Science-Diplomacy Nexus in Deep-sea Mining: Creation of the Clarion-Clipperton Zone Regional Environmental Management Plan

João H Bettencourt
Geophysical Institute, University of Bergen, 5007 Bergen, Norway
E-mail: joao.bettencourt@uib.no

Introduction

The global push for energy transition and the need to secure the supply of critical minerals have reignited the interest in seabed mining for these minerals. Nonetheless, deep-sea mining remains contentious due to its potential environmental repercussions on the pristine deep-sea ecosystems. Mining activities in the seabed beyond national jurisdiction, known as the Area, fall under the International Seabed Authority (ISA) jurisdiction. Established under the auspices of the United Nations Convention on the Law of the Sea (UNCLOS) and the Part XI Agreement, the ISA comprises political organs (the Assembly and the Council), expert organs such as the Legal and Technical Commission (LTC), and administrative organs like the Secretariat.

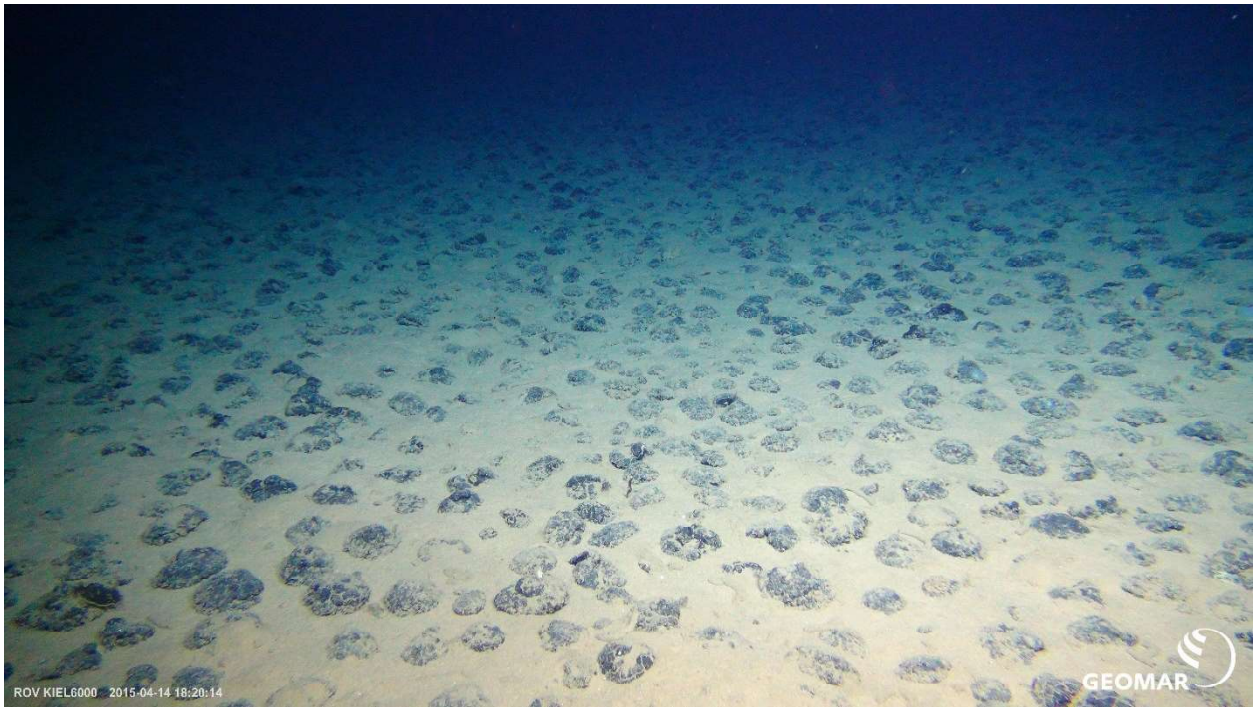


Figure 1. Manganese nodules on the seafloor in the Clarion-Clipperton Zone in more than 4000 metres depth. Source: ROV-Team/GEOMAR (CC BY 4.0)

The legal regime of the Area, as defined in UNCLOS, mandates the ISA to protect the environment from adverse effects related to mining activities. To fulfil this mandate, the ISA has adopted a regional environmental management approach, utilising Regional Environmental Management Plans (REMPs) as area-based management tools to strike a balance between environmental protection and resource development.[1] The only existing REMP so far covers the Clarion-Clipperton Zone (CCZ), a mineral-rich deep-sea province of the Area located in the Northeast Pacific. The CCZ REMP designates a network of nine Areas of Particular Environmental Interest (APEI) within the CCZ where mining activities are prohibited. Guided by principles such as the precautionary approach, the protection and preservation of the marine environment and environmental impact assessments, the CCZ REMP aims to employ integrated ecosystem management principles.

The development of the CCZ REMP exemplifies the intersection of science and diplomacy, known as the science-diplomacy nexus.[2] This nexus represents the integration of scientific advice into diplomatic processes to achieve desired outcomes. An effective science-diplomacy nexus should create the necessary conditions for two processes[2]: hybridisation, where scientific insights merge with policymakers' perspectives, leading to co-evolved diplomacy informed by scientific knowledge and policy considerations.

The creation of the CCZ REMP involved scientists interacting with diplomats and other stakeholders (contractors, NGO), falling under the realm of Science Diplomacy's *"science in diplomacy"* element. This paper traces the development of the CCZ REMP as a case study of a working science-diplomacy nexus, elucidating its key aspects and underlying reasons for its success.

Development of the CCZ Regional Environmental Management Plan

The genesis of the CCZ REMP can be traced back to a workshop convened at the University of Hawaii in October 2007, aimed at deliberating the delineation of Marine Protected Areas (MPAs) where seabed mining activities would be prohibited.[3] Central to this discussion were the principles of ecosystem-based management and the geospatial analysis of physical, biological, and social datasets[3]. The outcome of this workshop was a proposal for establishing a network of MPAs in the CCZ, submitted to the LTC during its 14th session.[4] Subsequently, the LTC recognised the need for further clarification on issues related to MPA configuration and coordination with existing contractor obligations, forming a group of ecological and legal experts from the LTC to address these matters.

In the 15th session in 2009, the LTC reviewed the expert group's findings[5] and decided to convene a workshop to refine the MPA proposal and formulate a regional-scale environmental management plan for the CCZ. This workshop, held in November 2010, resulted in a draft REMP for the CCZ[6], which was recommended to the Council by the LTC in its 17th session in 2011. The Council requested an additional workshop to peer review and critique the proposal and any new data and information from the contractors. Subsequently, the Secretariat informed the Council that no further data had emerged in the interim[7], leading to the Council's approval of the CCZ REMP during its 18th session in 2012, to be implemented over an initial three-year period.[8]

Two key aspects of the science-diplomacy nexus emerged throughout this developmental process: hybridisation and co-evolved diplomacy. Hybridisation began with the 2007 workshop, up to the submission of the draft REMP to the Council, and the co-evolved diplomacy occurred during the two Council sessions where the draft REMP was negotiated.

Analysis of the Science-Diplomacy Nexus

Analysing the science-diplomacy nexus in developing the CCZ REMP highlighted several key aspects.

Firstly, the participatory nature of the 2007 workshop ensured representation from a broad consortium of stakeholders, including the ISA, consultants, NGOs, and the scientific community. This inclusivity guaranteed that the interests of all stakeholders were taken into account. The subsequent 2010 workshop continued this trend by extending stakeholder representation to include mining contractors.

Secondly, the initial recommendation aligned with the legal framework of the ISA. During the hybridisation process, the expert group tasked with reviewing the existing legal framework found a legal basis for the designation of areas exempt from mining activities in Article 165 of UNCLOS, which grants the LTC the authority to make recommendations to the Council regarding marine environmental protection. The expert group reviewing the legal framework proposed that the LTC could implement the proposal by designating areas within the CCZ as APEIs to exempt them from mining activities.[5]

Thirdly, efforts were made to minimise the socioeconomic impacts of the proposal, aiming to maintain scientific relevance while reducing overlap with existing mining claims in the CCZ.[3] These considerations were crucial in garnering support for the recommendation and its eventual adoption by the LTC.

Hybridisation, achieved through collaboration among stakeholders and the expert group, played a pivotal role in the development process. The participatory nature of the workshops facilitated this hybridisation, enabling the LTC to embrace the proposal. Subsequently, in the Council, a process of co-evolved diplomacy occurred, marked by explicit requests to incorporate the latest scientific knowledge. This process ultimately led to the adoption of the draft CCZ REMP.

Conclusion

The development of the CCZ REMP can be considered a successful process driven by a functional science-diplomacy nexus. Despite modifications to the original proposal, the REMP retained most of its characteristics, showcasing the effectiveness of the process. This success can be attributed to the participatory nature of the hybridisation process and the explicit commitment to adhering to the ISA legal framework while minimising socioeconomic impacts.

From a broader perspective, the overarching framework of UNCLOS, particularly its provisions regarding marine environmental protection and the use of marine scientific research in the management of mineral-related activities in the Area, also contributed to the success of the process.

In our opinion, this case study illustrates the conditions necessary for an effective science-diplomacy nexus to thrive. A comparative analysis with other instances of science in diplomacy could offer valuable insights into the challenges faced by this dimension of Science Diplomacy.

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