



Regional Environmental Management Plans Are Key to Deep-Sea Conservation

Such efforts could protect fragile marine environment from impacts of mining

Overview

The International Seabed Authority (ISA) was established to manage mining on the international seabed and to protect the marine environment from its harmful effects. Striking a balance is a formidable challenge.

All mining operations, on land or at sea, cause environmental damage. Research strongly suggests that deep-sea mining will result in the loss of biodiversity—losses that may be permanent.¹ The U.N. Convention on the Law of the Sea (UNCLOS) requires the ISA to manage activities in the international seabed “for the benefit of mankind as a whole” and to “ensure the effective protection for the marine environment”² from mining’s harmful effects. For the ISA to fulfill its protection obligations, it will need to manage ecological impacts not only at mining sites but also in the regions surrounding them.

A regional environmental management plan (REMP) is a tool the ISA will use to understand and manage a particular expanse of the seabed. At recent sessions of the ISA’s Council and Assembly, Member States have called for development of these plans as a precondition of mining in any area. REMPs would include both area-based and rules-based management tools, including a network of large no-mining areas that could serve as refuges for marine species and preserve ecosystem functions.

Because REMPs are vital to protecting the marine environment, they need to be integrated into the overall ISA Mining Code. The ISA should adopt a formal, binding regulation that no mineral exploitation can occur in any area not covered by a regional environmental management plan.

What is a REMP?

A REMP lays out the goals, rules, and management tools for a specific region where mining could occur. Different regions and habitats require different rules and thresholds to ensure effective protection. So these plans must be tailored to the ecosystem structure and functions for the area in question, including its different habitats, community structure, biodiversity, connectivity, and resilience. In general, there are two main classes of management tools for REMPs:

- **Area-based.** All REMPs should conserve areas of the seabed through a network of large no-mining zones. These zones are called areas of particular environmental interest (APEIs), and their placement should cover the full range of habitats, biodiversity, and ecosystem functions within the overall management area. Scientific principles should drive development of the APEI network, and placement decisions should be based on spatial analyses of physical, geochemical, ecological, and social datasets.
- **Other management measures.** REMPs are more than maps showing where contractors cannot mine. They should include measures for managing the areas where mining is permitted, such as collection and analysis of regional-scale baseline data, and processes to predict and manage cumulative impacts of more than one mining operation or marine activity in the same region. Other measures could be region- or species-specific. Certain habitats could be mapped and selected to receive special protections. Key breeding or migratory seasons could be identified in the region, to inform the introduction of temporal restrictions on mining. Underwater sites of historical or cultural significance could also be recognized for protection.

What makes a good REMP?

A successful regional environmental management plan will ensure effective protection of the marine environment, maintain biodiversity, and safeguard ecosystem functions during any mining operations within that area of the international seabed. It would include networks of APEIs and region-specific mapping, measures, and thresholds.

A well-formed plan would be based on generally accepted and widely used principles for marine spatial planning and the design of protected area networks and would:

- Include networks of APEIs that are **representative** of the range of habitats, species, and ecosystem functions in the area.
- Include protection measures for **ecologically important areas** that harbor unique biodiversity and provide important ecosystem services or functions.
- Offer **connectivity** for populations. APEIs should be close enough for larvae and other dispersing life stages to travel between them to maintain and/or restore population sizes.
- **Replicate** protections so that species, habitats, and ecological processes are covered in more than one protected area.
- Ensure **viable sites** of the size, populations, and protections sufficient to retain their ecological functions and maintain self-sustaining populations.
- Draw APEI networks that **protect 30-50 percent** of the total management area.³ The ISA has committed to protecting 30-50 percent of the Clarion-Clipperton Zone (CCZ) in the eastern Pacific Ocean, the only area with a management plan.⁴ Scientists have called for similar safeguards in other regions.

Once in place, an APEI network and a region's management plan should be evaluated against an objective set of performance metrics. The placement of APEIs should be open to review and revision only if the ISA and the contractors can ensure that there will be no net loss of biodiversity or if their performance metrics are not met. APEI networks and other protections specified in a REMP should remain in place until no active contracts remain in the region and areas affected by any mining activities have fully recovered from such impacts.

Current and future REMPs

As of 2019, the CCZ REMP was the only one in existence. The ISA intends to update that plan and develop new ones for each region with exploration contracts.

The ISA Council approved the CCZ REMP in 2012 as "one of the measures appropriate and necessary to ensure effective protection of the marine environment."⁵ Scientists developed the plan's APEI network during a series of workshops and submitted several design scenarios to the ISA.⁶ The scientists produced a plan for a network of nine large APEIs and a wide range of additional conservation-minded management objectives. The final REMP, as approved by the ISA Council and Assembly, shifted the proposed APEIs outward from the center of the CCZ so that no protected areas would overlap current exploration areas.

The CCZ REMP was approved for an initial period of three years. The plan included the revised network of nine protected areas (APEIs) and a range of additional management objectives. The ISA Legal and Technical Commission reviewed the REMP in 2016,⁷ noting that a majority of these management objectives had not been implemented. The review recommended adding two additional APEIs, developing guidelines for impact reference zones and preservation reference zones, and establishing an expert working group. The ISA plans to review the CCZ REMP in late 2019 to incorporate significant data acquired in recent years.

In July 2018, the ISA also approved a two-year plan to support the development of REMPs to cover the western Pacific seamount region (home to ferromanganese crusts, a mineral resource being explored) as well as the hydrothermal vent systems in the mid-Atlantic and Indian oceans (being explored for polymetallic sulfides). The ISA has scheduled a series of workshops for each area. The international community faces the considerable tasks of delineating the regions, proposing APEIs and other conservation protections, and specifying the metrics by which the REMPs' efficacy can be judged.

REMPs should be developed with active participation and input from all stakeholders since, as UNCLOS stipulates, the seabed is the "common heritage of mankind." Equally important, no exploitation should be undertaken in any region until a REMP for that region has been formally approved.

Endnotes

- 1 L.A. Levin et al., "Defining 'Serious Harm' to the Marine Environment in the Context of Deep-Seabed Mining," *Marine Policy* 74 (2016): 245-59, <https://doi.org/10.1016/j.marpol.2016.09.032>; H.J. Niner et al., "Deep-Sea Mining With No Net Loss of Biodiversity—An Impossible Aim," *Frontiers in Marine Science* 5, no. 53 (2018), <https://doi.org/10.3389/fmars.2018.00053>.
- 2 U.N. General Assembly, Convention on the Law of the Sea, Article 140 (Nov. 16, 1994), https://www.un.org/depts/los/convention_agreements/texts/unclos/closindx.htm; U.N. General Assembly, Convention on the Law of the Sea, Article 145 (Nov. 16, 1994), https://www.un.org/depts/los/convention_agreements/texts/unclos/closindx.htm.
- 3 M. Lodge et al., "Seabed Mining: International Seabed Authority Environmental Management Plan for the Clarion-Clipperton Zone; a Partnership Approach," *Marine Policy* 49 (2014): 66-72, <http://www.sciencedirect.com/science/article/pii/S0308597X14001171>; Convention on Biological Diversity, "Conference of the Parties 9 Decision IX/20" (2008), <https://www.cbd.int/decision/cop/?id=11663>; D.C. Dunn et al., "A Strategy for the Conservation of Biodiversity on Mid-Ocean Ridges From Deep-Sea Mining," *Science Advances* 4, no. 7 (2018): eaar4313, <https://advances.sciencemag.org/content/advances/4/7/eaar4313.full.pdf>.
- 4 International Seabed Authority, "Environmental Management Plan for the Clarion-Clipperton Zone" (2011), <https://www.isa.org.jm/documents/isba17l7c7>.
- 5 International Seabed Authority, "Decision of the Council Relating to an Environmental Management Plan for the Clarion-Clipperton Zone" (2012), <https://www.isa.org.jm/documents/isba18c22>.
- 6 L.M. Wedding et al., "From Principles to Practice: A Spatial Approach to Systematic Conservation Planning in the Deep Sea," *Proceedings of the Royal Society B: Biological Sciences* 280, no. 1773 (2013), <https://royalsocietypublishing.org/doi/abs/10.1098/rspb.2013.1684>.
- 7 International Seabed Authority, "Review of the Implementation of the Environmental Management Plan for the Clarion-Clipperton Fracture Zone" (2016), <https://www.isa.org.jm/document/isba22l7c12>.

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