Stakeholder Event Report

Current Developments on Deep Seabed Mining and the Use of Area-Based Management Tools to Protect Hydrothermal Vents

Utrecht, 10 May 2023

Under the project 'Protecting deep seabed hydrothermal vent fields through area-based management tools' led by Utrecht University (the Netherlands Institute for the Law of the Sea (NILOS) and the Utrecht Centre for Water, Oceans and Sustainability Law (UCWOSL)) and the Royal Netherlands Institute for Sea Research (NIOZ)

("UU-NIOZ Project")

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Background to the Stakeholder event

The project 'Protecting deep seabed hydrothermal vent fields through area-based management tools' led by Utrecht University (NILOS and UCWOSL) and NIOZ ("the UU-NIOZ Project") is a trans-disciplinary project between environmental scientists and international lawyers. It focuses on how hydrothermal vent fields, which face threats of harm from human activities, especially the imminent threat of deep seabed mining (DSM), can be protected using area-based management tools (ABMTs). The UU-NIOZ Project spans three years, January 2021 to December 2023.

The dimensions of ABMTs are of key importance for their ability to protect vents against the harmful impacts of DSM. The environmental scientists of the UU-NIOZ project have focused on studying the connectivity between active vents and their benthic and pelagic surroundings. Through this research they aim to determine the necessary three-dimensional size of ABMTs to protect hydrothermal vents. In order to optimise the operational effectiveness of ABMTs and ensure their three-dimensional protection, the regulatory effectiveness of ABMTs, including their geographical scope, must also be optimised. The international lawyers of the UU-NIOZ Project have thus been analysing the ABMTs under the International Seabed Authority's (ISA) regulatory framework and researching whether existing ABMTs (under both the ISA and other relevant instruments' frameworks) are fit for purpose for protecting hydrothermal vents or whether there are other opportunities or alternatives for the protection of hydrothermal vents.[1]

The UU-NIOZ Project is being conducted at a time where DSM has taken centre stage, due to Nauru's triggering of the two-year rule. This has accelerated the conversation around the finalisation of the ISA's Mining Code, whether DSM should be permitted to commence or whether the ISA should adopt some sort of DSM moratorium or precautionary pause, and in light of all of this, how the marine environment will be protected if and when DSM commences.

With the UU-NIOZ Project nearing a close at the end of 2023, it was an appropriate time to host a meeting with DSM stakeholders. This stakeholder event took place on 10 May 2023 at Utrecht University, Utrecht, the Netherlands. It involved a wide range of stakeholders, including academics and representatives from non-governmental organizations (NGOs), industry, and government. The stakeholder event was used as a platform for two core purposes: 1) to bring together DSM stakeholders to foster an exchange of views and engagements on DSM generally; 2) an opportunity for the UU-NIOZ Project team to present its research relating to the protection of hydrothermal vents and obtain feedback and reactions from experts in their respective fields on how to effectively protect hydrothermal vents using ABMTs.

[1] Blanchard C and Gollner S (2022) Area-based management tools to protect unique hydrothermal vents from harmful effects from deep-sea mining: A review of ongoing developments. Front. Polit. Sci. 4:1033251. doi: 10.3389/fpos.2022.1033251

List of participants[2]

	Name	Designation
1.	Alex Oude-Elferink	Director NILOS
2.	Aline Jaeckel	Associate Professor at the Australian National Centre for Ocean Resources and Security, University of Wollongong, Australia
3.	Britt Blankenaar	R&D Engineer, Allseas
4.	Carl Königel	Public Affairs Advisor, WWF NL
5.	Catherine Blanchard	Organiser UU-NIOZ project
6.	Dimitris Panousos	Master's Student in Utrecht University's Public International Law Course (Oceans, Environment, and Sustainability)
7.	Elisabetta Menini	PhD Candidate in Marine Science and Conservation, Nicholas School of the Environment, Duke University, United States
8.	Erik Molenaar	Organiser UU-NIOZ project
9.	Gert Polet	Head of Unit Landscapes and Species, WWF NL
10.	Henko de Stigter	Scientist, NIOZ
11.	Laisa Branco	PhD Candidate at the Geneva Graduate Institute, Switzerland
12.	Laurens de Jonge	Manager of Marine Mining, Royal IHC
13.	Lise Klunder	Organiser UU-NIOZ project
14.	Martijn Peijs	Senior Policy Adviser, Department for Nature and Fisheries, Netherlands
15.	Matthew Gianni	Co-founder, Political and Policy Advisor, Deep Sea Conservation Coalition
16.	Michel Uiterwaal	Legal Counsel Campaigns, Greenpeace International
17.	Muriel van der Klei	Senior Policy Advisor, Netherlands Ministry of Economic and Business Affairs
18.	Niels Houten	Policy Officer Marine Environment, Department of Nature & Biodiversity Netherlands, Ministry of Agriculture, Nature and Food Quality
19.	Patricia Esquete	Oceanographer, crustacean taxonomist, deep sea ecologist and anthropologist, Aveiro University, Portugal

[2] Invitations were extended primarily to participants based in the Netherlands, due to funding constraints. Some participants from other regions were able to attend the event due to them already being in Utrecht for another event in the same week.

	Name	Designation
20.	Pierre Scemama	Biodiversity Economist, National Institute for Ocean Science, France / DeepRest
21.	Pradeep Singh	Fellow at the Research Institute for Sustainability – Helmholtz Centre in Potsdam, Germany.
22.	Rob Banning	Manager at Parlevliet & Van der Plas
23.	Rudy Helmons	Assistant Professor Offshore and Dredging Engineering, Delft University of Technology & Adjunct Associate Professor in Deep Sea Mining at Norwegian University of Science and Technology (NTNU)
24.	Sabine Gollner	Organiser UU-NIOZ project
25.	Samantha Robb	Organiser UU-NIOZ project
26.	Tanja Stratmann	Scientist, NIOZ
27.	Tom Diederen	Legal Counsel, International Law Division, Netherlands Ministry of Foreign Affairs
28.	Wim van Urk	Team coordinator Marine, Directorate-General Water and Soil, Netherlands Ministry of Infrastructure and Water Management
29.	Wouter Duijnstee	Project Engineer, Allseas

Overview of the sessions

The stakeholders meeting comprised of two sessions. The first session focused on global debates around a potential DSM moratorium / precautionary pause in the Area, in light of Nauru's 2-year trigger. It aimed to provide a platform to consider DSM holistically and hear the views of different stakeholders, as well as provide different stakeholders with a platform to engage with one another on the topic. The second session focused on the UU-NIOZ Project and aimed to present the research undertaken during the project and ask for feedback from stakeholders, focusing on what action can be taken to protect hydrothermal vents.

Session 1: Deep seabed mining (DSM) and the call for a moratorium / precautionary pause

The first part of this session consisted of a panel of five speakers who gave short presentations on DSM from different stakeholders perspectives. The panel was moderated by Catherine Blanchard (NILOS / UCWOSL and UU-NIOZ Project). The five perspectives and speakers were as follows:

- A Science perspective by Patricia Esquete (University of Aveiro, Portugal);
- An Industry perspective by Wouter Duijnstee (Allseas);
- A Consumer perspective by Amrish Ritoe (pre-recorded presentation) (Hague Centre for Strategic Studies);
- An NGO perspective by Matthew Gianni (Deep Sea Conservation Coalition); and
- A Government perspective by Tom Diederen (Netherlands Ministry of Foreign Affairs).

The first 4 panellists used PowerPoint presentations, the pdfs of which can be found on the NILOS website.

The second part of the session was a plenary discussion, moderated by Sabine Gollner (NIOZ and UU-NIOZ Project) and Erik Molenaar (NILOS / UCWOSL and UU-NIOZ Project). Participants were encouraged to ask the panellists questions, and comment more generally on the topic. Discussions and insights included, but were not limited to, the following:

- On the question of terminology surrounding the call for a DSM moratorium or precautionary pause, the point was made that these are different labels for the same concept, but what is actually important to consider is what they call for and how that could be implemented. The precautionary principle is included in the ISA's framework and so this is what should be focused on and implemented. Some even argue that there is currently a DSM moratorium in place because exploitation of the deep seabed is not permitted at present.
- A discussion arose around the role of, and current critiques of, the ISA, as well as critiques of the United Nations Convention on the Law of the Sea (UNCLOS) and whether it is fit for purpose or requires amendment in relation to the DSM regime. It was highlighted by one stakeholder that while some criticism of the ISA is fair, it is important to keep in mind that the ISA is an organisation that was relatively unknown a few years ago, but which has attracted a lot more international attention in the last few years (especially since the triggering of the two-year rule). This has resulted in significant increased demands on the

ISA, which does not always have the institutional capacity to meet such demands. It was also emphasised that the UNCLOS governs not only the DSM regime, but all human activities at sea. Opening up the UNCLOS for amendment on DSM is very unlikely as it may lead to proposed amendments on a range of other issues.

- There was some discussion on how to address some of the institutional issues facing the ISA. Article 154 of the UNCLOS provides a mechanism to address some of these concerns as it requires the ISA's assembly to do a systematic review every five years. However, in the 30 years of the ISA's existence this has happened only once (and it was more than five years ago). Article 154 is quite an open-ended provision, and it is up to Parties to interpret it. Not all reviews would require an amendment to the UNCLOS.
- Regarding the triggering of the two-year rule, one argument is that it was never intended to expedite exploitation, but rather included to address the situation where a deadlock in the ISA's Council arose on adopting finalised exploitation regulations. States should ensure that DSM is prohibited until regulations are adopted, based on scientific certainty.
- Insights from NGOs indicated that they are questioning the economic benefit of DSM for all states, especially based on Massachusetts Institute of Technology's current models.[3] The current models entice ISA Members to become sponsoring states, as this is the only feasible way for Members to profit from DSM. However, there are not enough areas for all states to be sponsoring states in the Clarion Clipperton Zone (CCZ), for example (nor do all states have the financial and technical capabilities to be a sponsoring state). Equity within the DSM regime is thus a problem.
- Insights from industry were that studies had been conducted last year that showed that DSM was economically feasible and profitable for mining companies. Test mining took place in the CCZ in October 2022 where polymetallic nodules were collected. Next steps include feasibility studies and up-scaling of equipment.
- From a science perspective the question for discussion was how much science is enough. It was highlighted how difficult it is to answer this question for polymetallic nodule fields as scientists do not yet know exactly what questions would need to be answered (there are currently no defined environmental goals or objectives defined). Also, much of the deep seabed remains unexplored. Essentially, significantly more scientific research still needs to take place for there to be effective protection of the deep seabed from the harmful effects of DSM.

[3] The report can be accessed here: www.isa.org.jm/wp-content/uploads/2022/12/model_comparisons_0.pdf

Session 2: Protecting deep seabed hydrothermal vents using area-based management tools

The first part of this session entailed three short presentations by members of the UU-NIOZ Project on their scientific and legal research relating to hydrothermal vent protection.

Sabine Gollner gave a presentation on the hydrothermal vent ecosystem, including the sphere of vent influence, the extraordinary ecosystem services, and unique communities. From a science perspective there is enough knowledge to proceed with the protection of vents. Based on the vent ecosphere and potential impacts by extractive industries, 3-dimensional spatial protection measures including the seafloor, sub-seafloor and water column were discussed.

Lise Klunder presented a case study on the 'sphere of vent influence' at the Rainbow hydrothermal vent on the mid-Atlantic ridge. This case study investigated biodiversity changes around an active vent in both the sediment and water column. The Rainbow vent emits one of the largest continuous plumes from all vents found at the Mid-Atlantic Ridge. The track of this plume could be followed by turbidity sensors up to 25 km away from the vent site, which makes it a good study site for such a case study. Sediment and water samples were collected in the plume-affected area, as well as in reference areas. The samples were analysed using eDNA metabarcoding, and DNA was extracted from these samples. With the help of an extensive DNA reference library, the DNA sequences were taxonomically assigned to infer a species community overview. Based on these community patterns, it was shown that the species community in the sediments is affected by the vent and/or plume up to 10 km away from the vent, showing that the sphere of the vent influence is much larger than the vent site itself. Also, DNA from vent specific-species could be traced in the water samples from the plume close to the vent, and at 1 km distance from the vent.

Catherine Blanchard and Samantha Robb presented on 'The ISA's area-based management tools: A state of affairs.' This presentation included a brief overview of where ABMTs fit into the ISA's regulatory framework, highlighting the importance of regional environmental management plans (REMPs) and setting out where REMPs have been implemented or are being developed. It provided an overview of all the ABMTs that are in use or in development by the ISA, which include:

- areas of particular environmental interest, which are included under the CCZ REMP ;
- impact and preservation reference zones, which are referred to in the exploration regulations for all mineral resources and the Recommendations for the Guidance of contractors for the assessment of the possible environmental impacts arising from exploration for marine minerals in the Area ;
- areas and sites in need of protection, which are being developed under the Draft REMP for the Area of the northern Mid-Atlantic Ridge with a focus on polymetallic sulphides (Draft nMAR REMP); and
- areas and sites in need of precaution, which are being developed under the Draft nMAR REMP.

Lastly, the presentation included questions and critiques on the Draft nMAR REMP and the ABMTs that are being developed therein.

PDFs of the UU-NIOZ Project Team's PowerPoint presentations can be found on the NILOS website.

In the second part of the session, the participants were divided into five smaller groups where they were asked to discuss and report back on three questions which pertained to how hydrothermal vents could be adequately protected. The purpose of this session was to provide a platform to discuss the need for protection of hydrothermal vents, brainstorm on what could be done to protect hydrothermal vents and, lastly, come up with suggestions for concrete actions on how this protection should be carried out. The three questions were as follows:

1. Should hydrothermal vents be protected from the harmful effects of deep seabed mining? Assuming they should be protected, what are the impacts of protection on different stakeholders?
2. Do the ISA's current ABMTs offer effective protection for hydrothermal vents against the harmful impacts of DSM? Consider, for example, spatial dimensions (ecosystem services and functions, and stakeholder interests) and procedures and processes around ABMT identification; and
3. What concrete actions – whether individually or collectively - can different stakeholders undertake to protect hydrothermal vents against the harmful effects of deep seabed mining?

There was unanimity among all stakeholder that hydrothermal vents require protection, both from a science perspective and from a legal perspective (especially as this is required by the UNCLOS where the harmful effects of DSM are concerned). Discussions in some of the small groups indicated that where hydrothermal vents are concerned, the commercial case for mining polymetallic massive sulphide deposits is not so clear and mining companies have not yet shown a huge amount of interest in this type of mining, in part due to the technical difficulties associated with it. It was also emphasised that, other than mineral resources, vent fields provide significant benefits in terms of marine genetic resources and this industry would benefit hugely from vents being protected from DSM.

The general feeling among stakeholders was that the ISA's current ABMTs do not provide effective protection for hydrothermal vents from the harmful impacts of DSM. Some groups noted that the ABMTs in the ISA's regulatory framework act more as guidelines than actual protection for active hydrothermal vents. It was emphasised that in order to protect hydrothermal vents, the whole vent field needs to be protected and the current ABMTs fail to do this. Some groups also commented on the fact that it is predominantly contractors who are given the ability to set parametres of ABMTs to protect hydrothermal vents, and this may not result in adequate protection.

Some of the concrete actions for protecting hydrothermal vents suggested by stakeholders included the following:

- The Dutch government could work with scientists to present a side event at the next ISA Council meeting to share information on how hydrothermal vents could be protected from a scientific perspective.
- The importance of marine genetic resources could be highlighted and publicised. This would make DSM of hydrothermal vents less attractive both commercially and in terms of public opinion.
- Industry needs to work on developing less destructive practices for DSM. There should be a push towards trying to develop technology that can identify extinct hydrothermal vents.

- There needs to be general agreement on what scientific research is needed to move forward with DSM in a way that does not unduly harm the marine environment.
- There should be more workshops, which include all stakeholders – especially scientists and contractors – to discuss the size of ABMTs to adequately protect hydrothermal vent sites / fields.
- More public funded research into the deep seabed is required.
- The clearing house mechanism under the Draft Agreement under the UNCLOS on the conservation and sustainable use of marine biological diversity of areas beyond national jurisdiction, (BBNJ Agreement) can be a useful tool to contribute to progressing deep-sea research.
- Better public education is needed on the properties and services of hydrothermal vents, and why they require protection.
- A proposal was made that 'adaptable' ABMTs in terms of size and regulation should be established. This would entail initially setting wide geographic boundaries and thereafter refining / narrowing the ABMTs' boundaries as more knowledge is gained about the impact of DSM.
- Adherence to the precautionary principle must be reinforced when DSM is considered anywhere in the Area.

Key takeaways

DSM remains a complicated and often controversial issue, especially when the perspectives of all stakeholders are considered. This was made clear by the presentations and plenary discussion in the first session of the event, concerning the issue of a deep seabed mining moratorium. A key takeaway from this discussion was that with so many different stakeholder perspectives, it can be difficult to find common ground in conversations regarding deep seabed mining. However, one aspect that all stakeholders seem to agree on is that the marine environment needs to be protected from the harmful effects of DSM. Accordingly, the focus and resources should be on ensuring that such protection is achievable, rather than focusing on the terminology of what to call such protection.

With regard to the protection of hydrothermal vent fields, it was possible for a more action-orientated discussion to take place between stakeholders. What was clear from this session is that there is still inadequate scientific information available to be able to establish the spatial perimeters of ABMTs that can adequately protect hydrothermal vents.

While there were numerous suggestions for concrete actions to fill these information gaps, some key and common take aways from the small groups included:

1. a need for increased information-sharing and public education on hydrothermal vents and how they should be protected;
2. additional funding is required for vent-specific research; and
3. cooperation and collaboration between different DSM stakeholders and relevant institutions, bodies, and frameworks (including the BBNJ Agreement) is essential to understand and move forward with how best to protect hydrothermal vents.