Business and Human Rights Journal (2025), **10:** 122–146
doi:10.1017/bhj.2024.27

Business and Human Rights Journal

SCHOLARLY ARTICLE

Corporate Responsibility and Deep Seabed Mining: The Limits of Due Diligence

Chiara Macchi

Wageningen University & Research, Wageningen, The Netherlands
Email: chiara.macchi@wur.nl

Abstract

The International Seabed Authority is under pressure from some states and companies to adopt the regulations that would allow deep seabed mining (DSM) to commence. While presented by its supporters as necessary to procure the minerals and metals needed for energy transition, DSM presents serious risks for the marine environments and human rights whose extent is still insufficiently understood. This article focuses on whether, should DSM be allowed in the short term, the current regulatory regime would suffice to ensure that the corporations leading this activity carry out effective assessment, prevention and mitigation of environmental impacts. In order to answer this question, it explores contractor obligations as they emerge from the current version of the 'Mining Code'. In light of persisting scientific uncertainty and the high-risk profile of DSM activities, this article contends that the current version of the regulations does not devise sufficiently stringent due diligence obligations.

Keywords: deep seabed mining; just transition; environmental due diligence; International Seabed Authority; UNCLOS

I. Introduction

Mining in the "Area", defined by the United Nations Convention on the Law of the Sea (UNCLOS) as the seabed, ocean floor and subsoil beyond the limits of national jurisdiction, has not yet taken place. Under international law, only the International Seabed Authority (ISA) can grant exploration and exploitation licenses to contractors willing to prospect and exploit the Area's mineral resources. ISA, the autonomous international organization established by UNCLOS, acts as a 'trustee' on behalf of humankind, as it is humankind as a whole that retains 'all rights in the resources of the Area'.[1] Before exploitation can commence, ISA must put in place a regulatory regime governing the activities commonly referred to as 'deep seabed mining' (DSM) to ensure, among other things, their compatibility with environmental protection obligations under UNCLOS. These regulations have been under negotiation for several years, but the rules governing exploitation activities, which would allow the first mining licenses to be issued, have not been finalized and adopted.

[1] United Nations Convention on the Law of the Sea (1982) art 137(2).

Several states and corporations are pushing the ISA to accelerate DSM authorization, especially after Nauru triggered the 'two-year rule', citing the need for minerals for the energy transition. However, limited knowledge about deep-sea ecosystems makes it hard to predict and mitigate DSM's environmental and human rights impacts. While DSM, as an activity projected to take place in one of the planet's most remote areas, may seem less controversial than land-based mining,[2] there are serious concerns that its impacts on marine ecosystems would harm the livelihoods, well-being and cultural habits of coastal ocean-dependent communities. DSM might also disrupt the ecosystem services of delicate deep-sea habitats, with damages to present and future generations the extent of which is difficult to gauge. Given these risks, many states, scientists, activists and corporations are calling for a precautionary pause on DSM, despite some companies already investing in prospecting. DSM illustrates the dilemmas the international community faces in promoting a just energy transition, highlighting arguments of intergenerational justice and sustainability from both supporters and critics of this extractive activity. It raises complex questions of corporate accountability and reveals the limits of environmental and human rights due diligence amidst significant scientific uncertainty.

This article examines whether the emerging regulatory regime for DSM would ensure that contractors effectively assess, prevent and mitigate environmental impacts, aligning with the business and human rights normative framework. The analysis contributes to the broader debate on shaping international regulatory frameworks for a truly just energy transition. After exploring contractor obligations under the ISA exploration and draft exploitation regulations (the 'Mining Code'), the article argues that the current regulations do not establish sufficiently stringent due diligence obligations and lack a clear definition of acceptable levels of environmental harm. The absence of specific legal guidance and science-based criteria for assessing contractor-led risk assessment and mitigation threatens to encourage a box-ticking approach to compliance and weakens corporate accountability in the face of potentially serious and irreversible damage to the marine environment.

This article begins by examining the known and unknown environmental and human rights risks of DSM (Section 2). It then outlines DSM's regulation under international law and the ongoing debate regarding its authorization by the ISA (Section 3). Sections 4 and 5 focus on the due diligence obligations of sponsoring states and contractors within the DSM regime, particularly highlighting the contractor obligations outlined in the ISA's regulations. Section 6 critiques the limitations of environmental due diligence in the current Mining Code, arguing that high scientific uncertainty and ISA's institutional constraints undermine effective risk assessment and mitigation. Section 7 concludes by emphasizing the need for a precautionary pause to DSM to meet environmental protection obligations under UNCLOS.

II. Deep Seabed Mining at the Crossroads of the Energy Transition and Human Rights

DSM occurs at depths greater than 200 meters,[3] targeting minerals and metals found in potato-sized polymetallic nodules, polymetallic sulphides and ferromanganese crusts. These deposits form at a rate of a few millimetres per million years in areas both within and beyond

[2] Julian Aguon and Julie Hunter, 'Second Wave Due Diligence: The Case for Incorporating Free, Prior, and Informed Consent into the Deep Sea Mining Regulatory Regime' (2019) 38 *Stanford Environmental Law Journal* 3, 7.

[3] Caitlin Keating-Bitonti, 'Seabed Mining in Areas Beyond National Jurisdiction: Issues for Congress' (2022), https://sgp.fas.org/crs/misc/R47324.pdf (accessed 31 May 2024).

https://doi.org/10.1017/bhj.2024.27 Published online by Cambridge University Press

national jurisdiction[4] and contain commercially valuable amounts of nickel, copper, cobalt, zinc, silver, gold, manganese and rare earth elements.[5] The deep seabed is believed to house the largest reserves of 'critical minerals', essential for advanced and green technologies.[6]

A key argument for expediting DSM authorization is the need for these minerals to produce renewable energy technologies,[7] including electric car batteries, wind turbines and solar panels.[8] As controlling critical mineral supply chains is vital for leading the energy transition and capitalizing on its benefits, China's dominance in supply chains for rare earth elements, copper and electric vehicle batteries raises concerns for the European Union (EU), United States (US) and other global actors.[9] The International Energy Agency notes that global demand for cobalt, lithium and nickel tripled from 2017 to 2022, while supply sources remain insufficiently diversified.[10]

At the same time, land extraction, concentrated in a few countries,[11] is frequently associated with serious human rights and environmental issues, as seen in the Democratic Republic of the Congo,[12] which produces 60 per cent of the world's cobalt.[13] In regions like South America's 'lithium triangle' (Chile, Bolivia and Argentina), mining activities are linked to unsafe working conditions, corruption, high water consumption and negative impacts on local communities.[14] Thus, DSM is often presented as a solution to meet

[4] Lisa A Levin et al, 'Defining "Serious Harm" to the Marine Environment in the Context of Deep-seabed Mining' (2016) 74 *Marine Policy* 245–59, 250.

[5] Levin et al, note 4, 250, 251, 253; Norman Toro, Pedro Robles and Ricardo I Jeldres, 'Seabed Mineral Resources, an Alternative for the Future of Renewable Energy: A Critical Review' (2020) 126 *Ore Geology Reviews* 103699, 2.

[6] Toro et al, note 5, 2. See also 'Critical Minerals – Topics', *IEA*, https://www.iea.org/topics/critical-minerals (accessed 29 May 2024).

[7] Daina Paulikas et al, 'Deep-sea Nodules Versus Land Ores: A Comparative Systems Analysis of Mining and Processing Wastes for Battery-metal Supply Chains' (2022) 26:6 *Journal of Industrial Ecology* 2154–77 (publication funded by The Metals Company, the parent company of NORI, which aims at starting DSM under Nauru's sponsorship).

[8] Patrick W Pearsall and David Ingle, 'Deep Seabed Mining: The Next Frontier in Clean Energy Minerals', *A&O Shearman* (9 October 2023), https://www.aoshearman.com/insights/deep-seabed-mining-the-next-frontier-in-clean-energy-minerals (accessed 2 June 2024); Toro et al, note 5, 7.

[9] IEA, 'Global Supply Chains of EV Batteries', *iea50* (2022), 2, 21–2, 42, 46, https://www.iea.org/reports/global-supply-chains-of-ev-batteries (accessed 2 June 2024); Tom LaTourrette, 'Is Seabed Mining an Opportunity to Break China's Stranglehold on Critical Minerals Supply Chains?', *The Rand Blog* (2022), https://www.rand.org/pubs/commentary/2022/11/is-seabed-mining-an-opportunity-to-break-chinas-stranglehold.html (accessed 2 June 2024); European Parliament, 'Securing Europe's Supply of Critical Raw Materials The Material Nature of the EU's Strategic Goals' (2023), 4, https://www.europarl.europa.eu/RegData/etudes/BRIE/2023/739394/EPRS_BRI(2023)739394_EN.pdf (accessed 2 June 2024); IPIS, 'Briefing May 2021 - Reducing the Carbon Footprint at the Expense of a Mineral Footprint?' (2021), https://ipisresearch.be/weekly-briefing/ipis-briefing-may-2021-reducing-the-carbon-footprint-at-the-expense-of-a-mineral-footprint/ (accessed 2 June 2024).

[10] IEA, 'Critical Minerals Market Review 2023' (2023), 5, 7–8, https://iea.blob.core.windows.net/assets/afc35261-41b2-47d4-86d6-d5d77fc259be/CriticalMineralsMarketReview2023.pdf (accessed 2 June 2024).

[11] IEA, note 9, 21; Pearsall and Ingle, note 8.

[12] Dorothée Baumann-Pauly, 'Cobalt Mining in the Democratic Republic of the Congo: Addressing Root Causes of Human Rights Abuses', *NYU* (2023), https://static1.squarespace.com/static/5b6df958f8370af3217d4178/t/63e2dc7bad25b047da9100d7/1675811964954/NYU+CBHR+Cobalt+Mining_FINAL+Feb7.pdf (accessed 2 June 2024).

[13] Toro et al, note 5, 2.

[14] 'Human Rights in the Mineral Supply Chains of Electric Vehicles', *Business & Human Rights Resource Centre*, https://www.business-humanrights.org/en/from-us/briefings/transition-minerals-sector-case-studies/human-rights-in-the-mineral-supply-chains-of-electric-vehicles/ (accessed 29 May 2024); Bárbara Jerez, Ingrid Garcés and Robinson Torres, 'Lithium Extractivism and Water Injustices in the Salar de Atacama, Chile: The Colonial Shadow of Green electromobility' (2021) 87 *Political Geography* 102382; Ellen Johanne Beales et al, 'Environmental and social Consequences of Mineral Extraction for Low-carbon Technologies', *SINTEF* (2021), https://sintef.brage.unit.no/sintef-xmlui/bitstream/handle/11250/3047770/SINTEF%2breport%2b2021_00816%2bMineral%2bextraction%2bsustainability%2bimpacts.pdf?sequence=2&isAllowed=y (accessed 2 June 2024).

https://doi.org/10.1017/bhj.2024.27 Published online by Cambridge University Press

rising global demand for critical minerals while reducing reliance on concentrated land sources[15] and mitigating the harmful effects of terrestrial mining.[16]

While this is a highly contested view,[17] several countries are willing to ride the wave of growing global demand and, attracted by the potential financial and strategic advantages, are creating the regulatory conditions to allow this activity to start within their exclusive economic zones (EEZs).[18] DSM exploration permits have been issued by Papua New Guinea, Fiji, Tonga, Vanuatu, the Solomon Islands and the Cook Islands,[19] and in 2017 Japan was the first country to carry out a large-scale DSM project on its own continental shelf.[20] At the same time, several Pacific states (the Cook Islands, Kiribati, Tonga, Nauru and Tuvalu)[21] became interested in the potential benefits of mining the deep seabed in the mineral-rich Clarion-Coppertone fracture zone (CCZ),[22] mostly located beyond national jurisdiction.[23] Among the areas of commercial interest,[24] the CCZ constitutes the most attractive with estimated reserves of marine nodule resources that exceed the potential of land-based deposits of the same minerals.[25] Contrary to DSM on a country's continental shelf, DSM in international waters requires regulation and authorization from the ISA, thus it is a matter of global interest. The DSM debate speaks directly to the 'just' transition and its dilemmas, highlighting the tension between the alleged necessity of extracting minerals for the energy transition and the ecological and human rights impacts that this activity might cause.

A. Environmental and Human Rights Risks of Deep Seabed Mining

The deep sea, characterized by near-total darkness, high pressure and low temperatures, is largely unexplored and has been minimally affected by human activity. There is little scientific certainty about the effects that DSM might have on its unique ecosystems, although scientists warn of potential irreversible damage.[26] The deep seabed, covering

[15] IEA, note 11, 77.

[16] 'Deep Seabed Mining Facts - What is Deep Seabed Mining?', *DSM Facts*, https://dsm-facts.com/ (accessed 29 May 2024); 'We Need to Mine Deep-sea Metals to Power the Energy Transition: DeepGreen CEO Gerard Barron', *Eco-Business* (22 October 2020), https://www.eco-business.com/news/we-need-to-mine-deep-sea-metals-to-power-the-energy-transition-deepgreen-ceo-gerard-barron/ (accessed 29 May 2024).

[17] KA Miller et al, 'Challenging the Need for Deep Seabed Mining From the Perspective of Metal Demand, Biodiversity, Ecosystems Services, and Benefit Sharing' (2021) 8 *Frontiers in Marine Science* 706161; Dan Kammen, 'Don't Buy the Greenwashing – We Don't Need Deep-sea Mining', *Economist Impact* (5 February 2024) https://impact.economist.com/ocean/sustainable-ocean-economy/dont-buy-the-greenwashing-we-dont-need-deep-sea-mining (accessed 29 May 2024).

[18] Saul Roux and Catherine Horsfield, 'Review of National Legislations Applicable to Seabed Mineral Resources Exploitation' in Catherine Banet (ed.), *The Law of the Seabed*, (Brill | Nijhoff, 2020), 287.

[19] Ibid, 303.

[20] Rosanna Carver et al, 'A Critical Social Perspective on Deep Sea Mining: Lessons From the Emergent Industry in Japan' (2020) 193 *Ocean & Coastal Management 105242*, 1.

[21] Tuvalu's position on the matter changed in 2024, see sec VI.A below.

[22] The Pew Charitable Trusts, 'The Clarion-Clipperton Zone' (2017) https://www.pewtrusts.org/-/media/assets/2017/12/sea_the_clarion_clipperton_zone.pdf (accessed 2 June 2024).

[23] Sue Farran, 'Deep-sea Mining and the Potential Environmental Cost of "Going Green" in the Pacific' (2022) 24:3 *Environmental Law Review* 173–90, 177.

[24] Kathryn A Miller et al, 'An Overview of Seabed Mining Including the Current State of Development, Environmental Impacts, and Knowledge Gaps' (2018) 4 *Frontiers in Marine Science* https://www.frontiersin.org/articles/10.3389/fmars.2017.00418 (accessed 29 May 2024).

[25] Toro et al, note 5, 4.

[26] Sabine Christiansen, Aline Jaeckel and Katherine Houghton, 'Ecological Safeguards for Deep Seabed Mining - Final Report' (Saxony-Anhalt, Germany: Umweltbundesamt, 2018), 45, 70–1; Aline Jaeckel, 'Benefitting from the Common Heritage of Humankind: From Expectation to Reality' (2020) 35:4 *The International Journal of Marine and Coastal Law* 660–81, 675; E Simon-Lledó et al, 'Biological Effects 26 Years after Simulated Deep-Sea Mining' (2019) 9 Scientific Reports 8040; Lisa A Levin, Diva J Amon and Hannah Lily, 'Challenges to the Sustainability of Deep-seabed Mining' (2020) 3:10 *Nature Sustainability* 784–94; Ann Vanreusel et al, 'Threatened by Mining, Polymetallic Nodules are Required to Preserve Abyssal Epifauna' (2016) 6:1 *Scientific Reports* 26808.

https://doi.org/10.1017/bhj.2024.27 Published online by Cambridge University Press

two-thirds of the ocean floor,[27] is less known than Mars or the Moon.[28] What we do know today, that was not obvious when UNCLOS was negotiated and adopted, is that the deep seabed, far from being dead matter,[29] is home to diverse habitats, including abyssal plains, hydrothermal vents and seamounts, which host unique species[30] and contribute to critical ecosystem services, such as carbon sequestration.[31] Manganese nodules themselves constitute the habitat for a rich diversity of organisms[32] and play an important role in abyssal food webs.[33] At the same time, these ecosystems are highly sensitive to climate change-related alterations and might be at risk of biodiversity loss for this reason.[34] DSM would produce high levels of pollution, vessel traffic and seafloor destruction likely to produce irreversible effects on ecosystems that we are only starting to understand.[35]

Several gaps in scientific knowledge may impede effective risk prevention in large-scale DSM operations.[36] These gaps include a lack of comprehensive environmental baseline data for contract and adjacent areas and a limited understanding of DSM's direct and indirect longterm impacts.[37] While we know that sediment plumes would result from seafloor production and surface support vessels,[38] their composition and interaction with ocean currents and biodiversity remain unclear.[39] Although shallow-water or ex-situ experiments cannot reliably predict DSM's impacts,[40] a 1989 simulated mining experiment off Peru showed lasting biodiversity and ecosystem functions loss decades later, suggesting potentially irreversible damage from DSM.[41] Studies suggest that the suspended particulate matter contained in the plumes might affect marine habitats way beyond the mining areas,[42] although more specific recovery studies are needed to assess longterm impacts.[43] Further ecosystem disruptions might derive from noise, light, waste materials

[27] IUCN, 'Deep-Sea Mining', Issue Brief (May 2022) https://www.iucn.org/sites/default/files/2022-07/iucn-issues-brief_dsm_update_final.pdf (accessed 2 June 2024).

[28] Will Schrepferman, 'The Dangers of Deep Seabed Mining' *Harvard International Review* (4 April 2020), https://hir.harvard.edu/diamonds-are-forever-but-the-environment-is-not-the-dangers-of-deep-seabed-mining/ (accessed 3 June 2024).

[29] Douglas et al, 'Opinion - In the Matter of a Proposed Moratorium or Precautionary Pause on Deep-sea Mining Beyond National Jurisdiction', Pew Charitable Trusts (10 February 2023), para 7; Jaeckel, note 26, 675.

[30] Christiansen et al, note 26, 74; National Geographic, 'Deep Sea Hydrothermal Vents' https://education.nationalgeographic.org/resource/deep-sea-hydrothermal-vents/ (accessed 3 June 2024).

[31] Jennifer T Le, Lisa A Levin and Richard T Carson, 'Incorporating Ecosystem Services into Environmental Management of Deep-seabed Mining' (2017) 137 *Deep Sea Research Part II: Topical Studies in Oceanography* 486–503, 487.

[32] Christiansen et al, note 26, 73.

[33] Tanja Stratmann et al, 'Polymetallic Nodules are Essential for Food-web Integrity of a Prospective Deep-seabed Mining Area in Pacific Abyssal Plains' (2021) 11:1 *Scientific Reports* 12238.

[34] Christiansen et al, note 26, 72.

[35] Diva J Amon et al, 'Assessment of Scientific Gaps Related to the Effective Environmental Management of Deep-seabed Mining' (2022) 138 *Marine Policy* 105006, 8; Rakhyun E Kim, 'Should deep seabed mining be allowed?' (2017) 82 *Marine Policy* 134–7, 135; Miller et al, note 24, 2; Pradeep A Singh, 'Deep Seabed Mining and Sustainable Development Goal 14' in Walter Leal Filho et al (eds.), *Life Below Water* (Cham, Switzerland: Springer International Publishing, 2021) 1, 2.

[36] Amon et al, note 35, 10. See also Elisa Morgera et al, 'Addressing the Ocean-Climate Nexus in the BBNJ Agreement: Strategic Environmental Assessments, Human Rights and Equity in Ocean Science' (2023) 38:3 *The International Journal of Marine and Coastal Law* 447–79, 463.

[37] Amon et al, note 35, 11.

[38] Miller et al, note 24, 15.

[39] Amon et al, note 35, 11; PPE Weaver et al, 'Assessing Plume Impacts Caused by Polymetallic Nodule Mining Vehicles' (2022) 139 *Marine Policy* 105011, 7.

[40] Weaver et al, note 39, 7.

[41] Simon-Lledó et al, note 26, 1. See also: TR Vonnahme et al, 'Effects of a Deep-sea Mining Experiment on Seafloor Microbial Communities and Functions After 26 Years' (2020) 6:18 *Science Advances* 5922.

[42] Levin et al, note 4, 254; Miller et al, note 24, 15.

[43] Miller et al, note 24, 16.

https://doi.org/10.1017/bhj.2024.27 Published online by Cambridge University Press

and warmer water released during operations,[44] as well as from the cumulative impacts of DSM and other human activities, like fishing or shipping, not to mention anthropogenic global warming.[45]

Another complex question is to what extent DSM might impact human rights. As mentioned earlier, DSM is expected to negatively affect fishing activities even beyond the mining areas, especially when interfering with vulnerable marine ecosystems such as the ones associated with seamounts.[46] The United Nations Environment Programme (UNEP) notes that 'sedimentation and pollution into the water column may disrupt pelagic fishery stocks (e.g. tuna)'.[47] Even without considering major accidents (e.g., an oil spill), which could affect coastal communities beyond the mining regions, disturbances to deep-sea ecosystems from ordinary DSM activities might affect food security through the reduction or displacement of fish stocks, and food safety due to contamination of marine organisms.[48] Thus, the livelihoods and well-being of ocean-dependent communities, such as Pacific islanders,[49] as well as indigenous cultures closely linked to marine environments and wide-ranging marine species would be endangered.[50] Some of these impacts have already been observed during exploration activities in the EEZs of Papua New Guinea and Tonga.[51] Several scholars argue that, regardless of the remote location of planned DSM activities, their possible impacts on indigenous peoples' traditional territories entail a requirement to seek free, prior and informed consent (FPIC).[52]

The loss to current and future generations arising from the possible disruption of one of the world's key carbon sinks should also be considered.[53] A conservative estimate finds that 'the value of the loss in ecosystem services associated to the deep sea mining of 10,000 km^2 every year from 2028-2043' would amount to roughly half a trillion dollars, which would not be compensated by value creation by the same industry.[54] In addition, like on-land mining, the climate impact of DSM would in large part derive from the continuing need for metallurgical processing, which contradicts the narrative of a sustainable form of energy production.[55]

[44] Amon et al, note 35, 11; Christiansen et al, note 26, 102; Miller et al, note 24, 15–16.

[45] Christiansen et al, note 26, 87.

[46] Ibid, 98–9; Levin et al, note 4, 254.

[47] UNEPFI, 'Harmful Marine Extractives: Understanding the Risks & Impacts of Financing Non-renewable Extractive industries – Deep Seabed Mining' (2022), 32, https://www.unepfi.org/wordpress/wp-content/uploads/2022/05/Harmful-Marine-Extractives-Deep-Sea-Mining.pdf (accessed 3 June 2024).

[48] Aguon and Hunter, note 2, 11; Aline Jaeckel et al, 'Deep Seabed Mining Lacks Social Legitimacy' (2023) 2:1 *Ocean Sustainability* 1. JMA Van Der Grient and JC Drazen, 'Potential Spatial Intersection Between High-seas Fisheries and Deep-sea Mining in International Waters' (2021) 129 *Marine Policy* 104564.

[49] Neil L. Andrew et al, 'Continuity and change in the contemporary Pacific food system' (2022) 32 *Global Food Security* 100608.

[50] Aguon and Hunter, note 2, 12; Jaeckel et al, note 48, 1; Elisa Morgera, 'Participation of Indigenous Peoples in Decision Making Over Deep-Seabed Mining' (2024) 118 *AJIL Unbound* 93–7, 95.

[51] Aguon and Hunter, note 2, 13–15.

[52] Erick Guapizaca Jiménez, 'An Old Dilemma in Deep Seabed Mining: Free, Prior, and Informed Consent of Indigenous Peoples in Areas Beyond National Jurisdiction' (2024) *AJIL Unbound* 118 83–7; Pradeep Singh and Julie Hunter, 'Protection of the Marine Environment: The International and National Regulation of Deep Seabed Mining Activities' in Rahul Sharma (ed.), *Environmental Issues of Deep-Sea Mining: Impacts, Consequences and Policy Perspectives*, (Cham: Springer International Publishing, 2019), 471.

[53] Aguon and Hunter, note 2, 12–13.

[54] François Mosnier, 'How to Lose Half a Trillion', *Planet Tracker* (2024), 19, https://planet-tracker.org/wp-content/uploads/2024/02/How-to-Lose-Half-a-Trillion.pdf (accessed 1 October 2024).

[55] Emma Amadi and François Mosnier, 'The Climate Myth of Deep Seabed Mining', *Planet Tracker* (2023), 8, https://planet-tracker.org/wp-content/uploads/2023/12/The-Climate-Myth-of-Deep-Sea-Mining.pdf (accessed 1 October 2024).

https://doi.org/10.1017/bhj.2024.27 Published online by Cambridge University Press

At stake are human rights like the right to food, the right to health, the right to a healthy environment, the cultural rights of indigenous peoples and the rights of children, all already endangered by the triple planetary crisis (climate change, biodiversity loss, and pollution).[56] Notwithstanding the high stakes for humanity, participation of civil society in ISA processes has so far been marginal, and the transparency of such processes has been limited.[57] Only 32 non-governmental organizations (NGOs) are registered with observer status at the ISA, none of which directly represent a marginalized or vulnerable group.[58] Three UN Special Procedures, including the UN Working Group on Business and Human Rights, have addressed an open letter to ISA in 2024, noting 'the mounting scientific evidence and stakeholder disquietude that, if deep seabed mining becomes an industry, there will be irreversible human rights impacts'.[59] The letter echoes earlier concerns expressed by the Office of the High Commissioner for Human Rights (OHCHR),[60] stressing the need for a robust accountability framework for corporations and calling on the ISA to align such framework with the United Nations Guiding Principles on Business and Human Rights (UNGPs) and to ensure meaningful consultation with potentially affected groups and other stakeholders.[61]

III. The International Regulation of Deep Seabed Mining

A. Deep Seabed Mining under UNCLOS and the 'Two-Year Rule' Triggered by Nauru

The Area is a maritime zone beyond national jurisdiction, governed by Part XI of UNCLOS. Its mineral resources are regarded as the 'common heritage of mankind', a principle introduced by Ambassador Arvid Pardo in 1967 at the UN General Assembly.[62] This principle, included in UNCLOS and the Moon Agreement,[63] prohibits the national appropriation of international spaces and their resources, mandates peaceful use and requires a management mechanism ensuring international control over the relevant activities and the sharing of their benefits.[64] UNCLOS specifies that 'resources' under

[56] Sara L Seck, 'The Right to a Clean, Healthy and Sustainable Environment and the Triple Planetary Crisis: Reflections for Ocean Governance' (2023) 37:1 *Ocean Yearbook Online* 17–29, 27–9.

[57] Jeff Ardron, Hannah Lily and Aline Jaeckel, 'Public Participation in the Governance of Deep-seabed Mining in the Area' in Rosemary Rayfuse, Aline Jaeckel and Natalie Klein (eds.), *Research Handbook on International Marine Environmental Law* (Cheltenham, UK: Edward Elgar Publishing, 2023), 361; Elisa Morgera and Hannah Lily, 'Public Participation at the International Seabed Authority: An International Human Rights Law Analysis' (2022) 31:3 *Review of European, Comparative & International Environmental Law* 374–88, 383.

[58] Morgera and Lily, note 57, 383.

[59] Open Letter to the ISA by the Working Group on business and human rights, the Special Rapporteur on the implications for human rights of the environmentally sound management and disposal of hazardous substances and wastes and the Special Rapporteur on the issue of human rights obligations relating to the enjoyment of a safe, clean, healthy and sustainable environment, 15 March 2024, 2 https://www.ohchr.org/sites/default/files/documents/issues/business/activities/2024-03-15-open-letter-to-isa.pdf (accessed 1 October 2024).

[60] OHCHR, 'Key Human Rights Considerations on the Impact of Deep Seabed Mining', 2024 https://www.ohchr.org/sites/default/files/documents/issues/climatechange/information-materials/ohchr-seabed-mining-10-july.pdf (accessed 1 October 2024).

[61] Open letter, note 59, 2–3.

[62] UNCLOS, arts 1, 136; UNGA, UN Doc A/C.1./PV.1516, 1 November 1967, paras 1–16.

[63] Agreement Governing the Activities of States on the Moon and Other Celestial Bodies (Moon Agreement) (adopted 1979, in force 1984). The Moon Agreement has very limited weight due to low ratification.

[64] Claudia Cinelli, *La disciplina degli spazi internazionali e le sfide poste dal progresso tecnico-scientifico* (Giappichelli, Torino: G Giappichelli editore, 2020), 54–5.

https://doi.org/10.1017/bhj.2024.27 Published online by Cambridge University Press

Part XI are intended as the 'solid, liquid or gaseous mineral resources in situ in the Area at or beneath the sea-bed, including polymetallic nodules'.[65] Importantly, the common heritage of humankind[66] status does not per se bar said resources' exploitation through mining, but it does subject them to an internationalized management system. UNCLOS also envisages the establishment of an enterprise through which ISA could directly lead exploration and exploitation activities of its own, but this organ has not yet been created.[67] At the same time, the practical implementation of the common heritage of humankind principle, and particularly of its benefit-sharing component, has turned out to be complex and divisive,[68] leading to the negotiation of an Implementing Agreement for Part XI.[69]

In a nutshell, under UNCLOS, any state or any (private or public) corporation willing to carry out exploration or exploitation activities in the Area needs to enter into a contract with the ISA. In order to apply for a contract, a natural or juridical person needs to possess the nationality of a state party to UNCLOS or be 'effectively controlled' by it or its nationals and obtain sponsorship by that state party.[70] The applicant submits to the ISA two (not necessarily continuous) areas of similar estimated commercial value where it would like to start exploration or exploitation activities. The ISA itself allocates one of the two to the applicant and keeps the second site as a 'reserved' area where the ISA could conduct activities through the above-mentioned (never established) enterprise or in association with developing states.[71] This provision has enabled entities sponsored by Tonga, Nauru, Kiribati, the Cook Islands and Jamaica to stipulate exploration contracts with the ISA for reserved areas.[72] Interestingly, entities sponsored by China and Singapore, both still considered developing countries, also entered into exploration contracts for reserved areas.[73] This provision, aimed at ensuring the involvement of developing countries in the exploration and exploitation of the deep seabed's resources, makes it attractive for Global North enterprises to team up with the governments of developing countries, as shown by the example mentioned below of a Canadian parent company setting up a subsidiary in Nauru.

Since 2001, the ISA has entered into 31 exploration contracts with 22 contractors, among which are states, as well as state-owned and private corporations.[74] While

[65] UNCLOS, art 133(a).

[66] While original treaty formulations refer to 'mankind', recent instruments adopt the 'humankind' wording (e.g., Agreement on the Conservation and Sustainable Use of Marine Biological Diversity of Areas Beyond National Jurisdiction, 19 June 2023, A/CONF.232/2023/4, art 7). This paper adheres to the latter formulation except when directly quoting from primary sources.

[67] UNCLOS, art 170.

[68] Nadia Bernaz and Irene Pietropaoli, 'Developing a Business and Human Rights Treaty: Lessons from the Deep Seabed Mining Regime Under the United Nations Convention on the Law of the Sea' (2020) 5:2 *Business and Human Rights Journal* 200–20, 204; Aline Jaeckel, Jeff A Ardron and Kristina M Gjerde, 'Sharing Benefits of the Common Heritage of Mankind – Is the Deep Seabed Mining Regime Ready?' (2016) 70 *Marine Policy* 198–204, 199.

[69] Agreement Relating to the Implementation of Part XI of the United Nations Convention on the Law of the Sea, (adopted 28 July 1994, in force 28 July 1996) 1836UNTS3 (from now on, 'Implementation Agreement').

[70] UNCLOS, art 153(2), (3).

[71] Ibid, Annex III - Basic Conditions of Prospecting, Exploration and Exploitation, art 8.

[72] ISA, 'Minerals: Polymetallic Nodules' https://www.isa.org.jm/exploration-contracts/polymetallic-nodules/ (accessed 2 June 2024); 'ISA Council Approves Blue Minerals Jamaica Limited's Plan of Work for Exploration of Polymetallic Nodules in the CCZ', *DSM Observer* (17 December 2020) https://dsmobserver.com/2020/12/isa-council-approves-blue-minerals-jamaica-limiteds-plan-of-work-for-exploration-of-polymetallic-nodules-in-the-ccz/ (accessed 2 June 2024).

[73] 'Current Status of the Reserved Areas with the International Seabed Authority', ISA Policy Brief 01/2019, 3 https://www.isa.org.jm/wp-content/uploads/2022/06/statusofreservedareas-01-2019-a_1-1.pdf (accessed 2 June 2024).

[74] 'Exploration Contracts - International Seabed Authority' (17 March 2022), https://www.isa.org.jm/exploration-contracts/ (accessed 29 May 2024).

https://doi.org/10.1017/bhj.2024.27 Published online by Cambridge University Press

regulations concerning exploration activities were developed between 2000 and 2013, the ISA only started working on exploitation regulations in 2011, producing several drafts since 2016.[75] Between 2019 and 2020, the Council,[76] the executive organ of the ISA, started considering the regulations' fourth draft, presented by its subsidiary organ, the Legal and Technical Commission (LTC). It was planning further discussions of the draft with the help of three working groups when the COVID-19 pandemic put the whole process on hold.[77]

In 2021, Nauru, aiming to sponsor Nauru Ocean Resources Inc. (NORI) for a DSM contract, triggered the 'two-year rule' under the 1994 Implementing Agreement.[78] This rule requires the ISA Council to adopt exploitation regulations within two years of a state's request. If the deadline is unmet, the Council must 'consider and provisionally approve' any pending plan of work for exploitation.[79] Whether the drafters intended to impose a strict deadline on the Council is debated.[80] While the rule was originally included in the Implementing Agreement to defuse stalling tactics (as the Council needs to decide by consensus), it was not designed for situations where most Council members have serious concerns about moving into exploitation.[81] The delay in ISA's negotiations, which have now also missed the July 2023 deadline set by Nauru's request, was not due to a deliberately created deadlock, but rather to genuine regulatory concerns and the impact of the global pandemic.[82] The two-year rule should not be used to forcibly rush the adoption of regulations at the risk of leaving outstanding issues unresolved, including contractor obligations, the controversial benefit-sharing mechanism or the quantity of mining to be allowed.[83]

It is unclear what consequences might follow from the missed deadline.[84] If no mining applications are submitted before the finalization of the Mining Code, the ISA will simply continue negotiating the regulations.[85] If an application is presented,[86] the ISA Council would probably still retain the option of rejecting it.[87] It is unclear what a 'provisional approval' would entail, with Singh arguing that it would not necessarily lead to an automatic

[75] Catherine Blanchard et al, 'The Current Status of Deep-sea Mining Governance at the International Seabed Authority' (2023) 147 *Marine Policy* 105396, 2; ISA, 'The Mining Code', https://www.isa.org.jm/the-mining-code/draft-exploitation-regulations/ (accessed 29 May 2024).

[76] The Council comprises 36 members elected by the ISA Assembly among the 167 UNCLOS States Parties (ISA, 'The Council' https://www.isa.org.jm/organs/the-council/ (accessed 29 May 2024).

[77] Pradeep A Singh, 'The Invocation of the "Two-Year Rule" at the International Seabed Authority: Legal Consequences and Implications' (2022) *The International Journal of Marine and Coastal Law* 37:3, 375–412, 379.

[78] Maria Madalena das Neves, 'Deep-Sea Minerals Exploitation: The Two-year Rule Deadline is Running Out, What Happens Next?', *The NCLOS Blog* (27 June 2023) https://site.uit.no/nclos/wp-content/uploads/sites/179/2023/06/MMN_Deepsea-Minerals-Exploitation_NCLOS-Blog_27062023.pdf (accessed 29 May 2024).

[79] Implementation Agreement, note 69, Annex, sec 1(15)(b), (c).

[80] Blanchard et al, note 75, 1.

[81] Singh, note 77, 384.

[82] Ibid, 385.

[83] Pradeep A Singh, 'The Two-year Deadline to Complete the International Seabed Authority's Mining Code: Key Outstanding Matters That Still Need to be Resolved' (2021) 134 *Marine Policy* 104804.

[84] Daniel Rosenberg, 'The Legal Fight Over Deep-Sea Resources Enters a New and Uncertain Phase' *EJIL: Talk!* (22 August 2023) https://www.ejiltalk.org/the-legal-fight-over-deep-sea-resources-enters-a-new-and-uncertain-phase/ (accessed 3 June 2024); Singh, note 77, 411.

[85] Pradeep A Singh, 'Legal Consequences of the Two-Year Rule at the ISA and Implications of Missing the Deadline' *DSM Observer* (22 August 2022) https://dsmobserver.com/2022/08/legal-consequences-of-the-two-year-rule-at-the-isa-and-implications-of-missing-the-deadline/ (accessed 3 June 2024).

[86] The Metals Company, 'TMC Announces Corporate Update on Expected Timeline, Application Costs and Production Capacity Following Part II of the 28th Session of the International Seabed Authority' (1 August 2023) https://investors.metals.co/news-releases/news-release-details/tmc-announces-corporate-update-expected-timeline-application (accessed 2 June 2024).

[87] Singh, note 77, 400.

https://doi.org/10.1017/bhj.2024.27 Published online by Cambridge University Press

signing of the contract and that it should be subjected to conditionality.[88] While uncertainty persists, it is all the more important to reflect on the known and unknown risks of an activity that has no real precedent.

IV. Contractor and Sponsor State Obligations under UNCLOS

States, individuals and corporations can act as contractors under the DSM regime by entering into contracts with the ISA to explore and exploit resources in the Area. This analysis specifically focuses on corporations as contractors. To apply for an exploration and/or exploitation license, a corporation must obtain sponsorship from a state party. In some cases, multiple sponsorships may be necessary, such as when the applicant has multiple nationalities or is effectively controlled by a state different from their nationality.[89] The ISA currently interprets control mainly as regulatory control,[90] allowing multinational corporations to structure themselves in ways that simplify the identification of their sponsoring state, for instance by establishing subsidiaries in the jurisdiction of states parties willing to sponsor their application.[91]

The responsibility regime of DSM is quite unique under international law. Firstly, only the ISA is entitled to authorize mining activities in the Area, and it organizes and controls them on behalf of humankind as a whole.[92] While the sponsoring state bears supervisory responsibility, the right *to allow* mining activities in the Area is removed from it and any other state. This is a significant difference with the regime emerging from the Outer Space Treaty, for instance, under which 'non-governmental entities' require 'authorization and continuing supervision by the appropriate *State party* [...]'.[93] Secondly, whereas under international space law only state actors retain international responsibility for their own activities, as well as for the activities of non-governmental entities,[94] UNCLOS Part XI envisages a shared responsibility regime under which not only the ISA and states parties but also corporations are duty-bearers.[95] Given the peculiarity of this regime, the present paragraph first briefly illustrates the obligations of sponsoring states to then delve into the obligations of corporations operating as contractors.

A. Sponsoring State Responsibility and Liability

The 2011 Advisory Opinion by the Seabed Disputes Chamber (SDC)[96] clarified sponsoring states' responsibility and liability in DSM, addressing concerns from developing states that

[88] Singh, note 83; Singh, note 77, 408–11.

[89] ITLOS, Responsibilities and Obligations of States With Respect to Activities in the Area, Advisory Opinion, 1 February 2011, ITLOS Reports 2011, para 190.

[90] Control could be interpreted as regulatory or economic control or both (Klaas Willaert, 'Forum Shopping within the Context of Deep Sea Mining: Towards Sponsoring States of Convenience?' (2019) 52 *Revue Belge de Droit International* 116, 123).

[91] Ibid, 124. Negotiators are Aware of the Risk of 'Sponsoring States of Convenience', Which Might Warrant a More Precise Definition of 'Effective Control': IISD, 'Summary of the Twenty-ninth Annual Session of the International Seabed Authority (Second Part): 15 July – 2 August 2024', 2024, 10.

[92] UNCLOS, art 153(1).

[93] Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies (1966), art VI (emphasis added).

[94] Ibid; Agreement Governing the Activities of States on the Moon and Other Celestial Bodies (1979), art 14(1).

[95] Ilias Plakokefalos, 'Environmental Protection of the Deep Seabed' in André Nollkaemper and Ilias Plakokefalos (eds.), *The Practice of Shared Responsibility in International Law*, (Cambridge, UK: Cambridge University Press, 2017) 380, 381, 389; Bernaz and Pietropaoli, note 37, 206.

[96] Advisory Opinion, note 89.

https://doi.org/10.1017/bhj.2024.27 Published online by Cambridge University Press

sponsoring such activities could result in damages exceeding their financial capacity, potentially limiting their participation in DSM.[97] The SDC clarified that the regulatory regime for DSM creates a distribution of responsibilities between ISA, the sponsoring state and the contractor,[98] each liable for their own wrongful acts, with the liability of the sponsoring state and the contractor existing in parallel.[99] The sponsoring state has a *due diligence* obligation to ensure that the activities of contractors in the Area are carried out in conformity with their contractual requirements and with UNCLOS.[100] While 'effective control' over the contractor, as explained above, is a precondition for a state to act as a sponsoring state, the 'responsibility to ensure' entails 'an ongoing duty' to exercise regulatory control over contractors.[101] The relevant 'activities' are all operations directly connected to minerals extraction and lifting to the surface, whereas they exclude on-land processing, marketing and transportation.[102]

Sponsoring states must deploy 'adequate means' and 'exercise best possible efforts' to ensure contractor compliance.[103] Their obligations of conduct entail establishing domestic regulations[104] and applying a precautionary approach, which the SDC considers a customary international law norm *in statu nascendi.*[105] States are also obligated to apply best environmental practices and provide avenues for prompt and adequate compensation for environmental damage caused by marine pollution.[106] Moreover, the SDC underlines that the obligation to conduct environmental impact assessments for all applications for approval of a plan of work reflects a general obligation of customary international law.[107] It is a direct obligation of the sponsoring state to ensure that the contractor fulfils this requirement.[108]

The SDC recognizes the intrinsic variability of the concept of due diligence, which evolves over time and with the emergence of new scientific and technological knowledge.[109] The severity of the standard is higher for the riskier activities, with exploitation to be generally regarded as riskier than prospecting.[110] The SDC affirms the principle of equality of treatment of sponsoring states, meaning that both developed and developing states face equal responsibility and liability.[111] The underlying reasoning is that to bind developing states to a less stringent due diligence standard would encourage the spreading of sponsoring states 'of convenience', incentivizing contractors to set up companies where they can benefit from more lenient regulations.[112]

The framework outlined by the SDC entails a risk of uncompensated loss. A sponsoring state is liable only if a causal link between its failure to fulfil its own responsibilities and the

[97] Tim Poisel, 'Deep Seabed Mining: Implications of Seabed Disputes Chamber's Advisory Opinion' (2012) 19 *Australian International Law Journal* 213, 216.

[98] Advisory Opinion, note 89, para 200.

[99] ILA Study Group on Due Diligence in International Law, Second Report, (2016), 26, https://www.ila-hq.org/en_GB/documents/draft-study-group-report-johannesburg-2016 (accessed 3 June 2024).

[100] Advisory Opinion, note 89, para 110. See UNCLOS art 139(1).

[101] IISD, note 91, 9–10.

[102] Advisory Opinion, note 89, paras 84, 94–6.

[103] Ibid, para 110.

[104] Ibid, paras 108–10, 218–19.

[105] Ibid, para 135.

[106] Ibid, para 139.

[107] Ibid para 122, 145.

[108] Ibid, para 141.

[109] Ibid, para 117.

[110] Ibid.

[111] Ibid, paras 158–9.

[112] Ibid, para 159.

https://doi.org/10.1017/bhj.2024.27 Published online by Cambridge University Press

contractor's damage can be established.[113] If this link cannot be proven, or if the state has complied and the contractor cannot pay its liability, the damage may go uncompensated.[114] In such cases, the state cannot be held liable for the contractor's noncompliance.[115] The SDC recommends that the ISA consider establishing a trust fund to address this liability gap and notes that the responsibility and liability regime may evolve through changes in the DSM regulatory framework or developments in international law.[116]

B. Contractor Responsibility and Liability

Contractors' obligations under the DSM primarily stem from international law and the domestic laws of the sponsoring state, along with relevant transnational instruments.[117] For corporations, this includes international soft law standards like the UNGPs and Organisation for Economic Co-operation and Development (OECD) Guidelines on Responsible Business Conduct.[118] This section clarifies the nature of contractors' obligations under the DSM regime, which, like those of sponsoring states, are obligations of conduct rather than result.[119] The DSM framework includes UNCLOS Part XI, its Implementing Agreement and secondary law adopted by the ISA, such as exploration and draft exploitation regulations. These rules apply to contractors through the Standard Clauses included as annexes in the exploration and draft exploitation regulations.[120]

Firstly, it should be noted that the Implementing Agreement's provision that the 'contractor shall have responsibility or liability for any damage arising out of wrongful acts in the conduct of its operations'[121] should not be read as imposing strict liability. Indeed, here the terms responsibility and liability are used interchangeably to indicate 'the secondary legal obligations arising from unlawful acts',[122] namely, from the breach of a legal norm. As explained by the SDC, 'the liability of the sponsored contractor arises from its failure to comply with its obligations under its contract and its undertakings thereunder'.[123]

Secondly, the due diligence nature of the contractor's obligations appears from the language of the ISA's regulations on exploration and of the Standard Clauses for Exploration Contracts.[124] The ISA regulations on prospecting and exploration ('exploration regulations') affirm that contractors 'shall take necessary measures' to

[113] Ibid, paras 166–84. ILA notes that this differs from the customary international law standard, under which 'state liability would arise even though no material damage resulted from the failure of the state to meet its international obligations' (ILA, note 99, 26, fn 153).

[114] Advisory Opinion, note 89, para 203.

[115] Ibid, paras 204, 184, 166.

[116] Ibid, para 211.

[117] Isabel Feichtner, 'Contractor Liability for Environmental Damage Resulting from Deep Seabed Mining Activities in the Area' (2020) 114 *Marine Policy* 103502, 2.

[118] OECD Guidelines for Multinational Enterprises on Responsible Business Conduct (2023); UN Guiding Principles on Business and Human Rights (2011) A/HRC/17/31 ('UNGPs').

[119] Alexander Proelss and Robert C Steenkamp, 'Liability Under Part XI UNCLOS (Deep Seabed Mining)' in Peter Gailhofer et al (eds.), *Corporate Liability for Transboundary Environmental Harm*, (Cham, Switzerland: Springer International Publishing, 2023) 559, 566–7.

[120] Plakokefalos, note 95, 384.

[121] Implementing Agreement, Annex III, art 22.

[122] Feichtner, note 117, 2.

[123] Advisory Opinion, note 97, para 204.

[124] Plakokefalos, note 95, 388.

https://doi.org/10.1017/bhj.2024.27 Published online by Cambridge University Press

protect and preserve the environment in accordance with Article 145 UNCLOS.[125] Such due diligence obligation is qualified by a reasonableness criterion ('as far as reasonably possible') and by a requirement to apply a precautionary approach and best environmental practices.[126] The Standard Clauses specify that contractors are liable for damage arising out of not only their own wrongful acts or omissions, but also that of their 'employees, subcontractors, agents and all persons engaged in working or acting for them'.[127]

The ILA noted that the SDC's Advisory Opinion on the DSM's liability regime did not consider situations where damage to the marine environment occurs without any unlawful acts by the contractor, who therefore cannot be held liable.[128] The SDC may have assumed that harm from lawful activities would be covered by contractually mandated insurance as recommended by the ISA's Standard Clauses.[129] The ILA also pointed out that the DSM regime differs from the International Law Commission's Loss Allocation Principles, which state that operator liability for transboundary damage from hazardous activities does not depend on fault.[130] This difference may stem from two reasons: firstly, both Part XI of UNCLOS and the ISA regulations aim primarily to *facilitate* deep seabed resource exploitation while ensuring precautionary measures to protect the marine environment, rather than focusing solely on preservation.[131] Secondly, the limited knowledge of the deep-sea environment at the time UNCLOS was negotiated likely led to an underestimation of DSM's hazards.[132] As knowledge improves and the risks become clearer, the DSM regime must evolve accordingly.

The SDC recognizes that due diligence is a flexible standard, allowing contractors' specific obligations to evolve with emerging scientific evidence about environmental risks and the availability of new technologies.[133] While this flexibility does not allow for a shift from due diligence liability to strict liability, it enables the ISA to establish stringent environmental due diligence obligations that consider both known and unknown risks posed by DSM to vital deep-sea ecosystems.[134] The ILA suggests that a broad due diligence obligation may initially promote participation, with the potential to evolve into a stricter system of legal accountability as involvement increases.[135] In its 2024 Advisory Opinion, the International Tribunal for the Law of the Sea (ITLOS) confirmed that 'stringent' due diligence obligations are necessary to prevent 'serious and irreversible harm to the marine environment', particularly in cases of transboundary pollution.[136] It emphasized that the obligation to protect and preserve the marine environment under UNCLOS Article 192 applies to all maritime areas and all forms of marine environmental degradation.[137]

[125] Regulations on Prospecting and Exploration for Polymetallic Nodules [PMN] (ISBA/19/C/17 and ISBA/19/A/9), (2013), Reg. 31(5); for Polymetallic Sulphides [PMS] (ISBA/16/A/12/Rev.1), Reg.33(5); for Cobalt-rich Ferromanganese Crusts [CFC] (ISBA/18/A/11), Reg.33(5).

[126] Exploration Regulations, note 125, Reg. 5(1).

[127] Ibid, Standard Clauses for Exploration Contract, sec 16(1).

[128] ILA, note 99, 27.

[129] Ibid, referring to Exploration Regulations, note 125, Standard Clauses, secs 16, 16.5.

[130] ILC Draft Principles on the Allocation of Loss in the Case of Transboundary Harm Arising Out of Hazardous Activities, *Yearbook of the International Law Commission*, 2006, vol. II, Part Two, Principle 4.

[131] Feichtner, note 117, 3.

[132] Ibid, 3–4.

[133] ILA, note 99, 21.

[134] Feichtner, note 117, 3; Proelss and Steenkamp, note 119, 569.

[135] ILA, note 99, 3.

[136] ITLOS, Climate Change and International Law, Advisory Opinion, 21 May 2024, paras 243, 258.

[137] Ibid, para 400.

https://doi.org/10.1017/bhj.2024.27 Published online by Cambridge University Press

A more fundamental question, explored in the next section, is whether the current level of knowledge allows, in practice, for the designing of due diligence processes that can be reasonably expected to prevent serious and irreversible harm.

V. The elements and Limits of a Due Diligence Process in the Context of Deep Seabed Mining

While contractor obligations under the DSM regime are obligations of conduct, the UNGPs establish a 'strict' responsibility, formulated as a 'no harm' responsibility, for a corporation's own impacts.[138] The UNGPs adopt due diligence as a standard of care only in relation to a corporation's responsibility for the conduct of third parties (for instance, their suppliers).[139] The parallel between the international law regime for DSM and the UNGPs is of course limited, given the different nature and goals of these frameworks. However, the contractor's obligation, under the Mining Code,[140] to establish procedures to identify and mitigate risks resonates with the concept of human rights (and environmental) due diligence, intended as a process,[141] contained in both the UNGPs and the OECD Guidelines for Multinational Enterprises. Under these soft law instruments, risk assessment constitutes the first step of the due diligence process. The OECD Guidelines recommend conducting an appropriate environmental impact assessment when significant environmental impacts are identified. They state that due diligence measures should include measurable objectives and science-based targets and strategies, and they recommend regularly reviewing the relevance of these objectives and the effectiveness of the measures adopted.[142] Both the UNGPs and the OECD Guidelines emphasize that the severity of impacts—based on their scale and irremediability—should guide companies in prioritizing due diligence measures.[143] Meaningful consultation with stakeholders and affected communities is also essential throughout the assessment and due diligence processes.[144]

As the next paragraphs show, scientific uncertainty around the potential impacts of DSM, certain institutional limitations and flaws in the current version of the Mining Code might stand in the way of credible impact assessment and due diligence processes in the context of DSM.

A. The elements of Environmental Due Diligence Emerging from the Mining Code

Environmental Impact Assessment Provisions in the Exploration Regulations

The UNGPs posit that the first step of a due diligence process is the identification and assessment of any actual or potential adverse impacts with which the corporation may be involved either through its own activities or as a result of its business relationships.[145] In relation to environmental risks, the revised OECD Guidelines for Multinational Enterprises specifically recommend environmental impact assessments addressing risks associated with their operations, products and services.[146] Under the DSM regime, the exact obligations of

[138] Jonathan Bonnitcha and Robert McCorquodale, 'The Concept of "Due Diligence" in the UN Guiding Principles on Business and Human Rights' (2017) 28:3 *European Journal of International Law* 899–919.

[139] Ibid, 912.

[140] Expression used by ISA to indicate the whole body of exploration and (draft) exploitation regulations and procedures (ISA, 'The Mining Code' https://www.isa.org.jm/the-mining-code/).

[141] Bonnitcha and McCorquodale, note 138, 900.

[142] OECD Guidelines, note 118, Guideline 1(b), (c).

[143] Ibid, Commentary to Chapter II, para 19; UNGPs, note 118, GP 14.

[144] OECD Guidelines, note 118, Commentary to Chapter II, para 28, Chapter VI, Guideline 2; UNGPs, note 118, GP 18(b).

[145] UNGPs, note 118, GP 18.

[146] OECD, note 118, 33, para 1.

https://doi.org/10.1017/bhj.2024.27 Published online by Cambridge University Press

contractors are not fully defined, yet, pending the finalization of the exploitation regulations.[147]

Under the ISA Exploration Regulations,[148] adopted in 2013, two relevant phases can be identified: before contract award and after contract award. In the first phase, the obligation is limited to a 'preliminary assessment of the possible impact of the proposed exploration activities on the marine environment for the first five years of the plan of work'.[149] While the Standard Clauses for exploration contracts require submission of 'an impact assessment' of the proposed activities prior to the commencement of exploration work,[150] the scope and contents of this preliminary assessment are not further specified and are likely to be limited by the scarce information that the applicant can collect at this stage of the process.[151] In the second phase, namely, during an exploration contract, the assessment of potential environmental impacts of exploration activities is guided by a set of non-binding Environmental Impact Assessment (EIA) Recommendations issued by the LTC that contractors are called to observe 'as far as reasonably practicable'.[152] Submission of an Environmental Impact Statement (EIS) prior to the commencement of exploration is recommended only for certain activities, whose unspecific characterization (e.g., 'taking of large samples' and 'testing of mining components') leaves room for interpretation.[153] While the EIS should follow a 14-heading template and the Recommendations provide a list of baseline data, no minimum requirements are set against which an EIA for exploration activities should be assessed.[154] Lacking harmonized binding rules on data collection, the LTC has noted that the quality and type of data collected by contractors varies significantly.[155] While the LTC reviews the EIA 'for completeness, accuracy and statistical reliability',[156] it lacks the power to reject an inadequate EIS.[157] The LTC may decide to 'not recommend incorporation of the environmental impact statement into the programme of activities under the contract',[158] but the consequences of this are unclear.[159] These EIA features fall short of recognized best practices.[160]

Recommendations on stakeholder involvement and post-permit monitoring are also relatively weak. The UNGPs consider 'meaningful consultation with potentially affected groups and other relevant stakeholders' to be an essential part of the risk assessment process.[161] The OECD Guidelines refer more generally to 'meaningful stakeholder

[147] Feichtner, note 117, 4.

[148] Exploration Regulations, note 125.

[149] Ibid, Reg. 18.

[150] Ibid, Standard Clauses, sec 5.

[151] Neil Craik and Kristine Gu, 'Implementing Environmental Impact Assessment for Deep Sea Mining: Lessons to Be Drawn from International and Domestic EIA Processes' (The Pew Charitable Trusts, 2021), 13 https://www.pewtrusts.org/-/media/assets/2021/06/craik–gu–implementing-environmental-impact-assessment-for-deep-sea-mining.pdf (accessed 3 June 2024); Hanna Lily et al, 'Analysis of the International Seabed Authority Environmental Impact Assessment Regime during Exploration' (CODE Project, 2023), 4, fn 8.

[152] Exploration Regulations, note 125, Reg. 18; Standard Clauses, sec 13.2(e).

[153] Lily et al, note 151, 7.

[154] Ibid.

[155] ISA, Report of the Chair of the Legal and Technical Commission on the Work of the Commission at the Second Part of its Twenty-seventh Session, ISBA/27/C/16/Add.1 (2022), see paras 19–22.

[156] LTC, Recommendations for the Guidance of Contractors for the Assessment of the Possible Environmental Impacts Arising From Exploration for Marine Minerals in the Area, ISBA/25/LTC/6/Rev.1 (30 March 2020), para 41(c) ('EIA Recommendations').

[157] Craik and Gu, note 151, 13; Lily et al, note 151, 12.

[158] EIA Recommendations, note 156, para 41(i).

[159] Lily et al, note 151, 12.

[160] Ibid, 6–14; Farran, note 23, 185–6.

[161] UNGPs, note 118, GP18.

https://doi.org/10.1017/bhj.2024.27 Published online by Cambridge University Press

engagement' as a key component of the due diligence process, which should prioritize 'the most severely impacted or potentially impacted stakeholders'.[162] While weakened by their non-binding character, the EIA Recommendations could ground a more granular definition of states' and contractors' due diligence obligations by setting clear parameters. Instead, they fail to set an explicit stakeholder consultation requirement, although the LTC 'may encourage' the sponsoring state to conduct one, they do not spell out the features of and conditions for such consultation.[163] This seems at odds with the principle of public participation contained in the Aarhus Convention,[164] and it increases the risk of exploration plans being approved notwithstanding inadequate or incomplete EIAs.[165] The failure of the Solwara 1 project in Papua New Guinea, partly fuelled by an NGO's critical review of its EIA,[166] highlights the importance of independent reviews, which the current regime does not mandate. Nor has the LTC, so far, followed a practice of involving independent experts to fill the gaps of its in-house expertise,[167] which raises concerns about how the LTC can ensure, 'on the basis of the best available scientific and technical information',[168] that the proposed activities won't harm vulnerable marine ecosystems.

The recently adopted Agreement on the Conservation and Sustainable Use of Marine Biological Diversity of Areas beyond National Jurisdiction (BBNJ Agreement) will require states parties to conduct EIAs for activities beyond national jurisdiction, assessing not only environmental impacts but also economic, social, cultural and human health impacts, including cumulative effects. These assessments should be based on the best available science and, where applicable, the traditional knowledge of indigenous peoples and local communities.[169] This obligation will bind states parties involved in DSM projects. Unlike ISA regulations, which allow conducting EIAs after exploration permits are issued, the BBNJ Agreement mandates a full EIA *before* authorizing any planned activity.[170]

Environmental Due Diligence under the Draft Exploitation Regulations

The consolidated draft of the exploitation regulations was submitted by the LTC to the ISA Council in 2019, and in 2020 an informal working group was tasked with advancing discussions on its marine environmental protection provisions.[171] The latest draft, discussed at the 29th ISA annual session,[172] includes the principle of effective protection of the marine environment from the harmful effects of exploitation.[173]

[162] OECD Guidelines, note 118, Chapter III, para 28.

[163] EIA Recommendations, note 156, para 41(d).

[164] Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters, 25 June 1998, reprinted in 38 International Legal Materials 15 (1999).

[165] Lily et al, note 151, 10–11.

[166] Jennifer M Durden et al, 'Environmental Impact Assessment process for deep-sea mining in "the Area"' (2018) 87 *Marine Policy* 194–202, 199–200.

[167] Lily et al, note 151, 9.

[168] Exploration Regulations, note 125, Reg. 31.4.

[169] BBNJ Agreement, art 31.1(b), (c).

[170] Ibid, art 28.1.

[171] ISA, Decision of the Council Concerning Working Methods to Advance Discussions on the Draft Regulations for Exploitation of Mineral Resources in the Area, ISBA/26/C/11, 21 February 2020.

[172] ISA, 'Draft Regulations on Exploitation of Mineral Resources in the Area', ISBA/29/C/CRP.1 (16 February 2024), ('Draft Exploitation Regulations').

[173] Ibid, Reg. 2(e).

https://doi.org/10.1017/bhj.2024.27 Published online by Cambridge University Press

Like the exploration regulations,[174] it embraces the precautionary principle, 'or approach, as appropriate'.[175] In 2023, the informal working group proposed conditioning the LTC's consideration of a plan of work on the adoption by the ISA Council of a Regional Environmental Management Plan (REMP) for the area concerned.[176] The REMP aims at providing the ISA, the contractor and the sponsoring state 'with proactive area-based and other management tools to support informed decision-making processes that balance resource development with conservation'.[177] A REMP has been adopted for the CCZ[178] and others are under discussion.[179] While the REMP is a precondition to mining, not all its elements are automatically binding.[180] The CCZ's REMP, adopted in 2012 and updated in 2021, designates 'areas of particular environmental interest' (APEIs) protected from future mining.[181] The draft regulations indicate that the LTC will not recommend for approval mining proposals in these areas, suggesting legally binding protection for APEIs.[182] However, the binding nature of other REMP elements remains unclear, as disagreements persist among states.[183] Discussions at the 29th ISA session emphasized that REMPs are 'first and foremost policy instruments', although parts of them might be made binding.[184] It is worth noting that, while REMPs are area-based management tools (ABMTs) narrowly focused on environmental considerations in DSM,[185] ABMTs under the new BBNJ Agreement are more broadly aimed at protecting biodiversity and ecosystems while supporting 'food security and other socioeconomic objectives, including the protection of cultural values'.[186]

Under the draft regulations, contractors must establish an environmental management system (EMS) to protect the marine environment from mining impacts.[187] The EMS, reviewed periodically by an independent organization,[188] contains an environmental impact statement (EIS) ensuring compliance with applicable environmental standards,

[174] Exploration Regulations, note 125, Reg. 2.2.

[175] Draft Exploitation Regulations, note 172, Reg. 2.4(b).

[176] ISA, 'Draft Regulations on Exploitation of Mineral Resources in the Area', ISBA/28/C/IWG/ENV/CRP.2/Rev.1 (21 June 2023) ('Draft Exploitation Regulations'), Reg. 44 bis.

[177] ISA, 'Regional Environmental Management Plans' https://www.isa.org.jm/protection-of-the-marine-environment/regional-environmental-management-plans/#:~:text=Regional%20environmental%20management%20plans%20(REMPs,Level%20Action%20Plan%20(HLAP) (accessed 3 June 2024).

[178] ISA, 'Environmental Management Plan for the Clarion-Clipperton Zone' https://www.isa.org.jm/protection-of-the-marine-environment/regional-environmental-management-plans/ccz/ (accessed 3 June 2024).

[179] ISA, 'Draft REMP for the Northern Mid-Atlantic Ridge' https://www.isa.org.jm/protection-of-the-marine-environment/regional-environmental-management-plans/northern-mar/ (accessed 3 June 2024); ISA, 'Progress in Other Priority Regions', https://www.isa.org.jm/protection-of-the-marine-environment/regional-environmental-management-plans/other-regions/ (accessed 3 June 2024).

[180] Chris 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, 10.

[181] Draft Exploitation Regulations, note 176.

[182] Draft Exploitation Regulations, note 172, Reg. 15.2(b)(iv).

[183] Pew Charitable Trusts, 'How do Regional Environmental Management Plans Fit Within the ISA's Mining Code', (2023), 2 https://www.isa.org.jm/wp-content/uploads/2023/10/Giving-Legal-Effect-to-REMPs_Pew-Charitable-Trusts.pdf (accessed 3 June 2024).

[184] ISA, 29th Session Part I – Fast Facts on the Meetings of the Council, 2024 https://www.isa.org.jm/29th-session-fast-facts/ (accessed 1 October 2024).

[185] Samantha Robb, 'How could the BBNJ Agreement affect the International Seabed Authority's Mining Code?' *EJIL: Talk!* (13 April 2023), https://www.ejiltalk.org/how-could-the-bbnj-agreement-affect-the-international-seabed-authoritys-mining-code/ (accessed 1 October 2024).

[186] BBNJ Agreement, art 17(d).

[187] Draft Exploitation Regulations, note 172, Reg. 50 bis.

[188] Ibid.

https://doi.org/10.1017/bhj.2024.27 Published online by Cambridge University Press

including the relevant REMP.[189] The EIS is based on an Environmental Impact Assessment (EIA) and an Environmental Risk Assessment (ERA).[190] The EMS also includes an environmental management and monitoring plan (EMMP) for continuous monitoring by the contractor of the actual and potential harmful effects of mining on the marine environment.[191] Some members of the Informal Working Group on the Protection and Preservation of the Marine Environment criticize this self-monitoring approach and advocate for independent monitoring programmes covering at least the first years of a mining project.[192] The EMS also includes a closure plan, though specific guidance is pending.[193]

A positive aspect of the draft Regulations is the 90-day public consultation period for submitted environmental plans (EIS, EMMP and Closure Plan), allowing stakeholders to provide written feedback.[194] However, disagreements remain over what confidential information will be excluded from publication.[195] Similar to the exploration regulations, stakeholder participation in the exploitation regime is limited.[196] The draft regulations establish that the EIA process shall 'provide' for stakeholder consultation which, under Regulation 93 bis, entails measures of transparency and requires contractors to submit a written response to the consultation.[197] However, it is unclear how much influence these consultations will have on decision-making,[198] as Regulation 12 only states that the LTC 'shall take into account' stakeholder comments and the contractor's response.[199]

The current DSM regime gives limited attention to human rights risks.[200] The draft regulations mention the protection of human life, health, safety and labour standards for those involved in exploitation[201] but provide less focus on broader human rights impacts. The LTC is required to 'take into account' health effects from environmental impacts,[202] and the ocean's cultural value is only considered regarding underwater heritage discoveries.[203] Draft Annex IV of the EIS asks contractors to describe the socioeconomic and sociocultural impacts of projects, which 'may include' details about the scale, severity or cumulative nature of impacts.[204] A 'list of sociocultural values and uses' should be provided in the EIS, indicating when a site is associated with the activities of indigenous peoples and local communities,[205] but human rights are not explicitly referenced. There is

[189] Ibid, Annex IV.
[190] Ibid, Schedule.
[191] Ibid, Reg. 49.3.
[192] IISD, note 91, 11.
[193] Keith MacMaster, 'Sustainable Seabed Mining and the Phase 1 Environmental Standards and Guidelines' (Schulich School of Law, 2023), 25, 30–2 https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4388191 (accessed 3 June 2024).
[194] Draft Exploitation Regulations, note 172, Reg. 11.1(a).
[195] Pickens et al, note 180, 14.
[196] Elisabetta Menini, Anindita Chakraborty and Stephen E. Roady, 'Public Participation in Seabed Mining in Areas Beyond National Jurisdiction: Lessons Learned From National Regulators in the Terrestrial Mining Sector' (2022) 146 *Marine Policy* 105308, 2.
[197] Draft Exploitation Regulations, note 172, Reg. 46.3(d), Reg. 93 bis.
[198] Menini et al 2022, note 196, 6.
[199] Draft Exploitation Regulations, note 172, Reg. 12.4 (bis).
[200] Aguon and Hunter, note 2, 22.
[201] Draft Exploitation Regulations, note 172, Reg. 13.3, Reg. 30.
[202] Ibid, Reg. 13.5.
[203] Ibid, Reg. 35.
[204] Ibid, Annex IV, para 6.
[205] Ibid, Annex IV, para 6.2.5.

https://doi.org/10.1017/bhj.2024.27 Published online by Cambridge University Press

also little clarity on how contractors should gather impact data and apply mitigation measures, and a list of goals and targets against which the EIS can be evaluated is not provided by the draft regulations.[206]

Morgera argues that 'deep-seabed mining can reduce the availability, accessibility, and acceptability of marine spaces and marine resources in the Area' and in connected marine areas, with impacts on human rights and the rights and culture of indigenous peoples.[207] Yet, human rights and social impacts remain marginal in the emerging DSM regime, both from a substantial and procedural point of view.[208] Several experts are calling on the ISA to adopt a human rights-based approach and make its decision-making participatory, in line with its obligation[209] to manage the Area on behalf and for the benefit of humankind while ensuring the protection of the marine environment and human life.[210]

Assessing 'Acceptable Harm' in the Face of Scientific Uncertainty

It is important to recall that an obligation of due diligence does not guarantee that harm will not occur.[211] State and contractor due diligence obligations under the DSM regime do not imply a no-harm standard but rather allow for a degree of 'acceptable' harm.[212] Establishing what degree of environmental harm is acceptable under this regime, therefore, is crucial to devising adequate due diligence standards and assessing their adequacy. As Feichtner notes, under the Convention for the Regulation of Antarctic Mineral Resource Activities (CRAMRA), the resource exploitation framework for Antarctica which never entered into force, exploitation was prohibited if it caused certain 'significant' changes or adverse environmental effects.[213] The unacceptable impacts were defined with a certain degree of specificity and based on a low threshold of harm.[214] Under UNCLOS, the ISA Council may disapprove an area for exploitation, based on an LTC's recommendation, when 'substantial evidence' indicates the risk of 'serious harm' to the environment.[215] Under the Exploration Regulations, 'serious harm' is defined as 'any effect [...] which represents a *significant adverse change* in the marine environment' determined on the basis of internationally recognized standards and practices.[216] In the draft Exploitation Regulations, instead, the definition remains in brackets, hence, still under discussion.[217]

[206] Diva J Amon and Sabine Gollner, 'Commentary on "Draft Regulations on Exploitation of Mineral Resources in the Area"' (DOSI, 2019), 16, https://www.dosi-project.org/wp-content/uploads/DOSI-Comment-on-ISA-Draft-Exploitation-Regulations-October-2019.pdf (accessed 3 June 2024); Douglas et al, note 29, para 66(a).

[207] Morgera, note 50, 95.

[208] Clément Chazot et al, 'Deep Seabed Mining and Human Rights' (IUCN, 2024) https://www.iucn.org/resources/grey-literature/deep-seabed-mining-and-human-rights-statement#:~:text=With%20ecosystem%20service%20degradation%2C%20it,including%20protection%20of%20cultural%20heritage. (accessed 3 June 2024); Aguon and Hunter, note 2.

[209] See arts 145-6 UNCLOS.

[210] Chazot et al, note 208; Morgera, note 50, 93-94; Ardron et al, note 57, 362.

[211] Report of the International Law Commission, 53rd Session, UN Doc. A/56/10 (2001), 154.

[212] Feichtner, note 117, 3.

[213] Convention on the Regulation of Antarctic Mineral Resource Activities, 1988 (CRAMRA), arts 4.2, 4.3.

[214] Unacceptable harm would be "any impact on the living or non-living components of that environment or those ecosystems, including harm to atmospheric, marine or terrestrial life, *beyond that which is negligible* or which has been assessed and judged to be acceptable pursuant to this Convention" (art 1.15 CRAMRA, emphasis added).

[215] UNCLOS, art 162.2(w), art 165.2(k).

[216] Exploration Regulations, note 125, Reg. 1.3(f) (emphasis added).

[217] Draft Exploitation Regulations, note 172, Schedule – Use of terms and scope.

https://doi.org/10.1017/bhj.2024.27 Published online by Cambridge University Press

While the threshold for serious harm remains undefined, the negotiating history of UNCLOS shows that it should be set lower than 'irreversible harm'.[218] This, however, besides establishing a higher threshold than the one found in CRAMRA,[219] provides little practical guidance as to the conditions that should compel the ISA to prohibit mining. Clarifying how 'significant adverse change' should be assessed in practice is of key importance in defining the specific obligations of states, contractors and the ISA.[220] The vagueness of the legal definition is compounded by the high level of scientific uncertainty, which means that available baseline information might not be enough to estimate the scale, severity and persistence in time of the impacts.[221] This complicates contractors' ability to implement effective impact assessments and due diligence. Additionally, the LTC's capacity to address complex environmental science issues is limited by resource constraints and a lack of specialized expertise.[222]

These factors would warrant an approach based on precaution, considering that a fine line might stand in the way of habitat destruction and species extinction. In the absence of clear standards, the crucial definition of 'serious harm' risks being subjected to the autonomous determination of contractors.[223] Moreover, the lack of a clear threshold and criteria against which to assess the adequacy of a contractor's risk assessment and mitigation measures could create obstacles in the finding of liability and the application of insurance coverage.[224]

VI. Discussion

Feichtner claims that the scientific knowledge we already hold concerning the likely impacts of DSM on the marine environment is sufficient to qualify DSM as a 'hazardous activity',[225] which under international environmental law generally requires a higher standard of care.[226] While contractors under the DSM regime are not strictly liable for the adverse impacts of their DSM operations, the ISA could still strengthen their liability, as well as enhance environmental protection, by devising far-reaching due diligence obligations, setting a low threshold for 'acceptable harm' and implementing the precautionary principle.[227] Stringent due diligence obligations would also be compatible with existing

[218] Douglas et al, note 29, para 39.

[219] Feichtner, note 117, 3.

[220] Ibid, 4.

[221] Levin et al, note 4, 248; PAJ Lusty et al, 'Deep Sea Mining Evidence Review', (British Geological Survey, 2022), xiv https://www.bgs.ac.uk/download/deep-sea-mining-evidence-review/ (accessed 3 June 2024).

[222] In the LTC, experts in ecology and environmental science are under-represented, while most members are geologists or lawyers. (LTC, 'Meet the Members of the Legal and Technical Commission 2023-2027', https://www.isa.org.jm/organs/the-legal-and-technical-commission/ltc-members-2023-2027-3/ (accessed 3 June 2024); Ida Soltvedt Hvinden, 'To Mine or Not to Mine the Deep Seabed?: The Relative Influence of Competing NGO Views in Defining "Serious Harm" to the Marine Environment' (2024) 23:1 *Maritime Studies* 11, 13; David Billet et al, 'Eighth Report - Enhancing Scientific Expertise at the ISA', (CODE Project, 2023), 8–11, https://www.pewtrusts.org/-/media/assets/2023/04/code-project_enhancing-scientific-expertise-at-the-isa.pdf (accessed 3 June 2024).

[223] Soltvedt Hvinden, note 222, 6, 13.

[224] Feichtner, note 117, 8; Keith MacMaster, 'Environmental Liability for Deep Seabed Mining in the Area: An Urgent Case for a Robust Strict Liability Regime' (Schulich School of Law, 2019), 24 https://digitalcommons.schulichlaw.dal.ca/cgi/viewcontent.cgi?article=1584&context=scholarly_works (accessed 3 June 2024); Keith MacMaster, note 193, 31.

[225] Feichtner, note 117, 9.

[226] ILA, note 99, 21.

[227] Feichtner, note 117, 3.

https://doi.org/10.1017/bhj.2024.27 Published online by Cambridge University Press

business and human rights standards, which associate high-risk contexts or activities with the need for enhanced forms of human rights and environmental due diligence.[228] In general, soft law and emerging mandatory due diligence legislation provide for risk-based due diligence, requiring companies to prioritize and shape their actions based on the severity of the (potential) impacts and on issues of context.[229] For high-risk activities such as those often characterizing the extractive industries, an outcome-based approach to due diligence is paramount to preventing harm and should lay the basis for 'go/no go' decisions.[230]

The current state of the Mining Code, with the Exploitation Regulations still under negotiation, leaves several key issues unresolved. There is no binding guidance on how to assess the adequacy of environmental baselines or EIS. While the LTC may provide more clarity in the future,[231] there are no definite criteria for the ISA to disallow or halt exploration and exploitation activities.[232] The lack of precise definitions and thresholds for 'harmful effects' and 'serious harm', along with scientific uncertainty, makes it difficult for contractors to implement effective risk assessments and due diligence processes. This also hinders sponsoring states and the ISA from identifying flaws before irreversible damage occurs, increasing the risk of 'managerialization',[233] where contractors control the definition of compliance.[234]

Extractive activities often take place in remote locations with 'few linkages with the rest of the economy and the remainder of the population'.[235] These features, which are arguably present to the extreme in the case of DSM, encourage business-centric models of due diligence, with limited involvement of stakeholders, in which the due diligence model's adequacy is evaluated only ex post.[236] In the case of DSM, even this retrospective assessment could be made impossible by the remoteness and the dilution in time and space of the impacts, which complicate the reconstruction of causal links. If contractors' due diligence obligations are to be devised taking into account the hazardous nature of DSM,[237] the law must provide clear and binding guidance as to the criteria—*in primis*, the definition of unacceptable harm—that must orient go/no go decisions on the part of the duty-bearers. Whether this is possible in practice remains doubtful, in the light of current gaps in scientific knowledge.[238]

[228] OECD Guidelines, note 118, Ch. II, para 19; Ch. IV, para 45; UNGPs, note 118, GP7.

[229] Besides the already mentioned soft law standards, see, for instance: EU Directive on Corporate Sustainability Due Diligence 2019/1937 (2024), art 3(c)(ii), art 3(u), art 9.2; Norwegian Transparency Act, 2021 (unofficial translation), sec 4 https://www.regjeringen.no/contentassets/c33c3faf340441faa7388331a735f9d9/transparency-act-english-translation.pdf (accessed 3 June 2024).

[230] Daniela Chimisso and Sara L. Seck, 'Human Rights Due Diligence and Extractive Industries' in Surya Deva and David Birchall (eds.), *Research Handbook on Human Rights and Business*, (Cheltenham, UK: Edward Elgar Publishing, 2020) 151, 168.

[231] ISA, Decision of the Council of the International Seabed Authority Relating to the Development of Binding Environmental Threshold Values, ISBA/27/C/42 (2022).

[232] Douglas et al, note 29, para 66.

[233] Lauren B Edelman, Sally Riggs Fuller and Iona Mara-Drita, 'Diversity Rhetoric and the Managerialization of Law' (2001) 106:6 *American Journal of Sociology* 1589–1641; Lauren B. Edelman, *Working Law: Courts, Corporations, and Symbolic Civil Rights* (Chicago: University of Chicago Press, 2016).

[234] David Monciardini, Nadia Bernaz and Alexandra Andhov, 'The Organizational Dynamics of Compliance With the UK Modern Slavery Act in the Food and Tobacco Sector' (2021) 60:2 *Business & Society 288–340.*

[235] Chimisso and Seck, note 249, 152.

[236] Ibid, 166–7.

[237] Feichtner, note 117, 9.

[238] Elisa Morgera et al, 'Addressing the Ocean-Climate Nexus in the BBNJ Agreement: Strategic Environmental Assessments, Human Rights and Equity in Ocean Science' (2023) 38:3 *The International Journal of Marine and Coastal Law* 447–79, 463.

https://doi.org/10.1017/bhj.2024.27 Published online by Cambridge University Press

A. The Call for a Precautionary Pause to DSM

A significant movement of scientists, activists,[239] and several states and companies is advocating for a 'precautionary pause' or 'moratorium' on DSM. To date, 58 businesses have signed a petition,[240] including companies from the technology sector,[241] the energy and mobility sector,[242] the retail sector[243] and several financial institutions.[244] Other companies and financial institutions have expressed support for a moratorium[245] or have adopted a policy 'excluding deep-sea metals from their procurement policies and/or investment policies'.[246] 32 States expressly support a precautionary pause or moratorium, at the time of writing. These include Global North countries such as France (advocating for a ban), the United Kingdom (UK), Canada, Denmark, New Zealand, Germany and Spain, among others, and Global South countries, mostly from Latin America (e.g., Brazil, Chile and Mexico) and the South Pacific (e.g., Vanuatu, Fiji and Samoa). [247] Malta, Tuvalu, Honduras, Guatemala and Austria joined this front at the 29th annual session of the ISA.[248] These calls are broadly based on the precautionary principle, which permeates the Mining Code[249] and requires adopting cost-effective measures for environmental protection despite scientific uncertainty.[250] A deferral of DSM based on this principle is not only compatible with UNCLOS but arguably required to comply with its provisions.[251]

While the term 'moratorium' could raise concerns about compatibility with UNCLOS—indeed, a moratorium would require amending the treaty, and could open the door to even more problematic unilateral actions[252]—a 'precautionary pause' would only temporarily delay exploitation and could be decided by the ISA without treaty amendments.[253] This

[239] Among many others, see: Greenpeace International, 'The Oceans Need a Deep Sea Mining Moratorium, not Regulations That Allow Destruction' (8 November 2023) https://www.greenpeace.org/international/press-release/63549/the-oceans-need-a-deep-sea-mining-moratorium-not-regulations-that-allow-destruction/ (accessed 3 June 2024); 'IUCN Director General's open letter to ISA Members on deep-sea mining' (IPBES, 3 June 2023) https://onet.ipbes.net/node/133 (accessed 3 June 2024); WWF, 'Policy Position – Deep Seabed Mining', https://wwf.be/sites/default/files/2021-03/2020-WWF-policy-position-Deep-Seabed-Mining.pdf (accessed 3 June 2024).

[240] 'Call for a Halt on Deep Seabed Mining - Endorsers', https://www.stopdeepseabedmining.org/endorsers/ (accessed 3 June 2024); 'Deep-Sea Mining Science Statement' https://seabedminingsciencestatement.org/ (accessed 3 June 2024).

[241] E.g, Apple, Google, Philips and Samsung.

[242] E.g., BMW, Renault, Scania, Volkswagen and Volvo.

[243] E.g., Barents, Breitling and Patagonia.

[244] E.g., ASN Bank, Globalance and Triodos Bank.

[245] ABN AMRO, BBVA, Cooperative Bank, Credit Suisse, Lloyds Banking Group, NatWest, Standard Chartered Bank and The European Investment Bank.

[246] Microsoft, Ford, Daimler, General Motors and Tiffany & Co. (Deep Sea Conservation Coalition, 'Voices Calling for a Moratorium - Companies and Finance' https://deep-sea-conservation.org/solutions/no-deep-sea-mining/momentum-for-a-moratorium/companies-and-finance/ accessed 3 June 2024).

[247] Deep Sea Conservation Coalition, 'Voices Calling for a Moratorium - Governments and Parliamentarians' https://deep-sea-conservation.org/solutions/no-deep-sea-mining/momentum-for-a-moratorium/governments-and-parliamentarians/ (accessed 3 June 2024).

[248] 'Five States Join Calls for a Moratorium on Deep-sea Mining at the 29th Session of the International Seabed Authority', Volterra Fietta (2024), https://volterrafietta.com/archives/1437 (accessed 1 October 2024).

[249] Douglas et al, note 29, paras 46–8.

[250] A Jaeckel, *The International Seabed Authority and the Precautionary Principle* (Leiden: Brill Nijhoff, 2017), 36.

[251] Douglas et al, note 29, para 102.

[252] Ibid, para 109; Pradeep A Singh, 'What Are the Next Steps for the International Seabed Authority After the Invocation of the "Two-year Rule"?' (2021) 37:1 *The International Journal of Marine and Coastal Law* 152–65, 161.

[253] Douglas et al, note 29, para 126.

https://doi.org/10.1017/bhj.2024.27 Published online by Cambridge University Press

deferral would last until sufficient scientific progress is made to establish environmental baselines, a solid legal framework is in place, and the ISA has the institutional capacity to oversee mining activities effectively.[254]

Importantly, the expected social and economic benefits of DSM are not a legally valid argument in favour of allowing DSM to start in the absence of a robust legal framework and adequate scientific knowledge.[255] The precautionary principle's cost-effectiveness dimension refers to adopting 'the most cost-effective means' to ensure the desired level of environmental protection,[256] and not to a trade-off between environmental protection and economic development.[257] Neither the precautionary principle nor UNCLOS allow for balancing environmental goals against development objectives.[258] Moreover, while UNCLOS Part XI promotes resource development for the benefit of humanity,[259] it also requires compliance with marine environmental protection,[260] making a premature authorization of DSM incompatible with these obligations.

VII. Conclusion

Transitioning to more sustainable energy sources, enhancing energy security and reducing reliance on 'volatile countries' for energy supply are legitimate goals that DSM is said to support.[261] However, the viability of DSM as a tool for energy transition remains contested[262] due to uncertainties regarding its necessity, profitability[263] and environmental impacts. Moreover, there is a fundamental concern that DSM may reinforce an extractive model focused on unfettered growth, mirroring the unsustainability of traditional on-land mining.[264] Part XI of UNCLOS assumes that mineral exploitation in the Area will eventually begin,[265] and the ISA is under pressure to finalize the necessary regulations. However, a 'just' transition[266] necessitates addressing the tension between actions enabling the energy transition

[254] Douglas et al, note 29, para 110.

[255] Toby Fisher, quoted in: BIICL, 'Deep Seabed Mining & International Law: Is a Precautionary Pause Required?', Webinar summary (2023), 5 https://www.biicl.org/documents/166_deep_seabed_mining_event_report.pdf (accessed 3 June 2024).

[256] Jaeckel, note 250, 64.

[257] Fisher, note 255, 5.

[258] Douglas et al, note 29, para 103.

[259] UNCLOS, art 140.1.

[260] Douglas et al, note 29, para 103; Singh, note 252, 162.

[261] Sandra Cassotta and Michael Goodsite, 'Deep-seabed Mining: An Environmental Concern and a Holistic Social Environmental Justice Issue' (2024) 2 *Frontiers in Ocean Sustainability*, 7.

[262] Ibid, para 3; EASAC, 'Deep-Sea Mining: Assessing Evidence on Future Needs and Environmental Impacts' (June 2023) https://easac.eu/fileadmin/user_upload/EASAC_Deep_Sea_Mining_Web_publication_.pdf (accessed 3 June 2024); Miller et al, note 24; Diva J Amon, et al, 'Heading to the Deep End Without Knowing How to Swim: Do We Need Deep-seabed Mining?' (2022) 5:3 *One Earth* 220–3; Bobbi-Jo Dobush and Maddie Warner, 'Deep Seabed Mining Isn't Worth the Risk' (The Ocean Foundation, 2024), https://oceanfdn.org/wp-content/uploads/2024/02/dsm-finance-brief-2024.pdf (accessed 3 June 2024).

[263] Mosnier, note 54.

[264] Kim, note 35, 135; Rozemarijn J Roland Holst, 'Exploiting the Deep Seabed for the Benefit of Humankind: A Universal Ideology for Sustainable Resource Development or a False Necessity?' (2023) *Leiden Journal of International Law* 1–23.

[265] Douglas et al, note 29, para 103.

[266] Xinxin Wang and Kevin Lo, 'Just Transition: A Conceptual Review' (2021) 82 *Energy Research & Social Science* 102291, 2–3.

https://doi.org/10.1017/bhj.2024.27 Published online by Cambridge University Press

and their potential human rights impacts.[267] While the knowledge available at the time UNCLOS was adopted may have been insufficient to fully appraise the risks of DSM, there is now growing evidence that DSM could disrupt marine ecosystems in the Area and beyond. This may affect the human rights of coastal communities and indigenous peoples while threatening species, habitats and ecosystem services that remain insufficiently understood.[268]

DSM is arguably a hazardous activity requiring stringent due diligence obligations for both sponsoring states and contractors. Focusing on contractor obligations, this paper has highlighted that the lack of reliable environmental baseline data, science-based thresholds and a clear definition of 'acceptable' harm prevents the adoption of credible risk assessment and mitigation processes. Scientific uncertainty and insufficient legal guidance prevent effective identification, prioritization and mitigation of impacts, hindering both sponsoring states and the ISA in assessing adequacy.

ISA negotiations will continue in 2025 under the new Secretary-General, Brazilian oceanographer Leticia Reis de Carvalho,[269] whose election is viewed as a potential turning point due to her commitment to increased transparency and greater attention to environmental protection compared with her predecessor.[270] Currently, the vagueness of key definitions in the Mining Code creates a risk of 'managerialization' of compliance where interpretation is highly susceptible to private interests and which could render environmental due diligence an empty exercise.[271] Methods and responsibilities for monitoring mining activities remain undefined in the draft exploitation regulations,[272] while the ISA's role is undermined by institutional limitations, including the lack of a scientific committee for assessments based on the best available science,[273] limited transparency, inadequate stakeholder participation[274] and risk of corporate capture.[275] Considering our insufficient knowledge about ecological connectivity between maritime areas, ecosystem services and human rights, it is also regretful that human rights are neglected in the Mining Code.[276]

While it has been suggested that DSM lacks social legitimacy,[277] in practice, companies may not face a backlash due to the remoteness of DSM operations and the challenges of

[267] Annalisa Savaresi, Margaretha Wewerinke-Singh, 'A Just Transition? Investigating The Role of Human Rights in The Transition Towards Net Zero Societies', EUI Working Paper (2023), 4 https://cadmus.eui.eu/bitstream/handle/1814/76752/AEL_2024_09.pdf?sequence=1&isAllowed=y (accessed 1 October 2024).

[268] Christiansen et al, note 26, 71.

[269] 'Election of New Secretary-General Opens "New Chapter" for ISA' *SDG Knowledge Hub*, https://sdg.iisd.org/news/election-of-new-secretary-general-opens-new-chapter-for-isa/ (accessed 1 October 2024).

[270] Elizabeth Claire Alberts, '"Trust Needs to be Rebuilt": Interview with Candidate to Head U.N. Seabed-mining Authority' *Mongabay Environmental News* (4 July 2024), https://news.mongabay.com/2024/07/trust-needs-to-be-rebuilt-interview-with-candidate-to-head-u-n-seabed-mining-authority/ (accessed 1 October 2024); Eric Lipton, 'Leader of International Seabed Mining Agency Admonished by Diplomats', *The New York Times* (2023) https://www.nytimes.com/2023/03/19/us/politics/seabed-mining-metals-united-nations.html (accessed 1 October 2024).

[271] David Hess, 'The Management and Oversight of Human Rights Due Diligence' (2021) 58:4 *American Business Law Journal* 751–98, 776.

[272] Pickens et al, note 180, 9–11.

[273] Soltvedt-Hvinden, note 222, 13.

[274] Christiansen et al, note 26, 123; Klaas Willaert, 'Public Participation in the Context of Deep Sea Mining: Luxury or Legal Obligation?' (2020) 198 *Ocean & Coastal Management* 105368; Morgera, note 50; Morgera and Lily, note 57.

[275] Farran, note 23, 186.

[276] 'Protecting Deep Seabed Ecosystems Under the Future Agreement on the Conservation and Sustainable Use of BBNJ and by the ISA' - Workshop Report (NILOS, UCWOSL, NIOZ, 13-15 December 2021), 3.

[277] Jaeckel et al, note 68.

https://doi.org/10.1017/bhj.2024.27 Published online by Cambridge University Press

establishing causality for impacts that might be diluted in time and space. Yet, companies are required under the DSM legal framework and under business and human rights standards to assess risks and halt activities if impacts cannot be mitigated. A precautionary pause on DSM is necessary at least until science and regulations can effectively guide these processes.

Competing interest. The author declares none.

Financial support. There is no funding to declare for this article.

Cite this article: Chiara Macchi, 'Corporate Responsibility and Deep Seabed Mining: The Limits of Due Diligence' (2025) *Business and Human Rights Journal* 10, no. 1: 122–146. https://doi.org/10.1017/bhj.2024.27