

# The Last Frontier, the First Responsibility

## - The Deep Sea and the Depth of Our Choices-



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## Deep-sea knowledge for effective Ocean management

Aligning research with EU and national requirements to comply with the BBNJ Agreement

Webinar – 11 April 2025



2015



2025

## Progresses in Deep-Sea Research and Management (2015–2025)

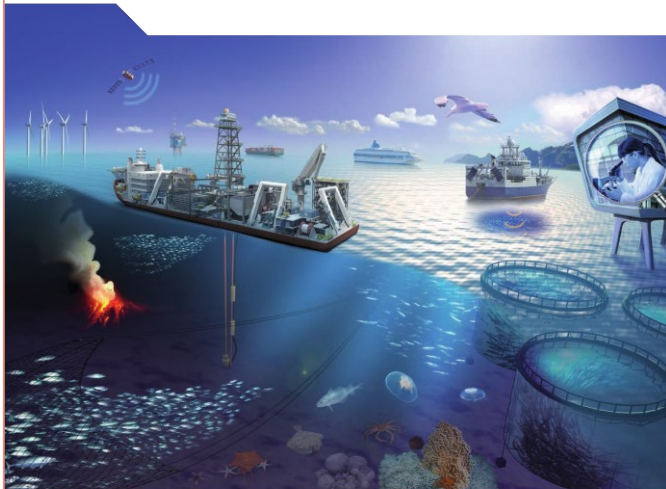
- Advancements in deep-sea ecosystem understanding through AUVs, ROVs, molecular sequencing, and modelling.
- Improved recognition of deep-sea roles in climate regulation, carbon sequestration, and nutrient cycling.
- Progress in international governance with the adoption of the BBNJ Agreement, enhancing legal coherence.
- Increased awareness of anthropogenic pressures; reinforced need for precautionary governance.
- Enhanced scientific cooperation via EMB and other international bodies (e.g., DOOS, DOSI, INTERRIDGE).
- Integration of FAIR data principles and promotion of ocean literacy and public

## Setbacks in Deep-Sea Research and Management (2015–2025)

- Only ~25% of the ocean floor has been mapped; much of the deep ocean remains uncharted.
- Knowledge remains fragmented—data often region-specific and lacking temporal consistency.
- Scientific investment has not kept pace with technological or industrial advances.
- Enforcement mechanisms are weak, especially in areas beyond national jurisdiction.
- Governance remains fragmented and insufficient to manage cumulative and synergistic impacts.
- Long-term, large-scale monitoring

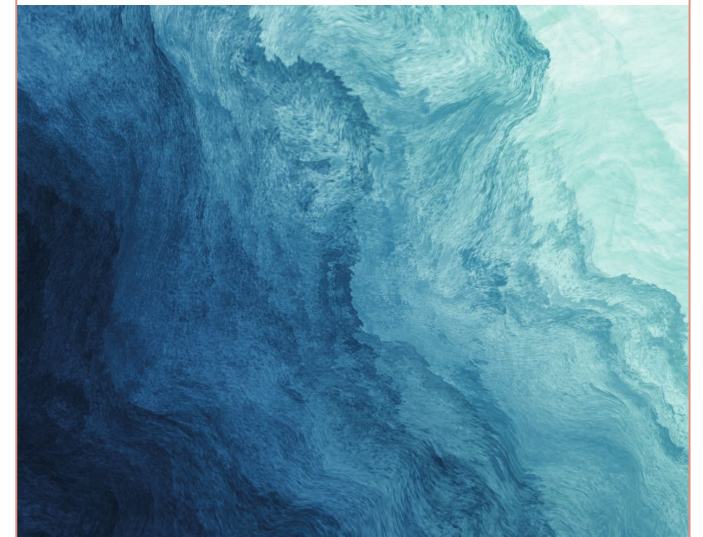


## The Ocean Economy in 2030



2016

## The Ocean Economy to 2050



2025



## Progresses in Deep-Sea Research and Management (2015–2025)

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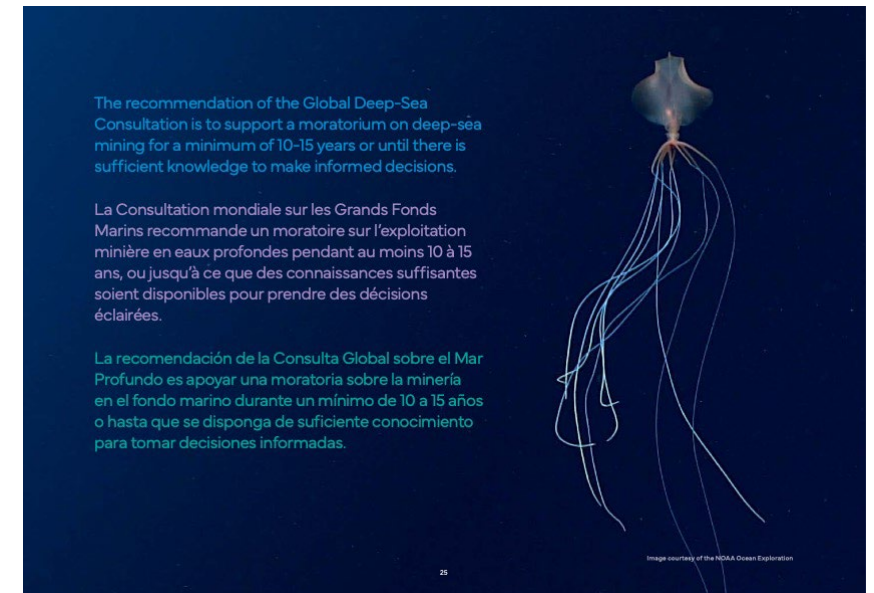
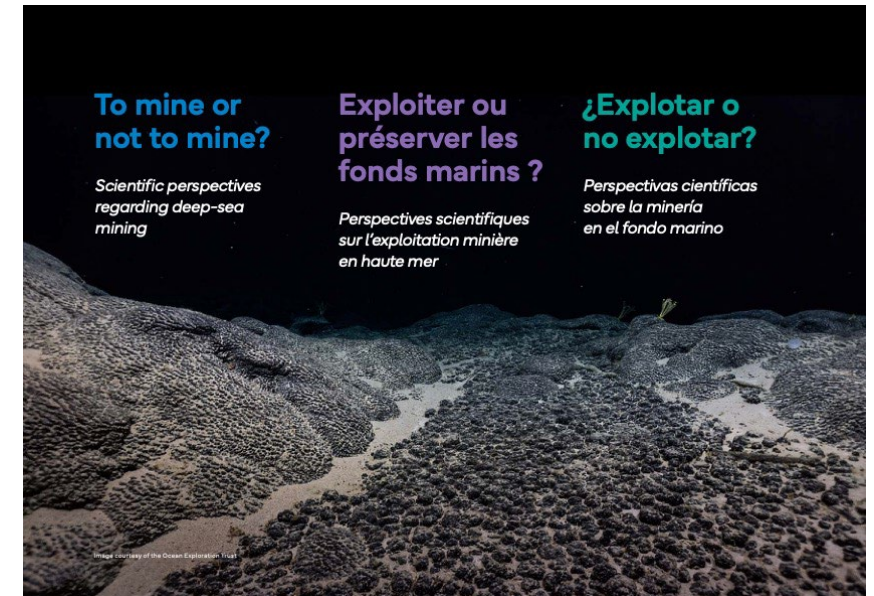
- Advanced robotics, AI, and big data enhance deep-sea observation and monitoring.
- Global seabed mapping efforts likely completed, enabling improved spatial planning.
- International scientific cooperation and tech transfer expand, including to Global South.
- Tighter regulations and integrated management systems begin to take hold in EEZs.
- Shift toward regenerative blue economy models (e.g., bioprospecting, ecosystem

## Setbacks in Deep-Sea Research and Management (2015–2025)

- Deep-sea mining may escalate without sufficient ecological safeguards.
- Climate impacts (acidification, deoxygenation) intensify, stressing deep ecosystems.
- Governance fragmentation and enforcement gaps persist, esp. in ABNJ.
- Economic benefits from seabed resources remain unequally distributed.
- Deep sea remains underrepresented in public awareness and policy discourse.

# Scientific Proclamation on Deep-Sea Mining

- Produced **at the request of President Emmanuel Macron**.
- Scientific consensus calls for a 10-15 year moratorium on deep-sea mining.
- Mining poses risks of irreversible environmental damage and biodiversity loss.
- Uncertainties remain about long-term impacts, legal accountability, and equitable benefit sharing.
- The precautionary principle and the principle of 'no harm' must prevail.
- The deep sea has intrinsic ecological value and vital planetary functions that must be preserved.
- Investment should prioritize alternative, circular economy models and responsible land-based mining.



# Key Takeaways from Deep-Sea Mining Decoded

- Produced **at the request of French President Emmanuel Macron**.
- Presents 30+ expert insights from scientists, legal scholars, youth, artists, and Indigenous leaders.
- Highlights ecological, legal, social, and ethical uncertainties surrounding deep-sea mining.
- Emphasizes the vast unknowns: only ~1% of the deep sea visually studied, 25% seafloor mapped.
- Documents recent breakthroughs (e.g., dark oxygen production) and their policy implications.
- Warns against fragmentation in governance and risks of irreversible damage from mining plumes.
- Argues for a precautionary pause as the only viable path until scientific and ethical clarity is achieved.



This work was led by Bruno David and Françoise Gall after a request from the French President Emmanuel Macron.



The Global Deep-Sea Consultation was led by Elva Escobar-Bonnes and Ricardo Serrán Santos.

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towards **ipos**

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Additional images were provided by NOAA Ocean Exploration, Ocean Exploration Trust, and OzeanX.



# Courage to Pause

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- This moment marks a threshold between two worldviews: one of short-term extraction, the other of long-term planetary care.
- Let us reject the illusion that mining the unknown is prudent. It is, in truth, reckless. Instead, let's affirm our responsibility—to science, to future generations, and to the deep ocean itself.
- The deep sea is not just the last frontier. It is also our first responsibility.



# Immanuel Kant 1790- *The Critique of Judgment*

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*How are we to explain why nature has so extravagantly spread beauty everywhere, even at the bottom of the ocean, where the human eye (...) rarely penetrates?*