Third in a Trilogy: New Project Selected to Study Ecological Impacts of Deep-Sea Mining

Seven European nations have selected the MiningImpact3 research project to conduct groundbreaking environmental research to inform the regulatory discourse about deep-sea mining.

The project was selected as part of the third phase of the successful JPI Oceans Joint Action on the ecological aspects of deep-sea mining. Endowed with a total budget of c. €9 million (of which c. €5.7 million is funded by the national funders through JPI Oceans), the project will fill critical knowledge gaps about deep-sea ecosystems and the potential consequences of mining activities for them. Different from its predecessor projects, research will not only focus on polymetallic nodule fields but also address massive sulphide deposits, combining existing data with new expeditions to advance our understanding of these unique environments.

"This third project is slated to provide crucial scientific evidence to support informed decision-making about the future of seabed mineral extraction and its governing international and national legislation," said Dr Matthias Haeckel (GEOMAR Helmholtz Centre for Ocean Research Kiel), coordinator of the project.

MiningImpact3 wants to:

- Assess the spatial and temporal variability of the deep-sea environment
- Understand genetic connectivity of deep-sea populations
- Study the effects of mining-induced toxicity and pressures on benthic and pelagic communities.
- Support the development of indicators of ecosystem health and thresholds for serious harm
- Advance governance and management tools, including digital twin technology
- Compare impacts of deep-sea and land-based mining

Among other things, the project will benefit from access to the research vessel *Sonne* provided by the German Federal Ministry of Education and Research. An expedition will investigate sites of previous polymetallic nodule mining tests in the Clarion-Clipperton Zone in the Northeast-Equatorial Pacific Ocean five years after the impact. Additional expeditions will study the ecosystem at seafloor massive sulphide deposits along the Arctic Mid-Ocean Ridge, with research cruises planned to Mohns Ridge in Norwegian waters during 2026 and 2027.

The research consortium brings together experts from Belgium, Denmark, Germany, Italy, the Netherlands, Norway, Poland, Portugal, and the United Kingdom. Results will directly inform the ongoing development of international regulations at the International Seabed Authority (ISA) and support evidence-based policymaking for deep-sea resource management.

Work is scheduled to begin in July 2025, with all research results to be made publicly available through open access publications and databases, ensuring transparent sharing of findings with the scientific community, policymakers, and the public.

Funding

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- Dutch Research Council (NWO), The Netherlands
- Research Council of Norway (RCN), Norway
- Narodowe Centrum Badań i Rozwoju (NCBR), Poland
- Department for Environment, Food and Rural Affairs (DEFRA), United Kingdom

Disclaimer

As in previous phases of the JPI Oceans Joint Action on the ecological aspects of deep-sea mining, the upcoming activities will focus on studying environmental impacts and risks. The Funding Parties are not funding (the development of) mining activities or technologies. Furthermore, support for the Joint Action does not imply that JPI Oceans or its Member Countries endorse or disapprove of seafloor mining and related operations.