Background document

REMP Workshop Hamburg, 11-13 November 2019

Regional Environmental Management Plans[1]: A Conceptual Analysis

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1. Introduction: State-of-the-Art

At its 24th session, the Council was presented with a Secretary General's report on the 'Preliminary strategy for the development of regional environmental management plans for the Area' (ISBA/24/C/3). In this preliminary strategy, several specific regions were determined as priority areas for the development of REMPs. These regions are the Mid-Atlantic Ridge, the Indian Ocean triple junction ridge and nodule-bearing province, as well as the North-west Pacific and South Atlantic for seamounts. The Council took note of this report at its 24th session and agreed with the determination of the priority areas (see ISBA/24/C/8, paragraph 9). The Council at its 25th session was presented with a Secretary General's report on the 'Implementation of the Authority's strategy for the development of regional environmental management plans for the Area' (ISBA/25/C/13), including a draft programme of work, which the Council took note of (see ISBA/25/C/7, paragraph 7). During the course of the second part of the 25th annual session of the Council in July 2019, the Secretariat introduced a document entitled 'Guidance to facilitate the development of REMPs' to which reference will be made in this document where appropriate.

This document was created by the authors, on behalf of the German Environment Agency, for the consideration of participants of the International Workshop "Towards a standardised approach to Regional Environmental Management Plans in the Area", to take place 11-13 November 2019 in Hamburg, Germany. The intention was to provide some broader background on the topics to be discussed at the workshop, as indicated in the three documents put forward by the workshop organisers

- Legal Force of Regional Environmental Management Plans - An Analysis
- Procedure for the development, approval and review of Regional Environmental Management Plans
- Regional Environmental Management Plan - Template.

2. Purpose and objectives of REMPs

The purpose of REMPs is to ensure the consideration of region-specific characteristics in ISA decision-making.[2] It moves the spotlight away from the focus on site-specific considerations, and allows for a wider assessment of cumulative impacts. Cumulative impacts here refers not only to the environmental effects caused by the conduct of activities in the Area (e.g. two or more exploration and/or exploitation sites within the region), but also other regional environmental impacts that are brought upon by other uses of the marine environment as well as the natural variable (climate change) factor. The table below illustrates the importance of REMPs:

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[1] The abbreviation REMP will be used for Regional Environmental Management Plans in this document.

[2] See ISA Secretariat 'Guidance to facilitate the development of REMPs' (July 2019), p. 6.

Tab. 1: The added value of regional environmental management plans for delivering the regional environmental mandate of ISA

Without REMPs	With REMPs
• Only site-specific considerations.	• Region-specific considerations.
• Decision on application made by relying solely on information submitted by the sole contractor in question and not with particular attention to other sources.	• Decision on application made by relying also on information available in REMP, which includes a collation of information from many sources.
• Does not value special region-specific features.	• Values special region-specific characteristics and features.
• Cumulative impacts is overlooked.	• Cumulative impacts is a cornerstone.
• 'Carrying capacity' of the region not ascertainable.	• Attempts to ascertain 'carrying capacity of the region.
• Adaptive management is restricted to the 'smaller picture'.	• Adaptive management is central and based on the 'bigger picture'.
• Restricts ability to attribute harm to a particular activity or activities since limited information available on surroundings of mining site.	• Increases ability to attribute harm to a particular activity or activities (mining or otherwise) in the region since information is available.
• Contractor accountability mainly confined to mining site (answerable only to harm cause by operation to the site).	• Increases the scope of contractor accountability (answerable to harm caused by operation beyond mining site, i.e. to the region).

Further, while REMPs are essentially instruments that facilitate decision-making within the ISA, as it provides the foundation for informed decision-making,[3] it also manifests a much more fundamental purpose – which is to provide an impression of the currently available information for the region and imparts knowledge. This allows for the identification of vulnerable habitats that require protection, 'hotspot locations` that also require protection, areas that are under use by other users (e.g. submarine cables and pipelines, fishing grounds, shipping routes, etc.), and subjects any decision to permit activities in the Area to the 'bigger picture' (i.e. cumulative impacts). Having REMPs in place is not only essential to control mining activities that take place at the present moment, it is also pertinent to ensure that other uses of the marine environment are aware of activities in the Area.[4] Moreover, REMPs could also be seen as a message to future generations,[5] underscoring the efforts taken today to ensure that the rights and interests of future generations are not comprised by activities undertaken at present.[6]

The objectives of REMPs are multifold. Given that REMPs place cumulative impacts at the cornerstone of management, thereby shifting the focus away from any one particular mining site,

[3] *Ibid*, at p. 5.

[4] Article 147(1) of UNCLOS stipulates that: "Activities in the Area shall be carried out with reasonable regard for other activities in the marine environment"; while Article 147(4) provides as follows: "Other activities in the marine environment shall be conducted with reasonable regard for activities in the Area".

[5] UNGA Resolution A/RES/66/288 (2012): 'The future we want'.

[6] World Commission on Environment and Development, 'Our Common Future' (1987), also known as the Brundtland Report.

REMPs seek to set the parameters under which region-specific activities in the Area are to take place. Through the collation of environmental baseline data for the region, it actually allows the regulator to ascertain which areas that clearly should not be mined, which areas that should be avoided, and which areas that may be considered for mining. It is common knowledge that the conduct of activities in the Area will inevitably cause significant levels of harm to the marine environment (Heffernan, 2019; Miller et al., 2018). REMPs allow the determination of region-based thresholds, based on the assessment of the region's carrying capacity, such as levels of harm from mining activities which does not lead to long-term, irreplaceable degradation of the ecosystems of the respective region. The objective here is to strengthen their resilience, and take action for their restoration, to achieve healthy and productive oceans, in line with UN Sustainable Development Goal 14.2.

A major practical challenge are the time- and spatial scales of data and information required to come to qualified conclusions on the effects of man-made disturbances. Deep-sea ecosystems are typically slow and difficult to observe in time and space, major functionalities being unknown (Washburn et al., 2019). On the other hand, disturbance may be large scale and long-lasting (Jones et al., 2017). This then requires a fine-tuned observing system, long observation periods supplemented by process experimentation (Gollner et al., 2017), precautionary action and adaptive governance (Jaeckel, 2016, 2017, 2019).

As such, REMPs implement the ecosystem approach to management, and translate the precautionary approach into practice. To this end, governance and management objectives have to be set to maintain ecosystem health while allowing for minimized harm, as opposed to avoiding serious harm (Levin et al., 2016). Therefore, an effective REMP will be able to define parameters in which the conditions of the marine environment in the region are at "healthy levels", as opposed to focusing on avoiding serious harm (or in other words, 'unhealthy levels'). It provides for the foundation to maintaining the status of health for the region that allows for the sustenance of its productivity. By focusing on the 'bigger picture', REMPs should initiate an iterative process for the design of measurable indicators that mining activities are subjected to and will be assessed against, as well as identifying areas in need of protection from the effects of mining-related activities.

2. Lessons learned from the CCZ Environmental Management Plan

In 2012, the ISA adopted a first environmental management plan for the Clarion-Clipperton Zone (CCZ EMP; ISBA/18/C/22)[7], its prime region for manganese nodule exploration contracts. The elements of this plan are (ISBA/LTC/17/7):

- The powers of the International Seabed Authority on the protection of the marine environment;
- The need for cooperation with other international organizations and processes related to the protection of the marine environment
- Guiding principles
- Definition of the region
- Description of mining operations, vulnerability and potential impacts

[7] Lodge et al., 2014, p. 69: The environmental management plan was finally approved by the Council in July 2012 in a decision which not only recalled the provisions of Articles 145, 162 and 165 of UNCLOS, but also placed the environmental responsibilities of ISA in the context of ongoing discussions at the United Nations General Assembly in relation to the conservation and sustainable use of marine biological diversity beyond areas of national jurisdiction. In particular, the decision recalled General Assembly resolution 63/111, of 12 February 2009

- Vision, goals, strategic aims and operational as well as management objectives guiding the management of the region.
- Design concepts for spatial management;
- Review and regional quality status reports every 5 years.

Effectively, the CCZ EMP commits to integrated ecosystem-based management and shall contribute to the achievements of the goals of the Plan of Implementations of the World Summit on Sustainable Development (WSSD, 2002), today the Sustainable Development Goals (UN General Assembly, 2015) (see IV 35. Goals of the EMP (b) and (d)). The core part of the CCZ EMP is the recommendation for the designation of an initial network of nine Areas of Particular Environmental Interest, APEIs, representing nine biogeographic subregions of the CCZ. These APEIs are subject to revision and shall be unavailable to exploration and exploitation, and act as a biodiversity reserve to allow for recovery of mined areas.

What are the lessons learned?

- The CCZ EMP does not have a binding force on contractors or ISA. This EMP is designed as a policy instrument (ISBA/25/C/4), adopted by the Council (ISBA/18/C/22) and adaptable through regular reviews by the Commission (Lodge, 2011). It is expected to act as a supportive framework in the decision-making processes of potential sponsoring States and of the ISA on whether to approve an exploitation application or not (ISBA/20/C/13). However, note that the current version of the Draft Exploitation Regulations includes provisions that suggests that contractors are required to comply with the decisions of the Council, which would include the decision to adopt a particular REMP.[8]
- **The region:** Physical and political boundaries were used for the delineation of the region, irrespective of ecological zonation.
- **Scope of the plan**: The CCZ EMP only addresses nodule mining. In regions with several potentially exploitable mineral resources, the EMP should cover all types of minerals to be an integrated ecosystem-based management tool.
- **Vision, goals and objectives** need revision to be brought in line with Article 145. The translation of high level goals and objectives into achievable and measurable management targets (Specific, Measurable, Achievable, Relevant and Timebound)[9] will set the core of management action.
- **Lack of data and information:** Regional data availability and comparability still pose major impediments to developing a transparent and reliable environmental baseline for the CCZ region. There is no structured approach to determine gaps or to develop scientific programmes in the region, although recent research has provided some very important new information on the ecosystems potentially affected by mining.
- **Cooperation** with other management organisations: Despite some progress in formal cooperation, no experience exists as to the mechanisms which would facilitate practical cooperation among independent international management bodies for mutual benefit under the auspices of ISA; no steps have yet been taken to become a proactive partner in developing an effective cooperation mechanism in the negotiations on the new ILBI/BBNJ Agreement[10].

[8] See Draft Regulation 7(2)(a); Annex I, para 24(a); and Annex X, section 3.3(a); of the Draft Exploitation Regulations (ISBA/25/C/WP.1)

[9] https://en.wikipedia.org/wiki/SMART_criteria

[10] International legally binding instrument under the United Nations Convention on the Law of the Sea on the conservation and sustainable use of marine biological diversity of areas beyond national jurisdiction" (General Assembly resolution 72/249)

- **Spatial protection**: To be representative, networks of APEIs have to be designed prior to exploration contracts being concluded, or to be a mandatory part of REMPs which restricts the location of mine sites. In addition, priority conservation areas need to be identified for vulnerable, rare, fragile, unique etc species and habitats in line with Arts. 145, 194 UNCLOS, CBD (Ardron et al., 2009) and (FAO, 2009) criteria and practices and eventually given a permanent protection status. PRZ and IRZ design and monitoring standards are urgently needed.
- **Transparency and participation:** The EMP was developed in an ad-hoc manner without transparent and accountable process of stakeholder engagement. A stakeholder engagement strategy, including the establishment of stakeholder inventories, determination of communication routes and type of interaction is still missing. Likewise, a strategy enabling science to provide systematic and contractor-independent advice, as well as an active research strategy are missing.

In summary, the CCZ EMP is a welcome first step towards a comprehensive management plan to safeguard the marine environment at regional scale. However, this primer so far lacks the core elements of an effective management plan, such as an environmental baseline, monitoring and/or research programme as well as indicators and thresholds for determining the risk of serious harm on various scales and consequent action by ISA and contractors. Oversight to ensure consistency of contractor environmental studies and data deliveries is required to enable regional integration of information. Activity-based measures and controls need to supplement the precautionary spatial measures. Thresholds and measures should be binding for ISA decision-making and/or contractors, respectively. The revision of the EMP should allow for adapted measures based on new knowledge gained.

3. The mandate: ISA's competence to adopt REMPs

It is important to start by acknowledging that the UNCLOS does not specifically require the ISA to adopt REMPs. In the context of Part XI of UNCLOS, the term 'region' is used only to refer to representation from geographic regions at the ISA, and not with respect to the marine environment.[11] UNCLOS, however, obligates the ISA to adopt "necessary measures […] with respect to activities in the Area to ensure effective protection for the marine environment from harmful effects which may arise from such activities".[12] Article 145 also singles out the need to "prevent, reduce and control pollution and other hazards to the marine environment […] that have the potential to interfere with the ecological balance of the marine environment", as well as to "protect and conserve the natural resources of the Area, preventing damaged to the flora and fauna of the marine environment". Furthermore, there are relevant provisions from Part XII of the UNCLOS that also lend support, for instance, that necessary measures shall include "those necessary to protect rare or fragile ecosystems as well as the habitat of depleted, threatened or endangered specific and other forms of marine life".[13]

Hence, the establishment of REMPs fits squarely within the ambit of 'necessary measures'.[14] In any event, the ISA and its member States have already firmly acknowledged the importance of

[11] See Articles 156(5), 161, 163, of UNCLOS.

[12] Article 145 of UNCLOS.

[13] Article 194(5) of UNCLOS.

[14] ISA Secretariat 'Guidance to facilitate the development of REMPs' (July 2019), p. 5; see also LTC Informal Workshop on the development of REMPs in the Area, with a focus on Mid-ocean Ridges: Scientific Tools and Approaches, 6 July 2019, Kingston, Jamaica, p. 1, paragraph 1.

REMPs and to have it in place before any exploitation activities commence.[15] There is even one existing precedent of a REMP, which is the CCZ EMP (see above), and this reinforces the practice of REMP development. In this regard, the ISA accepts and has already assumed the responsibility to design, adopt, implement and review REMPs. As such, arguing that the ISA does not have the authority to establish REMPs, or to backtrack (or regress) on the need to first adopt REMPs for a particular region before permitting any exploitation therein, is no longer possible.

4. The 'weight' of REMPs: Legal implications

While it is now trite that the ISA is obligated to establish REMPs in regions of mining interest before any exploitation activity commences therein, the 'weight' of such an instrument remains an open question. Although there is some common ground in accepting that the REMP is an instrument to facilitate decision-making, or in other words, an instrument that must be considered by decision-makers, the actual legal consequences which it implicates is a matter of debate. On the one hand, it can be seen as an instrument to guide the decision-making process, whereas on the other hand, it can be treated as an instrument that controls or governs the decision-making. This gives rise to the question: do REMPs guide the ISA decision-making process, or do they instruct the ISA decision-making process.

4.1. The weight of REMPs

The main assertion in favour of the former (that REMPs merely guide decision-making) is that the word 'plan' in Regional Environmental Management Plan in itself gives rise to a non-binding connotation. Following this logic, a plan will always remain as an idea or abstraction with guiding features, and functions as one of several means to an end. One response to that is that it is patently clear that appropriate terminology can be used to make a 'plan' legally binding, e.g. "This plan shall be legally-binding". Another response to that is that while some parts of the instrument can be aspirational, certain aspects of the plan can be made mandatory, e.g. "An area under consideration for approval must be at least [xxx distance] from an existing area", or "Applications that fall under the following coordinates shall not be considered". In this sense, while the instrument is generally of a policy nature to set aspirational and overarching objectives and targets, there can be numerous positive and obligatory provisions in REMPs that connote binding implications. A third response is that legal presumptions could be used in REMPs, stating something to the effect that: "Once [xx percentage] of the region area covered under the REMP is subject to exploitation contracts, the awarding of future exploitation contracts shall be postponed." Accordingly, when, where and how to make certain requirements within a REMP as compulsory and binding depends on the will of the member States, and not the title of the instrument itself.

It follows that REMPs do have the potential to carry significant, binding weight. It is, therefore, perhaps fitting to describe REMPs as a hybrid instruments with legal implications that steers, facilitates and instructs decision-making at the ISA. In this sense, it may be more appropriate to characterize REMPs as instrument to 'direct' decision-making rather than to 'guide' decision-making (i.e. an instrument of 'direction', as opposed to 'guidance'). All organs of the ISA are required to give full effect to REMPs in carrying their decision-making functions, thereby providing legal certainty and predictability to the regime, and ensuring a level-playing field by subjecting all prospective and existing contractors in the region to the same level of scrutiny.

[15] Based on numerous statements made by a multitude of member states at the 25th Annual Session of the Council and Assembly of the ISA.

4.2. The legal implications of REMPs

Having discussed the relationship between REMPs and the organs of the ISA, it is now necessary to consider the implications that REMPs might have on individual contractors. Here, it is pertinent to point out that while REMPs will function to steer and instruct decision-making processes at the ISA in a direct manner, it will only have indirect implications on contractors. Substantive requirements that shall apply to contractors must be inserted in the Rules of the Authority and the Standards and Guidelines developed thereunder. In this regard, the present Draft Regulations can require contractors to prepare their applications in accordance with the requirements under the applicable REMP, or risk the chance of having it disapproved. This includes, but is not limited to, fulfilling certain requirements that the applicable REMP may require with respect to the preparation of the Mining Workplan, as well as the Environmental Plans (to wit, the Environmental Impact Statement, the Environmental Management and Monitoring Plan, and the Closure Plan) that accompany the application. Prospective contractors shall be put on notice that an application that does not correspond or resonate with key components in the application REMP will not be approved.

Further, during the subsistence (and upon closure) of their contracts, contractors shall be required by the Regulations to ensure that their mining operations are in conformity with, and do not contradict or undermine, the objectives, measures and thresholds set by the applicable REMP. This link is specifically with respect to the annual reports that contractors are required to submit to the Authority, as well as the related monitoring and reporting obligations. In addition, Standards and Guidelines can also be utilized as a means to give effect to REMPs. Through this mechanism, objectives, measures and thresholds that are determined under REMPs can be transposed into actions and deliverables that contractors must meet.

In the event it becomes apparent during the subsistence of the contract that the mining operation is not in conformity with the applicable REMP, or contradicts or undermines its objectives, measures and thresholds, the contractor shall be bound to engage with the Authority in order to make the necessary adjustments to the mining operation. This requirement must be inserted in the contract, and expressly identified as a fundamental term of the contract. While the exact means that are to be adopted can be determined by the contractor and the Authority through consultation and mutual agreement, the Authority shall always retain the power to require certain measures, e.g. reduction in the mining operations, in order to ensure that the resulting environmental harm is minimized. The Authority also has the clear power to suspend mining operations, as well as to issue emergency orders in the case of ‘serious harm’. However, as mentioned, tackling ‘serious harm’ should not be the goal of REMPs; rather, REMPs should pursue the maintaining of a desired level of healthy status of the marine environment. The Authority should be empowered to pursue this aim and not settle for avoiding ‘serious harm’.

5. Standard procedure for REMP: Design, adoption, implementation, review and funding

While the respective REMPs are expected to be unique and different from each other (to some extent), taking into account the region-specific needs, there are numerous reasons, however, why each REMP should undergo a similar process. First, there is a need to ensure a level-playing field in the Area. Thus, while there is a need for special consideration to region-specific needs, all REMPs shall be subjected to the same level of attention and scrutiny. This is particularly the case with respect to the treatment of similar resources in different regions. Second, the level of transparency and opportunities for stakeholder participation should be the same for all REMPs, and it should be highly transparent and widely inclusive. While the exact constellation of stakeholders may differ from region to region, however, the general characteristics of such stakeholders (e.g. scientists, civil society, interested states, and representation from adjacent coastal states) shall be preserved. Third, there is a need to ensure that REMPs are based on best available scientific and other information. This includes the need to ensure that all REMPs are subjected to regular updates and synced to reflect new developments in scientific knowledge. There appears to be four stages in REMP development that require streamlining: the roles in the design process, adoption, implementation and review.

5.1. Design

The process to identify the need for the development of REMPs should commence with the Council. In fact, this already seems to be the practice with the Council having identified priority areas (ISBA/25/C/13). Other organs of the ISA (the Assembly or Secretariat), as well as Sponsoring States (existing or prospective) and Observer members, may also bring to the attention of the Council the need for a particular REMP development. Once the Council has determined the need for a specific REMP to be developed, the Council has several options:

A. Task the Environment and Scientific Committee (ESC) to take charge of this process: This option presupposes the possibility that the Council finds it necessary to urgently establish a dedicated subsidiary organ for all environmental and scientific matters (not just REMP-related). The UNCLOS provides the framework for the creation of subsidiary organs, such as the ESC, as and when deemed necessary.[16] The ESC can work parallel to or in conjunction with the LTC. Having been tasked by the Council to develop a REMP, the ESC will be tasked with setting up a dedicated REMP Expert Committee (REC). (While the members of the ESC are expected to have impeccable environmental and scientific expertise, a dedicated REMP Expert Committee is necessary to ensure region-specific expertise.) Upon identifying the terms of reference for the REC, the ESC shall notify the same to the Secretariat and the Council, in order to seek nominations from the Member States of the Authority. Based on the nominations received, the ESC shall propose the names of a fixed number of persons (e.g. between 4-6 experts) with a wide-range of environmental expertise, and in particular those with expertise that is specific to the region, to form the REC.

   Since the development of the REMP is to focus on being based on the best available science, the ESC shall propose the names of persons who possess the requisite expertise from among the

[16] See Article 162(2)(d) of UNCLOS which states that "the Council shall establish, as appropriate, and with due regard to economy and efficiency, such subsidiary organs as it finds necessary for the exercise of its functions in accordance with [Part XI]. In addition, the 1994 Implementing Agreement also acknowledges this needs-based evolutionary development of the ISA. This is reflected in Section 1(3) to the Annex of the Agreement, as follows: "The setting up and the functioning of the organs and subsidiary bodies of the Authority shall be based on an evolutionary approach, taking into account the functional needs of the organs and subsidiary bodies concerned in order that they may discharge effectively their respective responsibilities at various stages of the development of activities in the Area".

nominated names. Special attention can be paid towards nominations made by coastal states who are adjacent to the region under consideration (although it may not necessarily be the case that the person(s) nominated are citizens of the said coastal state(s)), provided the specific expertise requirement is met. Nominations made on the basis to represent mining interest in the region, however, shall not be considered. The rationale for this is to ensure that the REMP design is knowledge-based, with the assurance that all stakeholders, including adjacent coastal states and stakeholders (including those with mining interests) will be consulted at a later stage. Having received the proposed names from the ESC, the Council may decide to appoint these persons based on the said recommendations or consider any other persons that were nominated but have been overlooked by the ESC. The appointed REC, now to be considered as the core group, will then take charge of the REMP development process.

B. Task the LTC to take charge of the REMP development process: Under this option, the ESC is assumed to be non-existent. As such, the LTC will perform the steps in option A, replacing the ESC in the text above.

C. Call for nominations from among the Member States of the Authority and directly appoint the REC: Under this scenario, the Council takes charge of the REMP development process until the dedicated REC is formed.

It is important to note that the Secretariat, being the administrative organ of the ISA, shall assist the REC and facilitating its work, where necessary. While the Secretariat may make recommendations of suitable experts for the REC, based on its experience from previous occasions, it shall not participate in the process of appointment.

Once the REC has been formed and accepted its terms of reference, it shall commence work on the design of the REMP. Members of the REC shall meet as many times as necessary carry out all steps required for developing a draft REMP as indicated in chapter 6.1. After the completion of preparatory works and steps 6.1.1.1-6.1.1.6, the state-of-the-art Environmental Report should be presented to and discussed with science and regional a stakeholders, in particular also adjacent coastal States, e.g. in a dedicated workshop. Building on an overall agreed description of the environmental situation in the Environmental Report, a stakeholder-inclusive process shall agree on a regional environmental vision, objectives and targets (see 6.1.7) which set the management direction for the resulting environmental management plan (6.1.8.). The draft plan and all associated measures, ideally the drafting process, need intensive consultation with the stakeholder constituency in writing and in workshop-style.

Once the above process has been completed, the REC shall review the REMP and provide it for open consultation. The REC shall then promptly prepare a comprehensive report, detailing the comments that has been received on the draft REMP. The draft REMP together with the report shall then be forwarded to the ESC or LTC, as the case may be. The ESC or LTC shall consider the draft REMP and the report prepared by the REC, and make a recommendation to the Council. In its recommendation, the ESC or LTC shall provide justifications for its recommendation, in particular explaining the parts where it differs from the views of the REC (if any).

5.2. Adoption

Upon receiving the recommendations from the ESC or the LTC, the Council shall take up the matter at its next session. Upon deliberation, as provided under the UNCLOS and the 1994 Implementing Agreement, all efforts shall be undertaken to ensure that the REMP is adopted by consensus. If all efforts to do so are unsuccessful, the Council could either proceed to vote, or to defer the matter to facilitate further negotiations and deliberations. In the case of a vote, this being a matter of substance,

a decision "shall be taken by a two-thirds majority of members present and voting, provided that such decisions are not opposed by a majority in any one of the chambers" as prescribed in Section III of the Annex to the 1994 Implementing Agreement.

5.3. Implementation

Implementation of REMPs can be approached in a multitude of ways, in particular through the Exploitation Regulations, Standards and Guidelines, as well as other rules, regulations and procedures of the ISA.[17] One alternative approach to give effect to the implementation of REMPs that is perhaps worthy of extra consideration is doing so through a separate set of regulations, specifically dedicated to REMPs. Under this approach, while REMPs will continue to be referenced in the Exploitation Regulations, the main 'enabling' instrument will occur outside the Exploitation Regulations. This will give a stronger impression to REMPs, and enable it to cover other activities in the Area, such as prospecting and exploration. Moreover, as the matters in the Exploitation Regulations are more on the operative aspect (i.e. moving towards exploitation and actual exploitation), it might be more appropriate to address an important topic like REMPs outside of the Exploitation Regulations. Thus, there may be some added value if REMPs were given dedicated treatment. Further, a REMP should also include performance metrics (e.g. indicators) in which the scientific and technical criteria set out in the REMP can be assessed against. The REC can be tasked to periodically oversee the performance of REMPs during its operation and make any report to the ESC or LTC (as the case may be), if necessary.

5.4. Review

Each REMP should be subjected to a uniform review procedure, e.g. every 5 years. The body responsible for developing the REMP should be established permanently and be responsible for collecting new information until the next review of the REMP, including the assessment and review process. The review includes in substance an updated baseline description of the region, an updated environmental impact and risk assessment in view of the REMPs´goals and objectives, and eventually a revision of the measures agreed in the previous plan. This material, together with an identification of the key matters shall be published for public consideration, and inputs from this process will be compiled. The matter will then be taken up at a First Workshop to ascertain the performance of the REMP, identify shortcomings, and determine measures for improvement, based on the public consultation. If necessary, a Second Workshop will be held to follow up on this. The REC shall then prepare a report and a Draft Review of the REMP, and forward this to the ESC or LTC as the case may be. The ESC or LTC will then consider the said report and Draft Review, and make its recommendations to the Council. In its recommendation, the ESC or LTC shall provide justifications for its recommendation, in particular explaining the parts where it differs from the views of the REC (if any). The Council shall consider and adopt the Draft Review following the same process as the initial REMP was adopted.

5.5. Financing REMPs

Funding of the ESC and the RECs has to be provided.

[17] For greater elaboration, see the IASS Comments to the Draft Exploitation Regulations (15 October 2019) as well as the 'Legal Effect' background document prepared for the Hamburg Workshop.

6. The scope and contents of REMPs

A regional environmental management plan, REMP, is a precautionary action implementing the ecosystem approach to management of human activities. A REMP is necessarily spatial in nature and exceeds the dimension of individual projects in a region. REMPs can be an outcome of a strategic or regional environmental (and social) assessment of the collective environmental effects and risks to be expected as a consequence of new laws, policies, programmes or plans (SEA Protocol 2003; Abaza et al., 2004; OECD-DAC, 2006). The aim is to ensure *à priori* that the individual and cumulative environmental effects of the activities enabled under the new framework will not undermine the achievement of pre-agreed overarching and conservation goals and objectives or impair ecosystem services (Atkins et al., 2011). Such assessments should aim to be cross-sectoral, however in practice are often applied for sectoral purposes, such as for new offshore licensing rounds (example USA, Canada, UK, Ireland, Namibia).

In the context of ISA exploration and the upcoming exploitation legislation, REMPs will have to provide for an integrated assessment and regional planning, with measures applicable only to activities in the Area as defined by UNCLOS and (ITLOS, 2011). Should there be more than one type of resource in the region, and activities ongoing or planned for more than one resource, a REMP should cover the likely effects of both activities. Any other sectoral measures are in the responsibility of the respective management bodies or subject to State action. The currently negotiated ILBI/BBNJ Agreement may in the future provide for a framework for inter-sectoral regional cooperation for the benefit of biodiversity conservation.

The strategic aim of an integrated assessment and resulting regional planning is to contribute to a 'high level of protection' of the marine environment by

a) 'Ensuring that environmental, including health, considerations are taken thoroughly into account in the development of plans and programmes;

b) Contributing to the consideration of environmental, including health, concerns in the preparation of policies and legislation;

c) Establishing clear, transparent and effective procedures for strategic environmental assessment;

d) Providing for public participation in strategic environmental assessment; and

e) Integrating by these means environmental, including health, concerns into measures and instruments designed to further sustainable development' (Article 1, ESPOO SEA Protocol 2003).

The procedure will therefore entail the preparation of an environmental report including the consideration of alternatives; a transparent and inclusive public participation mechanism; consultation with other authorities; decision-making concerning the performance of the regulations with respect to the ISA's environmental obligations ('effective protection'); and, after approval, monitoring and communication of the results to the public and other authorities.

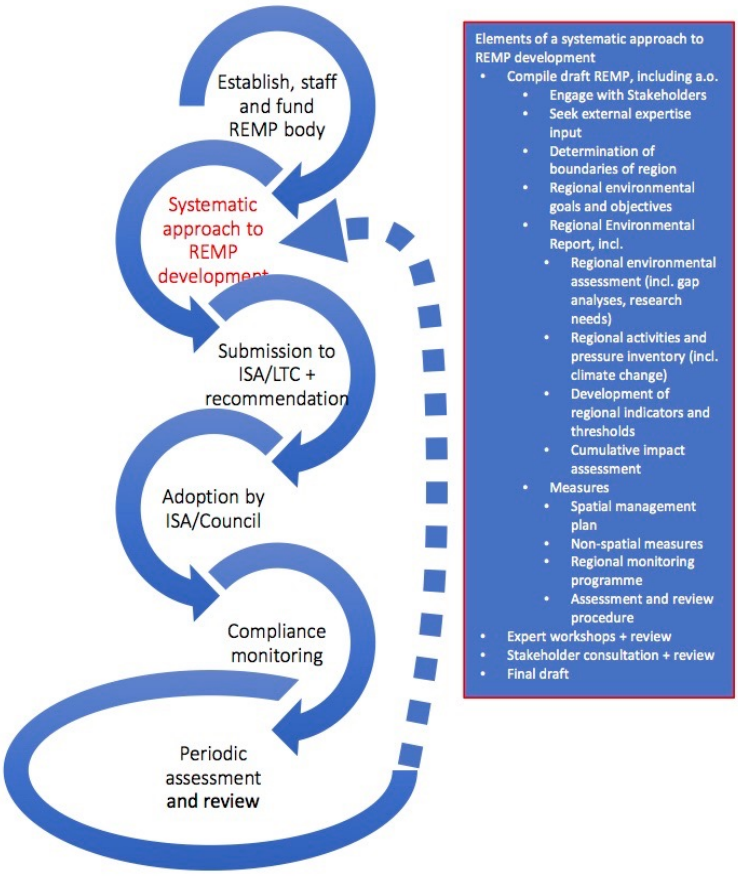

Fig. 1: Steps towards a systematic development of REMPs with stakeholder involvement.

6.1. Towards a systematic approach to developing REMPs

Prior to going into the process of collecting and evaluating the regional information, several actions are required:

- Establish the body responsible for the REMP development process, incl. funding (see chapter 5.1);
- Organise the planning process;
- Initiate stakeholder mapping and analysis, and agree on participation mechanisms (see chapter 6.1.4-5).

Together, or in consultation with stakeholders all following steps have to be taken, eventually based on draft reports assembled either by the organising body or external experts. These include

6.1.1. Determine the region of application

While ideally, a region should be defined as an ecological unit, in practice, the definition of boundaries occurs most of the time as a mix of ecological/biogeographic and practical criteria. This is also what was done in the context of delimiting the CCZ region. However, doing so in the Atlantic or Indian Ocean in relation to the seafloor massive sulphide license areas is more challenging, as it

depends to a large extent on the dimension of the impact areas of SMS mining. Surface or deep currents may advect mining plumes along or perpendicular to the ridges and even reach coastal waters. The region should in principle also cover the migratory habitat of key species.

- Define the outer boundaries, taking account of the location of ISA related activities. ecological units and migratory corridors, policy and management considerations[18].
- Analyse eventual transboundary issues, such as boundaries with the EEZs or extended continental shelf of coastal States and interlinkages with high seas freedoms and the ongoing BBNJ preparations.

So far no criteria exist which can be used for determining the number and extent of regions to be covered by REMPs. For example, in the Indian Ocean, either one, two or three REMPs are possible: one for all of the Indian Ocean Ridge system and the adjacent abyssal plains, two for the ridge system and the abyssal plain separately, and three for central and southwestern IO Ridge separately plus the abyssal region. Given the ecological connection, one region would make the most sense, however would pose the most practical problems.

6.1.2. Determine the plan period and review mechanism

Once adopted, the REMP should be implemented for a limited period, e.g. 5 years before it undergoes a review process. In the course of the plan period, new data and information are being assembled from scientific research, the regional monitoring programme, the annual information provided by ISA contractors, and other users. Annually, a progress report e.g. compiled by the responsible REMP body would highlight major changes in the information base which might give rise to decide an earlier than periodic review of the plan. After 5 years, the plan should undergo full review, including the production of a revised environmental report (6.1.3), and a re-assessment of the programmes and measures with a view to eventual readjustments in order to reach the agreed regional objectives and targets (6.1.4).

6.1.3. Establish a clearing house mechanism

A clearing-house mechanism is essential for transparency and in order to enable States and stakeholders in the region to access, evaluate, disseminate relevant information. The clearing-house should comprise a.o. a web-based information platform, including a GIS-mapping facility, a pool of experts and practitioners in relevant fields, and all process-related information.

6.1.4. Publish a communication and participation strategy for the region

Stakeholder involvement is one of the key principles for the application of an ecosystem approach to the management of human activities (Long et al., 2015), and is viewed as a critical success factor next to political will and leadership, and process transparency (Olsen et al., 2014). It is fundamental for knowledge acquisition and a means to enhance the understanding and acceptance of policies and measures (Langlet and Rayfuse, 2018). Participation processes should be inclusive and collaborative, and allowed sufficient time to mature in order to overcome existing imbalances of powers and means among stakeholders (Slater and MacDonald, 2018), and obstacles to bridge the communication divide between policy and science as well as to resource users (Langlet and Rayfuse, 2018 and lit quoted).

[18] see also ISA Secretariat 'Guidance to facilitate the development of REMPs' (July 2019), p. 20-21.

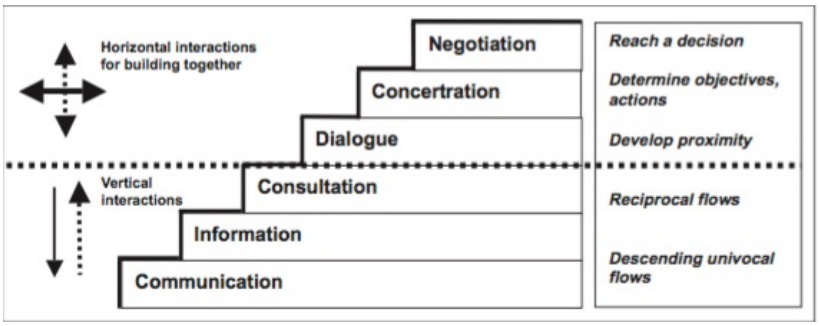

Fig. 2: Possible types of stakeholder participation in a Marine Spatial Planning process (Pomeroy and Douvere, 2008)

6.1.5. Develop a cooperation mechanism with other management authorities and relevant international agreements

Although the Regional Environmental Management Plans of ISA are and will likely remain a sectoral management tool, decisions on measures require an integrated, holistic assessment of past, present and future pressures on those ocean regions, vulnerabilities and expected changes even without any mining taking place. Integration is required horizontally across sectors, as well as vertically from law-makers to the public, be it in a top-down or bottom-up (Olsen *et al*., 2014). Key challenges/tensions to sectoral interplay concern the governance structures and mechanisms, communication and sharing, participation and exclusion and the sectoral fragmentation. Creating co-ordinating structures which operate across sectors, fostering the means of inter-sectoral communication and data-sharing, and broad-scale participation processes are recommended as good governance measures (Alexander and Haward, 2019). Additionally, in the context of waters beyond national jurisdiction, the UNCLOS provides freedoms of use in the high seas, an issue which is now subject to the negotiations on an "International legally binding instrument under the United Nations Convention on the Law of the Sea on the conservation and sustainable use of marine biological diversity of areas beyond national jurisdiction (General Assembly resolution 72/249). Competent management organisations such as IMO or RFMOs act autonomously and until today their governance structures are ill-adapted to enable inter-organisational cooperation (Matz-Lück and Fuchs, 2014).

6.1.6. Prepare an environmental report

In the environmental report the regional knowledge is synthesised from all available sources, including[19]

- An environmental baseline description and evaluation of the state of the environment (e.g. in a Quality Status Report), including observed natural variability, interconnectedness with other regions, and vulnerabilities to impacts from human activities, as well as all environmental and cultural values;
- Identification of gaps in knowledge and uncertainties;
- An inventory of existing spatial and non-spatial conservation measures, as well as potential sites of conservation interest according to global and sectoral measures and criteria;

[19] see e.g. Jones, D.O.B., Durden, J.M., Murphy, K., Gjerde, K.M., Gebicka, A., Colaço, A., Morato, T., Cuvelier, D., Billett, D.S.M., 2019. Existing environmental management approaches relevant to deep-sea mining. Marine Policy. Billett, D.S.M., Jones, D.O.B., Weaver, P.P.E., 2019. Improving Environmental Management Practices in Deep-Sea Mining. In: Sharma, R. (Ed.), Environmental Issues of Deep-Sea Mining. Impacts, Consequences and Policy Perspectives. Springer Nature Switzerland AG, Cham, Switzerland, pp. 403-446.

- An inventory of past, present and planned human activities and their current regulation;
- Identification of actual or potential use-conflicts - among ISA contractors, with other legitimate users - and transboundary issues
- An assessment of the probability, duration, frequency and reversibility of environmental impacts and threats from direct and indirect pressures, their magnitude and spatial extent, including cumulative and synergistic and likely transboundary effects, as well as the effects of global warming on the ocean ecosystems;
- A social and economic impact assessment.

An appropriate ISA guidance on the preparation of an environmental report, based on a standard template for the contents (such as to be discussed during the REMP workshop in Hamburg, 11-13 Nov 2019) is required. It is also essential to agree a regional assessment framework for the assessment of impacts and risks which can then be provided to contractors for application to activities in their responsibility. Action arising from the environmental report includes the assessment of knowledge gaps and resulting uncertainties. This knowledge then serves to either develop programmes to fill the gaps in knowledge through research and/or monitoring, or to proceed towards agreeing on appropriate regional conservation and management objectives and targets and the related management measures.

6.1.7. Agree on regional vision, goals and objectives

An important aspect of a REMP is the ambition to manage human activities transparently towards agreed environmental quality objectives (could e.g. be the avoidance of significant adverse impacts *sensu* FAO, 2009, or towards 'Good Environmental Status' in EU waters (2008) which requires the setting of precautionary impact thresholds. Therefore, in a region, it has to be decided how to break down the high level objectives (which ISA should have set in its Strategic Plan (Jaeckel, 2019), into measurable and achievable regional objectives and targets. A periodic review of the REMP will then measure management success in relation to these SMART targets and objectives. Considerations should include that the Sustainable Development Goals (UN General Assembly, 2015) and other high-level commitments on biodiversity and climate protection made by the member States can be achieved, i.e. that irreversible loss of biodiversity (genes, species, communities, ecosystem functions) is prevented, and that the interests of future generations are protected. (Tunnicliffe et al., 2018) have provided a first comprehensive proposal for relevant strategic goals and objectives.

6.1.8. Determine appropriate measures to reach the regional vision, goals and objectives

Based on the environmental report (6.1.4) and considering the regional vision, goals and objectives set out (6.1.5), the REMP will determine the measures to be taken to ensure an effective protection of the marine environment from harmful effects of mining activities, taking into account other pressures.

Under conditions of good knowledge, a systematic conservation planning process would be appropriate. Given the lack of knowledge on the deep sea, a first step to precautionary conservation could be ecological modelling of presumed environmental baseline conditions, including vertical and horizontal connectivity, food webs and temporal dynamics. A sound regional knowledge base is the precondition for (a) being able to evaluate any regional environmental degradation once mining has started; (b) being able to assess whether there may be a scale, duration, and intensity of environmental effects of mining related activities which will not lead to irreversible, large-scale degradation at local and regional scale; (c) determining the management direction.

6.1.8.1. Precautionary representative spatial protection[20]

Spatial planning is a necessary tool to accommodate the designation of a representative network of conservation areas covering at least 30 % of the overall region with pre-existing exploration contract areas. In order to ensure representativity of sites, the network of representative and autark mining-free areas, "Areas of Particular Environmental Interest", APEIs (an ISA term for areas which are set aside by the ISA from contracting for exploration and exploitation for a certain time until renewal), should be designated as early as possible (Wedding et al., 2013; Wedding et al., 2015). Later placement requires an adaptive scheme of optimising the placement of APEIs over time, in particular once a more realistic idea of the extent of mining effects will be known. This could include the consideration of relinquished areas and appropriate parts of the former exploration areas.

It needs to be investigated whether such a network of APEIs will be successful to ensure the prevention of loss of biodiversity, including ecosystem functions and services once mining will start. Despite all associated uncertainty as to the biological variables, prior modelling of potential mining effects and the possible effectiveness of APEIs is crucial to designing further measures as part of the regional EMP.

6.1.8.2. Spatial conservation of vulnerable, unique, rare and otherwise endangered species and habitats

The suite of representative sites should be complemented by priority sites, species and habitats for conservation, such as indicated by the criteria of CBD, FAO and other organisations, including regional conventions. Ideally, each exploration contractor would carry out a spatial analysis of its contract area and map the distribution of at least mesoscale benthic habitats and communities considering potential conservation areas acc. the criteria of FAO (2009) and CBD (Convention on Biological Diversity, 2010), and outlining Impact and Preservation Reference Areas according to the relevant ISA Guidelines (to be developed).

6.1.8.3. Setting a window of options for exploitation: regulating emissions

Spatial protection may not be sufficient to prevent the loss of biodiversity locally and regionally. Measures to minimise emissions are an even more effective tool for minimising environmental risk and damage. Such measures will be regulated globally through ISA Standards and Guidelines, as well as guidances on Best Environmental Practice and Best Available Technologies, however may need adaptation for regional or subregional purposes. Emissions control could include e.g. measures to minimise sediment plumes, to decrease weight/pressure on the seafloor, minimise toxic waste and discharge etc.

6.1.9. Consider other alternatives and the no-action option

6.1.10. Science programme and capacity building

6.1.11. Design a regional monitoring strategy

In order to keep track of environmental changes in the region, a regional standard monitoring programme in collaboration with contractors is required. The design, including spatial and temporal sampling coverage should be elaborated by a group of experts. Given the huge ocean areas concerned and the rudimentary knowledge of food webs and ecosystem dynamics, it will be key to determine

[20] see also International Seabed Authority Secretariat, 2019. Guidance to facilitate the development of Regional Environmental management Plans (REMPs). Kingston, Jamaika, pp. 1-40. (pp.16-21 and 27-30)

meaningful ecosystem/habitat/population health indicators and significance thresholds in an iterative process. The standard monitoring programme could usefully be based on remote, permanently recording instruments, however this may prove difficult for some biological parameters.

6.1.12. Assessment and review process

see 5.4

7. Documentation

All essential data and information collected, as well as measures taken and all actions related to the development, implementation and review of the REMP, including stakeholder participation, shall be documented continuously in the form indicated by the REMP template, as provided in draft form with the workshop documents. Annual updates of information and periodic reviews shall be included. All should be available through the clearing-house mechanism.

8. Outlook

A standardised approach, tailored to regional needs, for developing and implementing REMPs will increase transparency and accountability, include various forms of interaction with stakeholders as well as feedback loops in the governance of the region. All of this is needed for safeguarding the Area as the common heritage of mankind for the benefit of all, and it is at the heart of the ecosystem approach to management - comprising the best practice of regional assessments and resulting measures as fixed in regional environmental management plans (see also Strategic Directions 3.2 to 3.5 in the ISA Strategic Plan. There seem to be several sensitive steps involved which, if not done carefully, will lead to a mere paper exercise:

- If the environmental vision, objectives and in particular the targets are not formulated in a region-specific, measurable and time bound manner, a verification of the success of the measures formulated in the REMP will not be possible. For that purpose, indicator and threshold values need to be carefully selected and adjusted - eventually at the current state of knowledge an impossible task;
- If the knowledge base does not enable meaningful predictions on the regional and local-scale effects of mining and other human activities, then research and monitoring must have priority over enabling new mining activities. For this purpose there must be transparent mechanisms and institutional arrangements to support independent advice and informed decision-making;
- If stakeholders, including neighbouring coastal States, are not involved from early on and on a broad basis, then the REMPs will fall short of its inclusive and holistic ambition and in the end lack support from stakeholders and overall legitimacy.

The approach to REMP development as put forward in the background document above differs in one major aspect from the approach described in the REMP Guidance document prepared by the ISA Secretariat (July 2019): While the Secretariat seems to take a sectoral approach to REMPs, we suggest a more holistic approach. We see the development and later implementation of REMPs as an opportunity for integrating the sectoral measures undertaken by the ISA to ensure the effective protection of the marine environment (that is on the seafloor and the water column) with the efforts under the currently negotiated ILBI/BBNJ Agreement to provide for the conservation of biodiversity in exactly the same marine regions. As a minimum, coherence of environmental objectives, methodologies and measures should be ensured. Therefore, one crucial element of REMP

establishment through ISA is to create, eventually at global level, an interface for cooperation with other sectoral management authorities, intergovernmental bodies and a broad range of stakeholders.

9. References

2003. Protocol on strategic environmental assessment to the Convention on Environmental Impact Assessment in a Transboundary Context. Kiew 2003, entered into force 11 July 2010.

2008. Directive 2008/56/EC of the European Parliament and of the Council of 17 June 2008 establishing a framework for community action in the field of marine environmental policy (Marine Strategy Framework Directive). OJ L164 25.6.2008, pp. L164/119-140.

Abaza, H., Bisset, R., Sadler, B., 2004. Environmental Impact Assessment and Strategic Environmental Assessment : Towards an Integrated Approach. UNEP, Geneva, Switzerland.

Alexander, K.A., Haward, M., 2019. The human side of marine ecosystem-based management (EBM): 'Sectoral interplay' as a challenge to implementing EBM. Marine Policy 101, 33-38.

Ardron, J., Dunn, D., Corrigan, C., Gjerde, K.M., Halpin, P., Rice, J., van den Berghe, E., Vierros, M., 2009. Defining ecologically or biologically significant areas in the open oceans and deep seas: Analysis, tools, resources and illustrations. A background document for the CBD expert workshop on scientific and technical guidance on the use of biogeographic classification systems and identification of marine areas beyond national jurisdiction in need of protection, Ottawa, Canada 29 September – 2 October 2009. pp. 1-37 and Annex 32 (illustrations, 74pp.).

Atkins, J.P., Burdon, D., Elliott, M., Gregory, A.J., 2011. Management of the marine environment: Integrating ecosystem services and societal benefits with the DPSIR framework in a systems approach. Marine Pollution Bulletin 62 (2), 215-226.

Billett, D.S.M., Jones, D.O.B., Weaver, P.P.E., 2019. Improving Environmental Management Practices in Deep-Sea Mining. In: Sharma, R. (Ed.), Environmental Issues of Deep-Sea Mining. Impacts, Consequences and Policy Perspectives. Springer Nature Switzerland AG, Cham, Switzerland, pp. 403-446.

Convention on Biological Diversity, 2010. Marine and coastal biodiversity. COP 10 Decision X/29.

FAO, 2009. International guidelines for the management of deep-sea fisheries in the high seas. Food and Agriculture Organization of the United Nations, Rome, pp. 1-73.

Gollner, S., Kaiser, S., Menzel, L., Jones, D.O.B., Brown, A., Mestre, N.C., van Oevelen, D., Menot, L., Colaço, A., Canals, M., Cuvelier, D., Durden, J.M., Gebruk, A., Egho, G.A., Haeckel, M., Marcon, Y., Mevenkamp, L., Morato, T., Pham, C.K., Purser, A., Sanchez-Vidal, A., Vanreusel, A., Vink, A., Martinez Arbizu, P., 2017. Resilience of benthic deep-sea fauna to mining activities. Marine Environmental Research.

Heffernan, O., 2019. Deepsea dilemma. Nature, pp. 465-471.

International Seabed Authority Secretariat, 2019. Guidance to facilitate the development of Regional Environmental management Plans (REMPs). Kingston, Jamaika, pp. 1-40.

ITLOS, 2011. Responsibilities and Obligations of States Sponsoring Persons and Entities with Respect to Activities in the Area, Case No. 17, Advisory Opinion (ITLOS Seabed Disputes Chamber Feb. 1, 2011), at https://www.itlos.org/fileadmin/itlos/documents/cases/case_no_17/adv_op_010211.pdf [hereinafter Advisory Opinion].

Jaeckel, A., 2016. Deep Seabed Mining and Adaptive Management: The Procedural Challenges for the International Seabed Authority. Marine Policy 70, 205-211.

Jaeckel, A., 2017. The Implementation of the Precautionary Approach by the International Seabed Authority. Interna onal Seabed Authority, Kingston, Jamaica, pp. 1-15.

Jaeckel, A., 2019. Strategic environmental planning for deep seabed mining in the area. Marine Policy.