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# NAVIGATING SOVEREIGNTY AND SUSTAINABILITY: THE LAW OF THE SEA, DEEP-SEA MINING, AND INDIA'S ROLE IN UPHOLDING THE COMMON HERITAGE OF MANKIND

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## ABSTRACT

*The oceans, comprising over 70% of the Earth's surface, have transitioned from perceived limitless frontiers to highly contested spaces governed by complex legal frameworks. The United Nations Convention on the Law of the Sea (UNCLOS) 1982 introduced a revolutionary system for ocean governance, predominantly addressing the management of areas beyond national jurisdiction through the theory of the Common Heritage of Mankind (CHM). As technology advances, deep-sea mining has emerged as a new frontier, challenging traditional notions of sovereignty, sustainability, and equitable resource distribution. Deep-sea mining presents opportunities for economic development but raises significant legal, environmental, and ethical questions. Recent initiatives, including the 2023 BBNJ Agreement and advisory opinions of the International Tribunal for the Law of the Sea (ITLOS), further complicate this legal landscape. India, as a proactive maritime nation, has engaged extensively with deep-sea mining frameworks all the way through its conventions with the International Seabed Authority (ISA) and the Deep Ocean Mission. This paper critically examines the evolving international legal regime governing the oceans, focusing on sovereignty, sustainability, and the CHM principle. It also evaluates India's role in shaping sustainable governance models for deep-sea mining. Drawing on the latest treaties, cases, reports, and technological advances up to 2024, the paper argues for an adaptive, inclusive, and equitable framework capable of preserving the oceans for present and upcoming generations.*

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## INTRODUCTION

The oceans have represented the final frontier of human exploration and exploitation. Covering over 70% of the Earth's surface, the oceans regulate the global climate, sustain vast biodiversity, and provide critical resources for humanity. However, with technological advances making it possible to access previously inaccessible depths, a new era has begun in which the deep seabed is no longer a mysterious abyss but a site of potential economic opportunity and environmental concern. The legal framework governing the oceans must therefore balance sovereign rights, sustainable development, and global equity. The most extensive international legal framework governing the oceans to date was established by the United Nations Convention on the Law of the Sea (UNCLOS), which was signed in 1982 and went into effect in 1994. UNCLOS establishes the regime governing "the Area"—the seabed and ocean floor outside of national jurisdiction—defines maritime zones, grants states' rights and obligations, and more. In a dramatic shift from the conventional theory of res nullius, which formerly governed high seas resources, the Area's resources are now recognized as the Common Heritage of Mankind (CHM).[1] No state may claim sovereignty over any portion of the Area or its resources, according to the CHM principle, and the profits from exploitation must be distributed fairly among all states, with developing countries receiving special attention.[2] An independent international body created under UNCLOS, the International Seabed Authority (ISA) is responsible for overseeing operations in the Area, encouraging marine scientific research, safeguarding the marine environment, and making sure that benefits are shared fairly.[3]

The growing need for rare earth minerals and crucial metals necessary for modern electronics, electric vehicles, and renewable energy technologies has fuelled interest in deep-sea mining in recent years.[4] This surge in interest has brought renewed scrutiny to the international legal regime governing seabed mining, highlighting gaps in environmental protections, benefit-sharing mechanisms, and technology transfer frameworks. The "High

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[1] United Nations Convention on the Law of the Sea arts. 1, 133-137, Dec. 10, 1982, 1833 U.N.T.S. 397 (hereinafter UNCLOS).
[2] Id. art. 136.
[3] Id. art. 157.
[4] See International Seabed Authority, Strategic Plan and High-Level Action Plan 2019-2023, at 4 (2019), https://www.isa.org.jm/files/files/documents/StrategicPlanHLAP_EN.pdf.

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Seas Treaty," also known as the Agreement on the Conservation and Sustainable Use of Marine Biological Diversity of Areas beyond National Jurisdiction (BBNJ Agreement), was recently adopted in 2023 and has further developed the worldwide legal landscape.[5] Meanwhile, India has emerged as a proactive player in the arena of deep-sea mining governance. Through its exploration contracts with the ISA for polymetallic nodules and polymetallic sulphides, participation in ISA policymaking, and ambitious Deep Ocean Mission, India demonstrates a commitment to sustainable exploration of deep-sea resources while advocating for the equitable implementation of the CHM principle.[6] India's engagement also reflects its broader strategic vision for maritime security, the Blue Economy, and leadership among developing states. This paper examines the legal frameworks, environmental concerns, and geopolitical dimensions of deep-sea mining, emphasising the principles of sovereignty, sustainability, and the CHM. It critically analyses recent legal developments, such as the BBNJ Treaty and the 2023 ITLOS Advisory Opinion on Climate Change and the Law of the Sea,[7] and assesses India's evolving role in shaping future ocean governance. The paper ultimately argues for stronger and flexible legal frameworks that balance national interests with global commons management, guaranteeing that the deep seabed will continue to be a shared legacy for all of humanity.

## LEGAL FRAMEWORK: TREATIES, AGREEMENTS, AND INSTITUTIONS

An intricate web of international treaties, agreements, and institutional frameworks serve as the foundation for both ocean governance and the management of deep-sea mining operations. With the addition of later accords like the 1994 Agreement Relating to the Implementation of Part XI of UNCLOS and the 2023 BBNJ Agreement, the United Nations Convention on the Law of the Sea (UNCLOS) serves as the cornerstone of contemporary

[5] Agreement under the United Nations Convention on the Law of the Sea on the Conservation and Sustainable Use of Marine Biological Diversity of Areas Beyond National Jurisdiction, opened for signature Sept. 20, 2023 (not yet in force) (hereinafter BBNJ Agreement).

[6] Ministry of Earth Sciences, Government of India, Deep Ocean Mission, https://www.moes.gov.in/deep-ocean-mission (last visited Apr. 25, 2025).

[7] Responsibilities and Obligations of States Sponsoring Persons and Entities with Respect to Activities in the Area, Advisory Opinion, Case No. 17, Advisory Opinion, ITLOS, Apr. 21, 2023.

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ocean governance. When combined, these tools seek to strike a balance between environmental conservation, national interests, and the fair allocation of ocean resources.[8]

**United Nations Convention on the Law of the Sea (UNCLOS)**

UNCLOS, the "constitution of the oceans," was enacted in 1982 following over ten years of talks. It governs maritime zones, navigational rights, and the exploitation of marine resources. Part XI of UNCLOS, which regulates activities in the Area—defined as the seabed and ocean floor outside of national jurisdiction—is especially pertinent to deep-sea mining.[9] The region and its resources are recognized as the Common Heritage of Mankind (CHM) under UNCLOS.[10] No state may claim sovereignty or sovereign rights over any part of the Area.[11] Activities in the Area must be carried out for the benefit of all humankind, with special consideration for the interests of developing states.[12] The International Seabed Authority (ISA) was established under Part XI to organize, regulate, and control activities in the Area.[13] However, due to opposition from developed countries, particularly concerns regarding mandatory technology transfer and the financial terms of exploitation, the implementation of Part XI was modified through a supplementary agreement.

**The 1994 Agreement Relating to the Implementation of Part XI of UNCLOS**

The 1994 Agreement was adopted to address the concerns of industrialised countries and facilitate broader acceptance of UNCLOS.[14] This Agreement modifies and supersedes certain provisions of Part XI but reaffirms the principle that the Area and its resources are the Common Heritage of Mankind.[15] The 1994 Agreement includes voluntary rather than mandatory technology transfer,[16]simplified decision-making structure within the ISA to ensure the representation of all major legal and political systems,[17]more market-oriented

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[8] BBNJ Agreement, supra note 5
[9] UNCLOS, supra note 1.
[10] Id. arts. 1(1)(1), 133(a).
[11] Id. art. 136
[12] Id. arts. 137-140.
[13] Id. art. 156.
[14] Agreement Relating to the Implementation of Part XI of the United Nations Convention on the Law of the Sea of 10 December 1982, opened for signature July 28, 1994, 1836 U.N.T.S. 3 [hereinafter 1994 Agreement].
[15] Id. art. 5.
[16] Id. Annex, Section 5.
[17] Id. art. 3.

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mechanisms for the commercial development of seabed minerals. The 1994 Agreement thus reflects a pragmatic compromise, ensuring that the governance of the Area remained rooted in CHM principles while making it acceptable to both developed and developing states.

**The International Seabed Authority (ISA)**

It established pursuant to UNCLOS and operational since 1994, the ISA is tasked with organising and regulating all mineral-related activities in the Area.[18] Its principal organs includes the Assembly has comprising all member states, serving as the supreme policymaking organ. The executive body, the Council, is in charge of overseeing exploration and exploitation operations. The Legal and Technical Commission offers professional advice and suggestions on technical subjects, the Secretariat handles administrative tasks, and the Enterprise—which is still dormant—is intended to be the ISA's operational arm for direct mineral extraction. The ISA has developed regulations for prospecting and exploration for polymetallic nodules (PMN), polymetallic sulphides (PMS), and cobalt-rich ferromanganese crusts (CFC).[19]However, the exploitation regulations the so-called "Mining Code" remain under negotiation, with discussions ongoing as of 2024.[20]

**BBNJ Treaty (2023): The High Seas Agreement**

The 2023 Agreement on the Conservation and Sustainable Use of Marine Biological Diversity of Areas beyond National Jurisdiction (BBNJ Agreement) represents a landmark development in ocean governance.[21] The BBNJ Treaty, which was concluded under UNCLOS, aims to create marine protected areas, preserve marine biodiversity, require environmental impact assessments, and encourage the fair distribution of advantages resulting from marine genetic resources. Although the BBNJ Agreement does not directly regulate deep-sea mining, its provisions on marine environmental protection, area-based management tools, and cumulative impact assessments will significantly influence ISA's

[18] UNCLOS, supra note 1, arts. 156-157.
[19] International Seabed Authority, Regulations on Prospecting and Exploration for Polymetallic Nodules, ISBA/6/A/18 (July 13, 2000), as revised.
[20] International Seabed Authority, "Status of Draft Exploitation Regulations" (Dec. 2024), available at https://www.isa.org.jm. (last visited June 10,2025)
[21] BBNJ Agreement, supra note 5.

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regulatory framework.[22] States are now expected to harmonize deep-sea mining activities with broader biodiversity conservation obligations.

**Other Relevant Legal Instruments and Reports**

The deep-sea mining regime is further shaped by a number of other regional and international agreements, such as the Convention on Biological Diversity (CBD) and its Nagoya Protocol, which affect access to and benefit sharing from marine genetic resources.[23] The Paris Agreement (2015) indirectly affects deep-sea mining, as the transition to a green economy increases the demand for critical minerals. ISA's Strategic Plan (2019–2023) and the new ISA Deep Data Reports (2023–2024) provide updated frameworks for exploration management, environmental standards, and transparency.[24] These evolving frameworks reflect a growing recognition of the need for integrated, ecosystem-based approaches to ocean governance.

**Sovereignty in Maritime Zones**

The concept of sovereignty over the oceans has evolved considerably over centuries, culminating in a structured division of maritime zones under UNCLOS. The principles of freedom of the high seas and the governance of the seabed beyond national jurisdiction are carefully balanced with the sovereign rights of coastal states in the Convention. Therefore, sovereignty is not absolute; rather, it is based on factors like proximity to the shore and the type of marine activity being engaged in. [25]

**Internal Waters and Territorial Sea**

Bays, rivers, and ports are examples of the waters landward of the baseline over which states have complete jurisdiction.[26] Sovereignty over land territory is as comprehensive as this. States also exercise sovereignty in the territorial sea, which is up to 12 nautical miles from the baseline, albeit there are some restrictions, like the right of innocent passage for foreign

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[22] Id. arts. 7-9.
[23] Convention on Biological Diversity, opened for signature June 5, 1992, 1760 U.N.T.S. 79.
[24] International Seabed Authority, DeepData Brochure 2023, https://www.isa.org.jm/deepdata (last visited Apr. 25, 2025).
[25] Id. art. 17.
[26] UNCLOS, supra note 1, art. 8.

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vessels. Coastal states have the authority to control immigration, customs, fisheries, and navigation in this area.[27] Contiguous Zones extend up to 24 nautical miles from the baseline and are located outside the territorial sea.[28] The coastal state does not have complete sovereignty in this area, but it may exercise the minimal amount of control required to stop violations of its fiscal, immigration, sanitary, and customary rules within its borders or territorial waters.[29]

An important UNCLOS innovation is the Exclusive Economic Zone (EEZ), which gives coastal governments sovereign rights but not complete sovereignty so they can explore, develop, conserve, and manage natural resources up to 200 nautical miles from the baseline.[30] Coastal states are also in charge of environmental protection, maritime science, and artificial islands inside their EEZs.[31] All states, however, are still allowed to fly, navigate, and install pipelines and submarine cables.[32] Coastal nations has the sovereign right to explore and exploit natural resources on their continental shelf.[33] These rights exist ipso facto and do not depend on livelihood or public statement.[34] The continental shelf may extend beyond 200 nautical miles, up to 350 nautical miles, upon meeting criteria under Article 76 of UNCLOS, subject to compliance to the Commission on the Limits of the Continental Shelf (CLCS).[35]

The high seas regions are accessible to all states, whether they are landlocked or coastal, and are outside of national borders.[36] The freedom concept governs all activities on the high seas, including fishing, scientific study, over flight, and navigation. On the other hand, the Common Heritage of Mankind principle governs the deep seafloor, or the Area.[37] No state has the right to assert sovereignty over any region of the region. Under the direction of the

[27] Id. arts. 19-21.
[28] Id. art. 33.
[29] Id.
[30] Id. arts. 55-56.
[31] Id. art. 56.
[32] Id. art. 58.
[33] Id. art. 77.
[34] Id.
[35] Id. art. 76(8).
[36] Id. art. 87.
[37] Id. art. 136.

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International Seabed Authority (ISA), all operations must be conducted for the benefit of all people.[38]

## SOVEREIGNTY ISSUES IN MODERN PERCEPTION

### The South China Sea Arbitration (2016)

The Permanent Court of Arbitration (PCA)'s 2016 ruling in the South China Sea Arbitration upheld significant interpretations of UNCLOS maritime rights.[39] The decision made it clear that if a maritime feature cannot support commercial activity or human settlement, it cannot create an EEZ. It emphasized that coastal states' rights must be used in a way that respects other states' liberties.[40] The case highlights the fragile balance between sovereign rights and the international order of the oceans, even though it is not specifically related to deep-sea mining.

### India's Maritime Claims and Sovereignty Assertions

With one of the world's longest coasts, India has carved out a distinct continental shelf and EEZ in the Indian Ocean. In accordance with UNCLOS Article 76, it filed claims for enlarged continental shelf rights in the Bay of Bengal and Arabian Sea sectors.[41]India's dedication to the legitimate assertion of marine sovereignty while upholding its international commitments is reflected in its strategic initiatives, including the Deep Ocean Mission, SAGAR (Security and Growth for All in the Region), and its leadership in the Indian Ocean

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[38] Id. art. 156.
[39] South China Sea Arbitration (Philippines v. China), PCA Case No. 2013-19, Award (July 12, 2016).
[40] Id. 646.
[41] Commission on the Limits of the Continental Shelf (CLCS), Outer Limits of the Continental Shelf Beyond 200 Nautical Miles from the Baselines: Submissions to the Commission: Submission by India, UN Doc. CLCS.34.2009.LOS (May 11, 2009).

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Rim Association (IORA).[42] India emphasizes UNCLOS as the legal underpinning for all maritime activity and actively promotes freedom of navigation and over flight in the Indo-Pacific.[43]

## GOVERNANCE OF DEEP-SEA MINING: ROLE OF THE ISA

The International Seabed Authority (ISA), an independent body created under Part XI of UNCLOS, is principally responsible for overseeing deep-sea mining operations outside of sovereign borders. For the benefit of all people, the ISA's main responsibility is to plan, coordinate, and oversee operations in the region while making sure that the maritime environment is effectively shielded from any negative consequences that may result from them.[44]

### Institutional Structure and Functions

The Assembly is the highest policy-making body and is made up of all members. The executive body, the Council, has the power to authorize exploration and exploitation operations. Experts make recommendations on technical and environmental issues through the Legal and Technical Commission (LTC). The Secretariat, headed by the Secretary-General, conducts administrative operations.[45] The ISA was also intended to operate an entity called the Enterprise to directly carry out mining activities on behalf of humankind. But the Enterprise is still inactive, and the Secretariat now handles its operations. Regulations for the prospecting and exploration of cobalt-rich ferromanganese crusts (CFC, 2012), polymetallic nodules (PMN, 2000), and polymetallic sulphides (PMS, 2010) have been developed by the ISA. 7. Around 1.3 million square kilometers of the worldwide seabed have been covered by the more than 30 exploration contracts the ISA has signed as of 2024.

### Status of Exploration Activities

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[42] Ministry of External Affairs, Government of India, Security and Growth for All in the Region (SAGAR) Policy, https://www.mea.gov.in/press-releases.htm?dtl/25467/SAGAR (last visited Apr. 26, 2025).
[43] Prime Minister of India, Address at Shangri-La Dialogue, June 1, 2018, available at https://www.pmindia.gov.in/en/news_updates/pm-address-at-shangri-la-dialogue/.(last visited May 26,2025)
[44] International Union for Conservation of Nature (IUCN), Motion 069-2023, Calling for a Moratorium on Deep-Sea Mining.
[45] ISA, Council Working Group on Cumulative Impacts, ISBA/28/C/WP.5 (2024).

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According to the latest reports published by the ISA in December 2024 and June 2024, 31 exploration contracts are currently active. Contractors include both state-sponsored entities and private companies sponsored by states.[46] Reserved Areas have been created to guarantee that developing countries will have the opportunity to participate in mining operations in the future. Through the Ministry of Earth Sciences and its implementing agency (NIOT), India has a contract for the study of polymetallic sulphides in the Indian Ocean Ridge region and polymetallic nodules in the Central Indian Ocean Basin. The system of "reserved areas" is significant because it implements a key element of the CHM principle by guaranteeing developing states' access to resources. Reserved areas constitute approximately 43% of the total exploration area allocated to developing countries.[47]

While exploration activities are well-regulated, the ISA is currently finalizing the Draft Exploitation Regulations, colloquially termed the "Mining Code." Environmental Impact Assessment (EIA) standards, financial terms and royalty systems, benefit-sharing arrangements, dispute resolution processes, and institutional methods for compliance monitoring are among the many concerns that are being negotiated. Negotiations have been complicated by disagreements among member states over environmental standards, equity provisions, and the degree of ISA oversight over contractors. Adoption has been delayed by significant conflicts, despite early plans to complete the Mining Code by July 2023 under the "2-Year Rule" prompted by Nauru's notification in 2021. Discussions have been extended through 2024, with growing advocacy for a moratorium on commercial exploitation until robust environmental frameworks are established.[48]

**Criticisms and Reform Proposals**

The ISA has faced criticism for Lack of transparency in its decision-making processes. It has limited participation of civil society organisations and indigenous communities. It has Insufficient scientific baseline data regarding the deep-sea ecosystems targeted for mining. It also has Potential conflicts of interest within its Legal and Technical Commission.[49]

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[46] ISA, Council Working Group Reports, ISBA/27/C/WP.1 (2023-2024).
[47] ISA, "Status of Exploration Contracts" (Dec. 2024), https://www.isa.org.jm. (last visited May 10, 2025)
[48] ISA, Regulations on Prospecting and Exploration for Polymetallic Nodules, ISBA/6/A/18 (July 13, 2000); Regulations on Prospecting and Exploration for Polymetallic Sulphides, ISBA/16/A/12/Rev.1 (May 7, 2010); Regulations on Prospecting and Exploration for Cobalt-rich Crusts, ISBA/18/A/11 (July 22, 2012).
[49] Id. Supra note 45.

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Therefore, reform proposals include expanding observer participation rights, strengthening environmental governance, adopting precautionary moratoria on exploitation, and enhancing benefit-sharing mechanisms. The ISA has responded by releasing the Clarion-Clipperton Zone (CCZ) Environmental Management Plan (EMP) and starting the process of creating comparable frameworks for additional areas. Furthermore, it is anticipated that the 2023 BBNJ Treaty commitments will have an impact on the ISA's future environmental governance procedures.[50]

## ENVIRONMENTAL SUSTAINABILITY AND THE MARINE ECOSYSTEM

The deep-sea environment represents one of the least understood and most fragile ecosystems on Earth. Despite their remoteness, hydrothermal vents, abyssal plains, and seamounts host complex, unique biological communities, often characterized by endemic species adapted to extreme conditions. With the advent of deep-sea mining, concerns over irreversible damage to these ecosystems have intensified, demanding that sustainability and precautionary principles take centre stage in regulatory frameworks.[51] States and contractors operating in the Area are required under UNCLOS to "assess the potential effects" of their operations on the marine environment and "publish reports of the results of such assessments." Additionally, the International Seabed Authority (ISA) requires contractors to submit Environmental Impact Assessments (EIAs) as a precondition to commencing exploitation activities.[52] The Draft Exploitation Regulations, under negotiation since 2017, further develop EIA requirements, emphasising on baseline scientific studies over multi-year periods, risk-based environmental management, monitoring and reporting obligations, and development of Environmental Management and Monitoring Plans (EMMPs). However, concerns persist regarding the adequacy of EIAs, given the profound knowledge gaps regarding deep-sea ecosystems and the cumulative impacts of mining operations.[53]

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[50] Id. Supra note 5.
[51] Lisa Levin et al., Defining "Serious Harm" to the Marine Environment in the Context of Deep-Seabed Mining, 74 Marine Policy 245 (2021).
[52] ISA, Recommendations for the Guidance of Contractors for the Assessment of the Possible Environmental Impacts Arising from Exploration for Marine Minerals, ISBA/25/LTC/6/Rev.1 (2019).
[53] Cynthia R. Smith & Lisa A. Levin, Deep-Sea Ecosystems: Biodiversity and Ecosystem Services, 49 Ann. Rev. Environ. Resources 29 (2023).

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Deep-sea corals and sponges may live for centuries. Its recovery rates from physical disturbance may span decades or centuries. Due of their relatively limited ranges, many species are susceptible to localized disruptions. According to scientific research, mining-related sediment plumes can spread tens to hundreds of kilometers, suffocating benthic ecosystems and upsetting ecological connections.[54] The physical removal of nodules or sulphide structures eliminates essential habitat features, potentially leading to the extinction of unknown or undiscovered species.[55]

**Precautionary Principle and Ecosystem-Based Management**

In international environmental law, the precautionary principle is widely accepted, particularly within the frameworks of UNCLOS and the Convention on Biological Diversity (CBD).[56] It requires that actions to stop environmental deterioration not be postponed because of the lack of total scientific confidence. The ISA's Mining Code negotiations and recent Council Working Group reports emphasize the adoption of precautionary and ecosystem-based approaches to deep-sea mining governance. Draft regulations propose establishing Preservation Reference Zones (PRZs) areas where no mining is allowed to serve as environmental baselines and refuges.[57] Many scientists and environmental organizations, however, contend that the current plans do not adequately address the issue of real precaution and advocate for a halt to commercial deep-sea mining until adequate governance and knowledge are established.[58]

The ISA has developed Regional Environmental Management Plans (REMPs) for key mining areas, most notably the Clarion-Clipperton Zone (CCZ). Its aim is to establish Area of Particular Environmental Interest (APEIs). It sets environmental baseline data standards. It coordinates monitoring and cumulative impact assessments.[59] As of 2024, efforts are underway to expand REMPs to other regions, including the Mid-Atlantic Ridge and Indian Ocean basins.[60] The BBNJ Agreement (2023) further enhances obligations for cumulative

[54] J. Wedding et al., Managing Mining of the Deep Seabed, 49 Science 36 (2021).
[55] ISA, Council Working Group on the Protection of the Marine Environment Reports, ISBA/27/C/WP.2 (2024).
[56] Id. Supra note 45
[57] Duncan Currie, Transparency and Accountability at the ISA, 32 Marine Policy 278 (2023).
[58] Convention on Biological Diversity, supra note 15, art. 14.
[59] ISA, Status of New REMPs Development (2024).
[60] Id.

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environmental impact assessments and area-based management beyond national jurisdiction. It advances in deep-sea research technologies, such as remotely operated vehicles (ROVs), autonomous underwater vehicles (AUVs), and environmental DNA (eDNA) sampling, have greatly expanded understanding of deep-sea ecosystems.[61]Nevertheless, scientific exploration remains vastly outpaced by the planned scale of mining operations. Only about 0.0001% of the deep-sea floor has been directly observed and sampled. Greater investment in fundamental scientific research and capacity-building for developing countries is essential to align deep-sea mining with sustainability objectives.[62]

## THE COMMON HERITAGE OF MANKIND PRINCIPLE

One of the most important normative modifications brought about by the United Nations Convention on the Law of the Sea (UNCLOS) is the Common Heritage of Mankind (CHM) premise.[63] It redefines the relationship between states, natural resources, and future generations in respect to the deep seabed, asserting that certain global commons cannot be appropriated but must be preserved and managed collectively for the benefit of all humanity. The intellectual foundations of CHM can be found in Ambassador Arvid Pardo's landmark 1967 address to the UN General Assembly, where he argued that the ocean floor and seabed outside of national borders should be recognized as the collective heritage of all people rather than being subject to national appropriation.[64] This concept was first codified in the 1970 United Nations Declaration of Principles Governing the Seabed and the Ocean Floor,[65] and subsequently embedded into Part XI of UNCLOS. Article 136 of UNCLOS explicitly declares that the Area and its resources are the common heritage of mankind.[66] The CHM principle introduced several obligations such as Prohibition of national appropriation, Administration through an international authority (the ISA). It's important to develop marine

[61] ISA, Environmental Management Plan for the Clarion-Clipperton Zone, ISBA/17/LTC/7 (July 2012, updated 2021).
[62] Deep Sea Conservation Coalition, Moratorium Campaign, https://www.savethehighseas.org/moratorium (last visited Apr. 25, 2025).
[63]UNCLOS, supra note 1, art. 136.
[64]Arvid Pardo, "Speech to the First Committee of the UNGA," U.N. Doc. A/6695 (Nov. 1, 1967).
[65]G.A. Res. 2749 (XXV), Declaration of Principles Governing the Seabed and the Ocean Floor, and the Subsoil Thereof, Beyond the Limits of National Jurisdiction (Dec. 17, 1970).
[66] Id. art. 137.

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science for peaceful purposes, resource conservation, equitable benefit distribution, and preservation of the marine environment.[67]

**Legal Status and Interpretation**

Even though UNCLOS does not explicitly state that the CHM principle is jus cogens (a peremptory norm), it occupies a fundamental position within the treaty's structure. The 1994 Implementation Agreement reaffirmed CHM while adjusting operational details to make them well-suited with worldwide economic realities.[68] In its 2011 Advisory Opinion on Responsibilities and Obligations of States Sponsoring Persons and Entities with Respect to Activities in the Area, the International Tribunal for the Law of the Sea (ITLOS) affirmed that a state's duty to protect the marine environment in accordance with the principles of CHM is to act on behalf of all people.[69]

In 2023, ITLOS issued an additional advisory opinion addressing climate change obligations under UNCLOS, indirectly reaffirming that obligations concerning global commons like the deep sea must be interpreted in light of evolving environmental norms and intergenerational equity. Despite its ambitious moral aspirations, the implementation of CHM faces significant challenges such as Developing countries argue that benefit-sharing mechanisms remain largely theoretical, with few tangible results. Royalties and financial obligations under exploration contracts have not yet materialized into significant redistributions. Although UNCLOS originally mandated technology transfer to developing states, the 1994 Agreement diluted this obligation, rendering it voluntary and subject to commercial viability.[70] Critics argue that the ISA's decision-making structures favour technologically advanced states and contractors, limiting the voice of developing countries and civil society. Commercial incentives to exploit seabed minerals risk undermining the ecological stewardship implied by CHM, especially given the limited scientific understanding of deep-sea ecosystems.[71]

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[67] Id. art. 140.
[68] See Marie Bourrel et al., The Common Heritage of Mankind and Equity in Deep-Sea Mining, Marine Policy (2016).
[69] Id. art. 143.
[70] Lisa A. Levin et al., Deep-Sea Ecosystems at Risk from Mining, 38 Marine Policy 17 (2023).
[71] Responsibilities and Obligations of States Sponsoring Persons and Entities with Respect to Activities in the Area, Advisory Opinion, Case No. 17, ITLOS (Feb. 1, 2011).

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## INDIA'S PERSPECTIVE ON CHM

India has consistently supported the CHM principle in international fora. During UNCLOS III negotiations, India aligned with the Group of 77 and Non-Aligned Movement, advocating for equitable access to seabed resources and opposing monopolization by developed states.[72]India secured contracts for polymetallic nodules and polymetallic sulphides with the ISA, explicitly committing to knowledge-sharing and environmental stewardship.[73] India's official statements before the ISA Assembly emphasise have to for equitable benefit-sharing, technology transfer, and strong environmental safeguards aligned with the CHM principle. India's Deep Ocean Mission explicitly lists equitable exploration of resources and sustainable development of the blue economy as strategic objectives. Thus, India sees the CHM principle not merely as an abstract ideal but as a framework for global justice, sustainable development, and peaceful use of the oceans.[74] India has emerged as one of the foremost participants among developing countries in the governance and exploration of the international seabed. Combining strategic, economic, environmental, and scientific motivations, India's approach reflects a deliberate and comprehensive commitment to the legal frameworks established under UNCLOS and the International Seabed Authority (ISA).[75]

India was an active participant in the Third United Nations Conference on the Law of the Sea (UNCLOS III, 1973–1982), consistently advocating for the principle of the Common Heritage of Mankind (CHM). In 1987, India became the first country to be recognized as a "Pioneer Investor" by the Preparatory Commission for the International Seabed Authority, granting it a pioneer area in the Central Indian Ocean Basin for polymetallic nodule exploration.[76] India ratified UNCLOS in 1995, underscoring its commitment to international maritime governance. Its early proactive role reflects India's belief in equitable access to

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[72] Statements by India at UNCLOS III Negotiations (1973-1982), archived at Ministry of External Affairs, India.
[73] Ministry of Earth Sciences, Deep Ocean Mission, supra note 6.
[74] India Statement at the 28th ISA Assembly, 2023, available at https://www.isa.org.jm. (last visited June 10, 2025)
[75] Ministry of External Affairs, India's Engagement with UNCLOS, https://www.mea.gov.in/unclos.htm (last visited Apr. 26, 2025).
[76] Id.

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global commons for developing nations.[77] India currently holds two active exploration contracts with the ISA, first is Polymetallic Nodules (PMN) Contract which was signed in 2002, this covers 75,000 square kilometers in the Central Indian Ocean Basin.[78]and other one is Polymetallic Sulphides (PMS) Contract that is signed in 2016, covering an area along the Indian Ocean Ridge.[79] These contracts, implemented through the National Institute of Ocean Technology (NIOT) under the Ministry of Earth Sciences (MoES), aim at mapping resource potential, assessing environmental impacts, and developing appropriate mining technologies. India has invested heavily in marine scientific research platforms, including research vessels like RV Sagar Kanya and deep-sea vehicles capable of surveying depths up to 6,000 meters.[80]

**The Deep Ocean Mission (DOM)**

Deep ocean mission has launched in 2021, India's Deep Ocean Mission represents a holistic initiative designed to harness ocean resources sustainably. Its core objectives are embryonic technologies for deep-sea mining, creating manned submersibles for deep-sea exploration (e.g., Samudrayaan project), conducting biodiversity assessments of deep-sea ecosystems, and advancing ocean climate change studies. The mission aligns directly with Sustainable Development Goal 14 (Life below Water) and reflects India's strategic vision of achieving technological self-reliance in ocean sciences. The Deep Ocean Mission explicitly incorporates CHM principles by emphasizing environmental sustainability, capacity-building for Indian scientists, and responsible stewardship of marine resources.[81]

India's interests in deep-sea mining extend far beyond economic benefits. It seeks Reduce dependence on external sources for critical minerals necessary for renewable energy, defense, and high-technology industries. It also seeks Strengthening role as a security provider in the Indian Ocean Region (IOR) under its "SAGAR" doctrine (Security and Growth for All in the Region). It has supporting technology sharing and capacity building among developing

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[77] ISA, History of Pioneer Investors, https://www.isa.org.jm/history-pioneer-investors (last visited Apr. 26, 2025).
[78] ISA, Contract between the ISA and the Government of India for Exploration for Polymetallic Nodules, ISBA/7/C/7 (2002).
[79] ISA, Contract between the ISA and the Government of India for Exploration for Polymetallic Sulphides, ISBA/22/C/2 (2016).
[80] Ministry of Earth Sciences, Deep Ocean Mission Programme Document (2021).
[81] National Institute of Ocean Technology, India's Deep-Sea Research Infrastructure, http://www.niot.res.in (last visited Apr. 26, 2025).

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countries. India's assertive yet lawful engagement strengthens its diplomatic posture as a responsible global actor upholding the international rule of law, particularly in ocean governance. India is an active participant in the Assembly and Council of the ISA. It has supported the development of the Draft Exploitation Regulations (Mining Code) while emphasizing environmental safeguards.[82] It advocates for balanced benefit-sharing mechanisms that address the concerns of developing countries. It has called for stricter environmental monitoring and the precautionary principle to guide future mining operations.

During the 28th Session of the ISA in 2023, India urged that deep-sea mineral activities should not compromise the ecological health of the oceans and insisted that financial and technological benefits must be equitably distributed.[83] India's ambitious goals also face some major challenges such as there is a limited baseline scientific knowledge about deep-sea biodiversity and high financial and technological costs of commercial-scale deep-sea mining. International pressures for a moratorium or precautionary pauses on mining until more comprehensive environmental regulations are adopted.[84] Nevertheless, India's sustained investment in research, adherence to international law, and leadership among developing nations present significant opportunities for shaping the global deep-sea mining governance regime towards a more even-handed and sustainable future.[85]

There have been significant scientific, institutional, and legal advancements in the areas of deep-sea mining and ocean governance during the past two years. New cases, treaties, regulatory updates, and scientific reports have reshaped the landscape, emphasizing environmental protection, benefit-sharing, and precautionary approaches.[86] At the request of the Commission of Small Island States on Climate Change and International Law (COSIS),[87] the International Tribunal for the Law of the Sea (ITLOS) released an Advisory Opinion on April 21, 2023. The Opinion addressed the obligations of states under UNCLOS to prevent, reduce, and control marine pollution related to climate change, including greenhouse gas emissions.

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[82] Ministry of Earth Sciences, Deep Ocean Mission, supra note 6.
[83] Ministry of External Affairs, SAGAR Policy Document, supra note 42.
[84] India Statement at the 28th Session of the ISA Council, ISBA/28/C/12 (2023).
[85] Responsibilities of States with Respect to Climate Change, Advisory Opinion, ITLOS, Apr. 21, 2023.
[86] ISA, Status of Mining Code Negotiations (Apr. 2025), available at https://www.isa.org.jm.(last visited May29,2025)
[87] Id. 178-180.

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Although primarily focused on atmospheric emissions, ITLOS reaffirmed that states have to put into effect due diligence and environmental stewardship in all activities impacting the marine environment, including activities in the Area. This reinforces that states sponsoring seabed mining contractors bear continuing obligations to ensure that activities do not cause serious harm to the marine environment, consistent with the Common Heritage of Mankind (CHM) principle. The ITLOS Opinion thus adds momentum toward stricter environmental standards in deep-sea mining operations.[88]

After nearly two decades of negotiations, the Agreement under the United Nations Convention on the Law of the Sea on the Conservation and Sustainable Use of Marine Biological Diversity of Areas Beyond National Jurisdiction (BBNJ Agreement) was adopted in March 2023. Despite not directly regulating mineral extraction, the BBNJ Treaty greatly strengthens the Area's environmental obligations and will have an impact on ISA regulations, especially through the application of the precautionary principle and requirements for cumulative environmental assessments.

**Status of the ISA Mining Code and the "Two-Year Rule"**

In 2021, Nauru invoked UNCLOS Article 165(2), triggering the so-called "two-year rule," obligating the ISA to complete exploitation regulations within two years. The ISA decided to continue negotiations into 2024, with interim procedures allowing applications for exploitation contracts but emphasizing the need for rigorous environmental scrutiny pending adoption of final regulations. As of April 2025, the exploitation regulations the core "Mining Code" remain under negotiation, highlighting deep divisions between states favouring accelerated mining and those advocating for caution.[89] In response to regulatory uncertainties and scientific concerns, a growing coalition of states, scientists, civil society organizations, and local groups have called for a moratorium or precautionary pause on deep-sea mining.[90] The International Union for Conservation of Nature (IUCN) adopted a resolution in 2023 calling for a moratorium. The Deep Sea Conservation Coalition launched a global campaign urging states not to sponsor mining contracts until adequate environmental protections are

[88] Deep Sea Conservation Coalition, Global Campaign for Moratorium, https://www.savethehighseas.org.(last visited May 15, 2025)
[89] ISA, Decision on the Two-Year Rule Process, ISBA/28/C/30 (July 2023).
[90] IUCN, Resolution WCC-2023-Res-069-EN, Calling for a Moratorium on Deep-Sea Mining (2023).

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established. States such as France,[91] Germany, Costa Rica, and Chile publicly endorsed a moratorium or pause at ISA meetings. These calls have shifted the political dynamic at the ISA, forcing reconsideration of timelines and obligations under the Mining Code.[92]

Several major scientific reports published between 2023 and 2024 have warned about the ecological risks of commercial deep-sea mining, The UNESCO-IOC 2023 Report emphasized that less than 0.0001% of the deep ocean has been sampled, cautioning against premature exploitation.[93] The ISA DeepData 2023 Brochure highlighted data gaps, particularly regarding baseline environmental parameters and cumulative impact assessment.[94] The Global Seafloor Integrity Report 2024 warned that mining could cause habitat destruction, biodiversity loss, and disrupt global carbon cycling. These conclusion support opinions for applying the precautionary principle and for delaying exploitation until comprehensive scientific baselines are established.[95] India has taken a balanced stance by supporting the completion of the Mining Code but insisting that environmental protection must be paramount.[96] It advocating for strong, science-based Environmental Impact Assessments, and calling for equitable benefit-sharing mechanisms, particularly favouring developing countries. India's interventions reflect its dual interests: promoting technological and economic development while maintaining environmental responsibility aligned with the Common Heritage of Mankind.

## CHALLENGES AND FUTURE PROSPECTS

While the legal frameworks and governance structures for deep-sea mining have evolved significantly, numerous challenges remain unresolved. The potential of deep-sea mining and the sustainability of the deep ocean will depend on how these challenges are addressed at both the international and national levels.[97] Despite the elaborate regime established by UNCLOS and the ISA, the Mining Code is yet to be finalized, leaving ambiguity around key

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[91] France, Statement at the ISA 28th Assembly (2023), available at https://www.isa.org.jm (last visited May 13,2025).
[92] UNESCO-IOC, The Deep Ocean: Science, Governance and Stewardship (2023).
[93] ISA, DeepData Brochure (July 2023).
[94] India Statement at the ISA Council Meeting, ISBA/28/C/13 (2023).
[95] Global Seafloor Integrity Report, International Deep Ocean Research Council (IDORC) (2024).
[96] Id. 109.
[97] ISA, Dispute Resolution Procedures under Draft Mining Code, ISBA/28/C/WP.2 (2024).

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operational and environmental standards.[98] Overlap with BBNJ Treaty Obligations: The relationship between ISA's mining regulations and the marine biodiversity protections mandated by the BBNJ Treaty requires careful harmonization.[99]There is a lack of clarity on how disputes between contractors, states, and the ISA will be efficiently resolved, especially concerning environmental damages. The evolving complexity of international ocean governance demands dynamic, adaptive legal tools that can respond to scientific advances and emerging threats.[100]

The growing interest in critical minerals necessary for the universal power transition intensifies geopolitical competition over deep-sea resources: China, the United Kingdom, France, and South Korea dominate ISA exploration contracts.[101]Small Island Developing States (SIDS) increasingly seek a voice to ensure that the interests of vulnerable states are respected. India seeks a leadership role among developing countries in crafting equitable and sustainable mining governance.[102] Without effective multilateral cooperation, there is a risk that deep-sea mining could exacerbate global inequalities rather than deliver benefits to all humanity as intended under the Common Heritage of Mankind principle.[103] The deep sea represents both a scientific frontier and a moral frontier how the international community navigates the balance between resource use and environmental protection will profoundly shape the oceans' future.

## CONCLUSION

The governance of the oceans and, in particular, the regulation of deep-sea mining activities stands at a critical juncture. The principles established under the United Nations Convention on the Law of the Sea (UNCLOS) especially the Common Heritage of Mankind (CHM) provide a visionary framework that seeks to balance sovereign rights, sustainable development, and equitable benefit sharing. However, the translation of these normative

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[98] ISA, Status of Mining Code Negotiations, supra note 87.
[99] Id. note 5
[100] Deep Sea Conservation Coalition, Recommendations for ISA Reform, https://www.savethehighseas.org.(last visited June 10, 2025)
[101] International Union for Conservation of Nature (IUCN), Motion 070-2024, Strengthening ISA Environmental Governance.
[102] UNESCO-IOC, The Deep Ocean: Science, Governance and Stewardship (2023).
[103]ISA, Annual Report on Contractors and Sponsoring States, ISBA/28/A/3 (2024).

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aspirations into effective governance practices faces profound legal, scientific, institutional, and political challenges. The emergence of deep-sea mining as a technologically feasible and economically attractive activity has exposed significant gaps in international regulation, environmental knowledge, and institutional capacities. While the International Seabed Authority (ISA) has developed comprehensive frameworks for exploration, the lack of comprehensive exploitation regulations ("Mining Code") creates legal uncertainty and environmental risks. The adoption of the BBNJ Treaty in 2023, the ITLOS Advisory Opinion on climate change obligations, and the increased calls for moratoriums reflect a shifting global consensus emphasizing caution, scientific stewardship, and inclusive governance.

India's proactive role through its exploration contracts, Deep Ocean Mission, advocacy for environmental safeguards, and commitment to equitable access demonstrates how emerging maritime powers can contribute constructively to global ocean governance. India exemplifies a model that integrates national strategic interests with international legal obligations, advancing both development and sustainability goals. Looking ahead, the international community must urgently prioritise embedding the precautionary principle and ecosystem-based management into all phases of deep-sea mining governance and enhancing the ISA's transparency, accountability, and stakeholder inclusiveness. It should strengthening scientific research, particularly for developing countries, to address critical knowledge gaps. It must ensure that the Common Heritage of mankind principle remains the foundational ethic guiding activities beyond national jurisdiction. Ultimately, the deep seabed is not merely a repository of minerals; it is a shared legacy of all humanity, connecting generations past, present, and future. Upholding the spirit of UNCLOS requires a collective commitment to sustainability, justice, and stewardship, ensuring that the final frontier of the oceans is preserved for the benefit of all.