

Terms of Reference for a Research



“Information collection and comparative analysis of technologies for deep seabed mining with respect to technological readiness and environmental effects”

For our project "Bergbau am Tiefseeboden - Versuchsbergbau und fairer Vorteilsausgleich" (Deep Seabed Mining - Test Mining and Fair Benefit Sharing) we are seeking **technical expertise** on the state of development of deep seabed mining technology globally. An overview of the project's activities can be found here

<https://www.iass-potsdam.de/en/research/deep-seabed-mining-test-mining-and-fair-benefit-sharing>

We are aiming at developing proposals for implementing the Best Available Technology and Best Environmental Practice principles in the governance of deep seabed mining in the Area by the International Seabed Authority. For this purpose, we would like to establish an **up-to-date overview of contemporary technological progress in mining technologies** and an **initial ranking with respect to the degree of environmental change to be expected from a commercial operation** using these technologies.

Therefore, the research expected will have two parts:

1. Research the State-of-the-Art mining technology under development and envisaged operations globally, grouped by technical steps in the process chain, such as

- excavation (type of gear, e.g. dredging, drilling, sampling etc, specifications, operations)
- collection
- transport to surface (e.g. hydraulic riser, bucket or else, options for failure and loss)
- pre-processing and discharges (quality of discharge, depth, quantity, design)
- surface vessels
- transport
- processing (how? where?)
- Energy provision (?)

The information to be provided on the respective gear shall include referenced information on:

- responsible operator/developers
- which ISA exploration license holder, location, duration of license, type of license
- type of operations planned
- technical specifications of components/system
- technological feasibility stage

- type, timescale and location of tests, if any
- environmental monitoring, if any
- existing or envisaged cooperations with technology providers or other license holders.

The information shall be gathered from literature, internet sources and if possible expert advice based on previous compilations of such information e.g. from (Ecorys, 2014). We would appreciate a tabular or database-type of information display and a concise summary of results. The research shall be written in English..

2. Collection of information on the potential for environmental damage from the various technological developments.

Much of the technical details of mining technologies under development are likely not made public. However, any information that exists on the different components or systems as described above shall be collected, which may be used for assessing the potential for environmental harm. This would include factors such as weight/sediment penetration, drilling or dredging, sediment uptake and emission, eventual mitigation measures, discharge type and depth, noise level/reduction or light policy. The information can be presented in the form of a matrix and shall be accompanied by an english summary and an evaluation as to the depth of information available and its usefulness for evaluating the potential environmental impacts of the gear.

Qualifications needed:

You are suitable for carrying out this assignment if you have

- practical experience with deep sea technology and instruments development and/or operation;
- a background with deep sea science or deep seabed mineral exploration work, if possible;
- qualifications to assess the environmental impact of certain gear on deep-sea fauna, if possible;
- good skills to research the web and databases, experience with setting up databases and willingness to communicate to acquire hidden information.

Our offer

We offer a fee contract with IASS, covering 6,000.- Euros (plus VAT, if applicable).

As a first step, the structure and type of product will be developed together with the successful candidate. We will provide a starter set of information and literature. We expect the product to be delivered within 6 months from the selection of the contractor, if not agreed otherwise. We appreciate the presentation of the results during our "Fachgespräch" on test mining July 2, 2019 at IASS Potsdam.

The offer will remain open until a candidate has been selected, however, by first of March a first round of tenders will be evaluated. Candidates will be contacted until 8 March 2019 for a telephone interview.

Should the research reveal that the information can be used to classify the environmental performance of the mining tools, this could be further investigated under a second contract phase.

Your tender

Questions can be addressed to Sabine Christiansen (sabine.christiansen@iass-potsdam.de) until 20 February 2019. Questions will be collectively be responded to right after the deadline.

Please send a brief **notification of interest** by Email to Ms. Sara Agbétí (Sara.Agbeti@iass-potsdam.de), including

- Your contacts, qualifications, date, indication if VAT incurs,
- An indication as to how you would carry out the research (information accessible, research strategy, provisional time table, potential partners or contacts) including any sort of comment on the TOR you would like to add
- An indication of who will be involved in executing the assignment and how, including their CV, showing their specialist qualifications and professional experience relevant to the topic in question.

Selection criteria

The following criteria serve to evaluate the tenders and should therefore be carried out with the necessary care. We will evaluate the tenders on the basis of the quality and plausibility of the research proposal (50%), the suitability of the time table (30%) and the potential contributions of experts (20%).

Potsdam, 21 January 2019