

Environmental Committee

Research Report



Forum: Environmental Committee (EVC)

Issue: Regulation of deep sea mining for environmental protection

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Position: Chair

Introduction

The extraction of mineral resources from the ocean floor, known as deep sea mining, has drawn a lot of interest lately because of the rising demand for metals like cobalt, nickel, and rare earth elements. Electronics and renewable energy are two high-tech businesses that depend on these minerals. Deepwater mining began to take shape in the 1960s when new technologies made the endeavour possible. But it wasn't until the 21st century—fueled by the need for sustainable energy sources and the depletion of terrestrial mineral resources—that commercial interest really took off. The regulation of these activities has been greatly aided by international organisations such as the International Seabed Authority (ISA), which was founded in accordance with the United Nations Convention on the Law of the Sea (UNCLOS).

The main difficulty in regulating deep sea mining is striking a balance between environmental preservation and commercial gains. The deep ocean is home to a unique biodiversity and is essential to the balance of the global ecosystem, making it one of the least understood ecosystems on Earth. Environmental groups like Greenpeace and the World Wildlife Fund (WWF) express concern over the hazards that mining operations may bring, such as the potential for toxicity from mined materials, habitat damage, and sediment plumes. Furthermore, it might be difficult to monitor and enforce laws at deep water locations due to their remoteness and difficulty to access. It is the responsibility of national governments to regulate mining within their exclusive economic zones and to develop and enforce these restrictions. In the meantime, in order to comprehend the long-term effects of deep sea mining on marine environments, the scientific community carries out crucial study.

Deeply involved in developing the regulatory framework for deep sea mining are stakeholders from a variety of industries. In order to meet demand worldwide, the mining industry, represented by businesses like DeepGreen and Nautilus Minerals, advocates for access to these undeveloped deposits. Environmental organisations call on international organisations and national governments to take preventative action in order to save marine biodiversity through strict restrictions. The scientific community highlights ecological risks and offers vital data to support policy decisions through research institutions and universities. The way these parties interact has a significant impact on how deep sea mining regulations are developing, underscoring the necessity for a well-rounded strategy to protect the marine environment while meeting technological and economic demands.

Definition of Key Terms

Mining

The procedure used to remove priceless minerals or other geological components from the planet. When we talk about deep sea mining, we particularly mean the process of taking minerals out of the ocean floor.

Biodiversity:

The diversity of life on Earth, or within a certain habitat or environment. There are many different species found in the deep sea due to its high biodiversity, many of which are still little understood or undiscovered.

Sustainability

The capacity to sustain or protect resources for an extended period of time. To prevent irreversible harm to the marine ecosystem, sustainable methods in deep sea mining aim to strike a balance between resource extraction and environmental conservation.

Minerals

Natural materials that are typically found in the earth, such as metals like manganese, nickel,

and cobalt. These minerals are necessary for many different kinds of technology and enterprises.

Conservation

The protection and maintenance of the natural world. Conservation initiatives in the context of deep sea mining seek to shield marine life and habitats from the damaging effects of mining operations.

International Seabed Authority (ISA)

The ISA is an independent global institution founded in accordance with the United Nations Convention on the Law of the Sea (UNCLOS). In order to ensure that the exploration and exploitation of marine minerals are carried out in an environmentally appropriate way, it is in charge of regulating mineral-related activities in the international seabed region. The International Seabed Authority (ISA) regulates all mineral-related operations through rules, regulations, and processes and encourages fair distribution of the financial and non-financial economic gains from deep sea mining.

Exclusive Economic Zone (EEZ)

An Exclusive Economic Zone (EEZ) is a sea area designated by the United Nations Convention on the Law of the Sea, over which a state has particular rights with regard to the utilisation and development of marine resources, including the generation of wind and water power. It stretches out from the state's coast for up to 200 nautical miles. Although the coastal nation has exclusive rights to the resources inside this zone, the waters are nevertheless considered international waters for navigation purposes.

Major Countries and Organisations Involved

China:

Due to its substantial need for minerals required by high-tech companies and renewable energy technologies, China is a major player in deep sea mining. The nation has made significant investments in the advancement of deep sea mining technology and is the holder of several exploration contracts with the International Seabed Authority (ISA). China's large

industrial base and strategic interest in ensuring a steady supply of vital minerals make its engagement noteworthy.

Germany

Germany is an important European country that emphasises ecologically friendly and sustainable methods while engaging in deep sea mining. The nation said during the negotiations that it would not support any applications for commercial deep-sea raw material mining until further notice. The nation has exploration contracts with the ISA and works with research institutes to study the implications of mining activities. Germany's importance stems from its dedication to striking a balance between environmental preservation and resource development, as well as its influence over global regulatory frameworks.

United States

The United States is actively engaged in research and development related to deep sea mining, with an emphasis on safeguarding supply chains for vital minerals needed for both technological innovation and national security. The United States of America supports private sector activities and scientific research to explore the possibilities of deep sea resources, even if it is not yet a prominent player in commercial deep sea mining.ives and scientific research to explore the potential of deep sea resources.

International Seabed Authority (ISA)

The main body in charge of overseeing deep sea mining in international waters is the ISA. It creates guidelines, policies, and practices to guarantee that mining operations are carried out sustainably and that the advantages are distributed fairly. The International Seabed Authority (ISA) is a key participant in the worldwide administration of deep sea mining because of its jurisdiction to supervise any mineral-related activity on the ocean floor outside of sovereign borders.

Greenpeace

Greenpeace is an environmental group that strongly opposes deep sea mining because of worries about how it may affect biodiversity and marine ecosystems. The group advocates for a stop to deep sea mining until there is enough scientific data to evaluate the threats to the environment. Greenpeace's importance comes from its position as an outspoken supporter of environmental conservation and its ability to sway public opinion and legislative decisions.

DeepGreen Metals (The Metals Company)

DeepGreen Metals, now known as The Metals Company, is a major participant in the industry that wants to remove polymetallic nodules from the ocean floor. The business highlights how deep sea mining may offer a reliable supply of minerals required for the switch to green energy. Its contribution to deep sea mining's economic viability and its initiatives to use technological innovation to address environmental issues make it significant.

Timeline of Events

Date	Description of Event
1960s	Initial concepts and technological advancements make deep sea mining a feasible endeavour.
1982	The United Nations Convention on the Law of the Sea (UNCLOS) is adopted, establishing the ISA.
1994	The International Seabed Authority (ISA) is officially established.

- 2001 First exploration contracts issued by the ISA for polymetallic nodules in the Clarion-Clipperton Zone.
- 2011 Japan successfully extracts minerals from deep sea hydrothermal vent systems.
- 2013 ISA grants first exploration contracts for polymetallic sulphides and cobalt-rich crusts.
- 2016 DeepGreen Metals (The Metals Company) announces plans to extract polymetallic nodules.
- 2017 Germany launches JPI Oceans, a major European research initiative on deep sea mining impacts.
- 2018 Nautilus Minerals faces financial difficulties, highlighting risks and challenges in the industry.
- 2019 Nauru sponsors deep sea mining exploration contracts, emphasising the role of small island states.
- 2020 Greenpeace and WWF call for a moratorium on deep sea mining until environmental impacts are better understood.
- 2021 ISA adopts new regulations on environmental impact assessments for deep sea mining activities.

- 2022 Increased global attention on deep sea mining due to rising demand for minerals in renewable energy technologies.
- 2023 Deep sea mining becomes a central topic in international environmental and economic policy discussions.

Relevant UN Treaties and Events

1. United Nations Convention on the Law of the Sea (1994). A major step toward regulating deep sea mining activities is the official establishment of the International Seabed Authority (ISA) under the United Nations Convention on the Law of the Sea (UNCLOS). By providing the legal framework for the management of the seabed and international waters, UNCLOS makes sure that operations like deep sea mining are carried out in a way that preserves the marine ecosystem and encourages the fair sharing of resources. In order to create global collaboration and standardise laws pertaining to the ecological and ethical use of ocean resources, this convention is essential.
2. Convention on Biological Diversity (CBD) (1992). This international agreement seeks to guarantee the sustainable use of its constituent parts while protecting the biodiversity of the planet, especially marine life. The CBD's Decision X/2 highlights the need for biodiversity management and conservation strategies in regions outside of national borders, including deep-sea mining sites. The CBD offers a more comprehensive framework for incorporating biodiversity considerations into the management of deep-sea mining operations, guaranteeing that these activities do not conflict with international conservation objectives by highlighting the significance of preserving ecosystem integrity.
3. United Nations Sustainable Development Goals (SDGs) (2015). Goal 14 of the 17 Sustainable Development Goals focuses on the preservation and sustainable utilisation of the oceans, seas, and marine resources. This objective emphasises how important it is to control some operations, such deep-sea mining, in order to stop overuse and environmental damage. The SDGs emphasise the significance of striking a balance between resource extraction and the preservation of marine ecosystems for future generations by providing a thorough framework for incorporating sustainability into international development policy.

Previous Attempts to Solve the Issue

The United Nations Convention on the Law of the Sea (UNCLOS) established the International Seabed Authority (ISA), which plays a key role in controlling the extraction of mineral resources in the Area. The Area includes the ocean floor and seabed outside national borders. Through the issuance of exploration contracts for resources including cobalt-rich crusts, polymetallic sulphides, and polymetallic nodules, the ISA guarantees that deep-sea mining operations comply with international legal requirements. In order to reduce ecological damage and prevent substantial harmful effects on the maritime environment, the ISA has devised a comprehensive regulatory framework that requires environmental impact assessments (EIAs) and continual monitoring. The ISA's capacity to enforce compliance and deal with infractions is necessary for this system to be effective, but it is difficult given the remote and deep-sea nature of the operations. To preserve public confidence and stakeholder participation, the ISA's contract awarding and review procedures must be open, accountable, and transparent. Even with these precautions, there are still questions about whether the laws are adequate to completely safeguard delicate marine habitats. The effectiveness of the ISA's strategy will depend on strict enforcement and ongoing regulatory framework adoption in light of new scientific findings.

Germany's effort under the Joint Programming Initiative (JPI) Oceans aims to use extensive scientific research, including investigations, monitoring, and data gathering, to improve our understanding of the environmental effects of deep-sea mining. In order to provide accurate and pertinent results, this initiative uses state-of-the-art technology and procedures to evaluate how mining activities affect deep-sea ecosystems. Though it might not result in changes right away, the program helps clarify regulatory measures and informs policy decisions by producing precise data. To ensure a coordinated worldwide response to the issues of deep-sea mining, and to maximise the impact of these results, effective collaboration with international research initiatives and stakeholders is important. In the end, even though the research might not result in immediate changes to regulations, it is still extremely important for influencing future policy, improving our knowledge of environmental dangers, and assisting in the creation of more efficient conservation measures.

In order to avert potential harm to marine ecosystems, Greenpeace and the World Wildlife Fund (WWF) argue for a moratorium on deep-sea mining until enough scientific evidence is available to analyse its environmental implications. These groups are vital in bringing attention to the dangers and unpredictabilities of deep-sea mining and in encouraging public support for conservation efforts. Their effective lobbying may result in legislative modifications, such as short-term prohibitions or more stringent guidelines, aimed at shielding delicate marine ecosystems from impending dangers. Given the current scientific concerns over the long-term implications of deep-sea mining, the request for a moratorium is especially relevant because it would allow for further research and better informed decision-making. It will be difficult to strike a balance between conservation objectives and financial concerns if parties with financial stakes in mining oppose this

strategy.

New laws imposed by the International Seabed Authority (ISA) demand extensive environmental impact assessments (EIAs) for deep-sea mining operations. These regulations require mining corporations to carry out exhaustive examinations of potential environmental impacts before obtaining a licence for exploration or extraction. These policies enforce the creation and implementation of mitigation measures to prevent environmental impact, thereby addressing a number of issues such as habitat destruction, pollution, and long-term ecological effects. This entails planning activities to stay away from sensitive areas and keeping a close eye on the mining process at all times. Transparency and chances for stakeholder and public involvement are also essential to effective EIAs, since they guarantee that mining activities are held accountable and that all potential consequences are carefully evaluated. The effectiveness of these new regulations, which provide a strong framework for evaluating and mitigating environmental impacts, depends on the calibre of the evaluations and the ISA's capacity to compel compliance. To address changing environmental concerns and stay up to speed with new scientific findings, the EIA process must be updated and improved on a regular basis.

Possible Solutions

1. Conduct thorough environmental impact assessments, or EIAs: It is essential that comprehensive EIAs be obtained before beginning any deep sea mining operations. In order to ensure that mining operations are planned and carried out with the least amount of disturbance to the environment, these evaluations would investigate potential effects on marine ecosystems and biodiversity. Policymakers can emphasize ecological preservation by making well-informed judgments based on thorough scientific facts when establishing rules.
2. Create Marine Protected Areas (MPAs): By establishing MPAs in deepwater ecologically vulnerable areas, you may protect vital habitats from mining operations. By protecting biodiversity hotspots and enabling researchers to examine unspoiled settings, these protected zones would serve as a benchmark for assessing the effects of mining in other regions. By ensuring that important ocean floor regions stay unaltered, MPAs support long-term marine conservation.
3. Develop and Implement International laws: Global deep sea mining standards can be guaranteed by enforcing stronger international laws through organisations like the International Seabed Authority (ISA). Strict environmental safeguards, operational openness, and ongoing monitoring and enforcement procedures should all be part of these regulations. Globally coordinated initiatives can encourage sustainable mining practices and stop the abuse of laxer regulations.

4. Encourage Technological Innovation: Deep sea mining can have a minimal environmental impact if funds are allocated to the study and development of cutting-edge technologies. Sediment plumes and habitat loss can be decreased by innovations including real-time monitoring systems, precise mining techniques, and ecologically friendly extraction processes. Technological developments can reduce the negative effects of mining on the marine environment and increase mining operations' efficiency.

5. Promote Public and Stakeholder Involvement: More inclusive and successful policies can result from involving a wide range of stakeholders in the decision-making process, such as local communities, environmental organisations, scientists, and industry representatives. Various viewpoints can be taken into account through public consultations and stakeholder forums, which will increase the legitimacy and acceptability of regulatory actions. Involving stakeholders promotes cooperative approaches to deep sea resource management and aids in the development of consensus.

6. Facilitate the Development of other Resources: The need for deep sea mining can be decreased by encouraging the recycling of metals and the creation of other materials. Industries can reduce their dependency on newly derived minerals by emphasising circular economy principles and sustainable consumption practices. The environmental effects of deep sea mining can be lessened by promoting resource efficiency and innovation in material science.

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