



Strategic environmental planning for deep seabed mining in the area

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ABSTRACT

Discussions about an environmental management strategy for deep seabed mining in the Area have been underway for a number of years. Both states and scientists have called for such an environmental management strategy. In 2018, the International Seabed Authority has adopted its first 5-year strategic plan, covering all aspects of its mandate. This article examines whether the new strategic plan integrates elements of an environmental management strategy and what might be missing. It demonstrates that while some overlaps exist, there are several key gaps left by the current strategic plan which could be filled by an environmental management strategy. These include the development of environmental goals and objectives, a systematic approach to environmental regulation and management, setting priorities, filling gaps in substantive obligations, and allocating environmental management tasks to specific actors.

1. Introduction

Mining the deep oceans for minerals, such as cobalt and nickel, is an emerging industry that carries significant risks to the marine environment [1–3]. Regulating these risks falls under the responsibilities of the International Seabed Authority (ISA).¹ Established under the UN Convention on the Law of the Sea (LOSC),² the ISA regulates, controls, and administers all mineral resources on the international seabed,³ known as the ‘Area’.⁴ In doing so, the ISA must take ‘necessary measures [...] to ensure effective protection for the marine environment from harmful effects’ of seabed mining.⁵ Indeed, addressing the protection and preservation of the marine environment is a priority task for the ISA under the 1994 *Agreement Relating to the Implementation of Part XI of the United Nations Convention on the Law of the Sea*.⁶ Moreover, the ISA must act on

behalf of humankind as a whole to give effect to the special legal status of the Area and its resources as the ‘common heritage of mankind’.⁷

The ISA is currently developing the first international regulations for the commercial-scale exploitation of minerals in the Area [4]. While mineral exploration has been conducted for over 15 years, no exploitation has been carried out as yet. The ISA’s future exploitation regulations will ultimately enable exploitation to start.

A key challenge in developing the exploitation regulations is the lack of scientific knowledge about the precise effects of mining on the marine environment and measures to reduce, and where possible eliminate, adverse effects. While the general impacts of seabed mining, such as habitat destruction, reduction of biodiversity, and the creation of sediment plumes, can be predicted, the precise ramifications for ecosystem structure and functioning remain uncertain [2,3,5,6].

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¹ *United Nations Convention on the Law of the Sea* (adopted 10 December 1982, entered into force 16 November 1994) 1833 UNTS 3 (‘LOSC’), article 145.

² LOSC, article 156.

³ LOSC, article 153(1).

⁴ The term Area is defined as ‘the seabed and ocean floor and subsoil thereof, beyond the limits of national jurisdiction’ under article 1(1)(1) of the LOSC.

⁵ LOSC, article 145.

⁶ *Agreement Relating to the Implementation of Part XI of the United Nations Convention on the Law of the Sea* (adopted 28 July 1994, entered into force 28 July 1996) 1836 UNTS 3, annex section 1(5)(g).

⁷ LOSC, articles 136, 137.

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In light of these risks and uncertainties, a strategic approach to environmental regulation and management is needed. This would help to systematically reduce uncertainties where possible, including through targeted research and regional and strategic environmental impact assessments [7–9], while at the same time setting in place regulatory safeguards to ensure environmental harm does not exceed agreed thresholds.

A strategic approach would also support the implementation of a precautionary approach, which the ISA is required to adopt [8,10].⁸ A precautionary approach requires the ISA to err on the side of caution and take early measures to protect the environment from risk, even if uncertainties remain [10,11]. This involves incorporating precautionary buffers into environmental planning and ensuring that environmental measures are not overlooked in the rush to enable commercial-scale mineral exploitation, which in turn requires strategic planning. It also involves furthering strategically selected research to reduce scientific uncertainty [12,13].

An environmental management strategy is an appropriate tool to support regulatory development in the face of uncertainty. Indeed, an environmental management strategy for seabed mining has been discussed for a number of years [14,15]. Both states⁹ and scientists [7,16] have called for an environmental management strategy. The ISA's latest draft regulations for mineral exploitation foresee an 'environmental policy' for the ISA [17] and the ISA's technical advisory body, the Legal and Technical Commission (LTC), 'notes the importance of developing an overarching environmental policy framework' [18], albeit without specifying any details.

While the terminology may vary, the idea behind these calls seems to be the development of a policy-level strategy or plan for environmental management of deep seabed mining across the Area. Such a policy-level document would inform both regional as well as project-specific environmental management.

In July 2018, the ISA took an important step by adopting its first strategic plan for all aspects of its work [19]. The plan sets out strategic directions for the period 2019–2023 and seeks to align the ISA's work with the UN Sustainable Development Goals, in particular goal 14 on conserving and sustainably using the oceans [20]. It may be seen as a key step in the ISA's quest to become a more open and collaborative organisation that builds strategic alliances and partnerships with other organisations working on marine issues.

⁸ ISA, *Regulations on Prospecting and Exploration for Polymetallic Nodules in the Area*, ISBA/6/A/18 (13 July 2000), amended by ISBA/19/C/17 (22 July 2013), ISBA/19/A/12 (25 July 2013), and ISBA/20/A/9 (24 July 2014) ('*Nodules Exploration Regulations*'), regulations 2(2), 5(1), 31(2) and (5); ISA, *Regulations on Prospecting and Exploration for Polymetallic Sulphides in the Area*, ISBA/16/A/12/Rev.1 (15 November 2010), amended by ISBA/19/A/12 (25 July 2013) and ISBA/20/A/10 (24 July 2014) ('*Sulphides Exploration Regulations*'), regulations 2(2), 5(1), 33(2) and (5); ISA, *Regulations on Prospecting and Exploration for Cobalt-rich Ferromanganese Crusts in the Area*, ISBA/18/A/11 (27 July 2012), amended by ISBA/19/A/12 (25 July 2013) ('*Crusts Exploration Regulations*'), regulations 2(2), 5(1), 33(2) and (5); *Responsibilities and Obligations of States Sponsoring Persons and Entities with Respect to Activities in the Area* (Advisory Opinion) (Seabed Disputes Chamber, Case No 17, 1 February 2011), paragraphs 131–132; ISA, *Environmental Management Plan for the Clarion-Clipperton Zone*, ISBA/17/LTC/7 (13 July 2011), paragraph 13.

⁹ At the ISA's 24th session in March 2018, Jamaica stressed the importance of establishing an environment management strategy (see iisd Reporting Services, ISA-24 Part I # 5 Highlights: Thursday, 8 March 2018, Earth Negot. Bull. 25 (2018) 1–2. <http://enb.iisd.org/download/pdf/enb25156e.pdf>). Tonga suggested the development of an environmental policy framework (see iisd Reporting Services, Summary of the Twenty-Fourth Annual Session of the International Seabed Authority (First Part) 5–9 March 2018, Earth Negot. Bull. 25 (2018) 1–9. <http://enb.iisd.org/download/pdf/enb25157e.pdf>). See also Kingdom of the Netherlands, Submission on the ISA Draft Strategic Plan for 2019–2023, <https://www.isa.org.jm/files/documents/EN/SPlan/Subs/Netherlands.pdf>, 2018, paragraph 13.

In light of the above, it is timely to ask whether the ISA's new strategic plan integrates elements of an environmental management strategy, whether these are sufficient, and what might be missing. The present paper seeks to address these questions.

Section 2 summarises the case for an environmental management strategy while section 3 provides a brief overview of the ISA's recently adopted strategic plan. Section 4 then discusses the elements of an environmental management strategy that overlap with, and are already reflected in, the ISA's strategic plan while section 5 discusses those that are missing and would require attention. Section 6 offers concluding remarks.

2. The case for an environmental management strategy

The ISA has set a number of requirements in line with its obligation to ensure effective protection of the marine environment from adverse effects of seabed mining. Among these, the exploration regulations require environmental baselines at exploration sites,¹⁰ although implementing this requirement remains a challenge [21,22]. Moreover, specific exploration activities, such as testing of mining equipment, require a prior submission of an environmental impact assessment.¹¹ These measures are to be taken by the contractors, namely those public or private entities holding an exploration contract with the ISA.

However, while some environmental measures can and should be applied by contractors, other measures exceed the capacity of individual contractors and instead require commitment and action by the ISA as a whole. Examples are the establishment of pre-mining regional baselines, integrated assessments of impacts from multiple sources and over long time scales, and regional-scale environmental management, such as through the Environmental Management Plan for the Clarion-Clipperton Zone.¹²

The need for regional environmental management is widely acknowledged [23,24] and efforts are underway to develop regional environmental management plans (REMPs) for seabed mining beyond the Clarion-Clipperton Zone [4,24,25]. However, there remains a lack of environmental management at policy-level, as was noted by the ISA Council [4] and discussed at the March 2017 workshop titled 'Towards an ISA Environmental Management Strategy for the Area' [14]. Indeed, the ISA Council has invited the LTC, when revising the draft exploitation regulations, to 'consider making regional environmental management plans mandatory and include those plans in the overarching environmental policy' [26]. The Council also suggested factoring REMPs into environmental impact assessments and the assessment of new applications for approval of plans of work, which would create a much-needed link between regional-scale and project-scale environmental management [26]. In addressing these suggestions, an overarching environmental management strategy could clarify the role of, and requirements for, REMPs and situate them within an overall environmental policy of the ISA.

In addition, there are several current challenges that could be addressed by an environmental management strategy, which are elaborated on in section 5 below. First, there is a need for a systematic approach to environmental regulation and management to ensure existing requirements are fully implemented, such as the need to assess the cumulative impacts of several mine sites as well as other human activities.¹³ Moreover, given the range of environmental assessments and

¹⁰ *Nodules Exploration Regulations*, regulations 18(b), 32. *Sulphides Exploration Regulations*, regulations 24(b); 34. *Crusts Exploration Regulations*, regulations 24(b); 34.

¹¹ All *Exploration Regulations*, annex IV section 5.2; ISA, *Recommendations for the guidance of contractors for the assessment of the possible environmental impacts arising from exploration for marine minerals in the Area*, ISBA/19/LTC/8 (1 March 2013), paragraph 19.

¹² *Environmental Management Plan for the Clarion-Clipperton Zone* (n 8).

¹³ *Recommendations for the guidance of contractors for the assessment of the*

measures that should be performed before any mining can begin, there is a need to identify priorities.

Second, there are remaining gaps in the substantive obligations for the ISA and contractors. These include the consideration of how climate change is likely to alter relevant marine ecosystems and ecosystem services over the lifetime of a mining operation [14,27].

Third, an environmental management strategy could clarify the role of each actor in ensuring environmental protection. The ISA regime involves a number of relevant actors: (a) contractors, who are responsible for site-specific environmental management measures; (b) the ISA Council as the executive organ of the ISA¹⁴; (c) the ISA Assembly as the plenary organ of the ISA¹⁵; and (d) the LTC as the legal and technical advisory body which plays a key role in developing environmental standards for seabed mining in the Area.¹⁶ In addition, the regime involves sponsoring states¹⁷ that are responsible for ensuring that the contractors they sponsor comply with their respective obligations under the ISA regime.¹⁸

In addressing the aforementioned challenges, an environmental management strategy could have the following potential aims [14]:

- (1) to ensure all relevant environmental standards and measures are identified in a systematic manner and allocated to the appropriate actors;
- (2) to ensure strategic environmental management is fully integrated into the Mining Code as well as the ISA's decision-making processes and supported by institutional capacity;
- (3) to ensure environmental management measures are given effect in a timely manner.

The legal basis for an environmental management strategy is discussed in the literature [15] and derived from the LOSC, which equips the ISA Assembly and Council respectively with the power to establish the general and specific policies of the ISA 'on any question or matter within the competence of the Authority.'¹⁹ The ISA's competence encompasses inter alia control of pollution,²⁰ prevention of damage to flora and fauna,²¹ and adoption of 'mining standards and practices, including those relating to operational safety, conservation of the resources and the protection of the marine environment.'²²

Having far-reaching powers and competences as well as exclusive jurisdiction over mineral activities in the Area, the ISA is well-positioned to develop and implement a policy-level environmental management strategy for the Area. In 2017/2018, a priority task for the ISA was the development of its first overall strategic plan, covering all aspects of the ISA's mandate, including some environmental matters. The following section introduces that plan.

3. The ISA's new strategic plan

The ISA adopted its first strategic plan in July 2018, following a year-long process to develop it. The plan has its origin in the first

(footnote continued)

possible environmental impacts arising from exploration for marine minerals in the Area (*n* 11), paragraph 16; *Environmental Management Plan for the Clarion-Clipperton Zone* (*n* 8), paragraphs 37, 40, 51.

¹⁴ LOSC, article 162; 1994 Implementing Agreement, annex sections 1(15)–(16) and 3(11).

¹⁵ LOSC, articles 159, 160; 1994 Implementing Agreement, annex section 3(1).

¹⁶ LOSC, article 165.

¹⁷ LOSC, article 153(2).

¹⁸ LOSC, article 139.

¹⁹ LOSC, articles 160(1), 162(1).

²⁰ LOSC, article 145.

²¹ LOSC, article 145.

²² LOSC, annex III article 17.

periodic review of the seabed mining regime pursuant to Article 154 of the LOSC, which was undertaken between 2015 and 2017.²³ As one of the outcomes of the review, the Assembly requested the Secretary-General to develop a draft strategic plan for the ISA in which to define its directions and aims [28]. A draft strategic plan was published in February 2018 [29] and stakeholder input was sought. The plan was revised in light of stakeholder submissions and discussion at the ISA's 2018 session and a final strategic plan was adopted in July 2018 [19].

The strategic plan sets out the current challenges for the ISA, a list of expected outcomes for the period 2019 to 2023, and the following nine strategic directions [19]:

1. realize the role of the ISA in a global context;
2. strengthen the regulatory framework for activities in the Area;
3. protect the marine environment;
4. promote and encourage marine scientific research in the Area;
5. build capacity for developing states;
6. ensure fully integrated participation by developing states;
7. ensure equitable sharing of financial and other economic benefits;
8. improve the organisational performance of the ISA; and
9. commit to transparency.

Through stakeholder input on the draft plan, at least three aspects were highlighted. First, the principle of the common heritage of humankind needed to be reflected in the plan as a core guiding principle and integral to the mission statement of the ISA [30–34].

Second, the language used in the plan needed to be in line with the LOSC and the 1994 Implementing Agreement and avoid terms that deviate significantly from the LOSC, such as 'commercially viable framework for environmental management' and 'the highest practicable standards of protection of the marine environment and human health and safety' [29–31,33–35]. The final strategic plan was amended accordingly.

Third, the draft strategic plan was criticised for lacking measurable targets, milestone, and time-bound deliverables [31,35,36]. To address this, the ISA Assembly requested for the plan to be supplemented by a high-level action plan which is to include key performance indicators and a list of outputs for the 5-year period of the plan [19]. This action plan is currently being developed and could provide more detail as to how the ISA seeks to achieve its strategic directions, which will also provide an indication as to where its priorities lie.

Unsurprisingly, stakeholder submissions differed in their assessment of whether enabling commercial-scale mining should be the primary focus of the ISA, or whether this aim should be balanced with other considerations. In the words of Algeria, on behalf of the African Group:

'Parts of the draft Strategic Plan (such as paragraph 3, page 3), could be read as if the Authority's aim is to develop Exploitation Regulations that encourage deep-sea mining. In our view, a proper reading of the UNCLOS and the Authority's mandate is for the Authority to develop Regulations that enable exploitation in the Area to occur only insofar as there would be (net) benefit to mankind as a whole. This must take into account all parameters set by the UNCLOS, including the effective protection of the marine environment, and ensuring optimum revenues for the Authority for equitable sharing, in accordance with the UNCLOS' [30].

Belgium supported this view by noting that 'commercial certainty should not be guaranteed at a significant disproportionate cost for the environment', stressing that '[s]ufficient environmental protection is fundamental on its own' [35]. Chile stressed the need to clarify what happens if scientific studies recommend the cessation of mineral exploitation [37]. A consortium of 38 NGOs called for a fundamental

²³ See <https://www.isa.org.jm/article-154-periodic-review-international-seabed-authority>.

debate about whether deep seabed mining is in the best interest of humankind as a whole [38].

In contrast, some contractors argued for the ‘need for timely adoption of a commercially viable exploitation code’ [39] and for ‘[f]acilitating sustainable commercial development of the Area’ [40]. The final plan reflects the usual balancing act of recognising both views.

4. Overlaps between the strategic plan and an environmental management strategy

In light of the calls for an environmental management strategy for the ISA, it seems timely to ask whether the ISA’s new strategic plan already encompasses elements of an environmental management strategy and what gaps remain. The following sections discuss three overlaps before analysing a number of gaps. The three overlaps are: (a) regional environmental assessment and management, (b) inter-institutional collaboration, and (c) moving beyond ad hoc measures.

4.1. Regional environmental assessments and management plans

Strategic direction 3.2 of the strategic plan supports the development of a key environmental aim, namely regional environmental assessments and management plans for all provinces in which mineral activities in the Area are taking place [19]. This provides a clear policy-level commitment by the ISA to regional-scale environmental management.

An environmental management strategy could build on this commitment by setting out details regarding the following questions: (a) who will conduct regional environmental assessments and develop REMPs, (b) what are the procedures for these tasks, and (c) what common criteria will be applied to all regional environmental assessments. This could support meeting the ISA’s obligations to not only evaluate environmental impact assessments (EIAs) from contractors²⁴ but for the LTC itself to ‘prepare assessments of the environmental implications of activities in the Area’,²⁵ as enshrined in article 165(2) (d) of the Convention.

An environmental management strategy could also specify the relationship between global policy-level commitments, regional assessments and plans, and project-level EIAs and management [26]. The latter would need to operate within the parameters of the overall policy and the regional environmental management plan, while also feeding information upwards. Similarly, as the Netherlands submitted, REMPs should be based on an overarching environmental management plan or policy of the ISA, which would serve as the basis for REMPs [41]. The aim would be to have a clear link between policy, regional, and project-level environmental management.

However, a key challenge for achieving appropriate regional management is the allocation of funds to support the development of regional environmental assessments and management plans, as noted by the Secretary-General [24].

4.2. Inter-institutional collaboration

A point of overlap between the strategic plan and a potential environmental management strategy is the collaboration between the ISA and other relevant organisations. Protecting marine ecosystems in areas beyond national jurisdiction requires effective management of all human activities that impact these ecosystems. While the jurisdiction of the ISA is limited to seabed mining, the LOSC provides for the cooperation between the ISA and other organisations to achieve a degree

of multi-sectoral management.²⁶

The ISA’s strategic plan foresees ‘strategic alliances and partnerships with relevant subregional, regional and global organizations with a view to more effective cooperation in the conservation and sustainable use of ocean resources’, in particular with respect to marine scientific research [19]. The plan lists some example organisations for cooperation, including the Intergovernmental Oceanographic Commission of the United Nations Educational, Scientific and Cultural Organization (UNESCO), the International Atomic Energy Agency (IAEA), the International Hydrographic Organization, and collaborative programmes such as the European Union joint programming initiative on healthy and productive seas and oceans (JPI Oceans) [19].

While cooperation regarding scientific research is undoubtedly important, effective environmental management would also require cooperation with regional fisheries management organisations as well as organisations that establish global criteria for environmental management, such as the Secretariat of the Convention on Biological Diversity. An example of such cooperation is the proposal from the North-East Atlantic Fisheries Commission (NEAFC) and the OSPAR Commission for the Protection of the Marine Environment of the North-East Atlantic to conclude a collective arrangement with the ISA to achieve multi-sectoral protected areas in the North-East Atlantic [42]. While the proposal was discussed in 2015, the Council did not reach consensus on whether or not the ISA should join the collective arrangement [43].

Chile lamented that the strategic plan could have specifically committed the ISA to take into consideration the debates and developments around negotiating a new legally binding agreement for the protection of marine biodiversity in areas beyond national jurisdiction [23], beyond the ISA’s current engagement with the process. For the ISA to follow any new processes and measures to protect marine biodiversity, including in the waters directly affected by deep seabed mining in the Area, will arguably be crucial to achieve multi-sectoral protection of the marine environment. It remains to be seen what the ISA will commit to, once the new agreement is adopted.

4.3. Moving beyond ad hoc measures

A last point of overlap between the strategic plan and an environmental management strategy is the aim to move beyond ad hoc measures and create a longer-term strategy for managing the Area. To this end, the ISA’s strategic plan commits the ISA *inter alia* to the development of:

- (a) ‘regional environmental assessments and management plans for all mineral provinces in the Area where exploration or exploitation is taking place’ (strategic direction 3.2);
- (b) ‘scientifically and statistically robust monitoring programmes and methodologies to assess the potential risk for activities in the Area to interfere with the ecological balance of the marine environment’ (strategic direction 3.4); and
- (c) ‘appropriate regulations, procedures, monitoring programmes and methodologies to prevent, reduce and control pollution and other hazards to the marine environment, as well as interference with the ecological balance of the marine environment, prevent damage to the flora and fauna of the marine environment and implement the relevant requirements relating to the protection of the marine environment’ (strategic direction 3.5).

These commitments provide an important indication as to what environmental management measures the ISA seeks to pursue. Whether these commitments will translate into regulatory certainty will depend on how they will be reflected in the action plan that is currently being developed.

²⁶ LOSC, article 169. See also article 197.

²⁴ 1994 Implementing Agreement, annex section 1(7).

²⁵ See also LOSC, article 165(2)(f) which highlights the need to take into account ‘assessments of the environmental implications of activities in the Area’ when drafting rules, regulations, and procedures for the Council.

An environmental management strategy could add details to these high-level commitments, including defining ‘ecological balance’ and ‘damage to the flora and fauna of the marine environment’. Moreover, it could specify who is responsible for developing which aspect of the monitoring programme etc, when will these be developed, and how will they be given effect. This leads to the following section discussing the gaps left by the ISA’s strategic plan.

5. Gaps left by the strategic plan

While there are overlaps in high-level commitments between the strategic plan and a potential environmental management plan, the former lacks detail regarding the operationalisation of its high-level commitments. In addition, there remain several elements that are not captured in the ISA’s current strategic plan and that could be detailed in an environmental management strategy and reflected in the ISA’s regulations as appropriate.

5.1. Environmental goals and objectives

The first lacuna is overarching environmental goals, objectives, and measurable targets as well as mechanisms to assess progress towards the targets using indicators. The need for those is widely acknowledged [7,14,44,45] and the ISA Council has specifically ‘reaffirmed the importance of advancing environmental objectives’ [26].

All contractors will likely establish environmental objectives as part of their project-level Environmental Management and Monitoring Plan [17,46]. However, overarching environmental goals and objectives applicable to the whole Area will be necessary to manage the environmental impacts of seabed mining across spatial scales, including on ecosystem integrity. Tunnicliffe et al provide examples of potential environmental goals for the Area [45].

Goals and objectives will also be crucial to achieve a precautionary approach, which necessitates environmental measures that are both *effective* in meeting the environmental goals and objectives but also *proportionate* to them, meaning no more restrictive than necessary [10]. Without overarching goals and objectives, it is not possible to determine whether a measure is in line with the precautionary approach or indeed whether the environmental performance of individual contractors is satisfactory. Moreover, strategic environmental goals and objectives offer an opportunity to integrate ecosystem services, such as carbon sequestration and nutrient cycling, into environmental management for deep seabed mining [47].

Opinions differ as to whether environmental goals and objectives are best enshrined in the ISA’s regulations or standards or annexed to an environmental management strategy. While regulations are binding, amending them is cumbersome and whether or not amendments will apply equally to all contractors will depend on the wording in the final exploitation regulations.²⁷ In any event, an environmental management strategy would need to set out how, by whom, and when the goals and objectives will be developed as well as details regarding their periodic review and update.

5.2. Systematic approach to environmental management

Regulatory certainty would be increased by developing a systematic approach to environmental regulation and management. This includes

²⁷ The Draft Regulations on Exploitation of Mineral Resources in the Area issued on 9 July 2018 in document ISBA/24/LTC/WP.1/Rev.1 foresee amendments to the regulations being applicable to all contractors. See draft regulation 3.3 which states: ‘The Contractor shall, in addition: (a) Comply with the Regulations, as well as other Rules of the Authority, as amended from time to time, and the decisions of the relevant organs of the Authority’ (emphasis added).

the time-bound implementation of environmental tasks to be performed centrally by the ISA, such as regional environmental assessments. It would help to integrate these tasks into the ISA’s decision-making procedures and safeguard them against being overlooked if commercial pressure to promptly commence the exploitation phase increases.

An example of a relevant measure is the current aim for the ISA to conduct cumulative impact assessments at a regional level.²⁸ An environmental management strategy could end uncertainty as to when and how these will be performed.

A further example is the requirement on the LTC to develop and implement procedures for determining whether proposed exploration activities in the Area would have serious harmful effects on vulnerable marine ecosystems, such as hydrothermal vents, seamounts, and cold-water corals.²⁹ If that is the case, the LTC must ensure ‘those activities are managed to prevent such effects or not authorized to proceed.’³⁰ The reason for this requirement is the LTC’s conclusion that ‘[t]here is some potential for serious and permanent harm in [the areas of polymetallic sulphide and cobalt-rich ferromanganese crusts] during the process of seabed mining’.³¹ The LTC went on to say that because sulphides deposits are localized, ‘the potential impact at a mine site is likely to be significant’.³¹ Despite the significance of this requirement and the fact that it was first established in 2010, no procedures have been developed and exploration work has continued as normal. An environmental management strategy could turn this and other tasks into time-bound deliverables to prevent them from being overlooked.

5.3. Priorities

Closely linked to the previous point is the need for priorities. Some environmental protection tools require other milestones to be met first. For example, robust environmental baselines are a prerequisite for EIAs and monitoring programmes [36,44]. Without knowing the environmental conditions pre-mining, it is impossible to monitor and evaluate environmental changes caused by mining activities, making a precautionary approach all the more important. Equally, ‘the availability of data [is] the driver of the development of regional environmental management plans,’ as the ISA Council specifically noted [4].

Designing a strategic approach to environmental regulation and management, based on the precautionary approach, includes specifying these prerequisites and priorities. As South Africa noted in its submission on the ISA’s draft strategic plan: ‘The draft plan seems to be focused on developing environmental regulations in a ‘progressive way’, but it does not provide for the actual prioritisation of identified environmental considerations’ [32].

An environmental management strategy could set out these priorities and ‘timelines’. Indeed, where applicable, it could specify minimum data requirements needed to proceed to the next step [7,14]. This could help to ensure that baselines are of sufficient quality and it would provide contractors with certainty as to the quality and quantity of data they need to collect and process in order to meet their obligations. This would also support the procedural integration of the obligation to apply a precautionary approach, by establishing procedural safeguards whereby applicants and contractors can only proceed to the next step once sufficient baselines are established [10]. As a scientific

²⁸ Recommendations for the guidance of contractors for the assessment of the possible environmental impacts arising from exploration for marine minerals in the Area (n 11), paragraph 16; Environmental Management Plan for the Clarion-Clipperton Zone (n 8), paragraphs 37, 40, 51.

²⁹ Nodules Exploration Regulations, regulation 31(4); Sulphides and Crusts Exploration Regulations, regulation 33(4).

³⁰ Nodules Exploration Regulations, regulation 31(4); Sulphides and Crusts Exploration Regulations, regulation 33(4).

³¹ ISA, Explanatory notes relating to the draft regulations on prospecting and exploration for polymetallic sulphides and cobalt-rich ferromanganese crusts (ISBA/10/C/WP.1), ISBA/11/C/5 (12 August 2005), paragraph 15 (emphasis added).

report commissioned by PEW Charitable Trusts notes:

‘The operationalisation of “serious harm” and “significant adverse impact” requires quantitative measurements of a series of variables, which need to be defined as targets and thresholds for ecological indicators addressing specific environmental goals and objectives. The environmental baseline, including the data that create it, is a critical underpinning of the effective development of all strategic, regional and local environmental objectives, targets, thresholds and indicators to measure serious harm. This means that the baseline data must be sufficient to enable implementation of the Authority’s [strategic environmental objectives and goals]’ [44].

5.4. Substantive obligations

An environmental management strategy could also address current gaps in substantive obligations. These include incorporating climate change-related variations into all environmental assessments [25,27] and making the ecosystem approach as well as the polluter-pays principle applicable in the seabed mining context, the latter having been suggested by several states [31,41]. While these could be included in a policy-level environmental management strategy, the relevant requirements on contractors would also need to be reflected in the mining regulations and the standard contract terms. More specifically, the regulations and standard contract terms could require an operator to follow an ecosystem approach, while the environmental management strategy could outline how the ISA aims to operationalise that approach on a global and regional level.

5.5. Allocation of tasks

A last but not least contribution of an environmental management strategy could be the allocation of tasks to specific actors, such as the ISA Council, contractors, or sponsoring states. Who will perform and manage regional environmental assessments or develop environmental goals and objectives? Specifying these details could also help to address current uncertainties with respect to the role of contractors and sponsoring states.

Allocating tasks is an important feature of strategic planning documents and the absence of it in the ISA’s strategic plan has been noted by several stakeholders. A case in point, South Africa lamented the lack of ‘elaboration on which organ of the ISA is to perform which of the functions listed in the plan’ [32]. It remains to be seen whether the action plan that is currently being developed will help to fill this gap.

6. Conclusion

Calls for the ISA to develop an environmental management strategy are neither new, nor revolutionary. The adoption of the ISA’s first 5-year strategic plan offers an opportunity to assess the extent to which this strategic document covers aspects that would be associated with an environmental management strategy.

This article demonstrates the existence of some overlaps, although the details depend on what will be included in the ISA’s action plan, which is currently being developed. In any event, an environmental management strategy would add value to the current strategic plan, including by setting out how the high-level aims of the strategic plan will be achieved. In addition, an environmental management strategy could specify the relationship between policy, regional, and project-level environmental management. Lastly, there are several elements that are not captured by the ISA’s current strategic plan but that would likely be incorporated into an environmental management strategy and reflected in the ISA’s regulations as appropriate. These include the development of environmental goals and objectives, a systematic approach to environmental regulation and management, setting priorities, filling gaps in substantive obligations, and allocating environmental

management tasks to specific actors.

There are various options for the format of an environmental management strategy, including a stand-alone document or an annex to the overarching strategic plan, sitting alongside other possible strategies relating to the ISA’s strategic directions.

The effective protection of the marine environment is a core obligation of, and indeed a priority task for, the ISA under the LOSC, as well as the 1994 Implementing Agreement.³² An environmental management strategy would support the ISA in giving effect to its mandate by establishing systematic environmental safeguards during both the exploration and exploitation phases in the entire Area. Importantly, several elements that could form part of an environmental management strategy have either been adopted by the ISA (e.g. REMP for the Clarion-Clipperton Zone) or acknowledged as important (e.g. environmental objectives). Rather than reinventing the wheel, an environmental management strategy could integrate all relevant measures into a strategic vision, fill current gaps, and clearly situate all measures within the decision-making procedures of the ISA.

Conflicts of interest

No conflicts of interest.

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