFC relies on scientific information and advice from ICES,¹⁸¹ meaning there is a separation of science and policy under NEAFC. The Convention also specifies that cooperative arrangements with ICES will be sought to ensure research studies are carried out and not delayed.¹⁸² Advice from an independent science body, rather than a politically representative STB envisioned for the BBNJ treaty may enable more trust in scientific advice, and in turn facilitate the adoption of a DOM tool that automates regulations based on new information. Whether or not ICES could accommodate DOM is outside the scope of this research, however, the advisory role it has for management bodies such as NEAFC could make it an interesting organization for supporting DOM measures adopted by NEAFC.

4.3.3 Implications for Regional Emphasis

In summary, the Arctic Council, OSPAR, and NEAFC could play a role in the implementation of a DOM approach for Arctic MPAs. The Arctic Council does not have the legal competence to adopt a DOM approach for Arctic MPAs, but nevertheless, the Council can substantially contribute to knowledge development and exchange through its working groups and its networks of scientific experts. OSPAR and NEAFC have sectoral competence relevant for a small portion of the Central AO, and therefore, are regional bodies that should not be undermined by the BBNJ treaty. If the Collective Arrangement expands in substantial

¹⁷⁹ ‘Statement by the North-East Atlantic Fisheries Commission’ available at https://www.neafc.org/system/files/NEAFC-statement_Central-Arctic-Ocean-Agreement.pdf

¹⁸⁰ NEAFC Convention, Art 7(c).

¹⁸¹ *Ibid.*, Art 14(1).

¹⁸² *Ibid.*, Art 14(2).

participation beyond OSPAR and NEAFC as it intends, it could be an interesting avenue for cooperation regarding a DOM approach.

Undoubtedly there are benefits to regional decision-making for a DOM approach, such as the garnering coastal State interest, as well as the ability to have approaches that align with the circumstances of the region.¹⁸³ Although Arctic States have voiced their interest in decision-making occurring at the regional level, there is still an institutional and legal gap for establishing a holistic, cross-sectoral MPA in the Central AO. The Arctic council hypothetically could transform its legal character or become a new RSO to fill the Central AO management void, but for now there is no fully accommodating regional avenue.

There are several potential scenarios for accommodation of a DOM approach that lie somewhere between the BBNJ COP and regional and sectoral bodies and instruments. One, if the COP adopts a MPA framework that includes a DOM approach, OSPAR and NEAFC can adopt complementary measures under their mandates and potentially have a role for elements of the MPA mechanism, such as providing data on ocean users. Alternatively, the BBNJ COP could identify the Central AO as in need of protection and provide recommendations for a DOM approach, but NEAFC and OSPAR would then be the bodies to adopt dynamic approaches for spatial and temporal measures for Arctic BBNJ in accordance with their specific mandates. If establishment and implementation occur at the regional level, a DOM approach would likely be built in a patchwork fashion in line with sectoral and geographic coverage. Scholarship, however, suggests that the Sargasso Sea project exemplifies how several regional and sectoral entities working together to fill a comprehensive marine conservation role may lead to inadequate results.¹⁸⁴ To remedy these concerns, other scholarship recommends that the combination of regional and global cooperation is needed to improve conservation outcomes.¹⁸⁵

¹⁸³ Z Scanlon, 'The Art of 'Not Undermining' (2017) *ICES Journal of Marine Science*, p 10; as referred to in, A Friedman.

¹⁸⁴ D Freestone, 'The Limits of Sectoral and Regional Efforts to Designate High Seas Marine Protected Areas' (2018) 112 *Cambridge University Press*.

¹⁸⁵ A Friedman, n 123.

5 Options for Addressing Legal Concerns Raised by a DOM Approach to MPAs

5.1 A Mechanism for Cooperation and Consultation

Regardless of institutional arrangement outcomes, the accommodation of a DOM approach for Arctic MPAs will rely on input, buy-in, and complementary measures being adopted by existing competent bodies and instruments; that is, if the protected area is to be cross-sectoral, holistic, and widely accepted, and therefore, capable of effective conservation. For a DOM approach specifically, the work, knowledge, and interests of States, competent and relevant legal entities, as well as Arctic Indigenous Peoples, local communities, and industry will need to be considered. Thus, mechanisms for cooperation and consultation should be pursued to accommodate a DOM approach for the Central AO. The COP with the administrative support of the Secretariat could play the foundational role for the cooperation and consultation, however, the Arctic Council could also provide a system for cooperation for the knowledge gathering and exchange needed to support a DOM tool.

Cooperation and consultation will have multiple benefits. One, it is relevant to the need to be respectful of the Arctic and non-Arctic States' sovereignty and cognizant of the competence of legal instruments and bodies within their specific mandates. Additionally, it can lead to a better outcome of a DOM approach with relevant entities involved in shaping its objectives and implementation. Finally, the ability for affected entities to have a role in building the DOM approach, could in theory, lead to a broader adoption. Also, and perhaps most importantly, a mechanism for cooperation could ensure a better understanding of how the science behind the approach works and how potential regulatory outcomes could look. This participation could provide transparency into the complex scientific and expert-based process, and perhaps limit perceptions of extreme uncertainty related to the approach. Arguably it could be essential to the international community trusting the efficacy of the process and the resulting regulatory adjustments.

Cooperation and consultation should also be emphasized for the alignment of specialized experts that develop the DOM tool and the BBNJ decision-making body that could adopt the approach. A mechanism for cooperation and consultation between Parties of the Agreement and the scientific experts can ensure a standard international law decision-making process, such as through the COP, guides and maintains control over a DOM approach, even if it is carried out by specialized experts and an automated tool (likely at a lower institutional level).

Recalling the ability for the BBNJ decision-making body to limit the amount of flexibility and speed of a DOM approach, the COP for example, could in consultation with the DOM experts adopt a MPA framework with rules that restrain the process and outcomes. These upfront decisions can harness the discretion or amount of ‘influence’ DOM experts can have on regulatory change. Consequently, uncertainty is also minimized due to the regulatory change being contained within the confines of the sovereign-based legal decisions.

As discussed, this could be setting the regulatory adjustment intervals to longer timeframes; requiring new regulatory adjustments be pre-approved by the decision-making body; adding a time-lag for implementation of regulation updates; or choosing a compliance scheme where some elements are voluntary. It also would include setting a maximum spatial extent. In essence, the legal issues that arise from a DOM approach being expert-led and under scientific processes could be minimized or alleviated if the framework for a MPA adopted by a competent legal body or instrument narrows the extent of possible flexibility with clearly defined parameters. This could account for feasibility concerns (e.g., the adoption of a voluntary compliance scheme for the shipping industry due to its need for more stability and predictability in its operations). It could also limit concerns of arbitrary decisions being made by the experts building and operating the DOM tool.

The more the legal process limits the scientific process, however, the more chance the benefits of the DOM approach are stifled, thus limiting the conservation benefits of a DOM approach. A cooperation mechanism for the BBNJ decision-making body, the specialized experts of a DOM approach, and other Central AO knowledge holders, can provide a platform for establishing an appropriate framework. The dialogue that occurs would ideally lead to outcomes where there is a proper balance between the benefits of dynamic regulations for the Central AO and the potential costs of ongoing regulatory change.

The dialogue needed for adopting a DOM approach, however, does not merely involve perspectives of science and law. The negotiations also include the dynamic Central AO and its elements that constantly question law’s ability to constrain, control, and provide certainty in an ever-evolving environment. As Marusek suggests, the negotiation is rather between law, [ocean-users], and nature itself, where ultimately law must adapt to a dynamic scape.¹⁸⁶ Change

¹⁸⁶ S Marusek, n 41, p 64, 78. The present author replaced ‘the visiting public’ with ‘ocean-users’ to better fit the context of this research.

and risk are constant and inevitable within ocean spaces and to purport that law is able to control nature or provide stability with fixed lines and customary processes is perhaps where reconsideration is needed.

International law is centered around the ‘essentialism of sovereignty,’¹⁸⁷ as seen in decision-making processes and the signaling of sovereignty and jurisdiction in the use of lines and defined spaces (e.g., UNCLOS maritime zones). However, as discussed, mobile ocean characteristics and the mobility of species defy those lines and structures of purported sovereign control (and associated certainty with those assertions). Consequently, the processes and connected assumptions of stability and control—that are held closely in international law—are exposed as frangible or imperfect for a dynamic space. This reflection does not suggest overhauling a system that provides accountability, predictability, transparency, stability, and decentralized power under the rule of law. Instead, it suggests a shifting of perspective that could allow for the embrace of opportunities to better align with modern challenges and dynamic spaces.

5.2 Conclusion

The dynamic nature of the Central AO, intensified by climate change, suggests a rethinking of *status quo* legal structures. For example, standard static marine protected areas may not be effective when, for example, species driven by climate change exit the defined area meant to protect them. Instead, a rapidly changing Central AO could benefit from a DOM approach that accounts for expected and unexpected changes to the marinescape. Given the potential, the BBNJ treaty should ensure a pathway for a DOM approach to future Arctic MPAs. However, the accommodation relies on technical improvements, such as updates to the language of the treaty text, and perhaps more essential, the ability for international law to embrace dynamic legalities.

The current BBNJ overarching objectives and principles, as well as guidance for MPA decision-making, does not appear to outright inhibit a DOM approach to Arctic MPAs, however, the provisions could be expanded to better guide and institutionalize aspects of a DOM approach. The BBNJ treaty could also remove a ‘geographically defined space’ from the MPA definition to facilitate the adoption of a DOM approach and its fluid boundaries. The edit would require

¹⁸⁷ I Braverman and ER Johnson, n, 28, p 15.

a dismantling of fixed boundaries that define protected areas, and in turn a dismantling of the legal conceptualization of MPAs. This accommodation would entail a rethinking of the future of MPAs, including indicators of area-based conservation success.

While the BBNJ institutional arrangement and related dispersal of decision-making functions and powers is yet to be determined, global bodies, such as the COP and competent regional bodies and instruments, such as OSPAR and NEAFC can play a role in accommodating a DOM approach for Arctic MPAs. Due to the scientific processes that automate regulatory adjustments in near real-time, a DOM approach to Arctic MPAs will likely occur at a lower institutional level. This has the advantages of a regionally tailored approach and likely more interest and embrace by Arctic coastal States. However, a regional legal and governance gap remains for implementing a holistic and cross-sectoral DOM approach to MPAs, unless a Central AO management body emerges (e.g., a legal transformation of the Arctic Council). This gap, as well as the need to be cognizant of State sovereignty, competent bodies and instruments, and other stakeholders, implies a need for a cooperative mechanism that harnesses the interests, concerns, and knowledge of various entities. In particular, the Arctic Council could have a key soft power role in facilitating knowledge exchange necessary for a DOM approach.

In addition, the cooperation of DOM experts and those taking framework decisions seems fundamental for the implementation of a DOM approach. Cooperation could also help overcome legal issues that arise from the rapid and continuous regulatory change produced by DOM's scientific processes. MPA rules adopted under a BBNJ framework could clearly define the elements and parameters of the approach to limit arbitrary decisions from experts, lower uncertainty produced by flexible regulations, and ensure an international law decision-making system based on the consent of sovereign States. The specific framework adopted by the COP, for example, could specify the frequency of regulatory adjustments and the rules that guide the DOM tool, thereby limiting the extent of regulatory change possible.

These nuances are examples of how DOM decision-making under a legal framework could strike the balance between upholding principles of international law and introducing dynamic legalities that can address present and future ocean challenges. BBNJ negotiators and the international legal community will need to answer if accommodating a DOM approach to Arctic MPAs is feasible—technically or politically—and more generally, whether law and its decision-making processes should become more dynamic. Ultimately, this research suggests

that ‘future-proofing’ the BBNJ treaty requires not just an exploration of novel tools and approaches, but a reconsideration of law itself.

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