Evaluating the Towards IPOS Deep Sea Pilot Project:

Insights and Learnings for Aligning with IPOS Goals and Future Enhancements

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This document evaluates how well the Global Deep-Sea Scientific Consultation aligned with IPOS's values and methodologies, offering insights that will help refine and enhance the future decision-support pathways of IPOS.

Deep Sea Pilot Project Overview

The Towards IPOS Deep Sea Pilot Project was initiated in response to a request from France, calling for an international scientific consultation on deep-sea mining (DSM) to inform decision-making. Coordinated by Bruno David[1], Françoise Gaill and Towards IPOS, the consultation engaged over 40 global experts, producing two key deliverables: a Scientific Proclamation and an Expert Q&A Document.

The Deep Sea Pilot Project has demonstrated the capacity of Towards IPOS to effectively coordinate an international scientific consultation and produce deliverables in response to a high-level policy request. Through the collaborative efforts of the Global Deep Sea Scientific Consultation, the project successfully delivered two key deliverables over 16 months. These deliverables provided a robust scientific foundation for policymakers and international stakeholders to consider the risks of deep-sea mining ahead of the 2025 United Nations Ocean Conference in Nice.

Importantly, this project served as a learning and testing phase for elements of the Towards IPOS's Action Request under development rather than a definitive model for future IPOS operations. It provided valuable insights into best practices for scientific engagement, multi-stakeholder collaboration, and deliverable development within an evolving institutional framework. Operating in parallel with the development of Towards IPOS's strategic guidelines and best practices, the project provided a valuable learning process, while still successfully aligning with several of the organization's core values and bridging ocean science and policy.

1 Bruno David is a former president of the French National Museum of Natural History

The experience gained through this pilot project will play a pivotal role in shaping the design of future Action Requests. The consultation underscored the importance of clearly defined workflows and structured mechanisms for incorporating diverse scientific perspectives. Moving forward, Towards IPOS will refine its Action Request model, ensuring that future initiatives remain impartial, streamlined, inclusive, and impactful. Additionally, this project highlighted the value of interdisciplinary collaboration, particularly in areas where science intersects with governance, economics, and Indigenous knowledge. Towards IPOS will continue to foster such cross-sectoral partnerships to strengthen the credibility and reach of its outputs.

By successfully executing this high-profile consultation, Towards IPOS has established itself as a credible and trusted convener of global scientific expertise on pressing ocean sustainability issues. This pilot project has laid the foundation for a more structured, responsive, and impactful future for Towards IPOS, reaffirming its commitment to ensuring that ocean governance is guided by the best available science and informed by a truly global community of experts.

Assessment Method

To evaluate how well the pilot project aligned with Towards IPOS principles, it was scored using the key cards outlined in the Handbook for Best Practices Implementation. The 'key cards' represent best-practice benchmarks outlined in the Handbook. Towards IPOS developed a Handbook for Best Practices Implementation to strengthen its position as a trusted authority at the science–policy interface and to ensure transparent and inclusive processes are integrated while guiding collaborations across diverse stakeholders.

Deep Sea Pilot Project Score on IPOS Key Cards

Indicates the pilot project adhered to the best practice.

Indicates the pilot project partially adhered to the best practice.

Indicates the pilot project did not adhere to the best practice.

Deep Sea Pilot Project Assessment

A. Institutional Arrangements

1. Mandate – Should be demand-driven

The pilot was initiated following a request from France

2. Framing – Should be independent

The initial request from France was politically sensitive, as it mentioned desired outcomes. However, strong efforts were made for the scientific committee to have full autonomy to ensure an impartial assessment on whether deep-sea mining is a sustainable option for increasing critical mineral supply. In future ARs, framing will follow clear principles of independence, impartiality, and transparency.

3. Selection process – Should be transparent & inclusive

The list of scientific committee members is available on the IPOS website and included in all outputs. Experts participated in an independent capacity, and members were selected with attention to disciplinary, geographic, and gender balance—though youth inclusion could have been stronger. Experts were selected through networks of scientific leaders, prioritizing citation impact and involvement in major ocean governance efforts, with further selections made in consultation with the French Steering Committee and advisors. The committee was formed before transparent selection criteria and a formal conflict of interest policy were established. Future ARs will apply formal, published selection processes to ensure inclusivity, diversity, and independence.

4. Approval Process- Should be transparent & consensus-based

Both outputs were approved by consensus among members of the scientific committee. No structured consensus protocol existed. Future ARs will adopt a transparent approval process, validated by the Knowledge Committee, with the possibility of recording dissenting opinions.

5. Assessment Type – Should be integrated & ecosystem-based

An integrated ecosystem-based approach was used during the deep-sea pilot project, including the connection between the environment and the human system. Actionable insights and recommendations were provided. Future ARs will ensure actionable policy options, not prescriptive recommendations, in line with impartiality.

6. Publication Interval – Should be regular & timely

N/A

7. Secretariat – Should be permanent & impartial

N/A

8. Funding – Should be sustainable & aligned to mandate

Funding was provided by the French Ministry of Research delivered to the CNRS Foundation, hosting the Ocean Sustainability Foundation. Future ARs will follow clear financial guidelines, including diversified funding and transparent procedures to avoid perceived bias and ensure impartiality.

9. Relationship to other GEAs – Should be coordinated & synergistic

N/A

B. Coverage and Information Management

10. Knowledge base (environmental, social, economic information and indicators) – Should be comprehensive & indicator-based

No standardized indicators (such as Essential Ocean Variables (EOVs)) were used in this pilot project.

11. Links to SDGs – Should be integrated

Links to SDGs beyond SDG14 were considered in this pilot project. SDG12 (Responsible Consumption and Production) was most closely linked as the Scientific Proclamation called for a more circular economy to reduce the needs for critical minerals found in deep sea mineral deposits. Neither output directly referenced the projected impact of the recommendations on the attainment of SDG14. For future Action Requests, the request must be directly related to a global ocean sustainability target such as SDG 14 or GBF.

12. Systems approach – Should be integrated & transdisciplinary

This transdisciplinary pilot project took a systems approach, acknowledging the interconnectedness and interdependence of the deep sea on the larger ocean and climate system, including human and economic dimensions. The implications of recommendations across other policy spheres were taken into consideration.

13. Data accessibility – Should be open, FAIR & CARE-aligned

The report is open access. No new data was generated.

14. Knowledge gaps – Should be identified, mapped & addressed

The scientific committee identified the knowledge which already exists related to the question and clearly highlighted gaps in the knowledge, data, and capacity. Appropriate pathways to address these gaps with relevant and actionable options were suggested where possible.

C. Knowledge Production Process

15. Co-production – Should be inclusive & participatory

Diverse knowledge systems were integrated into the scientific committee through ensuring interdisciplinary participation. The various knowledge types used in the outputs were communicated transparently through sharing the reference list on the IPOS website. Private sector reports and indigenous and local knowledge could have been further integrated to improve performance for this key card. A comprehensive set of principles and processes for IPOS co-production was not created prior to this pilot project, but future Action Requests will follow IPOS co-production processes.

16. Peer review process – Should be independent & transparent

The Scientific Proclamation did not undergo external peer review.

17. Consensus protocol – Should be structured & transparent

Consensus on the Scientific Proclamation was reached informally by committee members as there was no set consensus protocol in the IPOS guidelines to refer to at the time of this pilot project. Future ARs will follow a structured consensus protocol, with transparent documentation of dissenting views where relevant.

18. Uncertainty language – Should be clear & evidence-based

The scientific committee, having worked in the deep sea sphere, were experienced in expressing where uncertainties lie. There was no established methodology by IPOS at the time of the pilot project to ensure effective communication of the degree of confidence in the information, predictions, and findings. Uncertainty language was not expressly used but the scientific committee expressed where uncertainties lie. Future ARs will follow established methodology and use structured uncertainty scales (e.g. high/medium/low confidence) to ensure clarity and transparency.

D. Stakeholders

19. Stakeholder engagement – Should be participatory & context-specific

This pilot project engaged over 40 individuals across stakeholder categories to ensure diverse perspectives were shared in both outputs. However, some stakeholder communities were not engaged due to resource and capacity constraints.

20. Capacity building – Should be needs-driven

No capacity building was carried out during this pilot project.

E. Outputs

21. Management options – Should be specific, actionable & evidence-based

Specific and actionable management options were provided that considered a holistic approach. As deep sea mining is an emerging industry, there were no existing transferable policies to reference. One universal management option (moratorium) was provided without suggesting alternatives for local contexts. Future ARs will offer a range of science-based policy options, adapted to different scales and contexts.

22. Spatial coverage (scale) – Should be multi-scale & context-specific

This pilot project considered deep sea mining on a global scale and made recommendations accordingly. Differentiation between laws and sovereignty when mining in national and international waters was made clear.

23. Futures thinking – should be multi-horizon

As the Scientific Proclamation made a call for a 10-15 year moratorium on deep sea mining, different time scales were not taken into consideration in the recommendation. The proclamation's defined future timeline allows scientific knowledge to mature prior to making management decisions. Future efforts beyond the 10-15 year timeline were not considered within the scope of the pilot project.

24. Communication strategy – Should enhance awareness & uptake

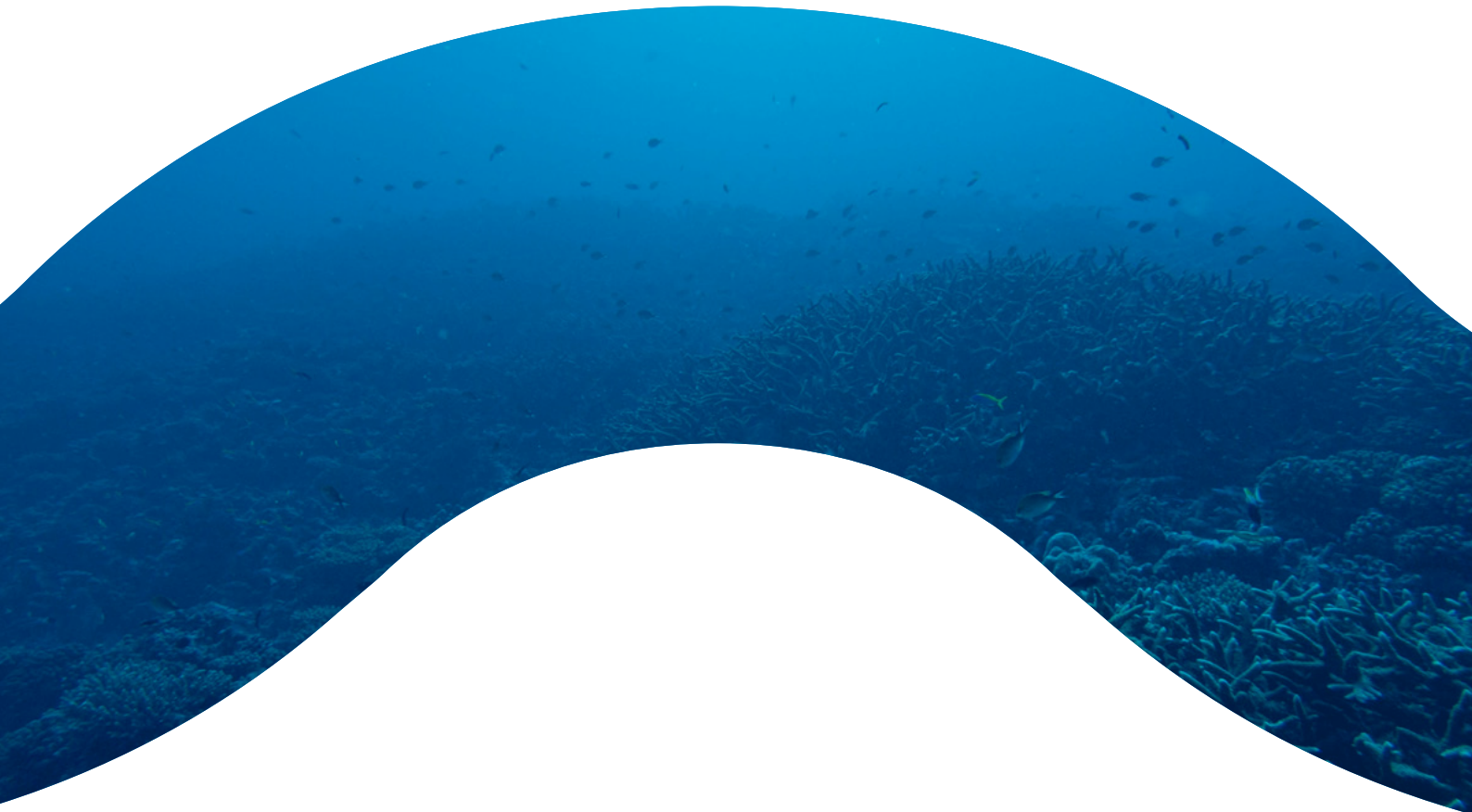
Communication of the reports contributed to global awareness. Both outputs were written in accessible language. The Scientific Proclamation is publicly available in English, French, German, and Spanish. Both reports were launched at a press event in Paris hosted by Kresk 4 Oceans. The content of the reports

were featured in mainstream press articles by both French and Portuguese news outlets.

F. Measure of Success

25. Assessment self-evaluation – Should score performance and reflect on lessons learned

This pilot project was self-evaluated by IPOS to monitor adherence to core principles and foster the continuous adaptation of IPOS services.



Lessons learned from the Deep Sea Pilot Project

Introduction

The Deep Sea Pilot Project represented an important milestone in testing how IPOS could coordinate international scientific expertise in response to a high-level request from France. While the project demonstrated the capacity to convene over 40 global experts and to produce timely, policy-relevant outputs, it also raised critical reflections on IPOS's mandate, impartiality, and processes.

It is essential to emphasize that this request constituted a scientific consultation comprising a Scientific Proclamation and Expert Q&A. These outputs are not reflective of an IPOS position, but rather the results of a coordinated collaborative response from independent scientists responding to a scientific question. As such, it served as a test case for exploring aspects of what a future Action Request could look like, but with distinct characteristics that will not be replicated in the future.

Future Action Requests will be designed to follow clear best practices as outlined in the IPOS Handbook for Best Practices Implementation. They will be demand-driven, impartial, transparent, and inclusive, with formalized processes for expert selection, external peer review, stakeholder engagement, use of standardized indicators, and the communication of uncertainty. Action Request Outputs will provide science-based options for policy, rather than single prescriptive recommendations.

The table below summarizes the main differences between the Deep Sea Pilot Project (Scientific Consultation) and the model that IPOS will adopt for future Action Requests.

Best Practices Key Cards	Scientific Consultation (Deep Sea Pilot Project)	Future Action Requests
1. Institutional Arrangements		
A.1. Mandate	Initiated in response to a request from France, in a highly politicized context (prior to UNOC-3 organized by France)	Demand-driven, based on requests from States or regional organisations. Requests will undergo a formal scoping process to ensure impartiality and relevance
A.2. Framing	The topic was politically sensitive, and despite the full autonomy of the scientific committee and efforts to neutralize the question, the topic was nevertheless perceived as aligned with a national stance	Guided by explicit principles of independence and impartiality. ARs will not reflect national positions but will respond to specific questions related to the implementation of global ocean targets through synthesized evidence, presented in an impartial manner with policy options
A.3. Expert selection process	Ad hoc process, relying on personal networks from the pool of global ocean deep sea scientists, as is commonly the case in such specialized scientific domains. No conflict-of-interest policy was yet in place.	The selection process will be transparent, inclusive, with clear criteria will ensure disciplinary, geographic, gender, and generational balance for future Action Requests. Conflict-of-interest policies and rotation of leadership roles in working groups will apply.

Best Practices Key Cards	Scientific Consultation (Deep Sea Pilot Project)	Future Action Requests
A.4. Approval process	Consensus was reached within the expert group, through deliberations but without a formal protocol.	Approvals will follow a structured process, with protocols for consensus and possibility to record dissenting views. Outputs will be validated by the Knowledge Committee with transparent documentation
1. Coverage and Information Management		
B.10. Knowledge based	No standardized indicators (e.g. Essential Ocean Variables / Essential Biodiversity Variables) used, as these were not applicable to the question.	Action Requests will make use of standardized indicators where applicable, in alignment with FAIR and CARE principles for data, and include integration across SDGs where relevant, as well as the adoption of a systems approach
C. Knowledge Production Process – 16. Peer review process	No independent external peer review conducted. The outputs were collaboratively agreed between the scientists.	There will be systematic external review by independent experts, with transparent publication of review processes and comments
C.18. Uncertainty language	Uncertainty was acknowledged informally but without standardized language being in place yet	Action requests will use structured uncertainty language (high/medium/low confidence) with clear protocols for communicating evidence limitations. A weight of evidence approach may be included where confidence levels are low.

Best Practices Key Cards	Scientific Consultation (Deep Sea Pilot Project)	Future Action Requests
D.19. Stakeholders and rights holders – Stakeholder engagement	Included multiple experts and involvement of civil society, and private sector in the Expert Q&A but limited involvement of Indigenous/local knowledge holders.	Action Requests will be Inclusive, participatory, and context-specific engagement processes. Broad involvement of other types of knowledge holders will be included in all outputs.
E. Outputs (whole category)	Produced three deliverables: a Scientific Proclamation, an Expert Q&A, including a call for a moratorium (a single prescriptive recommendation)	Action Requests will provide a range of science-based policy options, adapted to different contexts and time horizons. Futures thinking and scenario analysis may be systematically included where appropriate
F. 25. Measure of Success – Assessment self-evaluation and impact	The Scientific Consultation received high visibility and recognition during high-level events (SOS Ocean, One Ocean Science Congress, UNOC-3). German and Portuguese public services requested a translation. From IPOS's current standpoint, it is recognized that the outputs may have been perceived by some as politically sensitive.	Action Request processes will be designed to measure effectiveness through policy uptake, environmental outcomes, and alignment with global targets. There will be continuous self-evaluation and monitoring, with transparent communication. IPOS has an apolitical stance.

For more information and collaboration please contact us at
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