

# Trump's Deep-Sea Mining Executive Order: The Race for Critical Minerals Enters Uncharted Waters

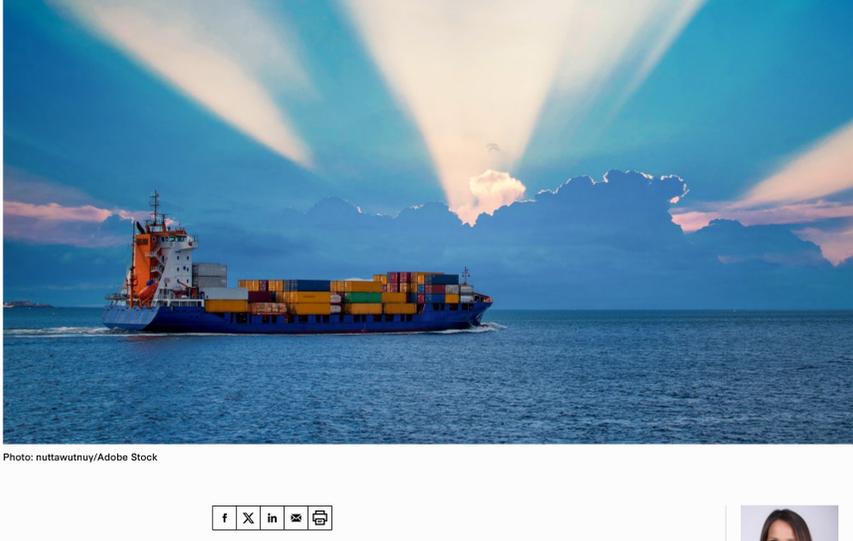
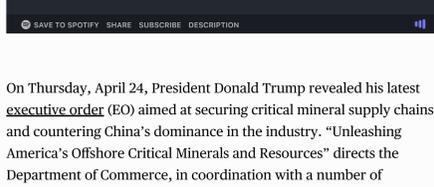


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Critical Questions by **Gracelin Baskaran** and **Meredith Schwartz**  
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**Gracelin Baskaran**  
Director, Critical Minerals Security Program



**Meredith Schwartz**  
Associate Fellow, Critical Minerals Security Program

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On Thursday, April 24, President Donald Trump revealed his latest **executive order** (EO) aimed at securing critical mineral supply chains and countering China's dominance in the industry. "Unleashing America's Offshore Critical Minerals and Resources" directs the Department of Commerce, in coordination with a number of executive agencies, to pursue the exploration and exploitation of deep-sea resources both within the U.S. exclusive economic zone (EEZ) and areas beyond national jurisdiction. For decades, the United States has remained on the sidelines of the deep-sea mining debate as an international body has governed the world's richest seabed resources. The Trump administration has unequivocally signaled this will no longer be the case. The emphasis on U.S. leadership in the deep-sea mining arena demonstrates the administration's commitment to an all-of-the-above approach to securing critical mineral supply chains. Nevertheless, this shift in deep-sea mining policy carries major implications for U.S. maritime security and the U.S.-China competition for critical resources.

**Q1: How significant is the resource potential of deep-sea mining, and is the United States well-positioned to establish a complete seabed-to-metal supply chain in the near term?**

**A1:** The resource potential of the seabed is significant, but questions remain on the **commercial viability**. Seabed minerals exist in several forms (ferromanganese crusts, sulfide deposits, and polymetallic nodules), but the collection of polymetallic nodules is the **most prominent** form of deep-sea mining and is currently believed to be the most commercially viable. These nodules exist throughout the ocean floor, both within the U.S. EEZ and beyond. To date, **no country** has extracted these resources at a commercial scale. The ocean region that has garnered the most attention for its resource potential is the Clarion-Clipperton zone (CCZ), a 1.7 million square mile patch of ocean **located** in international waters between Mexico and Hawaii. The CCZ contains the largest known nodule field on the globe, at an estimated **21.1 billion tons**.

Four critical minerals, key to battery production, can be found within polymetallic nodules: manganese, nickel, copper, and cobalt. As of January 2023, **50 percent** of U.S. waters remain unmapped. The EO's mapping efforts will be key to determining the true resource potential of the outer continental shelf. More mapping data currently exists for the CCZ. The Metals Company (TMC)'s International Seabed Authority (ISA) contracted regions are ranked as the **fifth and seventh** largest nickel deposits in the world in terms of combined reserves and resources. The ore grades of polymetallic nodules are also **estimated** to be significant at 31 percent manganese, 1.4 percent nickel, 1.2 percent copper, and 0.2 percent cobalt. Nickel ore grades are **comparable** to the ore grades of both the Sorowako and Weda Bay mines, the two largest producing nickel mines in Indonesia.

The United States currently lacks the processing infrastructure needed to process polymetallic nodules at-scale. One company has produced pre-cursor battery materials, **cobalt-sulphate and nickel-sulphate**, from nodules during bench-scale testing. However, significant capital investment will be necessary to establish a full-scale processing facility in the United States.

**Q2: What is the current policy landscape and controversy around deep-sea mining?**

**A2:** Deep-sea resources in international waters are governed by the ISA, a UN institution established by the UN Convention on the Law of the Sea (UNCLOS). The Law of the Sea Treaty has been ratified by 169 member states, which have joined the ISA to receive licenses for exploration and extraction of seabed mineral resources and to contribute to the development of industry regulations under UNCLOS. But despite **repeated attempts**, the U.S. Senate has never ratified UNCLOS, and therefore, the United States is not a voting member of the ISA and cannot hold licenses.

Without ISA membership, U.S. private industry has had to get creative in how it obtains ISA licenses. TMC, a Canadian company with a U.S. subsidiary, holds **three ISA licenses** through partnerships with island nations. So far, the ISA has designated **31 exploration licenses** in the CCZ—China holds five licenses, the most of any country.

Deep-sea mining is a highly controversial industry. The potential impacts on the marine environment are not fully understood. Some environmental groups are **intensely opposed** to any deep-sea mining. As of 2024, 32 countries have called for a **moratorium** on seabed mining, including Canada, the United Kingdom, France, Germany, Mexico, and Austria. However, advocates of the industry argue that pursuing deep-sea mining is a matter of national security, and if the United States does not actively pursue seabed resources, we will cede another key critical mineral resource to Chinese adversaries. For years, the industry was effectively stalled as the ISA declined to approve regulations for resource extraction, but the new EO is designed to change this. Continued investments in the collection of environmental data, robust impact studies, and independent science foundation research will be needed to ensure that the deep-sea mining industry moves forward under high environmental standards.

**Q3: How does President Trump's latest EO, "Unleashing America's Offshore Critical Minerals and Resources," impact the deep-sea mining industry?**

**A3:** At present, the Department of Interior's Bureau of Ocean Energy Management is responsible for deep-sea mine licensing within United States jurisdiction, and the National Oceanic and Atmospheric Administration (NOAA) is responsible for areas beyond national jurisdiction.

The EO directs the NOAA to expedite the process for reviewing and issuing both deep-sea exploration and commercial recovery licenses from areas beyond national jurisdiction for U.S. companies. Meanwhile, the Department of the Interior is directed to initiate similar processes for jurisdictions within the U.S. outer continental shelf. In addition to expediting the licensing processes, the EO directs new seabed mapping activities, engagement with allies and partners for joint scientific and commercial collaboration, and a review of how grants, loans, and Defense Production Act (DPA) financing authorities can be leveraged to support domestic processing capabilities.

The EO seeks to address the entire polymetallic nodule supply chain from mapping and exploration to extraction and processing. The measure sends a strong signal to the private sector that the U.S. government is committed to developing deep-sea mining as a new minerals frontier. However, it remains unclear what financial resources the administration is willing to commit to the effort. DPA Title III limits funds to just **\$50 million** per project without congressional authorization. These small dollar amounts may work well to support project feasibility studies, but they are less effective when trying to attract enough capital for an entire processing facility.

Efforts to map, explore, and extract deep-sea resources within the U.S. EEZ are less controversial and more precedented. Several **other countries** have already been exploring the potential to mine their own EEZ, including Norway, India, Japan, and the Cook Islands. Efforts to mine in international waters will undoubtedly be more complicated with more geopolitical trip wires.

**Q4: What does the EO mean for the ISA and U.S. allies?**

**A4:** The EO essentially bypasses the ISA to allow U.S. companies to gain access to resources in international waters without consultation or permission from the UN body. While it remains to be seen which regions the U.S. prioritizes for extraction licenses, considering the appeal of the CCZ, it is possible that the U.S. issues licenses in waters overlapping with areas designated to other nations by the ISA. This could lead to a number of unprecedented complications and international disputes over resource governance and ownership.

The executive order cites the **Deep Seabed Hard Mineral Resources Act of 1980** (DSHMRA) as legal justification for the licensing of areas beyond national jurisdiction. The DSHMRA was intended to serve as an interim measure to allow the United States to proceed with seabed mineral activities until the international governing regime was established. In 1984, NOAA issued exploration licenses for four sites located within the CCZ—but this was 10 years before UNCLOS was implemented and 12 years before the ISA was established. Since the establishment of the ISA, the United States has not designated any additional licenses, and in the meantime, two of the four licenses have been **surrendered**. The EO paves the way for the United States to issue its **first exploration licenses** in the CCZ since 1984, and the first ever licenses for mineral extraction.

Meanwhile, China appears to be siding with the ISA, for now. A Chinese foreign ministry spokesperson responded to the EO **saying**, "The U.S. authorisation . . . violates international law and harms the overall interests of the international community."

**Q5: What are the implications for U.S. maritime security?**

**A5:** Deep-sea mining opens up a Pandora's box surrounding maritime security. China has been making significant headway in the deep-sea mining industry for years, all while working within the ISA framework and fostering relations with island nations in strategic jurisdictions. On February 15, 2025, China and the Cook Islands signed a **memorandum of understanding** in which they agreed to collaborate to research and potentially extract the latter's seabed minerals. China has been developing **dual-use technologies** with both commercial mining and potential military applications, including autonomous underwater vehicles. If China were to send vessels and remotely operated vehicles into the CCZ, not far from Hawaii, under the guise of deep-sea mining activities, it could be challenging to tell whether its activities were purely commercial. The EO does not establish a path for how to ensure maritime security while countries—including foreign adversaries—race to advance their mineral security under the sea.

Additionally, the United States' bold steps to pursue critical mineral resources in international waters could embolden other countries to break with UNCLOS and pursue their own deep sea mining ambitions. China may be staying the course with the ISA at the moment, but this is unlikely to continue once its technological capabilities have fully matured and Chinese enterprises are ready to move from exploration to extraction.

The EO may reduce regulatory uncertainty for investors in the deep-sea mining space by removing the inaction of the ISA, however, it significantly raises geopolitical risks for the industry, as any country could now theoretically lay claim to seabed resources in international waters. The race to mine the deep sea is on, and conflict in international waters over disputed resources is likely on the horizon.

*Gracelin Baskaran is director of the Critical Minerals Security Program at the Center for Strategic and International Studies (CSIS) in Washington, D.C. Meredith Schwartz is a research associate for the Critical Minerals Security Program at CSIS.*

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