

# Non-use Measures for Deep-Seabed Mining in the Area

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## 1 Introduction

Deep-seabed mining (DSM) has become a contested topic. While a handful of companies and States are keen to start extracting minerals, such as copper, nickel, and cobalt, from the bottom of the deep ocean, the voices calling instead for a moratorium on seabed mining are becoming louder. As of 1 November 2024, some 32 States have called for a moratorium or pause on DSM<sup>1</sup> and they are joined by parliamentarians,<sup>2</sup> scientists,<sup>3</sup> Indigenous elders,<sup>4</sup> financial institutions and major companies,<sup>5</sup> fisheries organisations,<sup>6</sup> and civil society organisations.<sup>7</sup> Additionally, some international bodies have also called for a DSM moratorium, including the UN Human Rights Commissioner,<sup>8</sup> the

1 For a list actors calling for a moratorium on DSM, see: Deep Sea Conservation Coalition, “Momentum for a Moratorium”, available at <<https://deep-sea-conservation.org/solutions/no-deep-sea-mining/momentum-for-a-moratorium/>> accessed 24 July 2024.

2 *ibid.*

3 See European Academies Science Advisory Council Deep-Sea Mining, “Assessing Evidence on Future Needs and Environmental Impacts” (June 2023), available at <[https://easac.eu/fileadmin/user\\_upload/EASAC\\_Deep\\_Sea\\_Mining\\_Web\\_publication\\_.pdf](https://easac.eu/fileadmin/user_upload/EASAC_Deep_Sea_Mining_Web_publication_.pdf)> accessed 24 July 2024; Deep-Sea Mining Science Statement, “Marine Expert Statement Calling for a Pause to Deep-Sea Mining” (*Deep-Sea Mining Science Statement*), available at <<https://seabedmining.sciencestatement.org/>> accessed 24 July 2024.

4 Blue Climate Initiative, “Indigenous Voices for a Ban on Deep Sea Mining”, available at <<https://www.blueclimateinitiative.org/say-no-to-deep-sea-mining>> accessed 24 July 2024.

5 Deep Sea Conservation Coalition, “Voices Calling for a Moratorium: Companies and Finance”, available at <<https://deep-sea-conservation.org/solutions/no-deep-sea-mining/momentum-for-a-moratorium/companies-and-finance/>> accessed 24 July 2024.

6 Deep Sea Conservation Coalition, “Voices Calling for a Moratorium: Ocean Users”, available at <<https://deep-sea-conservation.org/solutions/no-deep-sea-mining/momentum-for-a-moratorium/ocean-users/>> accessed 24 July 2024.

7 Deep Sea Conservation Coalition, “Voices Calling for a Moratorium: NGOs and Community Groups”, available at <<https://deep-sea-conservation.org/solutions/no-deep-sea-mining/momentum-for-a-moratorium/ngos-and-community-groups/>> accessed 24 July 2024.

8 See eg V. Turk, “Tweet content” (*Twitter*, 10 July 2023), available at <[https://x.com/volker\\_turk/status/1678411484076953603](https://x.com/volker_turk/status/1678411484076953603)> accessed 28 July 2024; United Nations Office of the

Conference of the Parties to the Convention on Biological Diversity (CBD)<sup>9</sup> and the Convention on Migratory Species (CMS),<sup>10</sup> as well as the International Union for Conservation of Nature (IUCN) Congress.<sup>11</sup> The terminology used by those opposed to DSM is inconsistent and ranges from a ‘precautionary pause’ to a moratorium or ban. The nuances among these non-use measures are explored in section 3.1 below.

Those opposed to DSM are chiefly concerned about the potentially serious impacts seabed mining could have on the marine environment. While other concerns, such as effective governance, including monitoring and enforcement, do play a role,<sup>12</sup> the environmental risks appear to be the most commonly stated concern. A growing body of scientific literature highlights the risks of deep-seabed mining for biodiversity,<sup>13</sup> ecosystem services,<sup>14</sup> fisheries,<sup>15</sup> and marine ecosystems in general.<sup>16</sup>

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High Commissioner for Human Rights, “Key Human Rights Considerations on the Impact of Seabed Mining” (*United Nations Human Rights* 2023), available at <<https://www.ohchr.org/sites/default/files/documents/issues/climatechange/information-materials/ohchr-seabed-mining-10-july.pdf>> accessed 4 April 2024.

- 9 CBD COP, “Decision 15/24 – Conservation and Sustainable Use of Marine and Coastal Biodiversity” (19 December 2022) CBD/COP/DEC/15/24 para 16.
- 10 CMS COP, “Deep-Seabed Mineral Exploitation Activities and Migratory Species” (February 2024) UNEP/CMS/Resolution 146.
- 11 IUCN, “Resolution 122 – Protection of Deep-Ocean Ecosystems and Biodiversity through a Moratorium on Seabed Mining” (22 September 2021) WCC-2020-Res-122-EN.
- 12 P. A. Singh, A. Jaeckel and J. A. Ardron, “A pause or moratorium for deep-seabed mining in the Area? The legal basis, potential pathways, and possible policy implications” (2025) 56 *Ocean Development & International Law* 18.
- 13 H. J. Niner et al, “Deep-Sea Mining With No Net Loss of Biodiversity – An Impossible Aim” (2018) 5 *Frontiers in Marine Science* 53.
- 14 L. Brander and V. G. Goni, “Report on the Value of Ecosystem Services and Natural Capital of the Area” (2023) *ISA Consultant Report*, available at <<https://www.isa.org.jm/wp-content/uploads/2023/06/Report-on-Valuation-of-ecosystem-services.pdf>> accessed 12 June 2023; J. T. Le, L. A. Levin and R. T. Carson, “Incorporating Ecosystem Services into Environmental Management of Deep-Seabed Mining” (2017) 137 *Deep-Sea Research Part II: Topical Studies in Oceanography* 486; B. N. Orcutt et al, “Impacts of Deep-Sea Mining on Microbial Ecosystem Services” 2018 *BioRxiv* 463992.
- 15 J. C. Drazen et al, “Midwater Ecosystems Must Be Considered When Evaluating Environmental Risks of Deep-Sea Mining” (2020) 117 *Proceedings of the National Academy of Sciences of the United States of America* 17455; B. Christiansen, A. Denda and S. Christiansen, “Potential Effects of Deep Seabed Mining on Pelagic and Benthopelagic Biota” (2020) 114 *Marine Policy* 103442.
- 16 L. A. Levin, D. J. Amon and H. Lily, “Challenges to the Sustainability of Deep-Seabed Mining” (2020) 3 *Nature Sustainability* 784; T. W. Washburn et al, “Ecological Risk Assessment for Deep-Sea Mining” (2019) 176 *Ocean and Coastal Management* 24.

Any future seabed mining on the seafloor beyond national jurisdiction, designated as the 'Area' by the United Nations Convention on the Law of the Sea (UNCLOS),<sup>17</sup> will be subject to the governance regime established by Part XI of UNCLOS, under which the International Seabed Authority (ISA) has exclusive jurisdiction over mineral exploration and exploitation in the Area. While exploration activities have been ongoing for some years now, the rules, regulations and procedures that would apply to future exploitation activities are currently being negotiated at the ISA. As discussed in a parallel publication, there is sufficient legal basis for the ISA to establish a moratorium on DSM, and several pathways are available for it to enact such a non-use measure, such as through an ISA Assembly or Council decision or pausing the adoption of the exploitation regulations until the impacts of DSM are better understood.<sup>18</sup>

This chapter discusses a potential non-use measure for deep-seabed mining in the Area in the context of other non-use measures presented in this book. In so doing, the chapter starts by offering an overview of the state of DSM and the ISA as the regulatory authority (section 2). The chapter then analyses the types of non-use measures available for DSM, their aims, timing, and scope (section 3) before analysing how and by whom an ISA non-use measure could be enforced (section 4). This is followed by a discussion on the potential policy implications of a DSM non-use measure in section 5 and concluding thoughts (section 6). This chapter touches upon several questions put forward by the editors, in particular by identifying the aims and the characteristics of a potential non-use measure, discussing the implications of such measures for third States, as well as analysing some challenges to successful implementation and enforcement.

This chapter discusses non-use measures for DSM in general, not limiting the analysis to particular mineral deposits. However, the chapter is limited in scope to DSM in the Area, thus excluding mining under national jurisdiction from the analysis. We also refrain from discussing regional closures for DSM, such as the ISA's Areas of Particular Environmental Interest, as these are covered by Menini, Blanchard and Rovere in chapter 11 of this book. We note, though, that the extent and nature of regional closures, and other restrictive measures, could affect the political appetite for or against a more broadly applied non-use measure.

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17 United Nations Convention on the Law of the Sea (UNCLOS) (adopted 10 December 1982, entered into force 16 November 1994) 1833 UNTS 397, art 1(1)(1).

18 Singh et al (n 12).

## 2 Deep-Seabed Mining and the ISA

The Area and its mineral resources are the ‘common heritage of [hu]mankind’.<sup>19</sup> This legal status was agreed in the 1970s when States were faced with the question as to who would be allowed to mine minerals that lie beyond the jurisdiction of any State. In an act of multilateralism, States decided to manage the Area and its minerals collectively, through the ISA, which in turn was established through UNCLOS. All parties to UNCLOS are ipso facto members of the ISA. No mineral exploration or exploitation in the Area is allowed without a contract from the ISA.<sup>20</sup> Any mining-related activities in the Area must be carried out for the benefit of humankind as a whole, including present and future generations.<sup>21</sup>

The ISA’s overarching mandate is to act on behalf of humankind and to administer the mineral resources of the Area.<sup>22</sup> To do so, the ISA has broad powers to regulate DSM, ensure compliance, and promote marine scientific research.<sup>23</sup> In addition, the ISA is entrusted with numerous responsibilities, including to ensure the effective protection of the marine environment from harmful effects that may arise from DSM and develop a mechanism to equitably share any benefits received – financial and non-financial.<sup>24</sup>

Using its regulatory powers, the ISA has adopted rules, regulations, and procedures for prospecting and exploration of three types of mineral deposits, namely polymetallic nodules,<sup>25</sup> polymetallic sulphides,<sup>26</sup> and ferromanganese crusts.<sup>27</sup> Since 2014, the ISA has been working to develop mineral exploitation regulations for the commercial-scale mining phase. This is an exceptionally complex task, complicated further by the fact that the legal framework set out in UNCLOS was negotiated between the 1970s and 90s, when there was genuine

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19 UNCLOS, art 136.

20 *ibid* art 137(2).

21 *ibid* art 140.

22 *ibid* arts 137, 157(1).

23 See eg *ibid* arts 139, 143, 153, 157(2). For a detailed discussion of the ISA’s mandate, see A. Jaeckel, *The International Seabed Authority and the Precautionary Principle* (Brill Nijhoff 2017) chs 3.3, 4, 5.

24 See eg UNCLOS, arts 140, 145; D. Wilde et al, “Equitable Sharing of Deep-Sea Mining Benefits: More Questions than Answers” (2023) 151 *Marine Policy* 105572.

25 Regulations on Prospecting and Exploration for Polymetallic Nodules in the Area (22 July 2013) ISBA/19/C/17.

26 Regulations on Prospecting and Exploration for Polymetallic Sulphides in the Area (15 November 2010) ISBA/16/A/12/REV.1.

27 Regulations on Prospecting and Exploration for Cobalt-rich Ferromanganese Crusts in the Area (27 July 2012) ISBA/18/A/11.

ignorance as to the extent of the risks that DSM presents to the fragile and biodiverse ecosystems in the deep ocean. Moreover, the environmental risks were overshadowed by excitement that DSM could be imminent and immensely profitable,<sup>28</sup> assumptions which turned out to be incorrect to date. Nonetheless, States included a strong environmental mandate for the ISA in UNCLOS<sup>29</sup> and the subsequent 1994 Agreement relating to the Implementation of Part XI of UNCLOS.<sup>30</sup> In the intervening decades, science has demonstrated the deep ocean to be highly biodiverse and susceptible to the impacts of DSM<sup>31</sup> (though much remains to be studied).<sup>32</sup> States will need to agree on exploitation regulations that meet all obligations and criteria enshrined in UNCLOS, while tackling challenges that have come to light as a result of research and experiences over the past forty years.

Although Part XI of UNCLOS in its original form was seen as too restrictive by industrialised States interested in DSM, and was consequently renegotiated in 1994, neither the 1994 Agreement nor UNCLOS provide a 'right to mine'.<sup>33</sup> Rather, the Convention prohibits any exercise of sovereignty or sovereign rights in the Area and clearly subjects any future mining to the approval of States, through the multilateral processes of the ISA.<sup>34</sup> Thus, while UNCLOS and the 1994 Agreement were negotiated with mining in mind, DSM is

28 R. A. Frank, "Environmental Aspects of Deepsea Mining" (1975) 15 *Virginia Journal of International Law* 815.

29 For a detailed discussion on the ISA's environmental mandate, see Jaeckel (n 23) ch 4.

30 Agreement relating to the Implementation of Part XI of the United Nations Convention on the Law of the Sea of 10 December 1982 (1994 Agreement) (adopted 16 November 1994, entered into force 28 July 1996) 1836 UNTS 3 Annex section 1(5). Interestingly, environmental concerns were not seen as an obstacle for states ratifying UNCLOS. In Anderson's words, "there was general agreement that environmental considerations were of utmost importance and that the Convention already imposed high standards which would be further elaborated by the Authority. This question was not seen to be one which represented an obstacle in the way of ensuring universal participation". D. Anderson, *Modern Law of the Sea* (Martinus Nijhoff Publishers 2008) 310.

31 R. Williams et al, "Noise from Deep-Sea Mining May Span Vast Ocean Areas" (2022) 377 *Science* 157; T. W. Washburn et al, "Patterns of Macrofaunal Biodiversity Across the Clarion-Clipperton Zone: An Area Targeted for Seabed Mining" (2021) 8 *Frontiers in Marine Science* 1.

32 D. J. Amon et al, "Assessment of Scientific Gaps Related to the Effective Environmental Management of Deep-Seabed Mining" (2022) 138 *Marine Policy* 105006.

33 Z. Douglas et al, "Legal Opinion in the Matter of a Proposed Moratorium or Precautionary Pause on Deep-Sea Mining beyond National Jurisdiction" (2023) *PEW Charitable Trusts*, available at <<https://www.pewtrusts.org/-/media/assets/2023/03/deep-sea-mining-moratorium.pdf>> accessed 24 July 2024.

34 UNCLOS, art 137.

nonetheless subject to limitations, including the ISA's environmental obligations, benefit sharing, as well as compensation to developing and land-based mining States.<sup>35</sup>

With the environmental impacts of DSM now understood to be potentially significant, the ISA is facing the difficult decision of whether, and if so under what conditions, to permit DSM in the Area. This discussion was further complicated when, in mid-2021, Nauru triggered the so-called two-year rule under the 1994 Implementing Agreement, which required the ISA to finalise the exploitation regulations within two years.<sup>36</sup> This obscure rule was designed to circumvent deadlock in case draft regulations were effectively finished but their adoption was being blocked.<sup>37</sup> Given there remained numerous undecided matters to be addressed before the draft exploitation regulations could be adopted,<sup>38</sup> and States were negotiating with diligence, Nauru was criticised for its action. Unsurprisingly, the ISA was unable to finalise the regulations in 2023, which created the possibility that an application for exploitation may be submitted, considered, and even provisionally approved in the absence of applicable rules, regulations and procedures. This perceived regulatory loophole has led to a growing number of States and actors to call for a pause or moratorium on DSM in the Area, as discussed in the following section.

### 3 Deep-Seabed Mining and Non-use Measures

As noted by a group of lawyers in 2023, “the language of ‘moratorium’ or ‘precautionary pause’ obscures more than it reveals.”<sup>39</sup> This section offers a discussion about the terminology, parameters, and aims of a potential non-use measure.

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35 See UNCLOS, arts 140, 145, and 151(1).

36 1994 Implementing Agreement, Annex section 1(15).

37 P. A. Singh, “What If’ Revisited: Open Legal Questions in Light of the Two-Year Rule at the International Seabed Authority” (2023) RIFS Discussion Paper 7, available at <[https://publications.rifs-potsdam.de/rest/items/item\\_6002727\\_2/component/file\\_6002728/content](https://publications.rifs-potsdam.de/rest/items/item_6002727_2/component/file_6002728/content)> accessed 14 September 2024.

38 C. Pickens et al, “From What-If to What-Now: Status of the Deep-Sea Mining Regulations and Underlying Drivers for Outstanding Issues” (2024) *Marine Policy* 105967.

39 Douglas et al (n 33) 13.

### 3.1 *Types of Non-use Measures*

Those opposed to DSM employ differing terminologies, which requires unpacking. There are at least five types of non-use measures the ISA could take, in addition to measures that others might take, such as consumer boycotts of seabed minerals<sup>40</sup> or a self-imposed decision by an individual State to refrain from conducting or sponsoring DSM.<sup>41</sup>

**Seasonal or Regional Closure of DSM:** A very limited non-use measure, as currently used in fisheries management, would be seasonal restrictions on DSM, for example during breeding times of specific species. Similarly, the ISA has already restricted mineral exploration in Areas of Particular Environmental Interest, as a spatial management measure that is discussed in detail in chapter 11 of this book. These measures are not examined in this chapter, as we focus on the possibility of a widespread, general non-use measure for DSM in the Area.

**De Facto Moratorium:** A de facto moratorium would be an understanding amongst ISA Member States that mineral exploitation can only be approved once certain prerequisites are met, such as a specific level of scientific baseline knowledge to allow for robust environmental impact assessments. A de facto moratorium does not require a formal ISA decision, hence some might argue that it reflects the current status quo. Indeed, the ISA Council has expressed a firm view that no exploitation should occur without exploitation regulations in place, thereby sending a political message to anyone potentially seeking to apply for an exploitation contract while the regulations remain absent under the abovementioned two-year rule.<sup>42</sup>

**Precautionary Pause:** Several States, including Brazil, Chile, and Germany, have formally called for a precautionary pause.<sup>43</sup> They contend that more time is needed for marine scientific research to better understand the potential risks of DSM, before any mining can be considered. A precautionary pause can be either a political understanding or encapsulated in a formal ISA decision. Unlike a de jure moratorium

40 A. Jaeckel et al, "Deep Seabed Mining Lacks Social Legitimacy" (2023) 2 *npj Ocean Sustainability* 1.

41 Singh et al (n 12).

42 ISA, "Decision of the Council" (21 July 2023) ISBA/28/C/24.

43 Deep Sea Conservation Coalition, "Voices Calling for a Moratorium: Governments and parliamentarians", available at <<https://savethehighseas.org/voices-calling-for-a-moratorium-governments-and-parliamentarians/>> accessed 24 July 2024.

that would be dependent on formal conditions or reviews to be lifted, a precautionary pause may only require political agreement to come to an end. Importantly, a precautionary pause does not predict what might happen once the outstanding issues are resolved. It leaves the door open for the ISA to allow mining in the future, once the knowledge gaps, and any other outstanding issues, have been addressed to the satisfaction of Member States. Equally, once more scientific knowledge is available, States may feel compelled to more strongly restrict or prohibit DSM based on the principle of prevention.

**De Jure Moratorium:** A de jure moratorium involves a formal decision by the ISA (Council or Assembly) stating specific conditions and/or a timeframe for the moratorium to be reviewed and potentially lifted. Any such lifting would follow a pre-agreed procedure, as is the case for the 50-year moratorium on mining in Antarctica.<sup>44</sup>

**Ban:** As the strictest non-use measure, an indefinite or permanent ban can be instated through a formal ISA decision, without necessarily having any pre-conditions specified for its lifting. However, like any other ISA decision, it could be overturned in the future by a two-thirds majority.<sup>45</sup>

This chapter analyses the aim, scope, implications, and enforcement of a precautionary pause, moratorium (*de facto* and *de jure*), and a formal ban on DSM. Unless otherwise demarcated, we use the term ‘moratorium’ here as a catch-all to include a de facto and de jure moratorium as well as a precautionary pause, given that all three measures would result in a temporary delay of DSM.

### 3.2 *Non-use Measures for Seabed Mining*

As examined by Guggisberg in chapter 2, the non-use measures discussed in this book can be described through a certain typology. Mining minerals on the seafloor is an extractive use, which removes matter from the environment and in that process can cause significant environmental harm.<sup>46</sup>

A non-use measure for DSM can be distinguished from other non-use measures on a number of grounds. Mineral mining is by definition unsustainable as minerals are a non-renewable and exhaustible resource, which, once extracted, do not replenish (except in geological time scales). As such, a non-use measure for mineral mining addresses a fundamentally different concern to that of many other non-use measures: once mining has occurred, the harm

44 See the discussion conducted by Kempf in chapter 14 of this volume.

45 1994 Agreement, Annex section 3.

46 European Academies Science Advisory Council (n 3).

can usually not be readily reversed, and the resource cannot be replenished. For example, seabed nodule mining would likely cause irreversible loss of biodiversity<sup>47</sup> and habitat destruction on a scale ranging from decades to centuries (for some species)<sup>48</sup> to millions of years (for hard substrate nodule habitat to return). In contrast, fisheries can, to some extent, recover from overfishing, for example, and marine ecosystems may recover from anthropogenic ocean noise once that noise pollution ceases.

The governance dimension of a potential non-use measure for DSM in the Area also warrants mention. Unlike many non-use measures in international law, a DSM moratorium or ban would not be solely implemented and managed by individual States but instead also by the ISA, which is an independent inter-governmental organisation.

### 3.3 *Aims of a Ban or Moratorium for DSM*

A moratorium or ban on DSM would achieve several aims, some of which overlap with the reasons that have been put forward to justify a DSM moratorium. We discuss these reasons in a parallel publication<sup>49</sup> while this section focuses on the aims that a moratorium or ban could achieve.

The aim of a permanent ban on DSM would be three-fold. First, it would preserve the Area, its minerals, and marine ecosystems and, thus, meet environmental objectives. Second, banning DSM would help enable other uses of the Area, such as bioprospecting for marine genetic resources, which can occur on or around seabed minerals, including hydrothermal vents. Third, refraining from mining the Area and thereby preserving its ecosystems would also preserve cultural connections to the Area and deep ocean as well as the rights of Indigenous Peoples and local communities to their intangible cultural heritage.<sup>50</sup>

47 Niner et al (n 13); C. L. Van Dover et al, "Biodiversity Loss from Deep-Sea Mining" (2017) 10 *Nature Geoscience* 464.

48 M. Haeckel et al, "Environmental Impacts of Deep Seabed Mining" in T. Heidar (ed), *New Knowledge and Changing Circumstances in the Law of the Sea* (Brill Nijhoff 2020).

49 Singh et al (n 12).

50 E. G. Jiménez, "An Old Dilemma in Deep Seabed Mining: Free, Prior, and Informed Consent of Indigenous Peoples in Areas Beyond National Jurisdiction" (2024) 118 *American Journal of International Law Unbound* 83; S. Ranganathan, "The Participatory Scope of the Common Heritage Principle" (2024) 118 *American Journal of International Law Unbound* 88; E. Morgera, "Participation of Indigenous Peoples in Decision Making Over Deep-Seabed Mining" (2024) 118 *American Journal of International Law Unbound* 93; L. Lixinski, "Integrating Culture, Heritage, and Identity in Deep Seabed Mining Regulation" (2024) 118 *American Journal of International Law Unbound* 78.

A DSM moratorium or pause, not being permanent in nature, may temporarily meet the aforementioned three aims but focus more specifically on the following aims four to seven. Fourth, it would allow time to fill the numerous remaining scientific knowledge gaps<sup>51</sup> and thus place decision-makers in a better position to make a more informed choice about DSM. This would be fully consistent with the precautionary approach<sup>52</sup> and indeed that was one of the factors behind the mining moratorium in Antarctica.<sup>53</sup>

Fifth, a delay in the onset of DSM would provide time to develop the necessary institutional and governance structures as well as capabilities at the ISA to not only regulate DSM but to monitor compliance, take enforcement action and develop mechanisms for the sharing of benefits, as required by UNCLOS.<sup>54</sup> As documented in the literature,<sup>55</sup> including a Technical Study commissioned by the ISA itself,<sup>56</sup> the ISA is currently lacking the needed governance structures and expertise to fully discharge its mandate under UNCLOS. Indeed, numerous outstanding issues remain to be negotiated before the ISA would be in a position to properly entertain an application for mineral exploitation.<sup>57</sup>

Sixth, postponing DSM would enable future generations to decide whether and how to use the minerals in the Area. This would be in line with the Area and its minerals being the common heritage of humankind, a concept with a strong element of intergenerational equity.<sup>58</sup> Of course, how long into the future a delay would need to last to enjoy such intergenerational benefits is open to debate, but it is reasonable to assume that, in general, a ban would benefit more distant generations, whereas a moratorium/pause would allow

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51 Amon et al (n 32).

52 R. Makgill, A. Jaeckel and K. MacMaster, "Implementing the Precautionary Approach for Seabed Mining: A Review of State Practice" in V. Tassin Campanella (ed), *Routledge Handbook of Seabed Mining and the Law of the Sea* (Routledge 2023).

53 See eg 1991 Protocol on Environmental Protection to the Antarctic Treaty (Environmental Protocol) (adopted 4 October 1991, entered into force 14 January 1998) 2941 UNTS 5778, art 3(2).

54 See eg UNCLOS, arts 139, 140, 153(4), 153(5), 162(2)(a), 165(2)(h).

55 R. Collins and D. French, "A Guardian of Universal Interest or Increasingly Out of its Depth?" (2019) 1 *Intl Organizations L Rev* 31; D. Bosco, A. Jaeckel and P. Singh, *Ready to Regulate? The International Seabed Authority on the Brink of Commercial Mining* (Ostrom Workshop 2023), available at <<https://dlc.dlib.indiana.edu/dlc/handle/10535/10897>> accessed 24 April 2023.

56 A. L. Clark, J. Cook Clark and S. Pintz, "Towards the Development of a Regulatory Framework for Polymetallic Nodule Exploitation in the Area" (2013) *ISA Technical Study No 11*, available at <<https://www.isa.org.jm/wp-content/uploads/2022/06/tstudy11.pdf>> accessed 14 September 2024.

57 Pickens et al (n 38).

58 Ranganathan (n 50).

for the more thoughtful potential extraction of minerals benefiting some of the younger generations already alive. The concepts of sustainable development and common heritage of humankind are deliberately vague and particularly difficult to apply to non-renewable resources, such as minerals.

Lastly, a moratorium can assist States in meeting their obligations under UNCLOS, including the obligation to protect and preserve the marine environment and to equitably share any benefits derived from the Area.<sup>59</sup> Indeed, in 2023, a group of lawyers argued that “a moratorium or precautionary pause is not only consistent with UNCLOS, but is actually required by it”.<sup>60</sup> They reasoned that:

it is a core obligation of States Parties to protect and preserve the marine environment; it would be a violation of that obligation to enable the commencement of exploitation of the Area at a time when scientific understanding of the deep sea, the existing regulatory arrangements, and the ISA’s institutional capacity are insufficient to ensure that outcome.<sup>61</sup>

In addition to helping States meet their obligations under UNCLOS, a DSM moratorium would also address the fact that at present, seabed mining in the Area would conflict with international human rights law and international environmental law.<sup>62</sup> As highlighted by UN officials<sup>63</sup> and detailed in the literature,<sup>64</sup> DSM could affect the right to a clean, healthy and sustainable environment, the right to food, as well as cultural rights, amongst others. In addition, DSM would undermine existing environmental obligations, such as relating to biodiversity

59 UNCLOS, arts 140, 145.

60 Douglas et al (n 33) 13.

61 *ibid.*

62 J. Arato, A. Jaeckel and L. Lixinski, “On the Cultural Stakes of Deep Seabed Mining” (2024) 118 *American Journal of International Law Unbound* 67.

63 United Nations Office of the High Commissioner for Human Rights (n 8); Working Group on the issue of human rights and transnational corporations and other business enterprises, Special Rapporteur on the implications for human rights of the environmentally sound management and disposal of hazardous substances and wastes and Special Rapporteur on the issue of human rights obligations relating to the enjoyment of a safe, clean, healthy and sustainable environment, “Open Letter to the International Seabed Authority” (United Nations Human Rights Special Procedures 15 March 2024), available at <<https://www.ohchr.org/sites/default/files/documents/issues/business/activities/2024-03-15-open-letter-to-isa.pdf>> accessed 4 April 2024.

64 G. J. Hamley, “The Implications of Seabed Mining in the Area for the Human Right to Health” (2022) 31 *Review of European, Comparative & International Environmental Law* 389; N. J. Bennett, E. Morgera and D. Boyd, “The Human Right to a Clean, Healthy and Sustainable Ocean” (2024) 3 *npj Ocean Sustainability* 1; Morgera (n 50).

protection, and undermine a host of political commitments to restore ocean health.<sup>65</sup>

In sum, while a permanent ban on DSM would serve three long-term aims, a temporary delay in DSM would meet four shorter-term aims while also temporarily supporting aims one to three, as summarised in Table 10.1.

TABLE 10.1 Potential aims of a moratorium or ban on DSM in the Area

Aims of a ban	1	Ensure environmental conservation
	2	Enable other uses, such as bioprospecting
	3	Protect cultural heritage
Aims of a pause or moratorium	4	Fill (scientific) knowledge gaps
	5	Develop governance structures and enforcement capacity
	6	Enable more responsible and thoughtful extraction of the minerals in the foreseeable future
	7	Meet obligations under UNCLOS and international law more broadly

TABLE PREPARED BY THE AUTHORS

### 3.4 *Timing, as well as Substantive and Geographical Scope of a DSM Moratorium or Ban*

While a ban on DSM would be permanent (until reversed), the duration of a moratorium or pause remains unclear, though some States have called for 15 years, for example.<sup>66</sup> The expiry of the latter categories of non-use measures would likely be contingent on the resolution of certain issues, such as the availability of scientific information to establish robust environmental baselines; the development of next generation mining technology that reduces

65 For detailed discussion, see P. Singh and A. Jaeckel, "Undermining by Mining? Deep Seabed Mining in Light of International Marine Environmental Law" (2024) 118 *American Journal of International Law Unbound* 72.

66 Reuters, "Not worth the risk: Palau, Fiji call for deep-sea mining moratorium" (*Reuters*, 28 June 2022), available at <<https://www.reuters.com/business/environment/not-worth-risk-palau-fiji-call-deep-sea-mining-moratorium-2022-06-27/>> accessed 24 July 2024.

the footprint, sediment light and noise pollution of DSM; and/or the establishment of agreed mechanisms for compliance and enforcement of the ISA's rules, regulations, and procedures.

The scope of a non-use measure may include all types of mineral deposits, including polymetallic nodules, polymetallic sulphides, and ferromanganese crusts, or be limited to just some. The technology for mining each type of deposit varies greatly, with differing levels of maturity, as does the environmental footprint and indeed the level of scientific understanding about the impacts on the associated ecosystems (on this, see the discussion by Gollner, Esquete and van der Grient in chapter 9). Therefore, it is quite logical that separate non-use measures could be applied to each resource type, each with their own (similar) criteria for being lifted. Politically, however, a one-size-fits-all approach might be more palatable for those generally opposed to DSM in its current form.

Whether a non-use measure would only apply to the commercial-scale exploitation of minerals or also comprise the current exploration phase is also unclear, though the former may be more likely. Exploration for seabed minerals has occurred for decades and the environmental risks are better known and more containable than for exploitation. That said, the exploration phase can include test mining, the environmental harms of which are not yet well characterised. Notably, the abovementioned IUCN Congress resolution on DSM calling for a moratorium seeks to cover the renewal of existing exploration contracts and the issuance of new exploration contracts, in addition to future exploitation contracts.<sup>67</sup>

The geographical extent of a non-use measure could be either universal, meaning applying to the entire Area, or regional (eg an ocean basin) where more baseline data are required, or just focused on particular types of sites viewed as particularly vulnerable, such as hydrothermal vents.<sup>68</sup> It is also conceivable that a non-use measure could be applied only adjacent to exclusive economic zones, as a form of buffer zone, to lessen the risk of trans-boundary harms to areas under national jurisdiction.

Ultimately, the rationale behind the non-use measure would dictate its scope. For example, universal deficits in knowledge may support a broad

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67 IUCN (n 11).

68 See the discussion in chapter 11 of this volume; E. Menini et al, "Towards a Global Strategy for the Conservation of Deep-Sea Active Hydrothermal Vents" (2023) 2 *npj Ocean Sustainability* 1; C. L. Van Dover et al, "Scientific Rationale and International Obligations for Protection of Active Hydrothermal Vent Ecosystems from Deep-Sea Mining" (2018) 90 *Marine Policy* 20.

moratorium, whereas particular gaps in knowledge about specific places can be addressed through a more targeted non-use measure. Where a moratorium ends and a spatial closure begins is admittedly somewhat vague, but a moratorium can be seen as spatially larger, with broader, more enduring regulatory provisions and underlying rationale, than a closure. In fisheries management, for example, spatial closures are lifted regularly and often, whereas a moratorium (eg the Atlantic cod moratorium in eastern Canada<sup>69</sup>) can last for decades.

Regardless of the scope of a potential moratorium or ban, a key challenge will be to enforce the non-use measure, which is the focus of the next section.

#### 4 Enforcing a Non-use Measure for DSM

While establishing a non-use measure for DSM will likely be a lengthy political process, thought must also be given to how and by whom such a non-use measure can be enforced. Before discussing enforcement options, this section provides a brief overview of the types of breaches that may occur, and the range of actors potentially involved.

##### 4.1 *Types of Breaches and Actors Involved in Enforcing Non-use Measures*

Breaching a moratorium or ban for DSM can take different forms, depending on the scope of the non-use measure. If the non-use measure includes a wholesale prohibition of mineral exploitation in the Area, then any mining in the Area would constitute a breach. If, however, the non-use measure is limited to a seasonal closure or particular spatial area, then mining during closure periods or within prohibited areas can be a breach, despite the fact that the mining entity might hold an exploitation contract with the ISA.<sup>70</sup>

DSM in the Area is regulated and controlled by the ISA but can be carried out by a Member State, private company, or the Enterprise, which is set to become

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69 J. A. Hutchings and R. A. Myers. "What can be learned from the collapse of a renewable resource? Atlantic cod, *Gadus morhua*, of Newfoundland and Labrador" (1994) 51(9) *Canadian Journal of Fisheries and Aquatic Sciences* 2126.

70 However, as seen from previous practice, the ISA has systematically placed spatial closures in areas that were not overlapping with existing exploration contracts in order to appease commercial interests. See S. Christiansen et al, "Towards an Ecosystem Approach to Management in Areas Beyond National Jurisdiction: REMPs for Deep Seabed Mining and the Proposed BBNJ Instrument" (2022) 9 *Frontiers in Marine Science* 720146.

the commercial arm of the ISA.<sup>71</sup> Any State entity or private actor must be sponsored by a State who can be held responsible under international law for wrongdoing of the contractor, including breaching a non-use measure.<sup>72</sup> The responsibility of the sponsoring State is of a due diligence nature and involves taking appropriate domestic legal and administrative measures to ensure that the sponsored contractor complies with the ISA contract and the obligations under UNCLOS and related instruments.<sup>73</sup> In addition, the sponsoring State has direct obligations, such as applying a precautionary approach and providing recourse for compensation.<sup>74</sup> Given this array of actors, a breach of a non-use measure could be committed by at least five actors: an ISA contractor, a private third party, an ISA Member State who may or may not be a sponsoring State, a non-Member State, or the Enterprise. Which of those actors commits the breach dictates who can take enforcement action. Before analysing this point in detail below, this section first discusses the legal ramifications of a potential ISA non-use measure.

When considering who would be bound by an ISA moratorium or ban, it is important to note that UNCLOS outlaws any exercise of sovereignty or sovereign rights in the Area<sup>75</sup> and determines that any activities in the Area can only occur with the approval of the ISA.<sup>76</sup> Indeed, Article 137(1) goes further and establishes a duty to not recognise any claim or exercise of sovereignty or sovereign rights over the Area or its minerals.<sup>77</sup> If any minerals in the Area were mined without approval from the ISA, “no such claim, acquisition or exercise of such rights shall be recognized”.<sup>78</sup> This, in effect, prohibits States from trading minerals obtained in contravention of an ISA non-use measure,

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71 UNCLOS, arts 158(2), 170; 1994 Agreement, Annex section 2. For details on the Enterprise, see M. Remaoun, “The International Seabed Authority and the Enterprise: How Africa Is Reinvigorating the Principle of the Common Heritage of Mankind” (2021) 1 *Journal of Ocean Governance in Africa* 1; K. Willaert, “The Enterprise: State of Affairs, Challenges and Way Forward” (2021) 131 *Marine Policy* 104590.

72 UNCLOS, art 153(2).

73 Seabed Disputes Chamber of the International Tribunal for the Law of the Sea, *Responsibilities and Obligations of States Sponsoring Persons and Entities with Respect to Activities in the Area*, Advisory Opinion, ITLOS Case 17, 2011.

74 *ibid* 125–135 and 139–140.

75 UNCLOS, art 137(1).

76 *ibid* art 137(2).

77 *ibid* art 137(1).

78 *ibid* art 137(3).

which in turn would render any breach of an ISA non-use measure economically unattractive.<sup>79</sup>

Article 137 establishes the core elements of the common heritage of mankind principle, which applies to the Area and its mineral resources.<sup>80</sup> Importantly, the common heritage principle, in its application to the Area, forms part of customary international law,<sup>81</sup> meaning it is binding on all States, including those not party to UNCLOS.<sup>82</sup>

Indeed, Judge Wolfrum has likened Article 137 to a *jus cogens* rule,<sup>83</sup> not least because of the aforementioned duty to not recognise any claim to, or appropriation of, the resources in contravention of Article 137. Moreover, Article 311(6) of UNCLOS prohibits any amendments to, or derogation from, the common heritage principle, further demonstrating its fundamental nature.

In practice, this means that if the ISA were to declare a ban or moratorium on DSM, that would effectively prevent all States, arguably including ISA Non-Member States, from mining in the Area because customary international law (and UNCLOS) requires States to only conduct activities in the Area with the approval of the ISA. If no such approval is granted because of a non-use measure, then any State who would mine in breach of that measure would violate both customary international law and treaty law. Thus, while an ISA non-use measure would formally only bind ISA Member States, in practice it should affect all States, as no State would be able to mine the Area without approval of the ISA.

Given the universal acceptance of the ISA as the competent body to decide who is allowed to mine minerals in the Area, any State trying to undertake DSM in the Area without ISA approval would not only violate international law but also risk serious political resistance. Indeed, in the 1980s, when UNCLOS had been adopted but was not yet in force, several States, including France, Germany, Italy, Japan, the UK, and the US started establishing a so-called Reciprocating States Regime (RSR) as an alternative to the ISA regime. This system was to be divorced from UNCLOS and provide for unilateral legislation

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79 S. Voeneky and A. Hoefelmeier, "Article 137 – Legal Status of the Area and its Resources" in A. Proelss (ed), *United Nations Convention on the Law of the Sea: A Commentary* (Nomos Verlagsgesellschaft 2017) 962 para 11.

80 UNCLOS, art 136.

81 R. Wolfrum, "Common Heritage of Mankind" in *Max Planck Encyclopedia of Public International Law* (OUP 2012) 452–458.

82 As confirmed in Vienna Convention on the Law of Treaties (adopted 23 May 1969, entered into force 27 January 1980) 1155 UNTS 331, art 38, a treaty rule can become binding on third States as a customary international law.

83 Wolfrum (n 81) 13.

and mutual recognition of mining claims.<sup>84</sup> The RSR was heavily criticised, including by the Preparatory Commission for the ISA, who viewed it as illegal and contrary to the object and purpose of UNCLOS, which sought to promote multilateralism via an international regime.<sup>85</sup> With the 1994 Agreement and the widespread ratification of UNCLOS and its acceptance as the constitution for the ocean, the RSR was abandoned and all parties to that earlier arrangement, barring the US, are now member of the ISA. This historical case study offers an example of the political backlash any attempt to circumvent an ISA non-use measure might engender. In general, any attempt by third States to challenge the ISA regime would likely move beyond the ISA and escalate into diplomatic rows.

Currently, the only Non-Member State of UNCLOS that may have a stake in DSM in the Area is the US, which still claims mining rights over two sites in the Clarion-Clipperton Zone through its domestic legislation dating back to the RSR years. However, the US has not for decades voiced mining ambitions in the Area. Moreover, the US has been actively participating at the ISA, including in the development of the draft exploitation regulations. Until recently, a US company, Lockheed Martin, held two ISA exploration contracts, via its UK subsidiary UK Seabed Resources Ltd., sponsored by the UK.<sup>86</sup> In 2023, UK Seabed Resources was purchased by a Norwegian company in a move that saw Lockheed Martin abandon its DSM ambitions.<sup>87</sup>

Other ISA Member States which have expressed interest in DSM would, as members of the ISA, be expected to act in a manner consistent with ISA decision-making – in which they have a voice. In short, it is politically unlikely that any state, including non-ISA Member States would attempt to breach a non-use measure for DSM if the ISA decided to establish such a measure. Any such breach would violate international law, including customary international law.

Of course, instead of states conducting DSM, illegal mining operations in the Area could be carried out by private actors without an ISA contract. In that case, a strong reaction from the ISA and its Member States (and perhaps

84 Y. Tanaka, *The International Law of the Sea* (3rd edn, CUP 2019) 227–228.

85 “Declaration adopted by the Preparatory Commission on 30 August 1985” (2 September 1985) LOSC/PCN/72, 2.

86 For information on the contracts, see ISA, “UK Seabed Resources Ltd.”, available at <<https://www.isa.org.jm/contractor/uk-seabed-resources-ltd/>> accessed 24 July; and ISA, “Loke CCZ (formerly UK Seabed Resources Ltd)”, available at <<https://www.isa.org.jm/contractor/uk-seabed-resources-ltd-2/>> accessed 24 July 2024.

87 IISD, “Summary of the 28th Annual Session of the International Seabed Authority (First Part)” (2023) 25(251) *Earth Negotiation Bulletin*, available at <<https://enb.iisd.org/international-seabed-authority-isa-council-28>> accessed 4 April 2023.

non-members) could be expected. Since States share responsibility to ensure that activities in the Area are carried out in accordance with UNCLOS and the rules, regulations and procedures of the ISA, member states would be compelled to subject such actors to their domestic legal systems. However, given the need of private actors to attract investors, develop mining technologies, and later sell their minerals on the international market, it is highly unlikely that any attempt to go rogue would survive economically. Perhaps more likely is that private (and State) actors in the Area might breach their contractual terms, such as carrying out commercial mining under the guise of ‘test mining’ under an exploration contract or breaching a temporally or spatially restrictive ISA moratorium by mining outside the permitted times or areas. The possibility of such breaches underlines the necessity of robust ISA monitoring and enforcement mechanisms as currently under negotiation.<sup>88</sup>

In sum, breaching a DSM non-use measure could take various forms, from mining without a contract to mining with an ISA contract but outside the permitted area or times. Moreover, a breach could be committed by different actors, which in turn affects who has enforcement jurisdiction, as the following section discusses.

#### 4.2 *Enforcement Jurisdiction*

An ISA non-use measure for DSM could be breached by an ISA contractor, a private third party, the Enterprise, an ISA Member State, or a Non-Member State. Who commits the breach affects who has jurisdiction and power to take enforcement action. The actors involved in enforcement action can include the ISA, sponsoring States, flag States, port States, and judicial bodies. This section analyses jurisdictional roles and powers to enforce a non-use measure, depending on who commits the breach, with a summary provided in Table 10.2.

**ISA Contractors:** The most likely scenario may be a contractor, whether that be an exploration or exploitation contractor, breaching an ISA non-use measure by exceeding the terms of their contract. Contractors are directly bound by the terms of their contract as well as sponsorship agreement with their sponsoring State. As such, when a contractor breaches an ISA non-use measure, both the ISA and sponsoring states have enforcement jurisdiction<sup>89</sup> and may be supported by the relevant port State.

The ISA not only has powers to regulate DSM in the Area and decide who receives rights to explore or exploit minerals via an ISA contract, but it has

88 K. Willaert, “All Eyes on Deep Sea Mining: Monitoring and Inspection of Activities in the Area” (2021) 27(5) *Journal of International Maritime Law* 302.

89 UNCLOS, arts 139(2), 153(4).

TABLE 10.2 Enforcement jurisdiction depending on who commits a breach of an ISA non-use measure

		Entity committing the breach				
		ISA contractor	Private third party	Enterprise	ISA member State	Non-member State
Enforcement jurisdiction by	ISA	Major role	Support role	Major role	Major role	Support role
	Sponsoring State	Major role	/	/	/	/
	Flag State	Support role	Major role	Support role	Support role	Major role
	Port State	Support role	Support role	Support role	Support role	Support role

TABLE PREPARED BY THE AUTHORS

also far-reaching enforcement powers. Specifically, the ISA can “take at any time any measures provided for under [Part XI] to ensure compliance with its provisions”.<sup>90</sup> It is also mandated to “exercise such control over activities in the Area as is necessary for the purpose of securing compliance” with UNCLOS, the ISA’s Mining Code, and any exploration or exploitation contract.<sup>91</sup> The current draft exploitation regulations foresee a range of enforcement measures, which the ISA can deploy, from compliance notices, through to suspension or termination of a contract as well as the power to impose monetary penalties proportionate to the seriousness of the violation.<sup>92</sup> However, measures other than compliance notices are subject to the contractor having exhausted the judicial remedies available.<sup>93</sup> Given its relatively limited financial and human

<sup>90</sup> UNCLOS, art 153(5).

<sup>91</sup> *ibid* art 153(4).

<sup>92</sup> ISA, “Draft regulations on exploitation of Mineral resources in the Area. Consolidated text” (2024) ISBA/29/C/CRP.1, reg 103.

<sup>93</sup> UNCLOS, Annex III art 18(3).

resources, the capacity of the ISA to effectively monitor and control activities in the Area to enforce a non-use measure could become an issue. Cooperation with other actors engaged in monitoring areas beyond national jurisdiction (ABNJ) could be necessary.

The sponsoring State has a due diligence obligation to ensure that the contractor carries out all activities in conformity with UNCLOS, the ISA's Mining Code, and the terms of its contract.<sup>94</sup> In case of a contractor breaching an ISA non-use measure, the sponsoring State, thus, has an obligation to ensure enforcement measures are taken to regain compliance. This may include accessing domestic judicial avenues to hold the contractor to account. In addition, the sponsoring state has direct obligations, such as assisting the ISA "by taking all measures necessary to ensure compliance".<sup>95</sup> In other words, the sponsoring State has ample powers and duties to help enforce a DSM non-use measure against a non-compliant contractor. However, the demarcation of roles and responsibilities between the ISA and the sponsoring State remains unclear, which may lead to inconsistent conduct between different sponsoring States.<sup>96</sup>

The flag State of a mining vessel may also play a role in enforcing a non-use measure against an ISA contractor. All vessels on the high seas are subject to the jurisdiction of their flag State in respect to "administrative, technical and social matters concerning the ship".<sup>97</sup> This may include jurisdiction over environmental pollution caused by the regular operation of the vessel,<sup>98</sup> though it does not include jurisdiction over ensuring the vessel complies with the ISA's Mining Code.<sup>99</sup> Again, the precise demarcation of jurisdiction remains somewhat unclear<sup>100</sup> and can create issues if, for example, mine tailing are released together with operational discharged from a vessel as the former falls under

94 *ibid* art 139, Annex III art 4; Seabed Disputes Chamber of the International Tribunal for the Law of the Sea (n 73).

95 UNCLOS, art 153(4).

96 H. Lily, "Enforcement of Deep-Sea Mining Regulations at Sea, Ninth Report of the Code Project" (2024) *PEW Charitable Trusts* 5, available at <<https://www.pewtrusts.org/-/media/assets/2024/03/code-project--enforcement-of-deep-sea-mining-regulations-at-sea.pdf>> accessed 24 July.

97 UNCLOS, art 94(2)(b).

98 *ibid* art 94(4)(c).

99 *ibid* art 215; Lily (n 96); see also ISA, "Competencies of the International Seabed Authority and the International Maritime Organization in the context of activities in the Area" (2021) *ISA Technical Study No 25*, available at <<https://www.isa.org/jm/wp-content/uploads/2022/06/Technical-Study-25.pdf>> accessed 24 July.

100 E. Røsæg, "Framework Legislation for Commercial Activities in the Area" in C. Banet (ed), *The Law of the Seabed* (Brill Nijhoff 2020).

the jurisdiction of the sponsoring State whereas the latter is the responsibility of the flag state.<sup>101</sup> However, for the purposes of enforcing a non-use measure which prohibits DSM either in the entire Area or in particular zones or at particular times, the jurisdictional divide may be beside the point, as it is not concerned with whether or not the operator complies with all ISA environmental standards but rather with whether minerals are being removed in contravention of a non-use measure.

Lastly, enforcing a non-use measure for DSM could be supported by port States, to ensure visiting vessels do not unload illegally mined seabed minerals. Port States may investigate, and where necessary institute proceedings against, a vessel that is voluntarily using the State's port.<sup>102</sup> Port States can act as a safety net for identifying non-compliance, particularly where that is not achieved through the flag State, and have performed that role in relation to fisheries, safety, and pollution. While UNCLOS does not specifically provide for port State jurisdiction with respect to activities in the Area, it does provide for such jurisdiction in respect to vessel discharge that occurred in ABNJ.<sup>103</sup> Given that DSM will likely involve return water and tailings, this limitation may not be a hindrance to the role port States could assume.

**Private Third Parties:** Where a non-use measure is breached by a private company or other non-governmental actor without an ISA contract, the ISA has no direct jurisdiction, but nonetheless has a legal interest as the body entrusted by UNCLOS as a trustee over the resources of the Area representing humankind as a whole. However, the flag State of the relevant vessel has primary jurisdiction and would need to lead enforcement actions against the vessel, including through domestic proceedings.<sup>104</sup> The flag State's enforcement powers extend to pollution control measures and apply irrespective of where the non-compliance occurs.<sup>105</sup> Port States may be able to support enforcement measures, in line with the above discussion.

**Enterprise:** The Enterprise is envisaged in UNCLOS as the commercial arm of the ISA. Following extensive renegotiations of the funding and operation of the Enterprise, its future remains somewhat unclear.<sup>106</sup> However, when the Enterprise becomes fully operational, it will be able to hold exploration or

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101 Lily (n 96).

102 UNCLOS, art 218(1).

103 *ibid* art 218.

104 *ibid* art 217.

105 *ibid* art 94.

106 A. Jaeckel, "The Area and the Role of the International Seabed Authority" in V. Tassin Campanella (ed), *Routledge Handbook of Seabed Mining and the Law of the Sea* (Routledge 2023) 166–168; Willaert (n 71); Remaoun (n 71).

exploitation contracts in its own right or in joint venture with another entity.<sup>107</sup> As such, the Enterprise might breach an ISA non-use measure, particularly where such measure may be a spatially or temporally restricted non-use measure. In such event, the ISA would have enforcement jurisdiction in the same way it does over other contractors, while the flag and port states may assume support roles similar to what is outlined for contractors above.

**ISA Member States:** If an ISA Member State was to breach a non-use measure, eg through government-operated DSM, the ISA would be able to assume a significant role in enforcing the non-use measure. Aside from political pressure, the ISA can suspend membership of a State where the Seabed Disputes Chamber (SDC), the ISA's dispute settlement body, finds a state has 'grossly and persistently violated' Part XI of UNCLOS.<sup>108</sup> Given that the obligation to not conduct activities in the Area without consent from the ISA is a core provision of Part XI, as discussed above, it may be argued that breach of an ISA non-use measure falls within this provision. Where the flag State and port states are different to the State breaching the non-use measure, they may also support enforcement measures, in line with the powers discussed above.

**Non-Member States:** As the ISA has no direct jurisdiction over non-parties, enforcing a non-use measure against a non-member State, such as the US, would largely fall to the flag State of the DSM vessel, in cooperation with the ISA and potentially with support from port States. If the flag State is not party to UNCLOS (or has caused the breach), however, then the success of this modality is less likely. Nonetheless, ISA Member States could, collectively or individually, also decide to take action in political or even legal terms. As discussed above, it is arguable that Non-Member States are still required, as a matter of customary international law, to ensure that no DSM occurs in the Area without consent from the ISA. This legal obligation could, therefore, be enforced through judicial means.

Lastly, judicial bodies would likely play an important role in enforcing a DSM non-use measure, regardless of who committed the breach. The SDC of the International Tribunal for the Law of the Sea (ITLOS) has jurisdiction to entertain disputes concerning activities in the Area involving the ISA, Member States, the Enterprise, contractors, and even prospective contractors.<sup>109</sup> SDC

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107 1994 Agreement, Annex section 2(2).

108 UNCLOS, arts 162(2)(t), 185.

109 *ibid* art 187.

proceedings can result in binding decisions against the contractor, which are enforceable through domestic courts.<sup>110</sup>

## 5 Policy Considerations for Non-use Measures for the Area

Reaching agreement on a non-use measure can be difficult but has in fact been achieved in relation to numerous non-use measures for marine resources. Some of these measures were temporary but many remain in place – testaments to the lasting relevance of these difficult decisions. For example, in ABNJs, notable bans include the 1989 and 1991 driftnet resolutions adopted by the United Nations General Assembly (UNGA) recommending termination of all high seas deployment of large pelagic driftnets, implemented to protect marine biodiversity (though not without some disagreement<sup>111</sup>).<sup>112</sup> In 1982, the International Whaling Commission (IWC) decided on ‘a pause’ in commercial whaling from the 1985/1986 season onwards, often referred to as the commercial whaling ‘moratorium’, which remains in place today<sup>113</sup> (again, not without controversy<sup>114</sup>). Additionally, as mentioned above, Article 7 of the 1991 Protocol on Environmental Protection prohibits mineral resource activities, including deep-seabed mining, in Antarctica.<sup>115</sup>

In each of the above examples the available scientific evidence suggested that there were sufficient grounds to take a precautionary approach and instate a moratorium on the use of natural resources. The same might be true for DSM. States alongside an array of actors have increasingly voiced concern for, inter alia, the safety of deep-sea ecosystems and the need to protect cultural heritage and the common heritage of humankind. Given the concerns that have emerged over the past decades, and especially recently, the ISA, contractors and sponsoring States should no longer assume that DSM in the near future

110 J. Harrison, *Saving the Oceans Through Law: The International Legal Framework for the Protection of the Marine Environment* (OUP 2017) 241.

111 W. T. Burke, M. Freeberg and E. L. Miles, “United Nations resolutions on driftnet fishing: An unsustainable precedent for high seas and coastal fisheries management” (1994) 25(2) *Ocean Development & International Law* 127.

112 UNGA Res 44/225 (1990) GAOR 44th Sess, Supp 49; UNGA Res 46/215 (1992) 46th Sess, Supp 49.

113 International Whaling Commission, “Commercial Whaling”, available at <<https://iwc.int/management-and-conservation/whaling/commercial>> accessed February 2024.

114 L. Kobayashi, “Lifting the International Whaling Commission’s moratorium on commercial whaling as the most effective global regulation of whaling” (2005) 29 *Environmental Law and Policy Journal* 177.

115 Environmental Protocol, art 7.

is assured. One or more non-use measures, including a pause, moratorium, or ban, may be warranted.

When considering non-use measures, the ISA will be faced with balancing a complex variety of largely unanswered questions that should be addressed before a decision to mine the Area is made. These questions are briefly discussed here.

**Environmental Impacts:** Given the centrality of this concern in most arguments in favour of a moratorium, it behooves the ISA to better understand the potential ecological damage that would be caused by DSM,<sup>116</sup> were it to proceed using existing technologies.

**Economic Implications:** A commonly raised concern by those opposed to non-use measures is the need for an assessment of the economic impact of a moratorium on States and companies that have invested in deep-seabed mining technology and exploration. Such assessment is warranted, including any benefits that developing States might accrue through royalties and capacity-building arrangements. Similarly, a clearer understanding of the potential negative economic effects of DSM on land-based mineral producing developing states is needed, alongside agreed measures to compensate these States, as required by international law.<sup>117</sup>

**Socio-Economic Equity and Benefit Sharing:** Central to the implementation of UNCLOS and the 1994 Agreement are equity and benefit sharing. Discussion is needed on whether a non-use measure would help or hinder future equitable access to the Area's mineral resources by developing States. Similarly, discussion is needed on what benefits may be derived from the Area, how these might be shared, and how a non-use measure might facilitate some of those benefits, including the preservation of natural capital and ecosystem services and access to marine genetic resources.<sup>118</sup>

**Scientific Research:** The possibility of DSM has catalysed a marked increase in deep-sea research, and scientific cooperation with industry. The differing potential impacts on research caused by a pause, moratorium, or ban needs to be openly discussed. Discussion may also be warranted about the role of the ISA during a non-use measure, and whether

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116 Amon et al (n 32).

117 UNCLOS, arts 150(h), 164.

118 A. Jaeckel, "Benefitting from the Common Heritage of Humankind: From Expectation to Reality" (2020) 35 *The International Journal of Marine and Coastal Law* 1.

a focus on coordinating marine scientific research may be beneficial for humankind, similar to the shift in focus the International Whaling Commission underwent once the whaling moratorium was established.

**Technology Development:** DSM has already generated some technological developments. The effects on technology development of a ban, moratorium, or pause are likely to be different, and as per scientific research, above, need to be openly discussed.

**Regulatory Development:** Whether a moratorium or ban would help or hinder the development of the ISA's Mining Code should be considered. One might assume that more time would be beneficial for the more careful development of regulations, but it is plausible that a ban may stall regulatory development. At the moment, however, all states that have called for a moratorium or ban remain actively involved in the development of the Mining Code.

**International Cooperation:** The work of the ISA can affect the desire of states to cooperate in the management of common heritage but also ocean governance more broadly. Discussion would be warranted on how a non-use measure may affect cooperation, how cooperation can be encouraged despite a non-use measure, and how such a measure would sit alongside other ocean governance processes and commitments.

**Public Participation:** A wide range of stakeholders should be involved in the ISA's decision-making process, including cultural knowledge holders and Indigenous Peoples, civil society groups, the scientific community, and underrepresented groups, such as youth. Discussion is warranted on whether a non-use measure would align with the views of these stakeholders<sup>119</sup> and indeed whether a delay in DSM may offer time to improve public participation in ISA governance.<sup>120</sup>

**Surveillance, Compliance and Enforcement:** Institutions, procedures, and tools will need to be developed to either monitor compliance of DSM activities or a moratorium. Presumably, ensuring compliance with the moratorium would be easier than surveillance and enforcement of multiple active operations, but technical and financial resources will still need to be secured for either option.

**Sustainable Alternatives and Innovation:** Whether a moratorium would indeed encourage research and investment into sustainable

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119 Ranganathan (n 50).

120 E. Morgera and H. Lily, "Public Participation at the International Seabed Authority: An International Human Rights Law Analysis" (2022) 31(3) *Review of European, Comparative & International Environmental Law* 374–388, 374.

alternatives to DSM, such as recycling and new battery technologies, is an oft-stated position by those in favour of a moratorium, which deserves further critical analysis.

**DSM in Areas Under National Jurisdiction:** A further point of discussion could be the effect any non-use measures in the Area might have on DSM in areas under national jurisdiction. On the one hand, a non-use measure for DSM in the Area may increase the likelihood of DSM in areas under national jurisdiction. Any lessons learned from national jurisdiction may inform future regulation of DSM in the Area. On the other hand, an embargo, a supply chain or consumer boycott or continuing lack of social license of DSM which may accompany a non-use measure for DSM in the Area may decrease the likelihood of DSM anywhere.

## 6 Conclusion

Recent discussions, both within and outside of the ISA, on the possibility of a DSM moratorium have led to the unearthing of a broad range of issues, as outlined in this chapter. A potential non-use measure for DSM may be temporary or permanent and encompass the whole Area or focus only particular areas or seasonal closures. As this chapter has demonstrated, enforcing a non-use measure could involve a broad range of actors. In deciding for or against a non-use measure, the ISA will need to grapple with complex policy considerations that it has hitherto largely avoided. Indeed, Member States are cautious and careful in their deliberations at the ISA, often electing to take decisions by consensus and in the spirit of compromise in order to avoid political repercussions. Whatever course is chosen by the ISA Member States, it is clear that the decisions will be difficult, possibly protracted, and likely contentious. The recent pressure that is being applied to the ISA by a handful of parties keen to mine in the short-term will need to be tempered by the requirement that these common heritage mineral resources are managed over a much longer term for the collective benefit of humankind as a whole.