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Managing Mineral Resources in the International Seabed Area: Upholding the Common Heritage of Mankind and Indonesia's Regulatory Adaptation in the Transnational Era

Abdhy Walid Siagian[1*], Lailatur Rahmi[2]
[1] Universitas Gadjah Mada, Yogyakarta, Indonesia
[2] Universitas Andalas, Padang, Indonesia,

[*]Corresponding Author: abdhywalidsiagian@mail.ugm.ac.id

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Abstrak: Pengelolaan sumber daya mineral di kawasan dasar laut internasional (Area) berada di luar yurisdiksi negara dan tunduk pada prinsip Common Heritage of Mankind (CHM) sebagaimana diatur dalam UNCLOS 1982 dan Agreement 1994. Prinsip ini mengharuskan pemanfaatan sumber daya di Area dilakukan demi kepentingan bersama umat manusia secara adil dan berkelanjutan. International Seabed Authority (ISA) bertindak sebagai otoritas utama yang mengatur kegiatan prospeksi, eksplorasi, dan eksploitasi di Area serta memastikan perlindungan lingkungan laut dalam melalui instrumen seperti Regional Environmental Management Plans (REMP). Penelitian ini menggunakan metode yuridis normatif dengan pendekatan konseptual dan komparatif untuk menganalisis penerapan prinsip CHM, mekanisme perlindungan lingkungan laut, dan kesiapan hukum nasional Indonesia. Hasil penelitian menunjukkan bahwa meskipun Indonesia telah mengadopsi regulasi terkait melalui Perpres No. 80 Tahun 2023 dan Permen ESDM No. 11 Tahun 2025, masih terdapat kesenjangan pengaturan terkait standar lingkungan dan verifikasi tanggung jawab negara sponsor. Oleh karena itu, diperlukan harmonisasi pengaturan dan penguatan mekanisme pengawasan untuk memastikan eksploitasi mineral di Area dilakukan secara bertanggung jawab, selaras dengan standar ISA, serta tetap menjaga integritas ekologi laut dalam.

Kata Kunci: Kawasan Dasar Laut Internasional, Common Heritage of Mankind, UCLOS 1982, Perlindungan Lingkungan Laut Dalam, Pertambangan Bawah Laut

Abstract: *Managing mineral resources in the international seabed area (Area) is beyond state jurisdiction and subject to the Common Heritage of Mankind (CHM) principle stipulated in UNCLOS 1982 and the 1994 Agreement. This principle requires that the utilization of resources in the Area be carried out in the common interest of makind fairly and sustainably. The International Seabed Authority (ISA) is the leading authority regulating the Area's prospecting, exploration, and exploitation activities. It ensures the protection of the deep-sea environment through instruments such as Regional Environmental Management Plans (REMP). This research uses a normative juridical method with conceptual and comparative approaches to analyze the application of the CHM principle, the marine environmental protection mechanism, and Indonesia's national legal readiness. The results show that although Indonesia has adopted related regulations through Presidential Regulation No. 80 of 2023 and Minister of Energy and Mineral Resources Regulation No. 11 of 2025, there are still regulatory gaps related to environmental standards and verification of sponsor state responsibility. Therefore, regulatory harmonisation and strengthening of supervisory mechanisms are needed to ensure that mineral exploitation in the Area is carried out responsibly, in line with ISA standards, while maintaining the ecological integrity of the deep sea.*

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Keywords: *International Seabed Area, Common Heritage of Mankind, UCLOS 1982, Deep Sea Environmental Protection, Subsea Mining.*

INTRODUCTION

Indonesia is the largest archipelagic country in the world, with a vast sea area and superiority over marine resources.[1] The form of recognition needs to be done by Indonesia as a country that has advantages in its marine resources, this is as explained through part IV of the United Nations Convention on The Law of The Sea (UNCLOS 1982). The presence of UNCLOS is expected to provide regulation over the sea to provide a sense of peace and fair, efficient utilization and conservation of biological resources, including assessment, protection, preservation of the marine environment, and conservation of natural resources.[2] At the level of national legal instruments, Indonesia then ratified the 1982 Law of the Sea Convention through Law No. 17 of 1985 on the Ratification of the United Nations Convention on the Law of the Sea. UNCLOS 1982 defines the sea area through vertical and horizontal approaches, where the horizontal approach is carried out based on the perspective from the land area to the sea area; this is divided into internal waters, archipelagic waters, territorial sea, contiguous zone, economic exclusive zone, and high seas. Then, the vertical division is carried out based on the perspective from the land area to the bottom of the ocean, including the Continental Shelf and Area.[3]

Natural resources contained in the seabed also exist outside the jurisdiction of a state or commonly called “Area" as explained in Article 1 paragraph (1) UNCLOS 1982, which explains that Area “means the seabed and ocean floor and subsoil thereof, beyond the limits of national jurisdiction”. The Area is not allowed for appropriation, and no country can claim or exercise sovereignty and sovereign rights over it.[4] Mining in the Area must also be carried out for the common benefit of mankind commonly referred to as the principle of the common heritage of mankind (CHM) as explained through Article 136 of UNCLOS 1982.[5] The CHM principle is the basis for regulating the utilization of mineral resources found on the seabed outside the jurisdiction of the state, on this matter UNCLOS 1982 and the Agreement Relating to the Implementation of Part XI to establish the International Seabed Authority (ISA).[6] The ISA was established specifically and exclusively to manage marine areas and resources for the common good, including protecting the marine environment and the sustainable use of marine biodiversity.[7]

Mechanisms derive minerals in the Area from continental rocks concentrated in placer deposits, which are sorted by water movement (waves, tides, currents) according to their

[1] Dhiana Puspitawati et al., “Legitimate Interest of Coastal States in Seabed Mining: Indonesia’s Practice,” *Hasanuddin Law Review* 9, no. 3 (December 14, 2023): 299–316, https://doi.org/10.20956/halrev.v9i3.4116.

[2] Yasin Nur A H A S, Liem Tony Dwi Soelistyo, and Ika Shinta Utami Nur Agustin, “Pengelolaan Kekayaan Hayati Di Kawasan ‘The Area’ Menurut Unclos 1982: Studi Tentang Nodul Polimetalik (Polymetallic Nodules),” *Jurnal Hukum Bisnis Bonum Commune* 3, no. 1 (January 24, 2020): 26–38, https://doi.org/10.30996/jhbbc.v3i1.3073.

[3] Usmawadi, *Hukum Laut Internasional Suatu Pengantar* (Palembang: Bagian Hukum Internasional, Fakultas Hukum UNSRI, 2016).

[4] H A S, Soelistyo, and Agustin, “Pengelolaan Kekayaan Hayati Di Kawasan ‘The Area’ Menurut Unclos 1982: Studi Tentang Nodul Polimetalik (Polymetallic Nodules).”

[5] Agustina Merdekawati, Marsudi Triatmodjo, and Irkham Afnan Trisandi Hasibuan, “Common Heritage of Mankind Beyond Treaty Provisions: Customary or General Principle?,” *Indonesian Journal of International Law* 21, no. 3 (April 29, 2024), https://doi.org/10.17304/ijil.vol21.3.2.

[6] Internasional Seabed Authority, “About ISA,” 2025, https://www.isa.org.jm/about-isa/.

[7] International Seabed Authority, “Status of Exploration Activities in the Area” (Kingston, 2024), https://www.isa.org.jm.

constituent minerals' varying densities (mass per unit volume).[8] The minerals contain heavy metal elements (barium, chromium, gold, iron, rare earth elements, tin, thorium, tungsten, and zirconium) and non-metals (diamonds, lime, siliceous sand, gravel).[9] The ISA categorizes three types of mineral resources in international marine areas designated for exploration: Polymetallic Nodules, Polymetallic Sulphides, and Cobalt-rich Ferromanganese.[10] The mineral exploration process also requires a special approach according to its geological character in Polymetallic Nodules. It is done through bathymetric and sonar mapping and sampling using tools such as corners and dredges to analyze the distribution and content of metals such as manganese, nickel, and cobalt.[11] Exploration for Polymetallic Sulphides focuses on seafloor hydrothermal benthic systems with geothermal activity detection and geological sampling to assess the potential for copper, zinc, and precious metals.[12] Meanwhile, Cobalt-rich Ferromanganese focuses on seamount slopes, including topographic mapping and biota and substrate sampling to determine the crust's thickness and composition containing cobalt, nickel, and platinum. All exploration activities are subject to environmental impact studies, potential impacts, and geospatial data reporting verified by ISA to ensure sustainable utilization and protection of deep-sea ecosystems.[13]

The importance of environmental protection aspects of deep-sea ecosystems is an obligation, especially for protecting the common heritage of mankind.[14] Furthermore, the environmental protection aspect is important considering the exploration and exploitation of deep-sea minerals on a commercial scale, which will negatively impact the environment, both long-term and irreversible damage.[15] According to Article 145 of UNCLOS 1982, the ISA established deep-sea environmental protection plans, namely The Regional Environmental Management Plans (REMP), to solve deep-sea environmental protection problems.[16] REMP are considered a mandatory prerequisite for granting exploitation to sponsor countries and contractors; in other words, they are mandatory to provide accountability and transparency, reliability, and acceptability in environmental protection standards.[17]

Indonesia has a contribution to actively participate in managing mineral resources on the seabed, as issued by Presidential Regulation Number 80 of 2023 concerning Indonesia's Active Role in the International Seabed Area (Perpres KDLI), where the basis for the presence of the Presidential Regulation is because Indonesia has ratified the Implementation of Part XI of the United Nations Convention on The Law of The Sea of 10 December 1982 as issued by Presidential Decree Number 178 of 1999. Prior to the exploration and exploitation of seabed

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[8] Ilham Putuhena, "Urgensi Pengaturan Mengenai Eksplorasi Dan Eksploitasi Pertambangan Di Area Dasar Laut Internasional (International Sea Bed Area)," *Jurnal Rechts Vinding: Media Pembinaan Hukum Nasional* 8, no. 2 (September 6, 2019): 167-183, https://doi.org/10.33331/rechtsvinding.v8i2.316.

[9] International Seabed Authority, "The Mining Code: Exploration Regulations," International Seabed Authority, n.d., https://www.isa.org.jm/the-mining-code/exploration-regulations/.

[10] The International Seabed Authority, *Consolidated Regulations and Recommendations on Prospecting and Exploration*, Revised Ed (Kingston, 2015).

[11] The International Seabed Authority., 17-18.

[12] The International Seabed Authority., 4-5.

[13] The International Seabed Authority., 18-20.

[14] Aline Jaeckel, "An Environmental Management Strategy for the International Seabed Authority? The Legal Basis," *The International Journal of Marine and Coastal Law* 30, no. 1 (February 17, 2015): 93–119, https://doi.org/10.1163/15718085-12341340.

[15] Jochen Halfar and Rodney M. Fujita, "Danger of Deep-Sea Mining," *Science* 316, no. 5827 (May 18, 2007): 987–987, https://doi.org/10.1126/science.1138289.

[16] Wencui Zhou, Tianzhao Li, and Xuewei Qi, "New Perspective on the Recent Challenges of Regional Environmental Management Plans under the Background of Deep-Sea Mining: From Northwest Pacific to Global," *Frontiers in Marine Science* 11 (August 29, 2024), https://doi.org/10.3389/fmars.2024.1453760.

[17] Jinpeng Wang et al., "Taking Precautionary Approaches to the Governance of Commercial Deep Seabed Mining: Law-Making of International Seabed Authority and Multi-Subject Participation," *Sustainability* 15, no. 8 (April 10, 2023): 6414, https://doi.org/10.3390/su15086414.

minerals, the prospecting stage must first be carried out, which is an investigation activity to determine the general geological conditions and indications of mineralization, including composition, estimation of the size of mineral resources, distribution areas of mineral resources and economic value of mineral resources in the international seabed area without exclusive rights.[18] Furthermore, Minister of Energy and Mineral Resources Regulation Number 11 of 2025 concerning Procedures for Implementing Mineral Management and Utilisation Activities in the International Seabed Area (Permen ESDM 11/25) regulates mineral management and utilization in the international seabed area through three stages, namely: Prospecting; Exploration; and Exploitation.[19]

Looking at the potential of mineral resources utilization in the Area, a mechanism is needed that concerns the technical aspects of prospecting, exploration, and exploitation; this is necessary because it concerns CHM, which confirms that the utilization of mineral resources outside state jurisdiction must be managed for the common benefit of mankind. UNCLOS 9182 and the Agreement Relating to the Implementation of Part XI have assigned the ISA as the competent authority to regulate access to and management of these mineral resources reasonably, responsibly, and sustainably. Against this, the issue of protecting the marine environment in the Area becomes very urgent, given that the potential for negative impacts arising from exploration and exploitation activities on a commercial scale on fragile ecosystems has not been fully mapped. This research aims to analyze the application of the principle of the common heritage of mankind in the governance of mineral resources on the international seabed, examine the deep-sea environmental protection policies enacted by the ISA, and analyze the readiness and role of Indonesian national law in supporting the sustainable management of seabed mineral resources by international law of the sea.

METHODS

The method used in this research is the normative research method. According to Sunaryati Hartono, normative research seeks legal principles, legal theories, and the formation of new legal principles.[20] Meanwhile, according to Bagir Manan, normative research is research on existing legal principles and principles that focus on library or secondary data.[21] The primary focus of this approach is to examine the concepts, principles, and legal principles governing the management and utilization of mineral resources in the international seabed area (Area), as well as the obligation to protect the deep-sea environment. The approaches used in this research are conceptual and comparative. The conceptual approach is used to examine the principle of the common heritage of mankind (CHM), the sponsoring state's responsibility, and the International Seabed Authority (ISA) mandate in managing the Area under UNCLOS 1982 and the 1994 Agreement. A comparative approach is taken to compare international provisions with Indonesian national policies and regulations, such as Presidential Regulation No. 80 of 2023 and Minister of Energy and Mineral Resources Regulation No. 11 of 2025.

The legal materials used consist of Primary legal materials, which include the United Nations Convention on the Law of the Sea (UNCLOS) 1982; Agreement Relating to the Implementation of Part XI of UNCLOS 1982; ISA official documents (Seabed Mining Code, REMP, etc.); National laws and regulations (Law No. 17 of 1985, Presidential Regulation No.

[18] Article 1 number 8 of Presidential Regulation Number 80 of 2023 concerning Indonesia's Active Role in the International Seabed Area.

[19] Article 2 paragraph (2) of the Regulation of the Minister of Energy and Mineral Resources Number 11 of 2025 concerning Procedures for Implementing Mineral Management and Utilization Activities in the International Seabed Area.

[20] Sunaryati Hartono, *Legal Research in Indonesia at the End of the 20th Century*, 2nd ed. (Bandung: Citra Aditya Bhakti, 2006).

[21] Soerjono Soekanto dan Sri Mamudji, *Penelitian Hukum Normatif Suatu Tinjauan Singkat* (Jakarta: PT Raja Grafindo Persada, 2001).

80/2023, Permen of ESDM No. 11/2025). Secondary legal materials include legal literature, scientific journals, policy reports, and the results of relevant academic studies tertiary legal materials, such as legal dictionaries, legal encyclopedias, and UNCLOS interpretation guides. The technique of collecting legal materials was conducted through library research. The analysis of legal materials was conducted in a descriptive-qualitative manner by emphasizing systematics and legal argumentation, as well as the relevance between international norms and implementation at the national level.

RESULTS AND DISCUSSION

The Common Heritage of Mankind Principle is Applied in the Management of Mineral Resources in the International Seabed Area

The management of sea areas under international law is regulated in UNCLOS 1982, which divides three areas, namely the area of sovereignty, the area of sovereign rights or jurisdiction, and the Free area (global common).[22] In sovereignty, the principle of full power applies to a state over its territory so that national law applies. In contrast, the state does not have full sovereignty in the jurisdiction area. However, under international law, the state can manage and regulate its natural resources, including acting on events in the area.[23] The jurisdiction area is the Exclusive Economic Zone and the Continental Shelf Zone. Likewise, the free territory is not a country's ownership but a joint ownership (Global Common), so no one country owns the area. The free areas are the High Sea,[24] International Sea Bed Area,[25] Antarctic Treaty,[26] Moon Treaty,[27] and Outer Space Treaty.[28]

Common ownership is based on the principle of CHM, which is a principle that developed as one of the provisions in international law that was later adopted as the basis for regulating the utilization of some natural resources.[29] The affirmation of this principle is explained through UNCLOS 1982, which regulates the utilization of the seabed and ocean floor and the land beneath them beyond the limits of state jurisdiction, known as the "Area."[30] The explanation of the Area emphasizes the CHM principle, which affirms humanity as the owner of the resources found in the Area and provides a requirement for utilization for the common benefit of all humanity.[31] The CHM principle applies to the area regime, which includes utilizing non-living resources on the seabed, such as mineral resources.[32]

Previously, international law recognized the doctrine of the open sea (mare liberum), which has been used in the context of the law of the sea. This doctrine implies that every state

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[22] Putuhena, "Urgensi Pengaturan Mengenai Eksplorasi Dan Eksploitasi Pertambangan Di Area Dasar Laut Internasional (International Sea Bed Area)."

[23] Putuhena.

[24] Draft of High Seas Treaty (ver. March 2023), Article 5.

[25] Putuhena, "Urgensi Pengaturan Mengenai Eksplorasi Dan Eksploitasi Pertambangan Di Area Dasar Laut Internasional (International Sea Bed Area)."

[26] Antarctic Treaty, opened for signature 1 December 1959 (entered into force 23 June 1961), Article III.

[27] Article 11 of the Moon Treaty stipulates that the moon and its resources is CHM, The Agreement Governing the Activities of States on the Moon and Other Celestial Bodies, opened for signature 5 December 1979, 1363 UNTS 22 (entered into force 11 July 1984).

[28] The Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space Outer Space Treaty, including the Moon and Other Celestial Bodies, opened for signature 27 January 1967, 610 UNTS 205 (entered into force 10 October 1967), Article 1.

[29] Merdekawati, Triatmodjo, and Hasibuan, "Common Heritage of Mankind Beyond Treaty Provisions: Customary or General Principle?"

[30] Article 136 UNCLOS 1982.

[31] Agustina Merdekawati, Marsudi Triatmodjo, Irkham Afnan Trisandi Hasibuan, dan Vivin Purnamawati, "*Arti Penting Common Heritage Of Mankind Dalam Rezim Pengaturan Area Dan Perkembangannya*", Law review Vol. XXI no.3 (Maret 2022) : 282, doi : 10.19166/lr.v0i3.4198

[32] Merdekawati, Triatmodjo, and Hasibuan, "Common Heritage of Mankind Beyond Treaty Provisions: Customary or General Principle?"

has freedom on the high seas (beyond the boundaries of state jurisdiction) known as freedoms of the high seas.[33] Mare liberum and freedoms of the high seas are related to the arrangements adopted in the CHM principle in the context of the status of ownership of a resource. According to Andres Bello in 1882, objects that cannot be owned by one country without causing harm to other countries should be interpreted as 'common patrimony' as a common heritage. Similarly, A.G. de Lapradelle 1892 stated that every state should manage the sea as a heritage of humanity.[34]

Therefore, ownership of an object or resource, which is principally in the hands of all humanity, should not be owned privately or by the state. Its utilization cannot be done freely, and the results are not only for the enjoyment of the parties extracting the resources so that the benefits can be passed on to future generations.[35] Furthermore, in the context of utilizing the area, access control and management are required by states working together and acting on behalf of humanity through an international organization, the International Seabed Authority (ISA). Under the mandate of Article 145 of UNCLOS 1982, the ISA is authorized to protect and conserve resources and protect the environment and marine scientific research in the Area.[36] This legal framework emerges as an implementation of the conventions applicable to the law of the sea, which require that activities in the area, such as exploration, exploitation, and marine scientific research, contribute to and benefit the well-being of humanity.[37]

Environmental Protection Mechanism in the Area in Exploration and Exploitation Activities in the International Seabed Area

The protection of the marine environment in exploration and exploitation activities with the aim of underwater mining activities in the Area has been regulated through Article 145 of UNCLOS 1982, which explains, "The protection of the marine environment has the necessary measures to ensure that activities in the Area fulfill aspects of effective protection for the marine environment, especially from harmful impacts that may arise from these activities...".[38] UNCLOS 1982 mandates the ISA to regulate and control activities in the Area specifically to manage the resources of the Area.[39] This provision mandates the ISA to take such measures for protective purposes as it deems necessary; furthermore, the ISA is specifically obliged to establish rules and procedures for the prevention, reduction, and control of disturbances to the ecological balance of the marine environment in particular from adverse impacts arising from

[33] Monica Brito Vieira, "Mare Liberum vs. Mare Clausum : Grotius, Freitas, and Selden's Debate on Dominion over the Seas," *Journal of the History of Ideas* 64, no. 3 (July 2003): 361–77, https://doi.org/10.1353/jhi.2003.0043.

[34] Merdekawati, Triatmodjo, and Hasibuan, "Common Heritage of Mankind Beyond Treaty Provisions: Customary or General Principle?"

[35] H A S, Soelistyo, and Agustin, "Pengelolaan Kekayaan Hayati Di Kawasan 'The Area' Menurut Unclos 1982: Studi Tentang Nodul Polimetalik (Polymetallic Nodules)."

[36] Merdekawati, Triatmodjo, and Hasibuan, "Common Heritage of Mankind Beyond Treaty Provisions: Customary or General Principle?"

[37] Chris G. Brown, "Mining at 2,500 Fathoms under the Sea: Thoughts on an Emerging Regulatory Framework," *Ocean Science Journal* 53, no. 2 (June 23, 2018): 287–300, https://doi.org/10.1007/s12601-018-0033-z.

[38] Necessary measures shall be taken in accordance with this Convention with respect to activities in the Area to ensure effective protection for the marine environment from harmful effects which may arise from such activities. To this end the Authority shall adopt appropriate rules, regulations and procedures for inter alia: (a) the prevention, reduction and control of pollution and other hazards to the marine environment, including the coastline, and of interference with the ecological balance of the marine environment, particular attention being paid to the need for protection from harmful effects of such activities as drilling, dredging, excavation, disposal of waste, construction and operation or maintenance of installations, pipelines and other devices related to such activities; (b) the protection and conservation of the natural resources of the Area and the prevention of damage to the flora and fauna of the marine environment.

[39] Article 157 UNCLOS 1982.

seabed mining activities and to provide for the protection and conservation of natural resources in the Area, as well as the prevention of damage to the flora and fauna of the marine environment.[40]

In setting environmental standards, ISAs should be guided by international environmental law as described in Part XII of UNCLOS on protecting and preserving the marine environment.[41] Firstly, Article 197 of UNCLOS in Part XII highlights the need to consider the distinctive regional features of the marine environment, particularly in the context of the deep sea,[42] which requires special attention to be given to unique and largely uncharted ecosystems and unidentified organisms. Second, part XII of UNCLOS also places the duty to prevent marine pollution within the broader context of preserving the marine environment.[43] Thus, the obligation to protect and preserve the marine environment extends beyond acts of damage and includes the requirement to take active measures to improve the state of the marine environment.[44] The proactive approach in UNCLOS aims to regulate and manage human activities before the damage is done, providing ISAs with the parameters of an obligation to protect the marine environment from the adverse effects of seabed mining activities and the legal framework to develop comprehensive environmental management strategies.[45]

Based on the provisions that UNCLOS has given to the ISA through Article 145, the REMP was issued, a deep-sea protection plan formulated by the ISA, aiming to resolve environmental protection issues in deep-sea mining.[46] The establishment of the REMP was formally proposed by the ISA in 2011 based on the Kaplan project in 2002-2007 to serve as a management tool to balance the development of mineral resources in the Area with environmental protection. In 2012, the ISA board, on the recommendation of the Legal and Technical Commission (LTC), approved the REMP for The Clarion-Clipperton Zone (CCZ) in the Eastern Pacific Ocean.[47] The REMP area in the CCZ initially included nine Areas of Particular Environmental Interest (APEI) established to conserve biodiversity, maintain ecosystem structure and function in specific areas, and establish an initial prohibition on mineral resource exploitation activities in the Area. Furthermore, the number of APEI in the CCZ has increased to thirteen.[48]

The ISA Council in 2018 approved the secretariat's initial proposal on REMP for the Area, identifying the Mid-Atlantic Ridge, Triple Junction Ridge, Nodule Belt in the Indian Ocean, seamounts in the Northwest Pacific (NWP), and South Atlantic Ocean as priority

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[40] Jaeckel, "An Environmental Management Strategy for the International Seabed Authority? The Legal Basis."

[41] Jaeckel.

[42] Article 197 UNCLOS 1982.

[43] M. H. Nordquist, S. Rosenne, A. Yankov and N. R. Grandy, United Nations Convention on the Law of the Sea, 1982: A Commentary, Volume IV (Martinus Nijhoff Publishers, Dordrecht, 1991), at pp. 10–11; D. Freestone, 'Problems of High Seas Governance', in D. Vidas and P. J. Schei (eds), The World Ocean in Globalisation: Climate Change, Sustainable Fisheries, Biodiversity, Shipping, Regional Issues (Martinus Nijhoff Publishers, Leiden, 2011) 99–132, at p. 122.

[44] Nordquist et al. (n 47), at pp. 40–41

[45] Jaeckel, "An Environmental Management Strategy for the International Seabed Authority? The Legal Basis."

[46] International Seabed Authority, "ISA/COMRA Workshop on the Development of REMP for Cobalt-Rich Ferromanganese Crusts," 2018, https://www.isa.org.jm/events/isa-comra-workshop-on-the-development-of-remp-for-cobalt-rich-ferromanganese-crusts/.

[47] International Seabed Authority Council, "Decision of the Council Relating to an Environmental Management Plan for the Clarion-Clipperton Zone" (2012), https://www.isa.org.jm/wp-content/uploads/2022/06/isba-18c-22_0.pdf.

[48] International Seabed Authority Council, "Decision of the Council of the International Seabed Authority Relating to the Review of the Environmental Management Plan for the Clarion-Clipperton Zone" (2021), https://www.isa.org.jm/wp-content/uploads/2022/06/ISBA_26_C_58_E.pdf.

areas.[49] The focus on REMP development in the NWP was signaled by organizing the first workshop in May 2018 in Qingdao, China, in collaboration with the China Ocean Mineral Resources Research and Development Association (COMRA).[50] A follow-up workshop was held online in 2020,[51] and the latest meeting took place in February 2024 in Tokyo to validate and refine the draft Area Based Management Tools (ABMT) and other technical issues related to REMP in the NWP region.[52] In order to develop a standardized approach for the entire REMP, in 2022, the LTC submitted a draft proposal for a standardized approach to the ISA Council.[53] Draft ISBA/27/C/37 is under further review by the LTC, considering the Council's input, and has received written responses from eight stakeholders.[54] At the first session of the 29th Session of the ISA in March 2024, the Commission decided to technically support the practical implementation of this approach by developing a REMP guidance document. This document will refer to standardized procedures and contain technical and practical details, such as the scientific data required, methodologies, and approaches underlying the preparation, establishment, and review of REMP.

Although the development of REMP for NWP is progressing through workshops and drafting standardized approaches, the process is not free from challenges. Difficulties arise from technical, scientific, and institutional aspects that affect the effectiveness and speed of REMP implementation in the Area.[55] One such difficulty is the impact of deep-sea mining on benthic ecosystems in the NWP, which, as this ecosystem is a Triangle Area (TA),[56] requires a careful and science-based conservation approach. However, the complicated physical and biological characteristics and the lack of adequate scientific data pose significant challenges to developing and implementing REMP in this region.[57] On the other hand, given the increasing pressure of climate change and the limited scientific understanding of deep-sea ecosystems, the development of REMP for the NWP region faces complex challenges. Limited data on species distribution, habitat connectivity, and ecosystem resilience have made formulating effective and evidence-based management measures difficult, especially in vulnerable and highly diverse seamount regions such as the TA.[58]

REMP is one of the important instruments to provide environmental protection in deep-sea mining, where REMP plays a significant role, especially to the ISA and other stakeholders. Despite active encouragement from state parties to develop REMP in other regions, such as the Mid-Atlantic Ridge and NWP, the ISA has yet to approve a second REMP. This delay reflects the institutional, technical, and scientific challenges that have yet to be fully addressed in re-

[49] Zhou, Li, and Qi, "New Perspective on the Recent Challenges of Regional Environmental Management Plans under the Background of Deep-Sea Mining: From Northwest Pacific to Global."

[50] Permanent Mission of PRC to International Seabed Authority, "International Workshop on the REMP for the Cobalt-Rich Ferromanganese Crusts in Triangle Area in the Northwest Pacific Ocean," 2018.

[51] International Seabed Authority, "Workshop on the Regional Environmental Management Plan for the Area of the Northwest Pacific," ISA, 2020, https://www.isa.org.jm/events/workshop-on-the-regional-environmental-management-plan-for-the-area-of-the-northwest-pacific/.

[52] International Seabed Authority, "ISA Council Closes the First Part of Its 29th Session with Approval of MoU with FAO and Further Progress in Negotiations on the Draft Exploitation Regulations," ISA, 2024.

[53] International Seabed Authority Council, "Guidance to Facilitate the Development of Regional Environmental Management Plans-Report and Recommendations by the Legal and Technical Commission" (2022), https://www.isa.org.jm/wp-content/uploads/2022/12/2212509E.pdf.

[54] International Seabed Authority Council, "Report of the Chair of the Legal and Technical Commission on the Work of the Commission at the First Part of Its Twenty-Ninth Session" (2024), https://www.isa.org.jm/wp-content/uploads/2024/03/2404997E.pdf.

[55] Zhou, Li, and Qi, "New Perspective on the Recent Challenges of Regional Environmental Management Plans under the Background of Deep-Sea Mining: From Northwest Pacific to Global."

[56] International Seabed Authority, "Workshop on the Regional Environmental Management Plan for the Area of the Northwest Pacific."

[57] International Seabed Authority.

[58] International Seabed Authority.

establishing a comprehensive and sustainable deep-sea environmental management framework.[59] UNCLOS, therefore, requires the ISA to take action to ensure that the marine environment is protected from the negative impacts of activities in the Area, especially in the strategic plan for the period 2024-2028 (ISBA/28/A/7) in order to find a balance between environmental protection and exploitation of mineral resources in the Area.

Applying the Precautionary Principle in Mineral Mining in Transnational Areas

Safeguarding marine biodiversity and the ecological environment requires a precautionary approach to be applied to the governance of deep-sea mineral mining.[60] The precautionary approach is central to the ecosystem approach to management and is a legally binding obligation for ISA, states, and contractors.[61] The precautionary principle needs to be implemented at a systematic operationalized level in all stages of exploration and exploitation activities and not just at a declarative level. Referring to the Draft regulations on exploitation of mineral resources in the Area Number ISBA/25/C/WP.1 prepared by the ISA Council, the precautionary principle gains concrete implementation through a series of provisions, one of which is described in Regulation 2(e) Fundamental policies and principles, that in every exploitation activity in the Area must be carried out by ensuring adequate protection of the marine environment from all negative impacts caused, where this protection must be in line with the environmental policies established by ISA including the implementation of regional environmental management plans based on the principle:[62]

a. Effective protection of the marine environment, including biodiversity and ecological integrity, should be a fundamental consideration in the formulation of environmental objectives;
b. The precautionary approach, as reflected in Principle 15 of the Rio Declaration on Environment and Development, should be consistently applied to anticipate and mitigate environmental risks that are not yet fully known;
c. An ecosystem-based approach is the main framework for managing activities, taking into account the interrelationships between ecological components as a whole;
d. The polluter pays principle should be implemented through market-based instruments, economic-based and other relevant measures to ensure that those who cause pollution bear responsibility for their environmental impacts.
e. Access to data and information related to the protection and preservation of the marine environment should be openly guaranteed to support public oversight and evidence-based policy making;
f. Decision-making must be based on the principles of accountability and transparency so that every policy and action can be legally and morally accountable;
g. Effective public participation should be encouraged as an integral part of inclusive and equitable environmental governance.

[59] Zhou, Li, and Qi, "New Perspective on the Recent Challenges of Regional Environmental Management Plans under the Background of Deep-Sea Mining: From Northwest Pacific to Global."

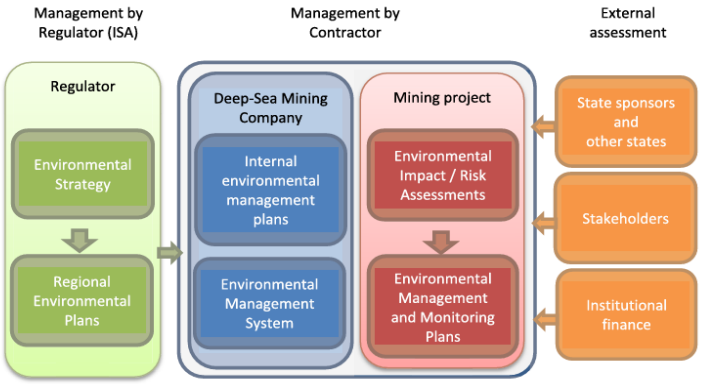
[60] Wang et al., "Taking Precautionary Approaches to the Governance of Commercial Deep Seabed Mining: Law-Making of International Seabed Authority and Multi-Subject Participation."

[61] International Tribunal for The Law of The Sea, "Responsibilities and Obligations of States Sponsoring Persons and Entities with Respect to Activities in The Area," 2011, https://www.itlos.org/fileadmin/itlos/documents/cases/case_no_17/17_adv_op_010211_en.pdf.

[62] International Seabed Authority Council, "Draft Regulations on Exploitation of Mineral Resources in the Area" (2019), https://www.isa.org.jm/the-mining-code/draft-exploitation-regulations-2/.

Through these principles, the exploitation of mineral resources in the Area is expected to take place responsibly and not at the expense of preserving the marine environment for future generations.[63]

The precautionary principle is also reinforced through Regulation 44 to 56 of the Draft regulations on the exploitation of mineral resources in the Area Number ISBA/25/C/WP.1, which explicitly stipulates the contractor's obligation to prepare, implement and update the Environmental Impact Statement (EIS) Environmental Management and Monitoring Plan (EMMP), and Emergency Response and Contingency Plan (ERCP). Regulation 53 affirms the contractor to develop an ERCP that ensures the readiness of mitigation actions in the event of an incident that could cause serious harm to the marine environment.[64] Furthermore, Regulation 54 also regulates the establishment of an Environmental Compensation Fund (ECF), which is a financial instrument to repair or compensate for irreversible environmental impacts despite preventive measures. This approach places the precautionary principle not only as a preventive principle but also as a due diligence and remediation principle.[65]



Source: Daniel O.B. Jones et al., 2019.[66]

Figure 1. Graphical summary of tools available for environmental management of deep-sea mining activities**.**

Perpres KDLI has stipulated Indonesia's active role as a state sponsor for contractors who wish to conduct prospecting, exploration, and exploitation in the Area as stated through Article 1 point 15, which states that prospective contractors are business entities, State-Owned Enterprises (BUMN), or foreign business entities that have not obtained a certificate of support and have not obtained a contract with the authority.[67] Article 43, paragraph (3) letter c explains the environmental management study and environmental management plan in the mineral management area in the Area, which is prepared by the regulatory criteria of the authority.[68] Related to the precautionary principle is also explained through Article 56 letter A, which states that efforts to protect the marine environment in the Area are carried out by applying the precautionary principle to prospecting, exploration, and exploitation activities towards

[63] Wang et al., "Taking Precautionary Approaches to the Governance of Commercial Deep Seabed Mining: Law-Making of International Seabed Authority and Multi-Subject Participation."

[64] International Seabed Authority Council, Draft regulations on exploitation of mineral resources in the Area., 40.

[65] International Seabed Authority Council., 40.

[66] Daniel O.B. Jones et al., "Existing Environmental Management Approaches Relevant to Deep-Sea Mining," *Marine Policy* 103 (May 2019): 172–81, https://doi.org/10.1016/j.marpol.2019.01.006.

[67] Article 1 number 15 of Presidential Regulation Number 80 of 2023 concerning Indonesia's Active Role in the International Seabed Area.

[68] Article 43 paragraph 3 letter c of Presidential Regulation Number 80 of 2023 concerning Indonesia's Active Role in the International Seabed Area.

preserving and protecting the marine environment.[69] However, there are weaknesses in the Perpres KDLI, where it is not explained in detail how environmental standards refer to the best available scientific evidence mandated by the ISA or merely follow domestic norms.

Permen of ESDM 11/25 as the implementing regulation explains through Article 22 paragraph 4 which explains that environmental requirements must consist of management studies and environmental management plans in mineral management areas in the Area; mitigation plans for preventing and overcoming accidents and pollution due to activities in the Area; and environmental impact recovery plans in areas where exploration activities are carried out.[70] However, there is a shortcoming in Permen ESDM 11/25 where there is no standard for document preparation, which is whether the document is in the form of an EIS as required by the ISA or only an Environmental Impact Analysis document as explained in more detail through Law 32 of 2009 concerning Environmental Protection and Management as amended by Law Number 6 of 2023 concerning the Stipulation of Government Regulation instead of Law Number 2 of 2022 concerning Job Creation into Law. This shortcoming will undoubtedly cause problems, mainly when this activity occurs in an area outside the jurisdiction of the Indonesian state. This disharmonious system can potentially cause loopholes in its implementation because contractors can claim the fulfillment of environmental obligations based on domestic standards that are laxer than ISA standards.

The obligations of the sponsoring state within the ISA framework are not merely administrative, as explained in Regulations 6 and 21 of the Draft regulations on the exploitation of mineral resources in the Area Number ISBA/25/C/WP.1, which clearly states that the sponsoring state is responsible for the acts or omissions of its sponsored contractors in the event of damage to the marine environment. Article 139 of UNCLOS also confirms this, which states that the state is responsible for violations of the convention's provisions committed by third parties it sponsors. This means that the precautionary principle mandated to the sponsoring state should be manifested through verification mechanisms and strict environmental supervision of contractors, both at the pre-licence and post-production stages.[71] Therefore, harmonizing national regulations with ISA standards is needed to strengthen Indonesia as a responsible state sponsor while ensuring that resource exploitation activities in the Area are truly carried out with ecological integrity and sustainability in mind.

Contribution and Readiness of Indonesian Regulations in the Involvement of Mineral Mining in the Regional Area

UNCLOS 1982 has been ratified by Indonesia as Law No. 17 of 1985 on the Ratification of the United Nations Convention on the Law of the Sea, where the ratification of UNCLOS 1982 is intended to regulate marine issues through the United Nations conference on the law of the sea which 177 countries including Indonesia have signed, and this is one of Indonesia's commitments with the issuance of ratification of UNCLOS 1982.[72] UNCLOS has determined the areas subject to state sovereignty, state jurisdiction, and international marine areas known as Areas.[73] The Area is the seabed and ocean floor as well as the subsoil below, which is beyond the boundaries of national jurisdiction, and the natural resources contained in the Area are the

[69] Article 54 letter a of Presidential Regulation Number 80 of 2023 concerning Indonesia's Active Role in the International Seabed Area.

[70] Article 22 paragraph (4) of the Regulation of the Minister of Energy and Mineral Resources Number 11 of 2025 concerning Procedures for Implementing Mineral Management and Utilization Activities in the International Seabed Area.

[71] Brown, "Mining at 2,500 Fathoms under the Sea: Thoughts on an Emerging Regulatory Framework."

[72] Explanatory Section of Law Number 17 of 1985 concerning Ratification of the United Nations Convention on the Law of the Sea.

[73] Heryandi, "Kerjasama Internasional Pengelolaan Sea Bed Area Dan Implikasinya Bagi Negara Pantai," *Jurnal Dinamika Hukum* 13, no. 3 (2013): 356, http://dinamikahukum.fh.unsoed.ac.id/index.php/.

common heritage of mankind; this is confirmed in the preamble of the Agreement relating to the implementation of Part XI of the United Nations Convention on the Law of the Sea of 10 December 1982 and in national law is explained by the issuance of Presidential Decree No. 178 of 1999 concerning the Ratification of the Agreement relating to the implementation of Part XI of the United Nations Convention on the Law of the Sea of 10 December 1982.

Seeing the application of international law to national law as stipulated through Law Number 17 of 1985 concerning the Ratification of the United Nations Convention on the Law of the Sea and Presidential Decree Number 178 of 1999 concerning the Ratification of the Agreement relating to the implementation of Part XI of the United Nations Convention on the Law of the Sea of 10 December 1982, has given implications for Indonesia to play an active role in the international seabed area. One of Indonesia's active forms in the Area as issued by the Presidential Regulation of KDLI, which explains the implementation of activities on the international seabed to increase Indonesia's active role in managing and utilizing minerals and marine scientific research following the provisions of the convention, implementing agreements and ISA regulations sustainably.[74] Mineral utilization resulting from exploitation activities,[75] is intended for prospecting, exploration, and exploitation activities.[76]

Prospecting activities are investigation activities to determine the general geological conditions and indications of mineralization, including composition, estimation of the size of mineral resources, distribution areas of mineral resources, and economic value of mineral resources on the international seabed without exclusive rights.[77] Exploration activities are activities that follow up the results of exploration in part or all of the location that has been determined to be the target of taking mineral resources or reserves, which includes construction, mining, processing, refining, transportation, and/or sales, as well as controlling environmental impacts on the international seabed.[78] Exploitation is an activity that follows up the results of exploration in part or all of the locations that have been determined to be the target of taking mineral resources or reserves, which include construction, mining, processing, refining, transportation, and/or sales as well as controlling environmental impacts on the international seabed.[79]

The role of Indonesia's activities in prospecting activities,[80] exploration,[81] and exploitation,[82] can be implemented by ministers and business entities as explained in ESDM Regulation 11/2025; furthermore, this regulation explains that in carrying out these activities it can be carried out by BUMN or private business entities in the context of domestic investment

[74] Article 2 letter a of Presidential Regulation Number 80 of 2023 concerning Indonesia's Active Role in the International Seabed Area.

[75] Article 3 paragraph (1) letter c of Presidential Regulation Number 80 of 2023 concerning Indonesia's Active Role in the International Seabed Area.

[76] Article 5 paragraph (2) of Presidential Regulation Number 80 of 2023 concerning Indonesia's Active Role in the International Seabed Area.

[77] Article 1 number 8 of Presidential Regulation Number 80 of 2023 concerning Indonesia's Active Role in the International Seabed Area.

[78] Article 1 number 9 of Presidential Regulation Number 80 of 2023 concerning Indonesia's Active Role in the International Seabed Area.

[79] Article 1 number 10 of Presidential Regulation Number 80 of 2023 concerning Indonesia's Active Role in the International Seabed Area.

[80] Article 3 paragraph (1) of the Regulation of the Minister of Energy and Mineral Resources Number 11 of 2025 concerning Procedures for Implementing Mineral Management and Utilization Activities in the International Seabed Area.

[81] Article 18 paragraph (1) of the Regulation of the Minister of Energy and Mineral Resources Number 11 of 2025 concerning Procedures for Implementing Mineral Management and Utilization Activities in the International Seabed Area.

[82] Article 34 paragraph (1) of the Regulation of the Minister of Energy and Mineral Resources Number 11 of 2025 concerning Procedures for Implementing Mineral Management and Utilization Activities in the International Seabed Area.

or private business entities in the context of investment foreign capital.[83] In prospecting activities, the business entity in question must first submit a notification application to the Minister, where this application must be accompanied by administrative completeness and supporting documents that show the business entity's readiness to carry out the activity. in accordancewith applicable provisions. The administrative completeness is in the form of a business Identification Number and documents proving the availability of experts in prospecting. Appointed through a competency certificate according to applicable standards. In addition, business entities must submit a prospecting activity plan that at least includes information on the coordinates of the activity location, the basis for consideration allocation selection, and the implementation plan and timeframe for prospecting activities. This plan must also contain a technical description of the survey method, including bathymetric surveys, geophysical surveys, sampling, and laboratory analysis, accompanied by a budget plan that shows the financial planning of the activity in a transparent manner.

In exploration activities, it is mandatory to submit administrative, technical, environmental, and financial requirements, as explained below:[84]

a. In administrative requirements, applicants must be national business entities required to submit a letter of application for the issuance of an exploration permit by attaching a Business Identification Number. In contrast, foreign business entities must include a deed of establishment as proof of legality. Furthermore, foreign business entities must also sign an integrity pact stating the willingness to carry out all obligations by national and international law, and this pact also includes a commitment to submit a contract application explorative to ISA within the period determined and maintain the confidentiality of the application documents from third party access.
b. The technical requirements emphasize the applicant's operational and professional capacity, which covers the availability of access to technology, equipment, and methods to be used during exploration. The applicant has also required the management of the mineral potential, accompanied by evidence-availability experts in the field of exploration.
c. Environmental protection requirements: The applicant is required to compile environmental management studies and plans based on the criteria of the ISA regulations. In addition, there must be clear mitigation to prevent and overcome accidents and marine environmental pollution caused by exploration activities.
d. Financial requirements, where the applicant must demonstrate adequate financial capability, proven through international insurance coverage covering accident and pollution risks and liability for damages. The applicant must attach financial statements audited by an internationally certified public accountant for the last three years. A financial reference letter from the parent company or its affiliates may be included for new companies. Applicants must also provide evidence of spending at least 30 million US dollars on research and/or exploration activities and demonstrate a commitment to using the funds in exploration activities. Finally, a letter of financial support from a financial institution or banking as a form of guarantee for the sustainability of exploration funding.

[83] Article 5 paragraph (2) of the Regulation of the Minister of Energy and Mineral Resources Number 11 of 2025 concerning Procedures for Implementing Mineral Management and Utilization Activities in the International Seabed Area.

[84] Article 22 of the Regulation of the Minister of Energy and Mineral Resources Number 11 of 2025 concerning Procedures for the Implementation of Mineral Management and Utilization Activities in the International Seabed Area.

In exploitation activities,[85] issuing a certificate of support with all administrative, technical, environmental, and financial criteria and requirements must be met completely and correctly by the provisions of laws and regulations and referring to ISA regulations. Furthermore, as a form of legal certainty and protection for business entities that have carried out exploration activities and have received a certificate of support at the exploration stage, they are guaranteed to receive a certificate of support for exploitation activities as long as they meet the applicable provisions. Furthermore, the implementation of rock exploitation activities can begin after ISA approves the exploitation work plan. In evaluating the application for an exploitation work plan, the Minister may involve other ministries or institutions that are members of the Coordination Team. This evaluation is also carried out comprehensively and covers two main aspects, namely the suitability of the work plan with the requirements for exploitation activities as stipulated by ISA and the implementation of good exploitation principles by national laws and regulations. Suppose the documents are declared complete and meet the requirements. In that case, the Minister will approve the exploration work plan no later than 15 working days after the application is received completely and correctly. After approval, the Minister will forward the certificate of support to the Minister of Foreign Affairs to be submitted to ISA for evaluation and to obtain further approval by international law.

CONCLUSION

The CHM principles, as regulated through UNCLOS 1982 and Agreement Relating to the Implementation of Part XI become the primary legal basis for managing mineral resources in the Area. The CHM principle emphasizes that the resources in the Area do not belong to a country but are a common heritage of humanity that must be utilized fairly, sustainably, and for the common good. To implement this principle, the ISA was formed, which has an exclusive mandate to regulate all activities in prospecting, exploration, and exploitation and to ensure the protection of the deep sea environment that is vulnerable to permanent damage. ISA applies an ecosystem approach and the precautionary principle in formulating environmental management policies, primarily through the REMP instrument. REMP is an important prerequisite before an exploitation permit is granted because it establishes a standard protection conservation zone and a scientific evidence-based approach (best available scientific evidence). However, the comprehensive implementation of REMP still faces technical, scientific, and institutional challenges, including limited ecological data, the complexity of regional characteristics such as the Northwest Pacific, and weak coordination mechanisms between countries and global stakeholders.

As an archipelagic country with strategic interests in the utilization of marine resources, Indonesia has adopted these international provisions into its national legal system through Law No. 17 of 1985 and Presidential Decree No. 178 of 1999. In a more operational context, Indonesia issued Presidential Regulation KDLI and ESDM Regulation 11/2025, which regulate the procedures for implementing mineral prospecting, exploration, and exploitation in the Area. These regulations reflect Indonesia's commitment as a sponsoring country that is responsible for the contractors it supports. However, these national regulations show challenges in their implementation. First, environmental protection standards are not yet fully aligned with the provisions of the ISA, including the lack of clarity on whether the required environmental documents forget about the EIS, as required by the ISA, or follow the Indonesian national standard AMDAL. Second, there is no transparent and verified environmental monitoring system to ensure contractor compliance with the sponsoring country's precautionary principle

[85] Article 36, 37, 38 of the Regulation of the Minister of Energy and Mineral Resources Number 11 of 2025 concerning Procedures for the Implementation of Mineral Management and Utilization Activities in the International Seabed Area.

and full responsibility as regulated through Article 139 of UNCLOS 1983 and the Draft Exploitation Regulations ISA.

Therefore, to strengthen Indonesia's position in the international Area and ensure the sustainability of the deep sea environment, strategic steps are needed, namely: substantial harmonization between national regulations and the ISA legal framework, especially regarding technical aspects and environmental protection; regulation of monitoring and verification mechanisms for contractors sponsored by Indonesia, which include environmental audits, periodic reports, and an effective sanction system; increasing institutional capacity and scientific research, to support a better understanding of the ecological characteristics of the Area; concrete application of the precautionary principle at all stages of activities from prospecting to post-exploitation, so that it is not just a normative declaration; and community involvement and public transparency in the decision-making process, as a form of accountability and governance based on global environmental justice. Thus, with the reformulation carried out by both regulations and governance, Indonesia can play a more proactive, responsible, and sustainable role in managing the Area's mineral resources while maintaining the integrity of the CHAM principle in a transnational era full of ecological and geopolitical challenges.

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