Deep-sea mining: What do we stand to lose?

If the member nations of the International Seabed Authority were to permit deep-sea mining, humanity would stand to lose far more than we could gain.

UNCLOS and the International Seabed Authority

The International Seabed Authority (ISA) was established by the United Nations Convention on the Law of the Sea (UNCLOS) to manage seabed mineral-related activities in the international area of the deep ocean (the "Area") “for the benefit of [hu]mankind as a whole” (UNCLOS, Article 148). UNCLOS also calls for the “equitable sharing of the financial benefits” of deep-sea mining among the 167 ISA Member States, plus the European Union.

No ISA Member State is allowed to mine in the Area without ISA permission. ISA members are currently in the process of negotiating regulations that, if agreed and adopted, could allow commercial-scale exploitation of deep-sea minerals to begin. Any country or company that is granted permission to mine by the ISA must ‘share the wealth’ with all Member States by paying royalties to the ISA. At the same time, in granting any permits to mine, the ISA must “ensure effective protection for the marine environment from harmful effects” of deep-sea mining activities, as required under UNCLOS (UNCLOS, Article 145).

Potential revenue from deep-sea mining

ISA Member States are currently discussing a royalty regime through which companies or other contractors (for example, state-owned enterprises) issued with mining contracts by the ISA would pay a fee to the ISA, which would then be shared among member countries. However, recent research finds that the predicted revenues from deep-sea mining and the proposed benefit-sharing mechanism would “lead to States receiving economically insignificant benefits” (Wilde et al., 2023).

The ISA Secretariat contracted a team from the Massachusetts Institute of Technology (MIT) to assess the economics of deep-sea mining for polymetallic nodules in the Clarion Clipperton Zone (CCZ).1 MIT concluded that the annual amount that would be received by the ISA in royalties for each CCZ mining operation under their scenarios would range from approximately US$80-176 million per year (Roth, Kirchain, Field & Peacock, 2018; Roth & Munoz Royo, 2018). This would equate to a net present value of between US$285-660 million over 30 years in today's dollars, or approximately US$60,000

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1 The CCZ is an area of the eastern Pacific Ocean where the ISA has, to date, approved 19 contracts to explore for minerals across some 1.5 million square kilometers of the seabed, equivalent in size to Belgium, Portugal, Spain, France and Germany combined.
to US$130,000 per year to each ISA Member State in royalty payments (UNCLOS Article 173.2). This figure drops even further, as the royalty payments would first be used to cover ISA administrative costs before funds were distributed to member countries.

In these scenarios, MIT assumes that sponsoring States would, on average, levy a 25% corporate tax on profits from the mining company. This is a highly debatable assumption, as at least one sponsoring State (Nauru) has contractually agreed not to levy any corporate tax on its contractor at all (Sustainable Opportunities Acquisition Corp, 2021). The African Group of ISA Member States in February 2019 stated that: “The African Group does not consider that this is fair compensation to mankind” (Remaoun, 2019).

Where an ISA contractor is a state-owned company or government agency, the country would keep the profits. However, the financial and liability risks associated with deep-sea mining are increasingly coming to light as more financial institutions divest, and former partners Maersk and Lockheed Martin sell off their shares (Khan, 2023).

The ISA would have to hand out contracts for between 45 and 100 nodule mining operations to generate annual royalty payments ($US7.7 billion) equivalent to US$1 per year for each person on Earth today. This number of mining operations would impact millions of square kilometers of seabed, causing widespread, irreversible damage.

Prospective mining company, The Metals Company, stated in 2022 in its S-1 Registration Statement to the U.S. Securities and Exchange Commission that, “there can be no assurance that we will be able to commercially develop our resource areas or achieve profitability in the future.” They also pointed out that “actual capital costs, financing strategies, operating costs, production and economic returns may differ significantly from those we have anticipated” (The Metals Company, 2022).

Sponsoring States

Under UNCLOS, a company must be sponsored by an ISA member country – the sponsoring State – to obtain a contract from the ISA to mine. Under the rules of the ISA, a State can sponsor more than one company, or the same company for more than one ISA contract, or can itself obtain multiple contracts from the ISA. There are currently 21 sponsoring States in total, including six who jointly sponsor one contract. In a number of cases, it is unclear whether the State sponsoring the ISA contract is in fact the same country in which significant tax would be paid and who the ultimate beneficiaries would be if mining were to go ahead. A potential legal disconnect between who bears the legal risk and who stands to benefit could further exacerbate global inequality between developed and developing States. In 2019, Papua New Guinea lost US$157 million of their deep-sea mining investment when Nautilus Minerals collapsed (Doherty, 2019).

Cost of deep-sea mining to humankind

The UN’s First World Ocean Assessment stated that the deep sea “constitutes the largest source of species and ecosystem diversity on Earth... and supports the diverse ecosystem processes and functions necessary for the Earth’s natural systems to function” (Inniss et al., 2018). If deep-sea mining were to proceed, scientists caution that the resulting loss of biodiversity and ecosystem functioning would be irreversible on multi-generational timescales (Deep-sea mining science statement, 2023).

Multiple factors make it difficult – if not impossible – to calculate the full value of a healthy deep-sea environment. This value includes:

- The role the deep sea plays in regulating planetary systems, including global climate and carbon sequestration;
- The economic value of life in the deep sea;
- The potential to discover new species and ecosystems that may expand our understanding of life on Earth;
- Opportunities to derive benefits from the genetic material of deep-dwelling organisms for medicines and other purposes;
- The interconnection between deep ocean marine life and ecosystems throughout the water column on which humans depend for livelihoods and sustenance.

Furthermore, deep-sea mining would also impact cultural heritage, if permitted to go ahead. The deep sea is considered to be the place of creation for the Indigenous Hawaiian culture; it is a part of their identity and is viewed as sacred (Greenpeace, 2023a; Maui Nui Makai Network, 2023; Rosane, 2023). The potential destruction of this irreplaceable cultural heritage by deep-sea mining would continue an ongoing legacy.
of colonialism, through cultural erasure and the continuous drive for profit from imperial powers (Jarvis, Ermida and Varmer, 2023; Greenpeace, 2023b). The industry could also destroy cultural artifacts (Jaeckel et al., 2023).

A 2023 report highlights that even though the ISA and mining companies have suggested that deep-sea ecosystem restoration could be implemented to mitigate the negative environmental impacts, research indicates that deep-sea ecosystems are essentially unrestorable due to current restoration techniques, long timescales required and the huge spatial impact of environmental damage.

The report indicates that the cost of restoration would be so high that mining companies would not be able to pay for it and operate at a profit, with potential for costs to be handed to taxpayers and not mining companies. It is estimated that restoring only 30% of the area under concession for potential deep-sea mining would cost more than the entire global defence budget (Planet Tracker, 2023).

**Making the rich richer?**

In 2011, the ISA started to award contracts to private sector companies, all of which are owned by shareholders and parent companies located in developed nations. If those companies are permitted to mine the international seabed, the vast majority of profits will flow to the high-net-worth individuals and multi-billion-dollar investment companies or corporate conglomerates who own the companies’ shares. For example, the Russian billionaire oligarch Alisher Usmanov was a major shareholder in Nautilus Minerals before the company went bankrupt (Sanderson, 2018).

Of the 31 exploration contracts the ISA has issued to date, at least 18 are held by only seven countries – China, France, Germany, India, Japan, Russia and South Korea - through their state-owned companies or government agencies and ministries. Another seven contracts are effectively in the hands of private companies: The Metals Company, a Canadian company listed on the NASDAQ stock exchange; Seabed Resources, a subsidiary of the Norwegian company Loke Marine Minerals; and Global Sea Mineral Resources, a subsidiary of the Belgian company DEME Group (International Seabed Authority, 2023).

UNCLOS is based on principles of equitable benefit-sharing and prioritizing the needs of developing countries. Given the significant environmental risks associated with deep-sea mining, it may do more harm than good for humankind as a whole and is unlikely to generate significant financial gains for the international community (Thiele et al., 2021).
 Recommendations

It currently cannot be proven that mining of the international seabed will provide global net benefit and equitably support the world’s poorest and most vulnerable populations. Deep-sea mining should therefore not be permitted to proceed, as this is a core principle of both the UN 2030 Agenda for Sustainable Development and UNCLOS. Valuation of the deep sea and the potential damage that could be caused by deep-sea mining is fundamental to this assessment.

In order to better understand the trade-offs involved, the ISA should prioritize scientific research and capacity building for developing States, decoupled from an extractive agenda. Research should focus on deep-sea biodiversity and ecosystems and their role in the functioning of our planet. This information will be useful in filling data gaps on the economic value of a healthy deep sea as well as on the true cost of mining. Capacity building should focus on aiding developing States to conduct deep-sea research and acquire the appropriate technology to do so, in order to further our understanding of the deep sea.

The ISA should shift its notion that mining is inevitable and reconsider the nature of its exploration contracts to ensure that contractors are conducting science for science’s sake, and not with a view to exploitation and profits. There should be a moratorium on any deep-sea mining until scientific and economic understanding is significantly improved and used to inform a transparent and inclusive policy debate.

Enhanced scientific understanding and societal debate around equity and consumption issues would be more beneficial to humankind than a payout to a select few at the cost of permanent damage to an environment that we all rely on.

With humanity facing a dual biodiversity and climate crisis, we must question if any amount of money can compensate for the loss of deep-sea ecosystems and species, and the critical ecosystem services the deep sea provides. Humankind would want to lose more than we could gain if the ISA were to open the deep ocean to industrial mining.

References


About the DSCC

The Deep Sea Conservation Coalition (DSCC) was founded in 2004 to address the need to prevent damage to deep-sea ecosystems and the depletion of deep-sea species on the high seas from bottom trawling and other forms of deep-sea fishing. The DSCC is made up of over 100 non-governmental organizations (NGOs), fishers organizations and law and policy institutes, all committed to protecting the deep sea.

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