

Section 2		
Page	Topic	Comments
Whole Document	Precautionary Principle/Approach & Polluter Pays Principle	<p>The regulation should be based on the precautionary principle which is e.g. laid down in the EU Treaty (art. 191) and therefore common legislative ground for all EU member states. At least, the precautionary approach as laid down in the Rio Declaration should be the basis for the regulation.</p> <p>In our understanding the precautionary principle/approach that first risks, and not only harm, are to be avoided and that second measures could be taken in case of lack of comprehensive information.</p> <p>The wording of the regulation would have to take this understanding into account.</p> <p>(See for example page 12, second column, last line which talks about “where significant impacts may occur”. To comply with the precautionary principle/approach it should read “where significant risks may occur”.</p> <p>As long as our knowledge on deep sea ecosystems is still incomplete the precautionary principle/approach, as reflected in principle 15 of the Rio Declaration, should be applied under the assumption that deep sea mining may cause negative ecological impacts.</p> <p>Similarly, the Polluter Pays Principle should be another center piece of the regulation.</p>
9	Financial and technical capabilities	<p>We strongly recommend a greater level of detail. It should be required to have detailed descriptions of the equipment and methods expected to be used in carrying out the proposed plan of work for exploitation....</p> <p>A general description as stated in the exploration regulation seems to be insufficient.</p> <p>All aspects regarding the capabilities of sponsors and contractors have to follow maximal transparency in order to fulfill the principle of common heritage of mankind and allow for sufficient judgment of impacts on the (marine) environment.</p>
10	Applications for approval of plans of work with respect to a reserved area	A revised definition of a developing state should be elaborated (Singapore and China claim reserved areas).
10	Data and information	The application should include mitigation- and contingency plan which clearly defines the measures to be taken in case of unpredicted “dangerous” events. It is not really clear whether a requirement of submitting a mitigation and contingency plan should be put in place.
11	Feasibility study	<p>The feasibility study should reflect the overall sustainability in view of the benefit for mankind is assessed.</p> <p>The feasibility study should contain relevant aspects of the current state of the environment and the likely evolu-</p>

		tion thereof without implementation of the plan as well as all impacts caused by the deep sea mining process.
12	<p>Environmental Impact Statement (EIS) and Environmental Management Plan (EMP)</p> <ul style="list-style-type: none"> • i. 	<p>i. An EIS has to follow on the basis of state of the art of science and technology* including best environmental practice (BEP) and the common understanding to continuously adapt to improving knowledge and experience.</p> <p>The term "state of the art" refers to the highest level of general development, as of a device, technique, or scientific field achieved at a particular time (e.g. applied in the German Atomic Energy Act).</p> <p>It is important to receive an independent EIA/EIS and Environmental Management Plan (EMP). To that end the operator of the EIA could be paid by a fund (financed by the contractor). The operator of the EIA should be selected through a board consisting of independent members (e.g. ISA and national environmental experts).</p> <p>EIA and EMP should than run through an open public consultation process involving amongst others national environmental agencies, institutions of international or regional conventions (e. g., CBD, OSPAR, CCAMLR) if appropriate. To that end, ISA could establish an internal or independent external technical body to evaluate the EIAs and EMPs from the environmental/ecological perspective.</p> <p>The review and evaluation of the EIA and EMP should cross-check whether the assumptions and conclusions made by the applicant are considering correctly the state of science with respect to ecology, environmental impacts and techniques to be applied.</p> <p>We recommend using already approved assessment frameworks e.g. as established under the London Convention/Protocol (especially the most current ones on carbon capture and sequestration (CCS) and on geoengineering (here ocean fertilization). They can be adapted to the needs of deep sea mining activities. They are accepted and used by LC/LP Contracting Parties. (*All aspects have already been stated in the German Stakeholder Submission)</p>
12	<p>Environmental impact statement (EIS)</p> <ul style="list-style-type: none"> • iv. 	<p>iv. A definition of significant adverse effects is required. (E.g. UN/FAO 2009).</p>
12	<p>Environmental impact statement (EIS)</p>	<p>We see a need that the EIA also considers cumulative effects. A cumulative effect assessment should include</p>

		<p>the impacts from other sectors and the impacts/results from other activities (e.g. deep sea fishing/trawling).</p> <p>Prior to permitting single exploitation projects an area specific Strategic Environmental Assessment (SEA) should be conducted, especially to identify and avoid/mitigate cumulative impacts on the marine environment.</p>
13	Environmental management plan (EMP)	The contents and the functionality of the EMP have to be determined. It is so far not very clear what the EMP should be and do.
	<p>Environmental management plan (EMP)</p> <ul style="list-style-type: none"> • v. 	<p>v. Until now there is minor or no evidence, that restoration and rehabilitation is possible in the deep sea. It is important to achieve a common understanding that due to this knowledge, highest care should be spent to avoid negative ecological impacts. We therefore need to formulate pretentious and effective ecological safety fences as basis for an EMP and the whole activity.</p>
14	Social impact assessment (SIA)	<p>The consequences for land based mining operations have to be considered within the “social impact assessment”.</p> <p>The Social impact assessment (SIA) should be part of the regional environmental management plan to be adopted for all regions where licenses for exploration have been issued.</p>
General	Assessment of alternative options	It seems to be reasonable that alternative options to exploit the minerals, for example on land, have to be considered with regard to the economic, social and environmental aspects. It could furthermore be worth to include other options such as optimal use of raw materials, recycling etc. into these considerations before starting deep sea mining activities.
15	Size and location of exploitation area(s) covered by the plan of work	Effects beyond the exploitation area have to be considered. The whole process from sampling/extracting the raw material, transport to the ship, processing on ship and/or at sea and possible discharges of mine tailings from land should be considered.
18	Public review	<p>The public has to be involved in the process of the approval of an application. Hence, all information submitted by the applicant should to be made available to the public, not only the EIA and the EMP.</p> <p>Furthermore, an overall transparency and public participation strategy should be developed and adopted by ISA.</p>
19	<p>Consideration by the Legal and Technical Commission</p> <ul style="list-style-type: none"> • An application for the approval..... 	<p>Technical working paper on „substantial risk of serious harm“ ...:</p> <p>This concept needs to be revised and aligned with current work or considerations such as those by UNGA/FAO 2009 on vulnerable marine ecosystems and precautionary action to avoid unintended, significant adverse impacts.</p>
20 ongo-	Contracts	The contracts should depend on the approvals which

ing		means that if the conditions/requirements of the permit are changed or have to be amended, the contract has to be adapted accordingly. The Authority should have the right to review, to amend or to withdraw the contract if the permit is changed.
24	Performance requirements <ul style="list-style-type: none"> • A contractor should be permitted to make <i>minor</i> changes to an approved programme of activities without recourse to the Authority. 	We recommend that the distinction between minor and material changes should be based inter alia on the potential environmental impacts. In any case, we recommend to impose to the contractor to immediately announce these minor changes to the Authority for transparency reasons and to ensure for the Authority to reinsure if necessary (e.g. in cases where there are doubts whether the change is of minor character). This could especially be helpful in the starting phase of mining activities, where experiences are missing.
25	Vessels operating in the Area	A clear definition of regulatory responsibilities is needed, settled in a contract between ISA and IMO.
26	Periodic review of the implementation of the plan of work for exploitation	This should include all available research and monitoring information.
26	Responsibility and liability	The specific obligations of an operator in case of liability have to be clarified. Restoration, Payment for the harm caused? The legal approach has to be constructed so that the operator is incentivized to avoid negative effects on the marine environment.
27	Protection and preservation of the marine environment	Preparations for setting up working groups could start now. Full transparency is recommended.
28	Protection and preservation of the marine environment	Waste disposal: Available expertise on the assessment of waste to be dumped into the marine environment under London Convention and London Protocol – specific guidelines on inert material and generic waste assessment guidelines – should be considered and used.
28	Environmental management <ul style="list-style-type: none"> • Specialists should conduct ... 	These independent specialists should be selected through a technical board consisting of independent members (e.g. ISA, NGOs and national environmental experts). The board should be able to evaluate the EIAs and EMPs from the environmental/ecological perspective.
31	Restoration and rehabilitation	The Closure plan has to declare how the restoration of the area will be achieved after the closure of the operation. In our view the operator should be responsible for the restoration after the end of exploitation. It should be considered how the Closure plan will be escorted, e.g. by appropriate monitoring. Responsibility for the latter should be with the Contractor. Details should be clarified e.g. on extent and intensity of monitoring in space and time. Useful indication could be gathered from

		<p>respective work under LC/LP and OSPAR with regard to CCS.</p> <p>The following aspects have been stated in the German Stakeholder Submission:</p> <p>Restoration and natural remediation of biological diversity and ecosystem functioning after deep sea mining has not been sufficiently explored to date.</p> <p>Exploitation of polymetallic nodules implies the removal of the substrate. The restoration of its function is not possible for millions of years (growth of a polymetallic nodule: 5 mm/million years). At this stage it is hard to assess whether we have adequate options for the restoration measures which may be needed.</p> <p>Human actions to actively restore biological diversity and ecosystem functioning will hardly be visible and natural remediation will only occur on long time scales, if at all.</p> <p>Natural remediation relies on the presence of sufficient undisturbed natural populations of relevant species (e.g. worms, corals, sponges) and habitats in the neighbouring areas. These populations/habitats should cover the whole area specific variability of species including rare and/or endemic species, isolated populations and communities.</p> <p>The development of Areas of Particular Environmental Interest and Preservation Reference Zones are extremely important for the restoration and remediation of impacted areas. We strongly support the implementation of Areas of Particular Environmental Interest and Preservation Reference Zones in order to avoid damage of biological diversity and ecosystem functioning. However, the Exploration Regulations fail to define benchmark parameters for the definition of Preservation Reference Zones, such as size, distance from and number of zones associated with each impact area. These parameters will have to be clearly defined in the Exploitation Regulations. Also, we believe that the size of impacted areas should be limited in order to maintain patchiness and to facilitate recolonisation from unaffected areas of similar ecology.</p>
32	Liability trust fund	We support the establishment of such a fund.
43	Effective protection	There is an essential need for clear environmental/ecological standards ("safety fences for ecological impacts", not only to assess the impacts and effects, but also to have precise thresholds and limit values in place.