

GUEST ESSAY

A Rush to Mine the Deep Sea Is Underway. It Must Be Stopped.

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By Diva Amon

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Descending to the depths of the ocean is part of my job as a deep-sea biologist. Traveling three miles below the sea surface never ceases to uplift me. I've seen strange and wonderful creatures, from anemones with seven-foot tentacles that billow across the seafloor, to sharks that glow in the dark, 1,000-year-old corals and blind white crabs sustained by bacteria they cultivate on their claws.

The deep sea is a trove of biodiversity, rich in living resources used in medicines and critical in regulating the climate and providing spawning and feeding grounds for fish. The planet would not be the same without it.

But the ocean is facing plenty of problems. Pollution can be found in every marine ecosystem, from the estimated 11 million metric tons of plastic entering the ocean every year to toxic chemicals accumulating in animals living in the deepest deep-sea trenches. The waters are becoming warmer, more acidic and less rich in oxygen. Twenty percent to 25 percent of marine species are already at considerable risk of extinction.

Now a new threat looms.

The ocean could be the next frontier for mining. An obscure but consequential organization formed under the United Nations Law of the Sea treaty is finalizing regulations for mining activities in over 40 percent of the planet's surface. Approval of these rules, in the works since 2014, could come possibly as soon as July. After that, a scramble to mine the deep sea could commence. And once it begins, there will be little hope of reining it in.

Why the rush? In June 2021, the Pacific Island nation of Nauru, one of the 167 member nations plus the European Union of the regulatory organization, the International Seabed Authority, invoked a provision of the treaty that requires the authority to adopt rules for deep-sea mining within 24 months. Nauru, one of the world's smallest nations, with a population of around 11,000, is the sponsor of Nauru Ocean Resources Inc., a subsidiary of a Canadian firm, the Metals Company. That company wants to mine parts of a region known as the Clarion-Clipperton Zone, between Hawaii and Mexico, for polymetallic nodules. These nodules contain many of the base metals now required to make batteries, and the Metals Company says they offer "the cleanest path toward electric vehicles." (Companies must be sponsored by a country under the treaty to engage in mining.)

Nauru's action could open much of the high seas to deep-sea mining, permanently altering near-pristine and vast areas of the ocean.

Some deep-sea mining companies argue that extracting minerals such as copper, nickel and cobalt from the ocean floor is more sustainable than extracting them from land-based mines. But what little independent science there is to back their claims is contested.

I led a team of 30 other scientists from around the world in a comprehensive study published in the journal *Marine Policy* last year that found that "there are few categories of publicly available scientific knowledge comprehensive enough to enable evidence-based decision-making regarding environmental management" of deep-sea mining. We added that "closing the scientific gaps" is a "monumental task that is essential to fulfilling the overarching obligation to prevent serious harm and ensure effective protection, and will require clear direction, substantial resources and robust coordination and collaboration."

We're still nowhere near closing those gaps.

There is also a growing body of evidence that mining hundreds of thousands of square miles of ocean floor could inflict irreversible damage on ocean health. Huge machines would be sent down to the ocean floor that scrape up minerals — and everything else in their way — creating plumes of sediment that would spread for many miles into the surrounding waters and emitting noise and light that disturb dark, quiet ecosystems in the deep seas that took eons to develop. A recent analysis of the seabed authority's process of assessing the environmental impact of exploration found it to be "severely deficient, both in procedure and in substance." The study was the work of scientists and legal scholars from 11 nations.

What's also deeply worrisome is that the companies and countries lobbying the seabed authority to open the deep sea to mining don't appear to prioritize equity in their plans. The oceans and their resources are, as the Law of the Sea puts it, "the common heritage of mankind" and are an especially integral part of the culture and well-being of ocean-dependent communities. The resources are supposed to be "vested in mankind as a whole," according to the U.N. treaty, and should be managed to ensure that any mining benefits as many people as possible. Right now, there is no mechanism to accomplish this.

Concerns have also been raised that the seabed authority doesn't display the transparency, objectivity and science-based decision-making critical for overseeing such a fraught and nearly impossible-to-monitor industry. There is no robust and inclusive engagement of all those with a stake and no transparent decision-making processes. Because of these issues, deep-sea mining lacks "social legitimacy," as seven ocean experts and I argued last month in a comment in the journal *npj Ocean Sustainability*. Without that legitimacy, we said, "investors and consumers might reject seabed minerals and their use."

A seabed authority meeting scheduled to begin Thursday in Jamaica offers the opportunity to put the brakes on this dash to excavate the deep sea. Member countries still have much to deliberate, and it now seems likely that they will be unable to reach an agreement in the near future, much less by the July 9 deadline imposed by Nauru's action. What that will mean is not entirely clear should mining companies submit applications to begin excavations in the absence of regulations.

More than 700 ocean experts have signed a statement urging a delay of deep-sea mining. Some major companies and banks have pledged similar support or created policies that exclude financing of deep-sea mining. And 12 countries have called for a moratorium on deep-sea mining, with France going further and pressing for an outright ban.

Fortunately, it's not too late for governments to stop this rush before it starts. More countries must step up and say they will not approve deep-sea mining unless and until there is sufficient scientific research on the potential risks and strong regulations can be put in place to protect these hidden but vitally needed ecosystems. Once a moratorium is in place, countries then can take time to assess whether we really need to mine the deep ocean at all.

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