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Potsdam, 19. Oktober 2018

IASS Stellungnahme im Beteiligungsverfahren bezüglich des Abbautests im deutschen Manganknollen-Explorationsgebiet in der Clarion-Clipperton Zone, Pazifik.

Sehr geehrter Herr Machetanz,

herzlichen Dank für die Gelegenheit zur Stellungnahme zum Vorhaben, einen Manganknollen-Kollektortest im deutschen Explorationsgebiet in der Clarion-Clipperton Zone im östlichen Pazifik durchzuführen. Wegen des Umfangs der durch den Test erzeugten Störungen am Tiefseeboden unterliegt dieses Vorhaben der Prüfung und Aufsicht nach den Regelungen des Meeresbodenbergbaugesetzes (MBergG) und den Regularien der Internationalen Meeresbodenbehörde, IMB, in deren regulatorischem Rahmen jedoch bislang keine öffentliche Beteiligung vorgesehen ist, und auch der Ablauf der Begutachtung sowie die Kriterien der Entscheidungsfindung unklar sind.

Daher ist es sehr zu begrüßen, daß Deutschland seine Verantwortung als Befürwortender Staat wahrnimmt, und die in dem Test vorgesehenen Arbeiten und das lt. IMB erforderliche Begleitmonitoring der Kritik einer breiten Öffentlichkeit aussetzt. Leider ist unklar, welche Konsequenzen die von den befragten Akteuren eingebrachten Kommentare und Anregungen haben werden: Das Anschreiben sichert zwar zu, daß die Stellungnahmen bei Entscheidungen der zuständigen Behörden über die Durchführung und Ausgestaltung des Tests berücksichtigt werden. Gehen also die Stellungnahmen ein in eine dann erforderliche Überarbeitung des zur Kommentierung stehenden, und von Deutschland zum 1. April 2018 bei der Internationalen Meeresbodenbehörde eingereichten Berichts (lt. ISBA/19/LTC/8 eine EIA/Environmental Impact Assessment)? Werden sich daraus auch Konsequenzen für das deutsche Engagement beim zukünftigen Monitoring und der langfristigen Auswertung der Umweltfolgen ergeben? Wird Deutschland im Rahmen der ISA Verhandlungen auf eine Verbesserung der Regularien im Hinblick auf die Anforderungen, Prüfungskriterien und die Durchführung von zukünftigen Tests und Pilotversuchen einsetzen? Letzteres würden wir besonders begrüßen, da das Testen von Abbautechnik zurzeit nicht ausreichend reguliert ist, andererseits aber eine besonders wichtige Informationsquelle für Risikoanalysen darstellt.

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Grundsätzlich sollte die Finanzierung und Durchführung von Abbbaugeräte- und -systemtests im Gebiet, mithin die bewußte Störung der Ökosysteme in einem mehr als wissenschaftlichen Maßstab, unter dem Vorbehalt gesehen werden, daß bislang die tatsächliche Notwendigkeit für den späteren Abbau der mineralischen Ressourcen aus dem Gebiet nicht belegt, andererseits schädigende Effekte auf die Meeresumwelt durch Vorhaben des Tiefseebergbaus sehr wahrscheinlich sind. Es wäre es zu begrüßen, wenn sich die Bundesregierung dafür einsetzt, daß die gesetzlichen Abbau-Regelungen einen strengen Vorsorgeansatzes umsetzen und dazu beitragen, daß das Gemeinsame Erbe der Menschheit einen signifikanten Beitrag zu den 2015 von den Vereinten Nationen verabschiedeten Nachhaltigkeitszielen leistet.

Unter dem obigen Vorbehalt wird im Fall des vorliegenden MiningImpact2 Projektes die öffentlich finanzierte, wissenschaftliche Begleitforschung des Kollektortests der belgischen Firma DEME/GSR im deutschen Manganknollenexplorationsgebiet in der Clarion-Clipperton Zone begrüßt. Der inhaltliche Aufbau des zu kommentierenden Berichts wird so verstanden, daß der Kollektortest nur die Basis für die wissenschaftlichen Arbeiten bereiten soll, nicht jedoch als eigenständiger technischer Test eines Abbauprototypen mit für die Privatfirma verwertbaren technischen Ergebnissen. Das eigentlich vom Verursacher der Störung zu leistende Umweltmonitoring wird so durch das wissenschaftliche Projekt geleistet. Diese Verquickung von Interessen erschwert es zu beurteilen, ob öffentliche Mittel hier eventuell eingesetzt werden, um von der Privatwirtschaft zu erbringende Leistungen zu übernehmen.

Die wissenschaftliche Begleitforschung sollte in jedem Fall einhergehen mit zeitnaher und umfassender Information der Öffentlichkeit über den Ablauf und die Ergebnisse des Kollektortests, sowie bezüglich der kurz-, mittel- und langfristigen Umweltauswirkungen. Die Forschungsarbeiten sollten grundsätzlich dazu führen, daß mit heutigen wissenschaftlichen Mitteln die Gesamtauswirkungen zukünftigen kommerziellen Tiefseebergbaus besser abgeschätzt und in eine zeitgemäße Zulässigkeitsbewertung im Rahmen des Vorsorgeprinzips und der UN Nachhaltigkeitsziele einfließen kann. Bisherige Forschungen belegen heute schon eindeutig die bereits durch Störungen im Forschungsmaßstab hervorgerufenen, im üblichen Naturschutzmaßstab unumkehrbaren, das gesamte Tiefseeökosystem umfassenden Veränderungen. Dabei wurden noch keine Beobachtungen der Dauer und Reichweite, sowie des ökologischen Störpotentials von Sedimentwolken in der Wassersäule gemacht.

Derzeit gibt es keinerlei direkte Grundlage zur Beurteilung der Erheblichkeit der durch Tiefseebergbau verursachten Umweltschäden im Gebiet, weder national, noch durch die ISA vereinbart. Daher gibt es auch keinen Maßstab, mit dem die durch den Kollektortest hervorgerufenen Störungen als nicht signifikant beurteilt werden können, wie im vorliegenden "Environmental Impact Assessment" (BGR, 2018) geschehen. Europäische Staaten sollten allerdings gehalten sein, auch außerhalb europäischer Gewässer einen guten Umweltzustand nach den Kriterien der EU MSRL zu erhalten bzw. herbeizuführen. Das könnte beispielsweise bedeuten, die in der MSRL beschriebenen Deskriptoren und die wissenschaftlich empfohlenen Bewertungsmethoden als Einstieg in die Erarbeitung von Indikatoren und Grenzwerten, sowie einem wissenschaftlich fundierten Bewertungsschema für Umweltschäden in der Tiefsee zu nutzen. Aktivitäten, die den Meeresboden beeinträchtigen, können demnach nur als nachhaltig bezeichnet werden, wenn 1. die natürliche Diversität, Produktivität und die Dynamik ökologischer Prozesse erhalten bleiben und 2. die Wiederherstellung der natürlichen Artengemeinschaften schnell und zuverlässig erfolgt, bzw. andernfalls vermieden wird (Rice *et al.*, 2012).

Das insbesondere von Deutschland finanzierte europäische Forschungsprojekt JPI-O MiningImpact2 sollte auf den europäischen Erfahrungen aufbauend, anhand der im Projekt erhobenen Daten und der mehrjährigen Erfahrungen mit der Schädigung/Erholung von Tiefseeökosystemen, die analogen Grundlagen für ein lokales und regionales Bewertungssystem für die Erheblichkeit von Umweltschäden

durch Manganknollenabbau erarbeiten. Da die IMB anstrebt, auch im Rahmen der Entwicklung der rechtlichen Rahmenbedingungen für den Abbau von Manganknollen in den nächsten Jahren Vorschläge für ein solches Bewertungssystem, Umweltziele und -standards zu erarbeiten würde es sich anbieten, wenn Deutschland sich speziell in diesem Bereich engagieren würde, um die Forschungsergebnisse gezielt einbringen zu können.

Wie auch im vorliegenden "Environmental Impact Assessment" betont, sind die zeitlichen und räumlichen Skalen der Umweltveränderungen durch den Test noch nicht einzuschätzen. Insbesondere die ultrafeine Fraktion der aufgewirbelten und ggf. wiedereingebrachten Sedimente wird bislang nicht modelliert, könnte aber wegen voraussichtlich sehr geringer Sedimentationsraten die ökologisch relevanteste Fraktion sein. Hier scheint auch ein über den lokalen Rahmen hinausgehendes Langzeitmonitoring (> 2 Jahre) erforderlich (s.a. ISBA/19/LTC/8, Annex I para 18), welches derzeit nicht vorgesehen ist.

Bezüglich dieses Langzeitmonitorings stellt sich die Frage, wer nach Ablauf der Explorationsphase, im Fall des deutschen Explorationsgebietes ab 2021, die Verantwortung für die weitere Beobachtung der Umweltfolgen des Tests übernimmt. Aus dem vorliegenden Bericht geht nicht hervor, wie der Verpflichtung zum Langzeitmonitoring nachgekommen werden soll. Wir sehen Deutschland als befürwortenden Staat und Vertragspartner der ISA (über die BGR) in der Verantwortung auch nach Ablauf des Explorationsvertrages das Monitoring und die Bereitstellung von Umweltinformationen zu gewährleisten, zum Beispiel in Form wissenschaftlicher Meeresforschung.

Bitte finden Sie anbei weitere Kommentare, die spezifisch auf den zu kommentierenden Bericht (BGR, 2018) eingehen.

Mit freundlichen Grüßen

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Potsdam, 19 October 2018

IASS comments on Environmental Impact Assessment of test mining activities in the German manganese nodules exploration area in the Clarion-Clipperton Zone, Pacific.

Dear Mr. Machetanz,

Thank you for the opportunity to comment on the upcoming manganese nodule collector test to be conducted in the German license area in the Clarion-Clipperton Zone in the Eastern Pacific Ocean. Due to the anticipated scale of disturbances to the deep seabed this test is subject to assessment and monitoring in accordance with the German Meeresbodenbergbaugesetz (Seabed Mining Act) and the regulations adopted by the International Seabed Authority (ISA). Public participation is, however, not explicitly provided for in ISA regulations.

We commend Germany for upholding its responsibilities as a sponsoring State and enabling civil society to comment on the testing activities and corresponding monitoring required by the ISA. We believe this is also in line with the broader spectrum of international environmental commitments Germany has undertaken independently and as a member State of the European Union. It is currently unclear, however, how these comments and suggestions will be considered in the broader decision-making process and what consequences they may have for the activities in question. Although the cover letter confirms that these written submissions will be taken into account by the responsible authority in its decision-making process concerning the conduct and design of the test, it is not yet clear whether the submissions will also be considered as part of necessary revisions to the environmental impact assessment submitted by Germany to the ISA on 1 April 2018 in accordance with ISBA/19/LTC/8. Will this submission also have consequences for German involvement in future monitoring activities and long-term evaluation of the environmental impacts of the test? Does Germany intend to push for improvements in the regulations concerning requirements, testing criteria and conduct of future component tests and pilot tests? We particularly encourage Germany to take an active role in this regard as testing of mining technologies is currently insufficiently regulated and is a key source of information for comprehensive risk analysis of mining activities.

Component and system tests in the Area and the intentional disturbance of ecosystems at a scale beyond the scale of scientific research should, as a matter of principle, be challenged in light of the fact that a future need for extracting the Area's mineral resources has not yet been proven, while

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environmental harm is very likely to occur. We ask the Bundesregierung to maintain the self-proclaimed legal obligation to apply the precautionary principle as well as its political commitment to the Sustainable Development Goals adopted in 2015 by the United Nations (e.g. Deutscher Bundestag, 2018), *i.e.* through the Mining Code under development.

With this in mind, we support the JPI-O MiningImpact2 project as publicly financed accompanying research to the collector test to be conducted by the Belgian company DEME/GSR in the German license area in the Clarion-Clipperton Zone. The structure of the report being commented on here gives, however, the impression that the collector test merely provides the basis for the research and is not to be understood as a technical feasibility test of a prototype with potential useful findings for a commercial company. In this case, the environmental monitoring required of the polluter will be conducted as part of the scientific project. This fusion of interests makes it extremely difficult to determine whether public resources are being used to uphold private sector responsibilities.

Irrespective of this important issue, the accompanying scientific research should provide timely and comprehensive information to the general public concerning the process and results of the collector tests as well as short-, medium- and long-term environmental impacts. This research should, as a matter of principle, be used to better assess the potential future impacts of commercial deep seabed mining and inform an up-to-date decision-making process which fully reflects the precautionary principle and the Sustainable Development Goals. Previous research already clearly confirms that ecosystem disturbances at the scale of academic research cause irreversible changes that impact the entire deep-sea ecosystem. Observations concerning duration and extent of these disturbances as well as the ecological impacts of plumes in the water column have not yet been conducted.

There is currently no specific basis for judging the significance of the environmental damage deep seabed mining would cause in the Area agreed at the national, European or ISA level. There are therefore no criteria against which the disturbances caused by the collector test could be judged as not significant, as the authors of the Environmental Impact Assessment (BGR, 2018) nonetheless do. In the absence of such criteria, European Union Member States should aim to maintain or achieve "good environmental status" in accordance with the Marine Strategy Framework Directive (MSFD). This could mean that the descriptors and scientifically recommended evaluation methods used in the MSFD are used as a basis for the development of indicators and thresholds, as well as a science-based assessment tool for environmental damage in the deep-sea. On this basis, activities which impact the deep seabed could only be deemed to be sustainable when *(i) the pressures associated with those uses do not hinder the ecosystem components to retain their natural diversity, productivity and dynamic ecological processes and (ii) recovery from perturbations such that the attributes lie within their range of historical natural variation must be rapid and secure,* or else such perturbations have to be prevented (Rice et al., 2012).

The European research project JPI-O MiningImpact 2, largely funded by Germany, should develop the basis for a local and regional assessment tool to determine the significance of environmental damage caused by the exploitation of manganese nodules based on the data acquired during the project and building on significant, already existing knowledge of damage and recovery in deep sea ecosystems. Because the ISA already seeks to develop such an evaluation tool, corresponding environmental goals and standards in coming years as part of its work on the regulations concerning the exploitation of manganese nodules, it would be particularly desirable for Germany to be pro-actively involved in such work and make strategic use of these research findings.

As already emphasized in the Environmental Impact Assessment, the duration and spatial scale of environmental changes caused by the test cannot yet be estimated. In particular, modelling of the ultrafine fraction of the suspended and reintroduced sediments has not yet been performed but, due

to the extremely low sedimentation rate in the deep sea, is likely to be the most ecologically relevant fraction. Long-term monitoring (> 2 years) beyond the local area would be essential (see ISBA/19/LTC/8, Annex I, para. 18), but is currently not provided for in the monitoring plans presented (chapter 8.2).

Concerning long-term monitoring, responsibility for on-going monitoring of the environmental consequences of testing after the conclusion of the exploration phase – for Germany, after 2021 – must also be addressed. The report does not address how the responsibility for long-term monitoring will be handled. We consider Germany, as a sponsoring State and contractual partner of the ISA (via the BGR), to have an on-going responsibility to monitor and provide environmental information even after the expiration of its exploration contract. This could be ensured, for example, through continuing marine scientific research.

The following text provides further specific comments on the Environmental Impact Assessment (BR, 2018).

Yours sincerely

Sabine Christiansen
Kate Houghton

Institute for Advanced Sustainability Studies e.V. (IASS)

General comments on the BGR submission (BGR, 2018, in the following the report):

It is commendable that the report follows the draft template for environmental impact statements as currently included under the draft regulations (ISBA/23/LTC/CRP.3*). This trial will be beneficial for highlighting weaknesses in the structure and contents of the proposed EIS formate.

The Report only insufficiently describes the interaction between the operator of the tested device, DEME-GSR and its vessel, and the research to take place by the JPI-O MiningImpact2 project on the RV Sonne:

- Only the cruise schedule DEME-GSRs cruise GSRNOD19 February to May 2019 is provided in Table 3.3. It indicates two four-day research periods for MiningImpact2 in the Belgian and German contract areas, respectively.
- Chapter 8 only describes the work programme of JPI-O MiningImpact2. This work programme is very comprehensive and labour-intensive. It is unlikely that the work can be performed during the four-day research periods during GSRNOD19. The indicated impact monitoring to be carried out from RV Sonne should be described in chapter 8.2.2 (see p. 33). However, reference is only made here to baseline studies and the installation of monitoring equipment in March 2019 (p.173).
- The parallel cruise of RV Sonne March-April 2019 should be outlined and the contributions of DEME-GSR should be indicated.

The overall goal of monitoring and assessing the environmental effects of a small-scale and short-term nodule collecting event is certainly scientifically challenging and rewarding, however, it is likely to only substantiate and extend the knowledge gained from previous science-scale disturbance experiments. It is also questionable in how far the observed effects will follow a linear cause-effect function, i.e. whether the biological effects observed can be scaled up at all. In addition, the cumulative component of relatively stationary longterm (30 y) excavation and plume generation may be difficult to predict.

The technical description of the prototype collector for manganese nodules (chapter 3.4), though at first seemingly comprehensive, lacks crucial information concerning, for example

- The water suction system: how much water is pumped in, at which height and flow rate? Is the prototype equipped with filters to keep organisms out?
- Down to which depth will the soil be taken into the machine? 12 cm (3.4.2.1)?
- After separation of nodules the remaining sediment ("*Only sediments and very fine abraded nodule fragments mixed with water will pass through the diffuser-exhaust*") will be sent through an exhaust 3 m above the seafloor with 400-100m^3/h (s. 3.4.2.4): why are no measures taken to encapsulate the sediment and direct it to the seafloor behind the machine? As the very fine particles practically do not sink (s. 4.2.4.2.), such a measure could significantly limit the extent of the sediment plume.
- How much additional turbulence is generated by the operation of the caterpillar?
- Interestingly, chapter 6.8.1 provides that the Patania II can only operate down to 2500 m (250 bar) and its hydraulic hoses up to 320 bar - yet the operating depth will be 4100 m.

Is this really the best available technique? Alternatives have not been considered.

The following comments are organised according to the requirements set out in ISBA/19/LTC/8, Part I, Introduction, para 8:

Contractors of an ISA exploration area have the obligation to submit to the Authority subsequent to the approval of their Plan of Work:

*(a) An **impact assessment of the potential effects on the marine environment of all proposed activities**, excluding those activities considered by the Legal and Technical Commission to have no potential for causing harmful effects on the marine environment;*

Comments:

1. The Report states that "due to the small spatial and temporal scale of the testing activity, no serious harm will be caused to the marine environment at any depth within the water column" (executive summary, p. 7). Although this is very likely to be the case, there is as yet no assessment framework for determining the severity of direct and indirect environmental impacts. The statement is thus an assumption not based on objective criteria. In order to develop an assessment method, it will be necessary to agree on environmental goals and objectives on various scales for the contract area, substantiated by appropriate indicators, a significance framework and thresholds, which will support the eventually agreed global and regional standards to be set by ISA, including in a revised Clarion-Clipperton regional environmental management plan, REMP.

2. A fundamental precondition for an impact assessment is a comprehensive baseline description of the testing area and the wider exploration area, taking into account the particular vulnerability of the biota to the effects of activities. Beyond what is required by the ISA so far, the baseline description should include a proposal of appropriate indicators for the state and dynamics of the deep-sea ecosystem (benthic and pelagic), and of ecosystem state-changes to be avoided. Such a baseline description of the German exploration area has not yet been published and together with the lack of agreed environmental goals prevents stakeholders from being able to verify any statement or assessment of environmental impacts on the respective ecosystems and their components.

3. As stated in the Report in Chapter 6 (p. 119), "*the aim of the MiningImpact 2 project is to assess the immediate, short-term and intermediate-term (2 year) physical and chemical impacts of the collector vehicle test on the seafloor and its overlying waters, as well as the response of benthic organisms to the impact*, …". It is concluded, that currently no monitoring and assessment of remaining effects of the testing activities is foreseen after 2 years (project end and exploration contract expired). This should be revisited.

4. There is only one occasion where a cut-off value is presented in the report, the preliminary significance threshold for a sedimentation footprint on the seafloor. The work of MiningImpact2 should be used to further clarify whether a 10 d sedimentation of 1 mm is appropriate in a region where the natural sedimentation is a mere 1-6 mm per 1000 y (p. 82, 4.2.4.4.). As stated on p. 127: "*The redeposition of plume SPM at this scale thus has a huge impact on the generally non-resilient deep ocean ecosystem, which could be prone to irreversible changes under such enormous pressure*."

5. Also, there will be no assessment of plume effects on the plankton community of the near-bottom waters, in particular fragile gelatinous taxa (see chapters 6.4, 7.4.3 and 8.2.1.2), nor was the plankton community described (chapter 5.2) or is it planned to do so (only qualitative sampling). Not only do pelagic life stages of benthic species comprise an important component of the plankton there, but some holoplanktonic groups may also be particularly sensitive to an increase in sediment load in the water. In addition, the lack of strong physical gradients in the deep sea raise the question how high up in the water column the sediments, e.g. coming through the exhaust of the Patania II, will be suspended. Will this be measured by MiningImpact2?

6. As documented in the report, the currently employed sedimentation models do not model the fate of the very fine fraction of sediments in the water column but focus on re-sedimentation on the seafloor (90%). The remaining fraction of 10 % of fine sediments, which like aggregates, have an extremely slow sinking rate (s.S. 76-77, 4.2.4.2.) and therefore potential for long lasting effects in the water column, are not further considered. For a comprehensive investigation of the fate of the plume and its ecological effects, the fate of the slow-sedimenting fractions of the plume should be investigated and if possible its biological impacts be observed, e.g. by camera observations (ROV documentation from the area always show a great abundance of plankton organisms passing by).

(b) A proposal for a monitoring programme to determine the potential effect on the marine environment of proposed activities; and to verify that there is no serious harm to the marine environment arising from the prospecting and exploration for minerals;

1. Chapter 8.2 describes an impressive programme for verifying the effects of the collector operation using scientific tools, and it is understandable that the final layout of the operation will need to be determined on location. Nonetheless, a bit more information on the rationale determining the sampling design (spatial extent horizontally and vertically, prioritisation of the different research questions, how to get statistically useful datasets in such a short time and at that great depth, replications , etc) would have been useful information.

2. As described in 8.2.2 the 2019 monitoring array will be spread over only 2 km^2 near the test site. Does this mean that no measurements will be taken outside this area? How will the "entire Plume Impact Reference Zone" be determined? Will the determination of its extent include the water column turbidity or will the AUV just look down on the seafloor?

(c) Data that could be used to establish an environmental baseline against which to assess the effect of future activities.

Data are not the same as information. Contractors are required to produce data for the recently established ISA environmental database. However, such raw and metadata cannot be used to inform stakeholders or the wider public. This may enable the ISA organs to develop assessment criteria and methods for evaluating future Environmental Impact Assessments produced by contractors, which enable a continuous improvement through feedback mechanisms with new data and information. However, also here, the practical experience in the field is crucial and should be maintained longterm also by Germany, in order not to loose these rare and expensive qualifications.

Hopefully the enormous research effort will result in a comprehensive, publicly available baseline description of the contract area in broad terms and of the test area and surrounding in detail. Such a baseline description should consider unique, rare and vulnerable habitats and species (i.e. acc. to the criteria set out by CBD (Convention on Biological Diversity, 2009; UNEP, 2007) and provide a scientifically satisfactory explanation for the location of Preservation Reference, PRA, and Impact reference zones, IRZ for this test and eventually future mining operations.

So far, despite a great number of publications on many aspects of research in the Clarion-Clipperton Zone, in particular from independant scientific research, BGR has so far not produced such a comprehensive report summarising the results of exploration and research in the CCZ contract areas and knowledge gaps remaining. Unfortunately, the reports submitted to the ISA are not released to the public, so that it is difficult to follow the exploration activities and resulting knowledge gain. The public funding of the activities and the Common Heritage of Mankind principle both require not only consultation and participation but also a timely information of stakeholders and the public.

Therefore, the consultation on the report under review is a promising first step to producing the environmental baselines for the German contract areas on which future decision-making on potential further tests and mining activities can be built.

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