



To:
The Royal Norwegian Ministry of Energy

26 September 2024

Response to the Public consultation of the first licensing round for seabed minerals by the Ministry of Energy, Norway

To whom it may concern,

The Deep-Ocean Stewardship Initiative (DOSI) hereby submits its response to the Public consultation of the first licensing round for seabed minerals.

The Deep-Ocean Stewardship Initiative is a global network of experts which seeks to integrate science, technology, policy, law and economics to advise on ecosystem-based management of resource use in the deep ocean and strategies to maintain the integrity of deep-ocean ecosystems within and beyond national jurisdiction. As a distributed network, DOSI has over 240 experts in its Deep-Sea Minerals Working Group and was granted Observer Status at the 22nd Session of the International Seabed Authority (ISA) in Jamaica in 2016. As such, DOSI offers science-based advice, and regularly reviews documents by the ISA - such as ISA's Regional Environmental Management Plan for the Northern Mid-Atlantic Ridge, or Environmental Impact Assessments by contractors (see <https://www.dosi-project.org/topics/minerals-deep-sea-mining/>).

This response was prepared by the following experts:

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We note that on January 27th 2023, DOSI submitted a response letter to the Ministry of Petroleum and Energy hearing on its impact assessment for mineral activities on the Norwegian Continental Shelf, highlighting (1) the vulnerability of unique faunal communities, (2) scientific assessment showing that all confirmed vent fields in areas beyond national jurisdiction in the Atlantic Ocean meet criteria for protection, and (3) the report on the “Status Assessment 2022 - Oceanic Ridges with hydrothermal vents by OSPAR¹” highlighting the need for protection for active vents and to assess vulnerability of inactive vents².

After careful examination of the map of the licensing areas proposed in this consultation and the information available, we, as a group of experts, will address the question posed on whether or not there are areas that should be exempt from seabed mining. In addition, we share our opinion on the environmental and legal implications of the procedure.

1. Regarding the ecosystems and areas in question and the need of protection, we note that:

- a) The majority of the potential licensing area is poorly studied, with no continuous habitat mapping in place. The location and extent of vulnerable marine ecosystems is insufficiently known to determine an effective network of protected areas.
- b) Of the several vent sites along the AMOR (Arctic Mid Ocean Ridges), including Lokeslottet, Mohnskatten, Aegirs Kilde, DeepInsight; see Figure 1), only Lokeslottet has been studied in depth and its biological composition and functioning is well understood. The other vent fields have a limited number of observations, but no detailed biological and ecological studies have been conducted to date.
- c) To the best of our knowledge, all known vent fields in the licensing areas show active hydrothermal venting, with the exception of Deep Insight. According to the consultation letter, these should be protected.
- d) The formerly believed inactive vent field Mohnskatten (source: Norwegian Offshore Directorate 2023 mineral resource assessment) shows hydrothermal activity on top of the ridge (source: recent operations by UiB; Ribeiro et al., manuscript in submission), and according to the consultation letter, should be protected.
- e) We note that there is potential for inactive deposits located along the actively-spreading ridges to reactivate (e.g., Fornari et al., 2012). Therefore, seemingly inactive systems located on or near the ridge axis have the potential to become active and should be protected. More monitoring, including the subsurface, is justified in these cases.
- f) Deep Insight is, to the best of our knowledge, the only (presumably) extinct vent field; it was discovered in 2023. Whilst no detailed studies on the biology are yet

¹ Note that Norway is a member of OSPAR.

²https://www.dosi-project.org/wp-content/uploads/DOSI_2023_Submission_MineralActivitiesNorway.pdf

available from this extinct vent, pictures show vulnerable marine species (e.g. sponges) at this location (see Figure 1).

- g) The sphere of vent influence (Levin et al., 2016) is not defined for any of the Norwegian vent fields. No spatial delineation is in place that would ensure the effective protection of unique and active vent communities. However, the sphere of vent influence can reach far into the water column including larval transport and nutrient transport via the vent plume (e.g. Klunder et al., 2020; Haalboom & de Stiger, 2020, Adams et al., 2011), into the benthic surrounding habitats, and even into the earth's crust (i. e., animal and microbial life below hydrothermal vents and hydrothermal circulation cells; Huber et al 2003, McNichol et al 2018). Therefore, the sphere of vent influence, including the seafloor, needs to be determined to protect active vents. Further, inactive deposits that are near active deposits should be considered as part of the same vent field, and therefore have the potential to reactivate. In order to protect active vents, a clearer definition of the extent of a deposit is required (e.g. Jamieson and Gartman, 2020). Until that certainty is reached for Norwegian SMS deposits, a precautionary principle/approach or stepwise approach to protect vents, would require the protection of AMOR.
- h) We are not aware of biological studies on seamounts with crusts in the potential licensing areas. We refer to the OSPAR habitat assessment on seamounts (2022), indicating poor status overall in the Arctic Waters (Region I). We note that the species typically found on seamounts, such as sponges and corals, are vulnerable marine species and crucial contributors to ecosystem function. Despite this lack of information, we note that similar studies have been conducted in the southern California Borderland at bathyal depths, and a distinct and diverse biota is associated with FeMn crusts. There is higher megafaunal (Vlach 2022, in review) and macroinvertebrate diversity (Guraieb et al. in press) on FeMn crusts relative to nearby phosphorite, basalt and sedimentary rock, with depth and oxygen influencing communities. Distinct assemblages on FeMn crusts (relative to other substrates) are also reported from the RioGrande Rise (Correa et al. 2022). Notably, high spatial heterogeneity of benthic community composition occurs in FeMn habitat (Schlacher et al. 2014; Guraieb et al. in press), suggesting that thorough studies covering a range of depths and hydrographic settings are required for adequate baseline characterizations.
- i) In the light of the above, we conclude that broad scale habitat mapping and connectivity studies are required to set in place effective networks of protected areas for seamounts in this region.
- j) The lack of regional knowledge (i.e. distribution of vent sites, community composition of vent and seamount fauna and water column fauna, connectivity amongst sites, ecosystem functions, ecosystem services, including but not limited to potential for Marine Genetic Resources) makes it impossible to develop robust regional management plans.
- k) To our knowledge, no Strategic Environmental Goals and Objectives (SEGOs, Tunnicliffe et al., 2020) have been put in place, which is central to developing effective REMPs (regional environmental management plans) and EIAs.

- l) To conclude this point, following a precautionary principle/approach or stepwise approach, no exploitation shall take place at any seamounts or the actively spreading mid-ocean ridges until a comprehensive knowledge of the area and ecosystems is gathered.

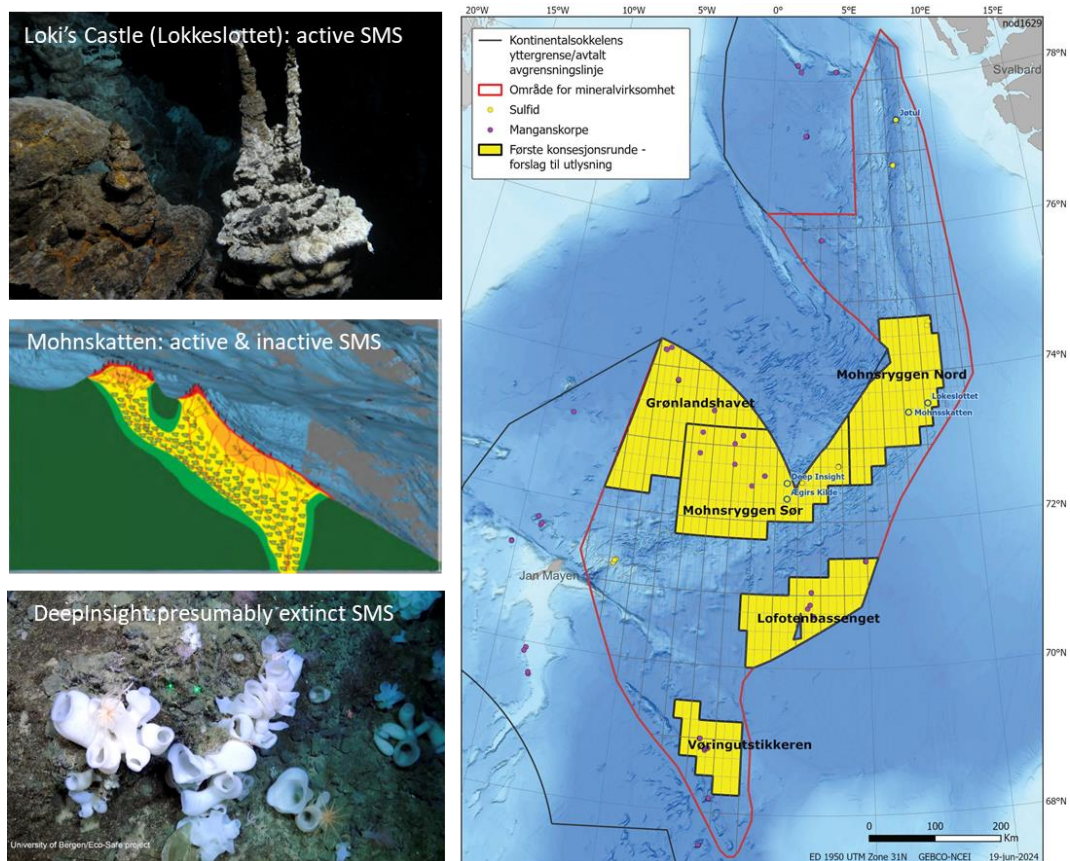


Figure 1. Examples of hydrothermal vent fields along the Arctic Mid-Ocean Ridge (AMOR) with various types of deposits. Picture 1 illustrates Loki's Castle, an active Seafloor Massive Sulphide (SMS) deposit. Picture 2 shows Mohnskatten, which has both active and passive hydrothermal venting. DeepInsight, a possibly extinct vent field, is depicted in Picture 3. On the map, similar deposits are shown.

2. Alignment with overarching international regulations

The proposed areas are in Norway's extended continental shelf, which grants rights over the seafloor. However, potential mining activities would extend to the water column, with significant implications for marine ecosystems and economic interests. Potential effects of concern include turbidity and toxicity via sediment dispersion (Gollner et al., 2017), disturbances of the carbon cycling function (Sweetman et al., 2017), and noise pollution (Popper & Hastings, 2009; Erbe et al., 2019). These are likely to affect fisheries, animal migrations and climate regulation. Given potential conflicts in international waters, it is crucial for Norway to align its environmental

strategies with (for example) the BBNJ Agreement³ and the ISA Mining Code⁴ to ensure sustainable practices in both national and international contexts. All nations which have ratified UNCLOS should adopt regulations at least as restrictive as the ISA Mining Code. Although the Mining Code is not yet in place, there is a rich quantity of regulations and guidelines based on years of work and negotiations, which Norway could readily adopt.

From a legal perspective, special provisions under UNCLOS concerning the continental shelf beyond 200 nm apply. The legal framework establishes an obligation to distribute payments or contributions resulting from the exploitation of non-living resources through the ISA (Art. 82).

3. Transparency in the decision process

There is insufficient information available on how to effectively assess the potential environmental impacts of deep-sea mining on the areas nominated for the first round of mineral extraction licences. This information should include technical details and survey methodology concerning the broad category of resources under consideration (e.g. manganese crust, polymetallic sulphide deposits, seabed topography and biodiversity and habitats present). Publicly available information (NPD, 2020, NPD, 2023, NPD, 2024a, NPD, 2024b, Norwegian Ministry of Petroleum and Energy, 2023) relating to the selection process is insufficient for evidence-based decision making on environmental impacts.

The white paper states that an Environmental Impact Assessment will be undertaken before an area is opened for extraction but that exploratory activities will not, as 'activity that can take place under an exploration permit is expected to have little environmental consequences' (Norwegian Ministry of Petroleum and Energy, 2023). Therefore an EIA is assumed to have been done, but no reference is made to one. Further, the white paper states that scientific knowledge gathering will be an integral part of decision making and that information is made available to interested industry partners (Norwegian Ministry of Petroleum and Energy, 2023), but does not state how relevant information is to be made more widely available.

In addition, there is limited evidence of environmental impact considerations in the process. The Act relating to deep-sea exploitation (Norwegian Offshore Directorate, 2021) briefly mentions requiring activities to take due consideration of the environment. The white paper includes concerned comments by relevant experts including the Norwegian Environment agency, on potential negative environmental impacts (Norwegian Ministry of Petroleum and Energy, 2023). However, little clarity is provided on how these concerns will be addressed. The white paper also states that activities will be carried out in relation to international agreements, but no timeline is provided

³ <https://www.un.org/bbnjagreement/en>

⁴ <https://www.isa.org.jm/the-mining-code>

for how that will be determined or how to resolve concerns from these bodies before activities are to begin (e.g. OSPAR, 2022).

4. Lack of transparency in the exploration vs exploitation process

The adopted resolution lacks a clear, procedural distinction between exploration and exploitation licences. These are two very different processes with disparate environmental consequences that require distinct activities and procedures, and as such they should be dealt with separately. Separating exploration and exploitation licences would be in accordance with Norway's commitment to a step-by-step approach and with the regulations of the ISA. A clear separation between these two phases will safeguard the exploration phase as a neutral impact assessment and not as a precondition for exploitation. An exploration phase provides crucial information about the environmental impact of potential mining activities in a given area. In the case of Norwegian DSM, this is of particular importance given the current general lack of knowledge about ecosystem composition, function, connectivity and vulnerability in the designated areas, as pointed out by the Ministry of Energy in its preliminary EIA (2022) and by our comments above. There are many critical reasons for separating this process from project-specific assessments. For example, as underscored by the Norwegian Environmental Agency (2023), the adopted resolution lacks a formalised plan for the protection of particularly vulnerable and valuable areas. The designation of protected areas needs to be in place before the project-specific EIAs are issued.

As Group Leads, we (Drs. Patricia Esquete, Sabine Gollner) submit on behalf of the Deep-Sea Minerals Working Group of the Deep-Ocean Stewardship Initiative (DOSI).

Please do not hesitate to contact DOSI with any questions. Thank you for the opportunity to respond to this hearing.

Sincerely,



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