**Forum:** International Maritime Organization (IMO)

**Issue:** Regulating Deep-Sea Resource Extraction to Protect Marine Biodiversity

**Student Officer:** Petros Markoulatos

**Position:** Deputy President

## Personal Introduction

Dear delegates,

My name is Petros Markoulatos and I am currently a student at Pierce – The American College of Greece in the second grade of lyceum. This year's ACGMUN will be my 8th conference and I feel truly honored because this will be my first time as a Co-Chair at an MUN conference, specifically, in the International Maritime Organization (IMO).

I would like to extend my greetings to all of you. I am confident that this will be a great opportunity to become acquainted and have a good time while brainstorming, exchanging ideas, preparing resolutions and debating in the team spirit we all enjoy at the MUN conferences.

The guide that follows concerns the third topic of the International Maritime Organization entitled "Regulating Deep-Sea Resource Extraction to Protect Marine Biodiversity" and it should provide you with all the essential information you will need on the matter. In addition to the study guide, you are highly encouraged to engage in your personal research so as to acquire enhanced knowledge and deeper insights on the topic.

Should you have any further questions about the topic, do not hesitate to contact me via email at: p.markoulatos@acg.edu

I am looking forward to meeting you all at the actual conference!

Best regards,

Petros Markoulatos.

## Topic Introduction

Over the past decades, the green transition and the new advances in digital technologies have increased the demand for minerals such as lithium, cobalt, copper and

rare earth elements that are commonly used in everything from wind turbines, smartphones, electric cars, medical and military technologies, etc. Centuries of terrestrial mining of these vital natural materials have brought land sources close to depletion. Thus, there has recently been proposed that the search for new sources be moved to the seafloor as it is believed to contain millions of square kilometers of metal ores. Many countries and companies are supporting deep sea mining as a method to retrieve mineral deposits from the deep seabed, that is ocean depths greater than 200 meters, particularly in the so called International Deep Seabed area ("The Area") [1]. Although the technology for deep sea mining exists, commercial mining of the deep sea has not yet begun.[2]

While its proponents consider deep sea mining a possible solution to the scarcity of natural minerals, this remains a topic of great controversy because the potential impact of deep-sea resource extraction on marine biodiversity and ecosystems have not been fully assessed yet. A growing body of scientific evidence indicates that deep sea resource extraction poses serious risks to submarine ecosystems, such as possible unknown impact on biodiversity, fisheries, water quality, and other interconnected ecological systems. Even so, putting in place adequate safeguards for the protection of the marine environment and the livelihood of those who depend on marine ad coastal biodiversity remains unresolved.[3]

The issue at stake is whether deep sea resource extraction is necessary, but the answer is not straightforward. Realizing the high possibility of negative consequences on marine ecosystems, many countries and companies have already pledged to postpone mining operations of the seabed until the issue has been further explored.[4] In addition, there is a great need for regulations that will protect the seabed and the marine ecosystem. Should there be a tilt toward licensing mining operations in the sea or even if such a possibility is banned. The International Seabed Authority (ISA), an independent

[1] Wang, Chang, et al. "Deep-Sea Mining: A Potential Solution to Secure Critical Energy Minerals Availability." *Npj Ocean Sustainability*, vol. 4, no. 1, 18 Nov. 2025, www.nature.com/articles/s44183-025-00162-1, https://doi.org/10.1038/s44183-025-00162-1.
[2] Ashford, Oliver, et al. "What We Know about Deep-Sea Mining — and What We Don't." *World Resources Institute*, 23 Apr. 2025, www.wri.org/insights/deep-sea-mining-explained.
[3] IUCN. "Deep-Sea Mining." *IUCN*, 7 July 2022, iucn.org/resources/issues-brief/deep-sea-mining
[4] McCauley, Douglas, and Diva Amon. "Risks of Deep-Sea Mining Are Not Fully Understood: Here's Why That Matters." *World Economic Forum*, 21 July 2022, www.weforum.org/stories/2022/07/take-a-deep-dive-into-how-deep-sea-mining-could-threaten-our-oceans/.

body under the 1982 United Nations Convention on the Law of the Sea (UNCLOS), is working to develop rules and regulations to authorize and control the development of mineral related operations in the international seabed, although to this day regulations have not been finalized.

Key issues that must be addressed include the impact of deep-sea mining on marine biodiversity, the potential social and economic consequences of seabed resource extraction, its implications for equitable global development, and the role of a circular mineral economy. Strengthening recycling systems and reducing reliance on new mineral extraction --whether on land or at sea-- should be emphasized as viable alternatives to deep sea mining[5]. Transparent, collaborative, and evidence based decision making is needed before regulations can be finalized.

## Definition of Key Terms

**Deep sea resource extraction/ Deep Sea mining**[6]

The process of retrieving mineral deposits from the deep seabed (200m to 6.5km below sea level).

**Marine biodiversity**[7]

The variety of life in the ocean. It includes all animals, plants and microorganisms living in the ocean.

**The Area:** [8]

The seabed and ocean floor beyond the limits of national jurisdiction. No State can claim or exercise sovereignty of any part of the Area or its resources. The Area contains

[5] Ashford, Oliver, et al. "What We Know about Deep-Sea Mining — and What We Don't." *World Resources Institute*, 23 Apr. 2025, www.wri.org/insights/deep-sea-mining-explained.
[6] IUCN. "Deep-Sea Mining." *IUCN*, 7 July 2022, iucn.org/resources/issues-brief/deep-sea-mining
[7] Marine Stewardship Council. "Marine Biodiversity." *Australia & New Zealand - English*, 2023, www.msc.org/en-au/what-we-are-doing/oceans-at-risk/marine-biodiversity.
[8] Graydon, Charalee. "Law and Regulations for Deep-Sea Mining: Following the Guidance of the UN Convention on the Law of the Sea." *IRPJ = Intergovernmental Research and Policy Journal*, 10 Oct. 2023, irpj.euclid.int/articles/law-and-regulations-for-deep-sea-mining-following-the-guidance-of-the-un-convention-on-the-law-of-the-sea/.

abundant mineral resources including polymetallic nodules, cobalt, and hydrothermal sulfides that hold critical energy minerals (copper, lithium, nickel, cobalt, etc).

**Rare Earth Elements (REEs)** [9]

Rare Earth Elements are a group of seventeen metallic elements of the periodic table. They are considered rare mostly because of the large expenses and difficulty of extracting and processing them for them to become useful

**Exclusive Economic Zones (EEZs)** [10]

As defined by the United Nations Convention on the Law of the Sea EEZs are maritime areas extending up to 200 nautical miles (370km) from a coastal nation's shore. Within these zones, countries have the exclusive rights on exploring, exploiting and managing the resources of the area

**The High Seas**[11]

The part of the ocean beyond any country's exclusive economic zones, starting 200 nautical miles from shore governed by the international law

**Moratorium**

The temporary prohibition of a particular activity or law.

[9] Keane, Christopher. "What Are Rare Earth Elements, and Why Are They Important?" *American Geosciences Institute*, 2018, profession.americangeosciences.org/society/intersections/faq/what-are-rare-earth-elements-and-why-are-they-important/.
[10] "What Is the "EEZ"? - NOAA Ocean Exploration." *NOAA Ocean Exploration*, 6 Jan. 2023, oceanexplorer.noaa.gov/ocean-fact/useez/.
[11] "What Are the High Seas? | Nausicaa." *Www.nausicaa.fr*, 2 May 2023, www.nausicaa.fr/en/the-ocean-magazine/what-are-high-seas.

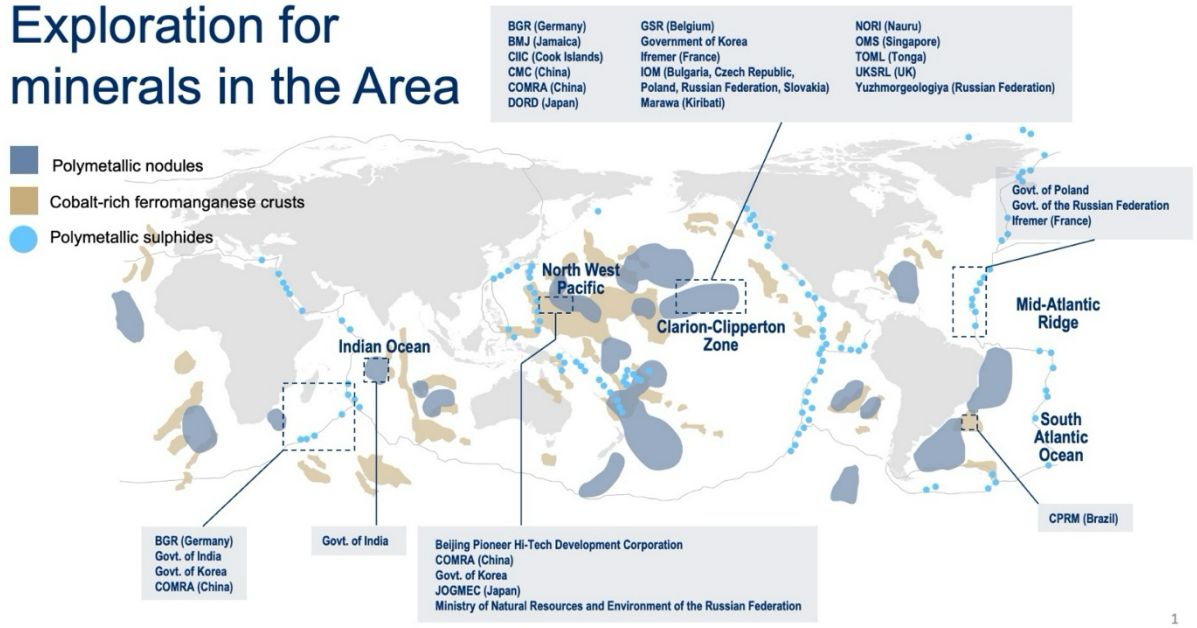


Image depicting exploitations for minerals in The Area[12]

## Background Information

### About Deep Sea mining

Deep sea mining (DSM) refers to the practice of retrieving or extracting critical mineral resources from the deep ocean floor (200 to 6.500 meters below sea level). [13] The deep sea consists of the water column below 200m and the seabed beyond continental shelves. It is one of the most inaccessible areas on earth. In addition to flora and fauna, the deep sea is also home to vast quantities of metal rich mineral deposits such as polymetallic nodules (continuing manganese, nickel, copper, cobalt and trace amounts of rare minerals), cobalt-rich crusts (containing manganese, cobalt, nickel and rare earth minerals) and polymetallic sulfides (containing copper, zinc, silver and gold). [14] Most of these mineral deposits are found in depths greater than 1,500m under the sea

[12] *Iucn.org*, 2025, iucn.org/sites/default/files/2022-07/exploration-for-minerals-in-the-area-c-isa-2021.jpg. Accessed 6 Dec. 2025.
[13] "Home - International Seabed Authority." *International Seabed Authority - International Seabed Authority*, 2022, isa.org.jm/.
*DEEP-SEA MINING WHAT IS DEEP-SEA MINING? WHY IT MATTERS?*
[14] ---. "Deep-Sea Mining." *IUCN*, 7 July 2022, iucn.org/resources/issues-brief/deep-sea-mining.

surface primarily within pacific island country and territory Exclusive Economic Zones (EEZs) and international seabed area.

Although the existence of valuable minerals on the seafloor had been known for several decades, it wasn't technologically or financially feasible to go after them until about 10-15 years ago. What prompted the surge of the idea of DSM was the massive increase in battery driven technologies (smartphones, computers, wind turbines, solar panels etc.) and renewable energy technologies that rely heavily on these exact same metals found in high concentrations in the deep seabed. This is how deep-sea mining started gaining great attention in recent years as a possible solution for resource security as conventional land mining is dwindling and terrestrial sources are often politically unstable[15] [16].

**Impacts of Deep Sea Mining**

Although proponents of deep sea mining claim that this form of obtaining rare earth elements and minerals is more environmentally friendly than traditional land mining, research based evidence shows that it would most probably cause significant and irreversible damage to biodiversity and ecosystems in the broader oceans where it would happen.[17] The impacts of deep sea mining are anticipated to extend beyond the mining area and have major and long lasting consequences for life one the seabed and withing the sediment. The full extent of the impact is still unknown but as DSM uses methods like dredging, drilling and hydraulic pumps it can be safely assumed that it will disturb ecosystems that are home to species not even known to science yet as the seabed is not fully explored or understood. Even for those species already known, the impact of DSM cannot be fully predicted either. While the full extent of the impacts is still unknown, it is almost certain that these areas will suffer because of habitat removal, sediment and

[15] "Deep Sea Mining: The Solution to Growing Mineral Demand or Risk beyond Control? – World Resources Forum 2025." *Wrf2025.org*, 17 June 2025, wrf2025.org/deep-sea-mining-the-solution-to-growing-mineral-demand-or-risk-beyond-control/.
[16] ---. "Deep-Sea Mining: Risks, Impact, and Alternatives." *Oceans Research*, 9 Apr. 2025, www.oceans-research.com/deep-sea-mining-threats-alternatives/.
[17] *Cost of HIGH SKY Deep Sea Mining The*. 2023., https://planet-tracker.org/wp-content/uploads/2023/06/Deep-Sea-Mining.pdf

plume disturbances which will likely cause similar effects to air pollution in land, water discharges and toxic compounds produced by dredging spoils, noise pollution from marine vessels and light pollution since there's practically no sunlight below 200m and organisms in such depths with reduced visual capacity will be disturbed[18] [19] Last but not least, DSM could also harm the Ocean's ability to help us fight climate change by threatening its ability to absorb carbon -- although more research is needed on how DSM would impact the carbon cycle. [20] [21]

**Economic Repercussions**

Caution has been suggested as far as DSM because the permanent damage it can cause will practically be irreversible as large scale attempts to restore deep sea mining would cost millions, thus, making the restoration of DSM that proponents proclaim as a solution, practically unattainable as neither governments, nor companies could pay for it. For example, the restoration of just 30% of DSM concession would cost more than the entire global defense budget.

As efforts to regulate and manage this surging new (industry, evidence of long-term effects and ecosystems is required. There is not enough knowledge about the recovery of seabed ecosystems. The existence of the existing research though shows that for decades after a small-scale test mining experiment that removed nodules impacts in many groups of organisms are persistent with very little signs of physical remediation.

It can be safely assumed that the cost and time required to truly repair the deep-sea ecosystems may legally or economically warrant a ban on DSM.

---

[18] Reitmeier, Lea. "What Is Deep-Sea Mining and How Is It Connected to the Net Zero Transition?" *Grantham Research Institute on Climate Change and the Environment*, 27 July 2023, www.lse.ac.uk/granthaminstitute/explainers/what-is-deep-sea-mining-and-how-is-it-connected-to-the-net-zero-transition/.

[19] ---. "Deep-Sea Mining: Risks, Impact, and Alternatives." *Oceans Research*, 9 Apr. 2025, www.oceans-research.com/deep-sea-mining-threats-alternatives/.

[20] "Deep Sea Mining: The Solution to Growing Mineral Demand or Risk beyond Control? – World Resources Forum 2025." *Wrf2025.org*, 17 June 2025, wrf2025.org/deep-sea-mining-the-solution-to-growing-mineral-demand-or-risk-beyond-control/.

[21] Rosane, Olivia. "Deep-Sea Mining Not Necessary for Renewable Energy Transition, Experts Argue." *EcoWatch*, 30 July 2021, www.ecowatch.com/deep-sea-mining-renewable-energy-ocean-conservation-2654261786.html. Accessed 2 Jan. 2026.

As countries and companies are attracted to DSM for potential economic benefits, studies are being conducted to try to predict a full net cost analysis of DSM. Such a study showed that profits could only be moderate in the long term for private companies whereas investors and DSM companies are likely to both litigation on business model risks from changes in technologies and social systems (e.g. new battery technologies do not depend on the DSM targeted metals). As for less economically developed countries, the prediction is that they will marginally benefit from DSM. The same is predicted for countries sponsoring DSM. Thus, the bottom line is that the not cause of DSM on humanity and nature would be dire and irreparable, which renders its justification difficult. The deep sea should be regulated for the benefit of all people not just the profit of wealthy companies in the global North or China. [22]

**Current status**

Some small-scale exploratory mining to test equipment has occurred at a small scale but there is a great push from certain countries and companies to start as soon as possible as they claim that this is the solution for the green transition. Commercial operations have not been approved yet. Some countries are testing deep sea mining in their national waters, but the most important issue remains the exploitation of the international waters beyond national jurisdiction (The "Area") which are a part of common human heritage and require protection for the common good[23].

The International Seabed Authority (ISA) is the intergovernmental organization that is trying to put regulations in place and find ways for them to be effectively enforced. One of the greatest challenges the ISA faces is that the deep-sea ecosystems are not fully understood, and impact will need more research to be fully estimated. The ISA is currently working on finalizing the "Mining Code" for international waters with negotiations ongoing into 2026. In summary, the deep sea mining industry pushes for commercialization but there are a lot of ongoing regulatory battles as there are stronger environmental,

[22] Jones, Daniel, et al. "Long-Term Impact and Biological Recovery in a Deep-Sea Mining Track." *Nature*, 26 Mar. 2025, pp. 1–3, www.nature.com/articles/s41586-025-08921-3, https://doi.org/10.1038/s41586-025-08921-3.
[23] Blanchard, Catherine, et al. "The Current Status of Deep-Sea Mining Governance at the International Seabed Authority." *Marine Policy*, vol. 147, no. 1, Jan. 2023, p. 105396, https://doi.org/10.1016/j.marpol.2022.105396.

economic and other concerns which have led scientists, several countries, and big companies and investors to back calls for a moratorium at least until more is known about the impacts of this enterprise. Furthermore, there has been a strong surge for improving and reducing consumption for minerals and land-based mining reforms that will make deep sea mining unnecessary.[24]

**Ethical dilemmas**

It has been argued that this is a multibillion dollar solution to problems that do not really exist. Proponents' arguments are based on false claims and false hopes. It is not an economically profitable solution potentially destructive for deep sea biodiversity, the climate, the coastal communities that depend on their livelihood and nutrition on the sea (see above impacts section).

Opponents of DSM argue that it is unnecessary because it is too expensive and too impractical especially since the extracted minerals will not solve supply chain or social problems and consider it an investment in "false hope" when, in fact, there does not seem to be a mineral supply shortage and current knowledge and technologies allow for more environmentally friendly
solutions for the so-called "green transition". [25] [26]

Based on this knowledge, it is obvious that the ethical dilemma is whether to proceed with something that will most likely damage biodiversity and ecosystems in waters that do not belong to any specific nation, company, or organization and are considered "common heritage of mankind" or to consider alternative climate policies, and greater investment in recycling metals and the circular economy that will not be dependent on extracted metals. It appears that any short-term gain is not worth the ecological damage predicted on the one hand, and on the other, the broader issue who will benefit from DSM and whether a rushed decision to proceed with it will impact future

[24] "What Is Deep-Sea Mining? How It Works and Why We Need a Moratorium | ClientEarth." *Clientearth.org*, 2025, www.clientearth.org/latest/news/what-is-deep-sea-mining-and-why-we-need-a-global-moratorium/.
[25] Alger, Justin, et al. "The False Promise of Deep-Sea Mining." *Npj Ocean Sustainability*, vol. 4, no. 1, 10 May 2025, https://doi.org/10.1038/s44183-025-00127-4.
[26] ClimaTalk Contributor. "Deep Sea Mining: Technological Feasibility vs. Environmental Morality - ClimaTalk - Climate Is Talking." *ClimaTalk - Climate Is Talking*, 15 Sept. 2025, climatalk.org/2025/09/15/deep-sea-mining-technological-feasibility-vs-environmental-morality/.

generations as well. Last but not least, there is no guarantee that in case DSM becomes a reality that there will be effective remedies for damage in the deep sea.[27]

Finally, if exploration of deep-sea exploitation was to continue Regulations and rules should be transparent and result from the collaboration of all parties involved: ISA members, meaning corporations and scientists. The regulations will need to be science-based, enforceable, and offer effective protection for the delicate deep sea floor environments from the impacts of deep-sea extraction. Until effective and enforceable regulations are put into place, it is proposed that a ban or, at least, a moratorium should be placed on the ASM to provide scientific research and establish environmental standards. [28]

## Major Countries and Organizations Involved

### China

China began its deep-sea mining research in the late 1980s and was one of the first ever countries to develop prototypes and mining systems. China sees DSM as a great economic opportunity following public backlash and political instability in the Democratic Republic of Congo where Chinese companies own 15 of the 19 mines that produced 70% of cobalt globally in 2021. China's interest in DSM is also fueled by political intent. For the Chinese president the vision of a strong China as a pioneer in technological advancement includes investing heavily in DSM, as described in China's 14th Five-year plan (2021-2025). The previous 5yr plan already included some environmental regulations for DSM which, however, are considered questionable as there is very little research on the impact of DSM in ocean ecosystems. Investing in DSM serves a 2 fold purpose for China: firstly, the U.S. and the rest of the world depend on Chinese critical mineral supply, presenting a possible risk to future energy security, technology and

[27] Jaynes, Cristen Hemingway. "Deep-Sea Mining 101: Everything You Need to Know." *EcoWatch*, 2025, www.ecowatch.com/deep-sea-mining-facts-ecowatch.html.
[28] Reitmeier, Lea. "What Is Deep-Sea Mining and How Is It Connected to the Net Zero Transition?" *Grantham Research Institute on Climate Change and the Environment*, 27 July 2023, www.lse.ac.uk/granthaminstitute/explainers/what-is-deep-sea-mining-and-how-is-it-connected-to-the-net-zero-transition/.

oceans. Moreover, cobalt and other REEs are crucial for defense manufacturing. [29] China has heavily invested in Arctic research over the past few years aspiring to gain access to untapped resources through the Northern Sea Route. It is thought that China's interest in the Arctic and its mapping of the ocean floor offer an advantage in submarine warfare as well as grants concerns for unsustainable mining. [30] Furthermore, China's growing interest in DSM poses strategic challenges to U.S. defense and national security by undercutting U.S. access to defense and critical minerals [31] as well as other western countries see the possibility of China's future supply dominance as a major threat.

**Japan**

Japan moved towards actively considering deep sea mining activities in their waters around 15 years ago which relates to a 2007 law on ocean policy which supported the development of mineral resources on the deep seabed. During the last few years, Japan has been actively attempting to become one of the first countries to exploit their own water territory and has been established as the leader in sustainable DSM. The Japanese government is trying to test ways of mining the deep seabed and has also collected data on marine ecosystems to help them diminish the impacts of mining recognizing the environmental threats concerning the exploitation of the deep sea. China's domination on this sector has been a critical factor in Japan's constant attempts to achieve successful means of exploitation of the seafloor since it comprises a major economic security threat for them. [32] In addition to that, Japan has agreed with the USA to joint DSM in their waters to assist each other and try to fracture China's resource dominance. More specifically, in cooperation with the U.S. the Japanese government

---

[29] Jan 25, Angus Soderberg on, and 2023. "Drilling Deep on Chinese Deep-Sea Mining." *American Security Project*, www.americansecurityproject.org/drilling-deep-on-chinese-deep-sea-mining/.
[30] "China Mixing Military and Science in Arctic Push - Denmark." *Reuters*, 29 Nov. 2019, www.reuters.com/article/us-usa-arctic/china-mixing-military-and-science-in-arctic-push-denmark-idUSKBN1Y3116/.
[31] Impossible Metals. ""China's Strategic Deployment of Deep-Sea Mining to Counter U.S. Defense Presence in Oceania" Report." *Impossible Metals*, 12 Aug. 2025, impossiblemetals.com/blog/chinas-strategic-deployment-of-deep-sea-mining-to-counter-us-defense-presence-in-oceania-report/. Accessed 28 Dec. 2025.
[32] Giseburt, Annelise. "Japan Prepares to Mine Its Deep Seabed by Decade's End." *Mongabay Environmental News*, 21 Mar. 2024, news.mongabay.com/2024/03/japan-prepares-to-mine-its-deep-seabed-by-decades-end/.

initiated The Minamitorishima project in an are located 1.950km away from Tokyo within Japan's EEZ estimated to hold approximately 16 million tons of REEs (especially dysprosium and gadolinium).[33]

**France**

France is one of the of the main countries that strongly opposes deep sea mining and advocates for a global ban or moratorium based on significant environmental concerns and fears about irreversible damage to sensitive ecosystems and climate stabilization as seabeds play a major role in regulating the climate[34]. France has asserted that "protecting deep sea ecosystems in not only a legal imperative but above all a scientific, environmental and economic one".[35] In March 2023 at the 20th session of the International Seabed Authority (ISA) council, France reaffirmed its total opposition to deep sea mining and spoke on behalf of 13 countries calling to form a broad coalition of nations to oppose DSM. The French General Assembly had already voted for a moratorium in early 2023 and President Macron has repeatedly spoken about the urgency for banning seabed mining and scientific understanding of the impact of DSM on biodiversity.

**Papua New Guinea**

Papua New Guinea is located in a pacific maritime zone which is particularly rich in minerals and REEs. The nation was a significant pioneer in the area of deep sea mining being the first ever country to grant a deep sea mining lease for the Solwara 1 project in January 2011 to the Canadian mining company Nautilus Minerals which aspired to become the first ever DSM company. The project was set to take place in 2018 in the

[33] Economy, The. "Japan Launches Proof-of-Concept for Deep-Sea Rare Earth Mining, Accelerating U.S.-Led Reshaping of the Global Mineral Security Order." *The Economy Senate*, 24 Dec. 2025, senate.economy.ac/t/japan-launches-proof-of-concept-for-deep-sea-rare-earth-mining-accelerating-u-s-led-reshaping-of-the-global-mineral-security-order/1253. Accessed 28 Dec. 2025.
[34] de, Ministère. "International Seabed Authority Council – France Calls for Expanding the Coalition against Deep-Sea Mining." *France Diplomacy - Ministry for Europe and Foreign Affairs*, France Diplomacy, 2023, www.diplomatie.gouv.fr/en/french-foreign-policy/climate-and-environment/news/2023/article/international-seabed-authority-council-france-calls-for-expanding-the-coalition.
[35] Elysee. "For a Preserved Ocean: Protecting the Deep Sea on the High Seas from Mining." *Elysee.fr*, 9 June 2025, www.elysee.fr/en/emmanuel-macron/2025/06/09/for-a-preserved-ocean-protecting-the-deep-sea-on-the-high-seas-from-mining.

Bismarck sea in order to acquire sea floor massive sulfides and was supposed to last for 25 years in order to extract mainly copper, gold, silver and zinc. Local citizens and many NGOs opposed the Solwara 1 project claiming that it would not only have major negative effects on the surrounding seafloor area but also harm the cultural values of these fishing grounds[36]. Since then, many attempts to pause the experiment took place --such as a local campaign to take away the licensing in 2012 which gathered 24 thousand signatures—as well as legal action against the country's government launched by coastal communities in 2017. Despite all the efforts against the government and Nautilus Minerals the project was ready to launch in 2018 but still failed going into the next year due to financial and legal issues. The citizens of Papua New Guinea still demand a full ban on DSM. In September 2019, PNG joined neighboring countries Fiji and Vanuatu on a 10-year moratorium concerning scientific research on deep sea resource extraction in their EEZ[37].

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

The United Nations Convention on the Law of the Sea establishes a comprehensive regulatory framework for the world's oceans laying down rules for the allocation of States' rights and jurisdiction in maritime zones, the peaceful use of the oceans and the management of their resources[38]. It defines Exclusive Economic Zones (EEZs), navigational freedoms ,and dispute resolution. The UNCLOS was adopted in 1982 and came into force in 1994. At present it has been part XI of the UNCLOS that governs the deep seabed and ocean floor beyond national jurisdiction (The "Area") which is considered "common heritage of the mankind" which means that it should be managed in a way that benefits all [39]. The UNCLOS has been signed by 169 counties. The U.S.

[36] Childs, John. "Deep Sea Mining Threatens Indigenous Culture in Papua New Guinea – Intercontinental Cry." *Intercontinental Cry*, 25 Feb. 2019, icmagazine.org/deep-sea-mining-threatens-indigenous-culture-in-papua-new-guinea/. Accessed 29 Dec. 2025.
[37] Grassi, Laura. "The First Deep Sea Mining (DSM) Project in Papua New Guinea." *Www.source-International.org*, www.source-international.org/news/the-first-deep-sea-mining-dsm-project-in-papua-new-guinea.
[38] International Maritime Organization. "United Nations Convention on the Law of the Sea." *Www.imo.org*, International Maritime Organization, 2019, www.imo.org/en/OurWork/Legal/Pages/UnitedNationsConventionOnTheLawOfTheSea.aspx.
[39]"THE UNITED NATIONS CONVENTION on the LAW of the SEA at FORTY: Have the Constraints on the Implementation of Part XI Finally Debunked the Myth of the Common Heritage of Mankind?" *Policy*

has not ratified the treaties because Part XI of the Convention which is viewed as unfavorable to American economic and security interests [40]. However, the USA generally adheres to provisions that are considered customary international law and supports its core principles.

**International seabed authority (ISA)**

It is an autonomous international organization established under the 1982 United Nations Convention on the Law of the Sea (UNCLOS) and the 1994 Agreement relating to the Implementation of Part XI of the United Nations Convention on the Law of the Sea (1994 Agreement). ISA is the organization through which States Parties to UNCLOS organize and control all mineral-resources-related activities in the Area for the benefit of humankind as a whole. ISA has the mandate to ensure the effective protection of the marine environment from harmful effects that may arise from deep-seabed-related activities.[41]

*Center*, 2024, www.policycenter.ma/publications/united-nations-convention-law-sea-forty-have-constraints-implementation-part-xi.

[40] Curtis. "The United Nations Convention on the Law of the Sea (UNCLOS)." *Curtis, Mallet-Prevost, Colt & Mosle LLP*, www.curtis.com/glossary/public-international-law/unclos.

[41] "About ISA - International Seabed Authority." *International Seabed Authority - International Seabed Authority*, 17 Mar. 2022, isa.org.jm/about-isa/.

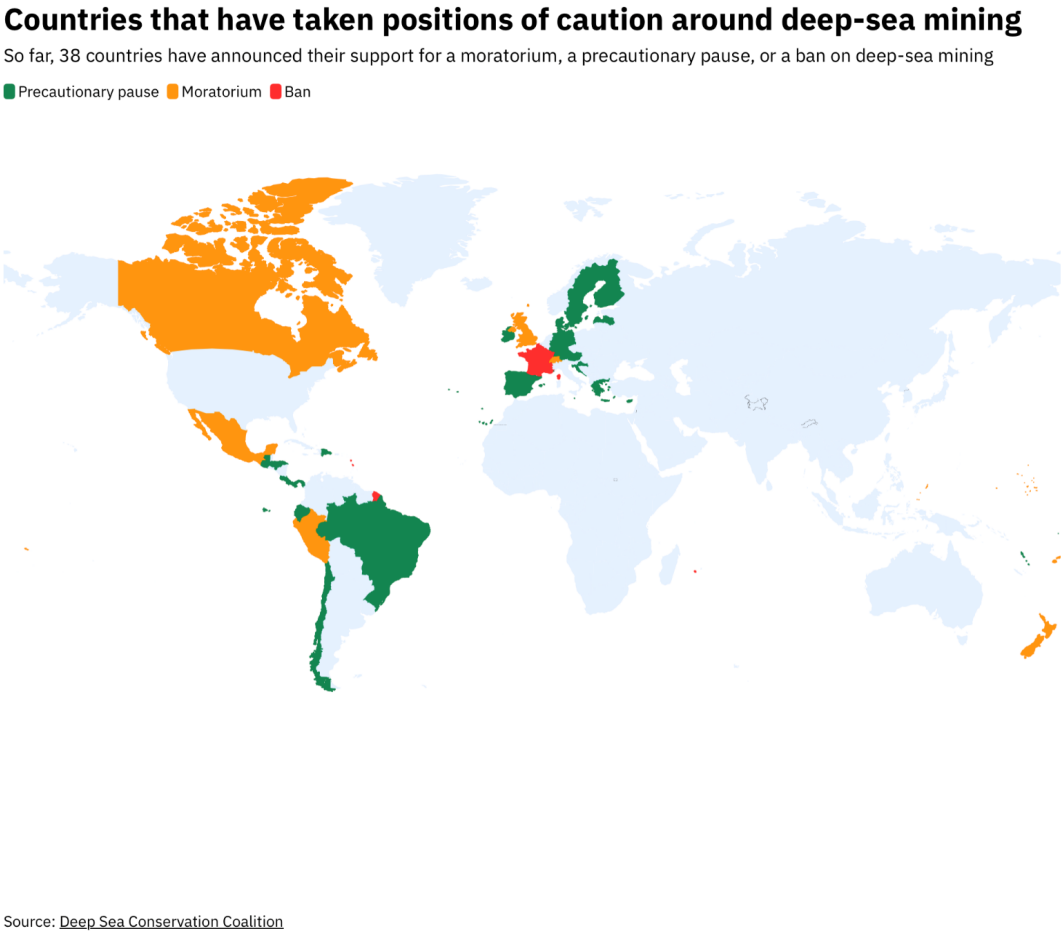


Image depicting countries that have taken positions of caution around deep sea mining[42]

## Blocs Expected

**Alliance 1, countries pushing deep sea resource extraction with economic and strategic motives: China, Norway, Mexico, The UK, Japan, South Korea, Russia, India, USA**

Alliance 1 consists of countries with significant economic, strategic or technological initiatives to attempt and proceed with deep sea resource mining. These nations view the global seabed as a notable source of energy and materials as well to enhance their

[42] *Weforum.org*, 2025, assets.weforum.org/editor/g2AefBFmv91JkGzI-OQj4X7ubMiyG16jKJXw6Nqupxc.png. Accessed 6 Dec. 2025.

economies and become more dominant.

**Alliance 2 support a ban, moratorium or precautionary pause on deep sea mining: France,**
**Germany, Finland, Portugal, New Zealand, Canada, Chile, Costa Rica, Switzerland, Vanuatu**

Alliance 2 is comprised by states that call for a ban or moratorium on deep sea resource extraction arguing that it should not advance further without the research required for the appropriate environmental safeguards and standards to be implemented.

## Timeline of Events

| **Date**[43] | **Description of Event** |
|---|---|
| March 7, 1873 | First documented discovery of polymetallic nodules by the Challenger Expedition (1872-1876) in the Pacific ocean by British vessels.[44] |
| September 28, 1945 | The Truman Proclamations are signed by U.S. president Harry Truman altering the legal frameworks concerning global seabed management.[45] |
| 1954 | U.S. research vessels Horizon and Spencer F. Baird discover the Clarion Clipperton zone in the |

[43] the, Mining. “Mining the Sea.” *Mining the Sea*, 2025, miningthesea.net/timeline.
[44] “Exploration Contracts - International Seabed Authority.” *International Seabed Authority - International Seabed Authority*, 17 Mar. 2022, isa.org.jm/exploration-contracts/.
[45] “Truman Proclamations | EBSCO.” *EBSCO Information Services, Inc.* | *Www.ebsco.com*, 2021, www.ebsco.com/research-starters/mining-and-mineral-resources/truman-proclamations.

| | |
|---|---|
| | Pacific which is one of the richest maritime zones in deposits of polymetallic nodules globally[46]. |
| 1958 | The four Geneva conventions on the law of the sea are signed establishing fundamental rules for maritime zones and activities [47] |
| 16-17 December, 1970 | The UN General Assembly asserts that the international seabed is the “Common heritage of mankind” |
| Summer 1972 | Japan conducts mining trials in the Pacific ocean for the first time in their history in search of polymetallic nodules.[48] |
| 1973 | Negotiations begin for the Convention on the Law of the sea in the third UN conference on the Law of the Sea |
| Summer 1978 | Ocean Management Inc. conducts the first ever successful deep sea pilot mining test for polymetallic nodules in the Clarion Clipperton Zone[49] |
| December 10, 1982 | The United Nations Convention on the Law of the Sea is finalized and opened for signature[50] |
| 16 November 1994 | The first meeting of the International Seabed Authority takes place |
| 2011 | The Pacific community collaborate with the European Union to initiate a 4.4€ million DSM |

[46] “Clarion Clipperton Fracture Zone - International Seabed Authority.” *International Seabed Authority - International Seabed Authority*, 29 July 2022, isa.org.jm/maps/clarion-clipperton-fracture-zone/.
[47] Mandat International. “WhatConvention.org - International Legal Search Engine.” *Whatconvention.org*, 2025, www.whatconvention.org/en/law_of_the_sea. Accessed 29 Dec. 2025.
[48] Kang, Yajuan, and Shaojun Liu. “The Development History and Latest Progress of Deep-Sea Polymetallic Nodule Mining Technology.” *Minerals*, vol. 11, no. 10, 14 Oct. 2021, p. 1132, https://doi.org/10.3390/min11101132.
[49] ---. “The Development History and Latest Progress of Deep-Sea Polymetallic Nodule Mining Technology.” *Minerals*, vol. 11, no. 10, 14 Oct. 2021, p. 1132, https://doi.org/10.3390/min11101132.
[50] “The United Nations Convention on the Law of the Sea at 40 - International Seabed Authority.” *International Seabed Authority - International Seabed Authority*, 19 Oct. 2022, isa.org.jm/unclos-at-40-2/.

| | |
|---|---|
| | project that included 15 pacific island nations for enhanced management and legal jurisdictions concerning DSM in the area[51] |
| January 19, 2011 | Papua new guinea grants the world's first deep sea mining lease to Canadian company Nautilus Minerals for its Solwara 1 project in the Bismarck sea |
| October 8, 2019 | Fiji proposes a 10-year moratorium on DSM to the Pacific islands for proper scientific research to be conducted |
| July, 2021 | Nauru requests that the International Seabed Authority (ISA) completes its mining regulations for deep sea exploitation in a time period of 2 years[52]. |
| July 9, 2023 | The International Seabed Authority has failed to adopt the deep sea mining measures requested after the 2 years have passed. |
| January 9, 2024 | Norway becomes the first country to open up a large area of its waters in the Arctic for DSM permits[53] |
| February 1, 2024 | 14 pacific island countries have joined the call for a moratorium |

## Relevant UN Resolutions, Treaties & Events

- High Seas Treaty 2023-2025
- Resolution UNEP/EA.6/L.18 2024

[51] "SPC-EU Deep Sea Minerals Project - Home." *Dsm.gsd.spc.int*, dsm.gsd.spc.int/.
[52] "Nauru Requests the International Seabed Authority Council to Adopt Rules and Regulations within Two Years - the Government of the Republic of Nauru." *Naurugov.nr*, 2014, naurugov.nr/government/departments/department-of-foreign-affairs-and-trade/faqs-on-2-year-notice.aspx.
[53] Business. "Norway Becomes First Country in the World to Allow Controversial Deep Sea Mining despite Concerns Voiced by Activists, Scientists, Fishers and Investors - Business and Human Rights Centre." *Business and Human Rights Centre*, 2025, www.business-humanrights.org/en/latest-news/norway-becomes-first-country-in-the-world-to-allow-controversial-deep-sea-mining-despite-concerns-voiced-by-activists-scientists-fishers-and-investors/. Accessed 30 Dec. 2025.

- International Seabed Authority (ISA) framework (The Mining Code)
- IUCN Resolution 122 on deep sea mining

## Previous Attempts to Solve the Issue

### International Seabed Authority (ISA) regulatory process

One of the most significant official attempts to address the challenges posed by deep sea mining has been the ongoing development of the draft exploitation regulations by the International Seabed Authority such as the Mining Code. For the last decade, the ISA has been working on multiple legal frameworks to manage commercial mineral extraction in the global seabed. While these regulations have remained inconclusive, the International Seabed Authority's 30th Session in July of 2025 ensured that the regulatory process is ongoing in order for deep sea mining to be conducted under strict international legislations and monitoring in the future. More specifically, as of 2026, the International Seabed Authority has issued more than 30 15-year contracts for the exploration of polymetallic nodules in order to gather information and resources on how to protect the environment and use these minerals correctly. [54]

### The 37-Country Global Moratorium Coalition[55]

During the 2025 United Nations Ocean Conference in Nice, it was announced that 37 countries from different parts of the world including France, the U.K. and Germany joined a coalition calling for a moratorium, precautionary pause or ban on deep sea mining making this the largest coordinated effort to stop the launch of deep sea mining industries in order to enhance scientific research on the topic, strengthen global governance and ensure that marine ecosystems are not irreversibly damaged before we are completely aware of the risks of deep sea mining. This movement also prevented exploitation licenses from being issued by slowing down the negotiations for the Mining Code.

[54] Hauner, Susanne. "Deep-Sea Mining: Exploration Rights under ISA Regulation." *Mining Technology*, 29 May 2024, www.mining-technology.com/features/deep-sea-exploration-rights-under-international-seabed-authority-regulations/?cf-view. Accessed 30 Dec. 2025.
[55] "UN Ocean Summit in Nice Closes with Wave of Commitments." *UN News*, 13 June 2025, news.un.org/en/story/2025/06/1164381.

Countries are still joining the coalition today with forty countries having[56] taken a position against DSM.

## Possible Solutions

### Strengthening marine protection laws and enforcement

The implementation of strict regulations and enforcement against the exploitation of deep sea ecosystems at a national level and international level could ensure that these extremely vulnerable and valuable ecosystems are protected and conserved. These stronger legal enforcement mechanisms implemented by governments or UN bodies, such as the International Seabed Authority and the United Nations Convention on the Law of the Sea, could stop any unsupervised underwater mining activities reducing the huge risk of damaging our marine ecosystems. These measures include increased penalties for illegal extraction and greater investment in surveillance technologies that monitor activities, including satellites and drones. The UN can impose new moratoriums and regulations for the recognition of maritime zones where mining is forbidden. The cooperation of coastal guards and environmental organizations is very significant.

### Alternative battery technologies

Many alternative batteries rely on materials that are abundant and easily recyclable such as sodium ion and solid-state batteries. By developing these innovative battery technologies with the help of governmental research institutions and agencies as well as private companies we could significantly reduce the global demand for rare seabed minerals like cobalt and nickel. All research programs and manufacturing facilities can be funded and supported through the governments. The scientific work needed to improve the performance of these batteries could also be conducted by universities while major companies, especially in the automotive and energy industry, would try to test and merge them with their commercial products and services. Joint research projects and coordinated standards should exist between countries and organizations to ensure true global efforts.

[56] "Governments and Parliamentarians." *Deep Sea Conservation Coalition*, deep-sea-conservation.org/solutions/no-deep-sea-mining/momentum-for-a-moratorium/governments-and-parliamentarians/.

### The development of circular economy strategies and increased recycling

Developing circular economy strategies and increased recycling could be a useful way to minimize or eliminate the need for deep seabed mining since global demand for minerals such as these acquired through DSM (cobalt, nickel and other REEs) would be reduced resulting in the decrease of most economic incentives to exploit the seafloor. Of course, implementing such plans requires the cooperation of both governments and international organizations as well as any other corporations involved in such activities. This could be achieved by proposing governmental laws that demand larger rates of recycling, recommend ecological standards for the creation and reusage of products. States could be aided in technical sectors, the monitoring of the implementation of these frameworks and the creation of these programs by specialized UN organizations and agencies. Private industries could also prioritize the usage of recycled materials, especially in the area of electronics and batteries.

### Enhancing land-based mining and approaching it in more eco-friendly ways

Improving land-based mining in more eco-friendly ways to make it more sustainable could really help to decrease the need for deep sea mining and the creation of the respective infrastructure while also reducing the environmental damage caused by traditional terrestrial extraction. This could be accomplished with the use of cleaner and more sustainable extraction techniques which would be more reliant on renewable energy and more water efficient. Moreover, governments could require the rehabilitation of locations that are not used for mining anymore. International organizations could help with the development of these specific sustainability guidelines and standards.

## Bibliography

### General Bibliography

"About ISA - International Seabed Authority." *International Seabed Authority - International Seabed Authority*, 17 Mar. 2022, https://isa.org.jm/about-isa/.

Alger, Justin, et al. “The False Promise of Deep-Sea Mining.” *Npj Ocean Sustainability*, vol. 4, no. 1, 10 May 2025, https://doi.org/10.1038/s44183-025-00127-4.

Ashford, Oliver, et al. “What We Know about Deep-Sea Mining — and What We Don’t.” *World Resources Institute*, 23 Apr. 2025, www.wri.org/insights/deep-sea-mining-explained.

Blanchard, Catherine, et al. “The Current Status of Deep-Sea Mining Governance at the International Seabed Authority.” *Marine Policy*, vol. 147, no. 1, Jan. 2023, p. 105396, https://doi.org/10.1016/j.marpol.2022.105396.

Business. “Norway Becomes First Country in the World to Allow Controversial Deep Sea Mining despite Concerns Voiced by Activists, Scientists, Fishers and Investors - Business and Human Rights Centre.”

*Business and Human Rights Centre*, 2025, https://www.business-humanrights.org/en/latest-news/norway-becomes-first-country-in-the-world-to-allow-controversial-deep-sea-mining-despite-concerns-voiced-by-activists-scientists-fishers-and-investors/

Childs, John. “Deep Sea Mining Threatens Indigenous Culture in Papua New Guinea – Intercontinental Cry.” *Intercontinental Cry*, 25 Feb. 2019, https://icmagazine.org/deep-sea-mining-threatens-indigenous-culture-in-papua-new-guinea/

“China Mixing Military and Science in Arctic Push - Denmark.” *Reuters*, 29 Nov. 2019, www.reuters.com/article/us-usa-arctic/china-mixing-military-and-science-in-arctic-push-denmark-idUSKBN1Y3116/.

“Clarion Clipperton Fracture Zone - International Seabed Authority.” *International Seabed Authority - International Seabed Authority*, 29 July 2022, https://isa.org.jm/maps/clarion-clipperton-fracture-zone/.

*ClimaTalk - Climate Is Talking*, 15 Sept. 2025, https://climatalk.org/2025/09/15/deep-sea-mining-technological-feasibility-vs-environmental-morality/.

"Convention on Migratory Species Meeting Adopts Stronger Protection Measures, Including on Ecolo." *Panda.org*, 2024, https://wwf.panda.org/wwf_news/?10744966/Convention-on-Migratory-Species-meeting-adopts-stronger-protection-measures-including-on-ecological-connectivity

*Cost of HIGH SKY Deep Sea Mining The*. 2023.

Curtis. "The United Nations Convention on the Law of the Sea (UNCLOS)." *Curtis, Mallet-Prevost, Colt & Mosle LLP*, www.curtis.com/glossary/public-international-law/unclos.

de, Ministère. "International Seabed Authority Council – France Calls for Expanding the Coalition against Deep-Sea Mining." *France Diplomacy - Ministry for Europe and Foreign Affairs*, France Diplomacy, 2023, www.diplomatie.gouv.fr/en/french-foreign-policy/climate-and-environment/news/2023/article/international-seabed-authority-council-france-calls-for-expanding-the-coalition.

"Deep Sea Mining: The Solution to Growing Mineral Demand or Risk beyond Control? – World Resources Forum 2025." *Wrf2025.org*, 17 June 2025, https://wrf2025.org/deep-sea-mining-the-solution-to-growing-mineral-demand-or-risk-beyond-control/.

"Deep Sea Mining: The Solution to Growing Mineral Demand or Risk beyond Control? – World Resources Forum 2025." *Wrf2025.org*, 17 June 2025, https://wrf2025.org/deep-sea-mining-the-solution-to-growing-mineral-demand-or-risk-beyond-control/.

*DEEP-SEA MINING WHAT IS DEEP-SEA MINING? WHY IT MATTERS?*

Economy, The. “Japan Launches Proof-of-Concept for Deep-Sea Rare Earth Mining, Accelerating U.S.-Led Reshaping of the Global Mineral Security Order.” *The Economy Senate*, 24 Dec. 2025, https://senate.economy.ac/t/japan-launches-proof-of-concept-for-deep-sea-rare-earth-mining-accelerating-u-s-led-reshaping-of-the-global-mineral-security-order/1253

Elysee. “For a Preserved Ocean: Protecting the Deep Sea on the High Seas from Mining.” *Elysee.fr*, 9 June 2025, www.elysee.fr/en/emmanuel-macron/2025/06/09/for-a-preserved-ocean-protecting-the-deep-sea-on-the-high-seas-from-mining.

“Exploration Contracts - International Seabed Authority.” *International Seabed Authority - International Seabed Authority*, 17 Mar. 2022, https://isa.org.jm/exploration-contracts/.

“Fixing Deep-Sea Mining Damage Would Be Double the Cost of Extraction, Study Says.” *Reuters*, 29 June 2023, www.reuters.com/business/environment/fixing-deep-sea-mining-damage-would-be-double-cost-extraction-study-2023-06-29/.

Giseburt, Annelise. “Japan Prepares to Mine Its Deep Seabed by Decade’s End.” *Mongabay Environmental News*, 21 Mar. 2024, https://news.mongabay.com/2024/03/japan-prepares-to-mine-its-deep-seabed-by-decades-end/.

“Governments and Parliamentarians.” *Deep Sea Conservation Coalition*, https://deep-sea-conservation.org/solutions/no-deep-sea-mining/momentum-for-a-moratorium/governments-and-parliamentarians/.

Grassi, Laura. “The First Deep Sea Mining (DSM) Project in Papua New Guinea.” *Www.source-International.org*, www.source-international.org/news/the-first-deep-sea-mining-dsm-project-in-papua-new-guinea.

Graydon, Charalee. “Law and Regulations for Deep-Sea Mining: Following the Guidance of the UN Convention on the Law of the Sea.” *IRPJ = Intergovernmental Research and Policy Journal*, 10 Oct. 2023, https://irpj.euclid.int/articles/law-and-regulations-for-deep-sea-mining-following-the-guidance-of-the-un-convention-on-the-law-of-the-sea/.

Hauner, Susanne. “Deep-Sea Mining: Exploration Rights under ISA Regulation.” *Mining Technology*, 29 May 2024, https://www.mining-technology.com/features/deep-sea-exploration-rights-under-international-seabed-authority-regulations/?cf-view.

High Seas Alliance. “High Seas Treaty Ratification Tracker.” *High Seas Alliance Treaty Ratification*, 2025, https://highseasalliance.org/treaty-ratification/.

“Home - International Seabed Authority.” *International Seabed Authority - International Seabed Authority*, 2022, https://isa.org.jm/.

Hutchins, Rob. “History Made: Portugal Takes Lead in Effort to Stop Deep-Sea Mining - Oceanographic.” *Oceanographic*, 18 Mar. 2025, https://oceanographicmagazine.com/news/history-made-portugal-takes-lead-in-effort-to-stop-deep-sea-mining/.

Impossible Metals. ““China’s Strategic Deployment of Deep-Sea Mining to Counter U.S. Defense Presence in Oceania” Report.” *Impossible Metals*, 12 Aug. 2025, https://impossiblemetals.com/blog/chinas-strategic-deployment-of-deep-sea-mining-to-counter-us-defense-presence-in-oceania-report/

International Maritime Organization. “United Nations Convention on the Law of the Sea.” *Www.imo.org*, International Maritime Organization, 2019, https://www.imo.org/en/OurWork/Legal/Pages/UnitedNationsConventionOnTheLawOfTheSea.aspx.

IUCN. “Deep-Sea Mining.” *IUCN*, 7 July 2022, https://iucn.org/resources/issues-brief/deep-sea-mining.

Jan 25, Angus Soderberg on, and 2023. “Drilling Deep on Chinese Deep-Sea Mining.” *American Security Project*, https://www.americansecurityproject.org/drilling-deep-on-chinese-deep-sea-mining/.

“Deep-Sea Mining 101: Everything You Need to Know.” *EcoWatch*, 2025, www.ecowatch.com/deep-sea-mining-facts-ecowatch.html.

Jones, Daniel, et al. “Long-Term Impact and Biological Recovery in a Deep-Sea Mining Track.” *Nature*, 26 Mar. 2025, pp. 1–3, www.nature.com/articles/s41586-025-08921-3, https://doi.org/10.1038/s41586-025-08921-3.

Kang, Yajuan, and Shaojun Liu. “The Development History and Latest Progress of Deep-Sea Polymetallic Nodule Mining Technology.” *Minerals*, vol. 11, no. 10, 14 Oct. 2021, p. 1132, https://doi.org/10.3390/min11101132.

Keane, Christopher. “What Are Rare Earth Elements, and Why Are They Important?” *American Geosciences Institute*, 2018, https://profession.americangeosciences.org/society/intersections/faq/what-are-rare-earth-elements-and-why-are-they-important/.

Mandat International. “WhatConvention.org - International Legal Search Engine.” *Whatconvention.org*, 2025, https://www.whatconvention.org/en/law_of_the_sea.

Mantilla, Silvia. “UNEA-6 Impact on Animals: Key Resolutions Explained.” *World Federation for Animals*, 6 Mar. 2024, wfa.org/unea-6-resolutions-what-they-mean-for-animals/.

Marine Stewardship Council. “Marine Biodiversity.” *Australia & New Zealand - English*, 2023, www.msc.org/en-au/what-we-are-doing/oceans-at-risk/marine-biodiversity.

Max. “Deep-Sea Mining: Risks, Impact, and Alternatives.” *Oceans Research*, 9 Apr. 2025, www.oceans-research.com/deep-sea-mining-threats-alternatives/.

McCauley, Douglas, and Diva Amon. “Risks of Deep-Sea Mining Are Not Fully Understood: Here’s Why That Matters.” *World Economic Forum*, 21 July 2022, www.weforum.org/stories/2022/07/take-a-deep-dive-into-how-deep-sea-mining-could-threaten-our-oceans/.

“Nauru Requests the International Seabed Authority Council to Adopt Rules and Regulations within Two Years - the Government of the Republic of Nauru.” *Naurugov.nr*, 2014, https://naurugov.nr/government/departments/department-of-foreign-affairs-and-trade/faqs-on-2-year-notice.aspx.

Reitmeier, Lea. “What Is Deep-Sea Mining and How Is It Connected to the Net Zero Transition?” *Grantham Research Institute on Climate Change and the Environment*, 27 July 2023, www.lse.ac.uk/granthaminstitute/explainers/what-is-deep-sea-mining-and-how-is-it-connected-to-the-net-zero-transition/.

Rosane, Olivia. “Deep-Sea Mining Not Necessary for Renewable Energy Transition, Experts Argue.” *EcoWatch*, 30 July 2021, https://www.ecowatch.com/deep-sea-mining-renewable-energy-ocean-conservation-2654261786.html

Schiller, Antje. “The Mining Code of the ISA.” *Umweltbundesamt*, 19 May 2022, https://www.umweltbundesamt.de/en/topics/water/seas/deep-sea-mining/the-mining-code-of-the-isa.

“SPC-EU Deep Sea Minerals Project - Home.” *Dsm.gsd.spc.int*, https://dsm.gsd.spc.int/.

"The United Nations Convention on the Law of the Sea at 40 - International Seabed Authority." *International Seabed Authority - International Seabed Authority*, 19 Oct. 2022, https://isa.org.jm/unclos-at-40-2/.

"THE UNITED NATIONS CONVENTION on the LAW of the SEA at FORTY: Have the Constraints on the Implementation of Part XI Finally Debunked the Myth of the Common Heritage of Mankind?" *Policy Center*, 2024, www.policycenter.ma/publications/united-nations-convention-law-sea-forty-have-constraints-implementation-part-xi.

the, Mining. "Mining the Sea." *Mining the Sea*, 2025, miningthesea.net/timeline.
"Truman Proclamations | EBSCO." *EBSCO Information Services, Inc. | Www.ebsco.com*, 2021, www.ebsco.com/research-starters/mining-and-mineral-resources/truman-proclamations.

"UN Ocean Summit in Nice Closes with Wave of Commitments." *UN News*, 13 June 2025, https://news.un.org/en/story/2025/06/1164381.

Wang, Chang, et al. "Deep-Sea Mining: A Potential Solution to Secure Critical Energy Minerals Availability." *Npj Ocean Sustainability*, vol. 4, no. 1, 18 Nov. 2025, www.nature.com/articles/s44183-025-00162-1, https://doi.org/10.1038/s44183-025-00162-1.

"Welcome to Zscaler Directory Authentication." *Un.org*, 2025, https://docs.un.org/en/UNEP/EA.6/L.18.

"What Are the High Seas? | Nausicaa." *Www.nausicaa.fr*, 2 May 2023, www.nausicaa.fr/en/the-ocean-magazine/what-are-high-seas.

"What Is Deep-Sea Mining? How It Works and Why We Need a Moratorium | ClientEarth." *Clientearth.org*, 2025, www.clientearth.org/latest/news/what-is-deep-sea-mining-and-why-we-need-a-global-moratorium/.

"What Is the "EEZ"? - NOAA Ocean Exploration." *NOAA Ocean Exploration*, 6 Jan. 2023, https://oceanexplorer.noaa.gov/ocean-fact/useez/.

**Media Bibliography**

*Iucn.org*, 2025, https://iucn.org/sites/default/files/2022-07/exploration-for-minerals-in-the-area-c-isa-2021.jpg.

*Weforum.org*, 2025, https://assets.weforum.org/editor/g2AefBFmv91JkGzI-OQj4X7ubMiyG16jKJXw6Nqupxc.png