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Race to the Deep on Seabed Mining

Reposition the United States as a leader in shaping the seabed mining policies of the future

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TOPLINE

The United States needs to get off the sidelines and develop a sensible seabed mining policy that integrates ocean science, geopolitics, economics, and national security.

With demand growing for rare earth minerals and global supply chains uncertain, the U.S. should prioritize efforts to engage in designing the rules around deep seabed mining based on science, national security, and the geopolitical implications. China is quickly moving forward and defining the rules of the road for seabed mining. U.S. leadership is needed now more than ever to develop a cohesive policy that balances ocean science and health with U.S. economic, energy, and national security needs.

THE PROBLEM

The global race is on to lead in advanced energy and high technology manufacturing to meet the growing consumer demand around the world – particularly for solar panels, electric vehicles, batteries for energy storage and semiconductor chips – while also safeguarding the needs of our military and aerospace. Accompanying this sprint is the international quest to access rare earth minerals, which are vital to meet technology demands. The winner or winners in this competition will determine who will have the edge in enhanced energy technologies, economics, and military security around the world.

Mining has accelerated for critical minerals like manganese, cobalt, lithium, copper, and nickel across mineral rich countries and regions including Africa, Australia, South America, and Southeast Asia. Between 2017 and 2022, demand for lithium tripled,

demand for cobalt increased by 70%, and demand for nickel increased by 40%.ⁱ The International Energy Agency estimates this demand is likely to double by 2040. Today, China is poised to lead in the global race to secure the deposits of these minerals. With the new U.S. Administration coming to power, potential China hawks like Senator Marco Rubio and Representative Michael Waltz are likely to pay more attention to this competition for advanced technologies, particularly in the maritime domain.

ESSENTIAL CONTEXT

Great Power Competition

China and the U.S. are already engaged in competition over the development and manufacturing of advanced technologies. Securing the critical minerals necessary to support the development and implementation of these technologies has further escalated tensions, with China making significant progress in both land-based and maritime sectors. China has achieved a domestic advantage for “processing and refining key critical minerals,” leaving the U.S., along with its allies and partners, vulnerable to supply chain disruptions that threaten both economic stability and national security.ⁱⁱ Currently, China accounts for 60% of global production and 85% of processing capacity,ⁱⁱⁱ with recent reporting indicating that China is also set to “dominate the deep sea and its wealth of rare metals.”^{iv}

China has also demonstrated a willingness to leverage its advantages in rare earth minerals. In 2010, the Chinese government blocked rare earth exports to Japan in response to a dispute over Japan’s detention of a Chinese fishing trawler captain whose vessel collided with Japanese coast guard vessels while fishing in waters claimed by China.^v Although Chinese officials denied the existence of the embargo, two months passed before exports resumed. Last year, China announced a ban on the export of technologies used for the extraction and processing of rare earths.^{vi} A December 2023 report from the U.S. House Select Committee on the Chinese Communist Party also highlighted China’s “willingness to weaponize these dependencies [on rare earths] to coerce the United States and its allies.”^{vii}

International Seabed Authority (ISA)

To date, most rare earth mineral mining has occurred on land. Now, all eyes are turning to the deep ocean floor as the next frontier for critical mineral extraction. Vast fields of nodules that hold critical rare earth metals are located across the world’s deep seabed. Seabed mining is governed by the International Seabed Authority (ISA), made up of the 168 member states who have ratified the United Nations Convention on the Law of the Sea (UNCLOS).^{viii} The ISA is charged with regulating the conduct of deep-seabed mining activities. The United States has not ratified UNCLOS, and as an observer, does not have a seat at the ISA decision-making table. On the other hand,

China has taken full advantage of its membership to shape international rules to its interests.^{ix}

Though difficult to access, China has prioritized seabed mining by investing heavily in technologies and furthering exploration. In 2016, China's President Xi Jinping stated that the nation must get its hands on the hidden treasures of the ocean.^x China holds five seabed mining exploration contracts, the highest number of any ISA member.^{xi} Additionally, a Chinese-based company, the Jinhang Group, has attracted millions in early-stage investments and signed a series of contracts to develop China's first commercial deep-sea mining robot by 2025.

In July of 2024, the ISA continued its years-long negotiations to draft seabed mining exploitation regulations.^{xii} Negotiations concluded with numerous gaps in the mining code, including lack of agreement on environmental data requirements, compliance and enforcement mechanisms, and liability requirements. The authority has also yet to broach important components such as environmental impact assessments, emergency response and contingency planning, and toxic substances.

In recent years, China has had an oversized influence in the ISA's decision-making, including blocking discussions on marine conservation at recent seabed mining exploitation negotiations.^{xiii} This influence is underpinned by significant financial and technical contributions to the ISA since its founding. China has provided more monetary support to the ISA's key funding mechanisms—the Endowment Fund for Marine Scientific Research and the Voluntary Trust fund for members of the Legan and Technical Commission and Finance Committee—than any other nation.^{xiv} China's support for the ISA has also taken the form of technical support. In June of 2024 former Michael Lodge, the current Secretary General of the ISA went on a five-day visit to the ISA-China Joint Training and Research Centre (JTRC). The JTRC explores technologies designed to streamline deep seabed mining exploration and eventual exploitation.^{xv}

A New Era at the ISA

A new era is about to begin with Brazilian oceanographer Leticia Carvalho elected as the next Secretary General for the ISA. Carvalho's leadership of the ISA will begin in January 2025. Her leadership has arrived at a key moment, with the global race on to exploit the seafloor for valuable minerals and the need for a strong regime to be put in place to ensure seabed mining is done in a manner supported by sound science and is equitable for the parties involved.

As the ISA grapples with key governance decisions on permitting, regulations, equity, and seeks scientific information needed for the protection of critical marine resources, the implications for island and coastal developing states are paramount for their future. The U.S. has a chance to engage in constructive dialogue both at the ISA, and

bilaterally with allies and coastal developing countries as well as the commercial mining interests who are considering seabed mining in international waters. Such engagement could help foster a responsible regime moving forward.

Seabed Mining Pause

Commercial deep-sea mining on the high seas has not yet started. Recently, at least 32 nations have proposed a “precautionary pause” on seabed mining while the ISA works to complete a strong governance structure.^{xvi}

As the pause is debated, state-owned and private Chinese companies are poised to move forward. Some estimate that as early as 2030 China will possess the capacity and technology to effectively exploit the rare earth resources that are contained within nodules located at the bottom of the deep seas. The U.S. has not invested commensurate resources in this area, and currently is not as close to being able to benefit from the start of deep seabed mining. Pausing seabed mining activities at the ISA to finalize regulations that ensure that all companies operate on a level playing field makes common sense. This would ensure that China cannot take advantage of its current technological advantage and historic dominant position in the ISA to secure its control the resources that will be critical to the most important technologies of the 21st century. It would also provide space and time for the US to leverage the innovation of its private sector and its long-term relationships with regional partner countries to establish a stronger competitive position before deep seabed mining begins.

A pause would also improve the potential for identifying alternative sources and materials, such as recycling and reusing electronic materials, the development of new synthetics, and domestic terrestrial sources – all of which could prove to be less expensive and more accessible. The Department of Defense has already awarded more than \$439 million since 2020 to establish domestic rare earth supply chains and is on track to establish a “supply chain capable of supporting all U.S. defense requirements by 2027.” U.S. companies have also begun investing in ways of extracting rare earths from sources such as coal ash and mine tailings.

The United States has lacked a strong, clear policy on deep seabed mining. U.S. engagement at the ISA has been limited, advocating from the sidelines for caution without providing consistent guidance on the type of regulations that would benefit the U.S. and the equity of our partners. Facilitating science-based investments that consider the health of the ocean, U.S. energy needs, economics and national security is crucial to so many U.S. industries and coastal communities across the Indo-Pacific. With Carvalho at the helm, and a new U.S. administration in place, it is time for the U.S. government to engage with thoughtful decisions and actions. A continued lack of action will only set the U.S. back in terms of technology and maritime security and propel its competitors forward.

POLICY RECOMMENDATIONS

Adopt a whole of government review on U.S. posture on deep seabed mining. The new Administration should undertake a whole of government review and assessment on the U.S. posture within the ISA and policies related to deep seabed mining. This review should determine how best to align the views of different U.S. federal agencies into a coherent single strategy for ISA negotiations specifically, and deep seabed mining generally. The assessment should consider U.S. economic growth, energy, environmental and national security, and geopolitical relations with partners, especially in the critical Indo-Pacific region.

Leverage American advantages to counter Chinese efforts to shape regulation. U.S. negotiators should leverage advantages in data collection and marine science to support its strategy in bilateral and multilateral negotiations. The United States possesses world-leading expertise in these areas, and that expertise should be aggregated and condensed into brief, easily comprehensible materials that can be shared with partners and allies to counter Chinese efforts to shape ISA regulations.

Work across disciplines and borders. Hold a roundtable with experts to arm the executive branch and Congress with knowledge and information that can facilitate action and strategies to support strong, responsible policies for ocean governance at the ISA, and work bilaterally with international allies and coastal states.

Call for precautionary pause on mining to develop appropriate and fair strategies. The U.S. should advocate for a precautionary pause on seabed mining. A precautionary pause would provide the ISA the necessary time to put in place regulatory guardrails to ensure that a safe, fair and efficient system is designed before any one nation like China can forge ahead with mining. It would also give the U.S. time to create and implement a consistent strategy on deep seabed mining, accelerate investment in relevant technologies and technical expertise, advance our standing with partners in the Indo-Pacific region, and participate in future decision making at the ISA.

Take a seat at the UNCLOS table to advocate for American interests. In this world of global competition with China, the new Administration should revisit ratification of UNCLOS. As a formal party to UNCLOS, the U.S. would gain a permanent seat on the ISA's governing Council. On the Council, the U.S. would increase its ability to support and block the ISA's substantive decisions, including "any decisions to adopt rules, regulations, or procedures relating to the deep seabed mining regime." This would allow the U.S. to better advocate for the interests of American businesses and people, and to effectively counter any actions on the part of the ISA that would be inimical to those interests.

REFERENCES

- ⁱ *Critical Minerals Market Review 2023*. Paris, France: International Energy Agency, 2023. <https://iea.blob.core.windows.net/assets/afc35261-41b2-47d4-86d6-d5d77fc259be/CriticalMineralsMarketReview2023.pdf>
- ⁱⁱ Lily Kuo. “China is set to dominate the deep sea and its wealth of rare metals,” *The Washington Post*, 19 October 2023, <https://www.washingtonpost.com/world/interactive/2023/china-deep-sea-mining-military-renewable-energy/>
- ⁱⁱⁱ Bonnie S. Glaser and Abigail Wulf. “China’s Role in Critical Mineral Supply Chains,” *GMF*, 2 August, 2023, <https://www.gmfus.org/news/chinas-role-critical-mineral-supply-chains>
- ^{iv} Lily Kuo. “China is set to dominate the deep sea.”
- ^v Keith Bradsher. “Amig Tension, China Blocks Vital Exports to Japan,” *The New York Times*, 22 September, 2010, <https://www.nytimes.com/2010/09/23/business/global/23rare.html>
- ^{vi} Gracelin Baskaran. “What China’s Ban on Rare Earths Processing Technology Means,” *CSIS*, 8 January, 2024, <https://www.csis.org/analysis/what-chinas-ban-rare-earths-processing-technology-exports-means>
- ^{vii} “Select Committee Adopts Proposal to Reset Economic Relationship with The People’s Republic of China,” *The Select Committee on the CCP*, 12 December, 2023, <https://selectcommitteeontheccp.house.gov/media/press-releases/select-committee-adopts-proposal-reset-economic-relationship-peoples-republic#:~:text=The%20report%20includes%20three%20pillars,and%20building%20collective%20resilience%20with>
- ^{viii} Eric Lipton. “Fight Over Seabed Agency Leadership Turns Nasty,” *The New York Times*, 4 July, 2024, <https://www.nytimes.com/2024/07/04/us/politics/seabed-agency-mining.html>
- ^{ix} Lily Kuo. “China is set to dominate the deep sea and its wealth of rare minerals,” *The Washington Post*, 19 October, 2023, <https://www.washingtonpost.com/world/interactive/2023/china-deep-sea-mining-military-renewable-energy/#:~:text=The%20ocean%20floor%20is%20shaping%20up%20to%20be%20the%20world's,products%20and%20advanced%20computer%20chips>
- ^x “China is itching to mine the ocean floor,” *The Economist*, 28 July, 2024, <https://www.economist.com/china/2024/07/28/china-is-itching-to-mine-the-ocean-floor>
- ^{xi} Yiming Zhong. “China Leads the Race to the Bottom: Deep Sea Mining for Critical Minerals,” 17 August, 2023, <https://newsecuritybeat.org/2023/08/china-leads-race-bottom-deep-sea-mining-critical-minerals/>
- ^{xii} Julian Jackson. “Nations Discuss Deep-Seabed Mining in International Waters Amid Growing Concerns,” *Pew Charitable Trusts*, 9 October 2024, <https://www.pewtrusts.org/en/research-and-analysis/articles/2024/10/09/nations-discuss-deep-seabed-mining-in-international-waters-amid-growing-concerns>
- ^{xiii} Zhong, “China Environment Forum China Leads the Race to the Bottom: Deep Sea Mining for Critical Minerals.”
- ^{xiv} “ISA Gallaery Receives Landmark Contribution of Deep-Sea Exploration Exhibition Models from China,” *China Ocean Mineral Resources R&D Association*, 29 June 2019, http://www.comra.org/en/2019-06/29/content_40803985.htm
- ^{xv} “ISA Secretary-General concludes high-level visit to China resulting in renewed cooperation in support of the mandate of ISA and the implementation of its Global Deep-Sea Research Agenda,” *International Seabed Authority*, 7 June, 2024, <https://www.isa.org.jm/news/isa-secretary-general-concludes-high-level-visit-to-china/>
- ^{xvi} Elizabeth Alberts, “Brazil’s Carvalho to lead seabed-mining authority following predecessor’s controversial term.” *Mongabay*, 3 August 2024, <https://news.mongabay.com/2024/08/brazils-carvalho-to-lead-isa-following-predecessors-controversial-term/>