Dialogue on Practical Utility of EIA Technology

EcoDeep-SIP Workshop II • Tokyo • Japan

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Contractors with exploration or exploitation licences for deep-sea mineral resources are bound by national or international regulations to perform an environmental impact assessment of their activities. Such assessment in the deep sea needs to be both robust and cost-effective requiring the design of environmental impact assessment studies protocol and long-term monitoring, with methods applicable to developing countries' technology. As part of a project initiated by the Japanese Government, both JAMSTEC and IFREMER are collaborating scientifically and technologically to contribute to the development of environmental guidelines as compiled by the International Seabed Authority (ISA).

INTRODUCTION

In 2015, the Japanese Government initiated a project to develop EIA-related technologies as required by the international society. As part of this project, the Japan Agency for Marine-Earth Science and Technology (JAMSTEC), the National Institute for Environmental Studies (NIES) and the Institut français de recherche pour l'exploitation de la mer (IFREMER), convened the first international EcoDeep-SIP workshop to assess EIAs of deep seabed mining; address scientific issues and technological challenges and contribute to developing a strategy for ecosystem-based management of future deep seabed mining activities. During that workshop, participants agreed that procedures and technologies for environmental research leading to the development of deep-sea mineral resources were greatly needed.

The second EcoDeep-SIP workshop was held in Tokyo, 14-15 March 2017, and followed the same framework.

RECOMMENDATIONS

EcoDeep-SIP I

We need deep-ocean stewardship as a transdisciplinary, multi-sectoral and multi-stakeholder endeavour within and beyond national jurisdictions:

- We are addressing huge areas, connected through highly heterogeneous living communities, which are remote and far from our bases. Our financial and technology limitations have led to a lack of needed scientific knowledge in regard to biodiversity response and ecosystem services recovery;

- Vast areas and long residence times typify deep sea environments, meaning that even fast processes on small spatial scales (e.g. hydrothermal vents) create massive services. In many cases the processes are far removed from their resultant services (mainly interrelated regulating and provisioning services);

- While there is a patent lack of public awareness regarding the richness and vulnerability of the deep ocean, we are working under different governance regimes to cover the international waters and countries' EEZ.

We know that the deep seabed may be a very complex place, interconnected on a vast range of scales, more particularly regarding the SMS sites:

- Depending on taxon, connectivity can occur over very large areas leading to large-scale baseline studies being needed of community and trophic structures and through the exchange of genes within a single basin even though genetic diversity might seem specific to each basin;

- It is crucial to acquire oceanographic data, particularly in regard to basin circulation.

From bottom to surface, the most significant impacts expected from deep-sea mining are:

- Noise and spill over from activities like mineral extraction, cutting and return plumes (particles and toxicity), extraction machines and risers may occur from incidents and ship-related activities;

- Mitigation priorities include: protection of areas from damage or impacts, e.g. representative MPAs (including APEI, Preservation Reference Zone, and other zoning options), limit spread of return plume; limit generation of plumes by mining tools; limit noise intensity and frequency; implement mining activities in a timely manner so as to ensure that mitigation approaches assume appropriate monitoring and adaptive management (use of technologies and knowledge as they become available) based on systematically minimizing mining impact;

- Cumulative impacts might be looked at through multiple mines in the same zone (e.g. CCZ), multiple industry activities in the same area (e.g. mining and fisheries), and in the context of increasing climate-stressors (warming, acidification, de-oxygenation) and eutrophication events.

Ways to reflect those priorities in the environmental assessment process include:

- Minimizing mining impacts: high quality Regional Environmental Assessment, Environmental Impact Assessments and Ecological Risk Assessment are all important steps in the regulatory process that require a strong partnership between research and industry;

- Making measurement/sampling activities as minimally intrusive as possible. Technology development is needed for exploration equipment, production equipment (including noise reduction) and monitoring equipment;

- Using standardized and commonly agreed monitoring devices and procedures must be

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developed jointly with the required regulations/ standards to be set by the ISA.

EcoDeep SIP II

Promote and transfer technological development:

- Clearly indicate the state of technology development which are mature, ready to use, and which are under development;
- Apply and test a complete set of technologies, some of which were presented in the workshop, at a single site to see how they perform together;
- ISA to contribute to the Technology Development efforts though appropriate fund sources have still to be identified.

Promote long-term observation system to generate long-term series of data:

All the scientific work and techniques introduced during the workshop were recognized as totally appropriate in regard to ISA guidelines and directives, though measurement through long-time series, for example, sediment oxygen profiles over time as a proxy for biological activity is also needed.

Be strategic and communicate knowledge:

- Common goals following the SDGs are not being set between policy makers, scientists and businesses and need to be built up on a common understanding of mining benefits and environmental losses;
- Communication of knowledge as well as uncertainty and dialogue with local governments and people are key. The role of 'science communicators' is crucial and should be promoted, as well as interdisciplinary reflection including social sciences;
- Rethink Policy-science interface. Is citizen science a good complementary tool and at what conditions? Definitions used by scientists and policy makers need to be understood;
- Communicate Scientific data/results. Say if something is "safe" or not so private companies, with the help of comprehensive Environmental Impact Studies (EIAs), could use this kind of data and information to discuss with, and convince locals about possible mining;
- Engage local communities as important sources of information for scientists engaged in EIA processes and studies as they often have deep knowledge of the marine environment.

Promote capacity building at regional scale through national institutions:

The ISA Secretary-General said he was impressed by Japan's commitment to technology development and was pleased to see that ISA recommendations were tightly followed. He said one of the key conditions for future adoption and application will be thorough and continuous capacity-building that could be helped through the ISA Endowment Fund for Japan and France, whilst scientific institutions like JAMSTEC and IFREMER will take charge of the actual training.

In the Pacific, Fiji and Papua New Guinea can collaborate with foreign universities and research institutes in their own right although most other island

States don't have the resources. Trained workers tend to migrate to Australia, New Zealand and the USA so there is always need to continue working on capacity building. Future capacity building should concentrate on Regional rather than National scales. For that purpose, the University of the South Pacific is a good partner.

Follow-up face-to-face meetings and workshops were seen as being crucial to maintaining the dialogue regarding practical improvements and the execution of the recommendations generated from the workshop.

The workshop agreed that deep sea mineral research and development should not be considered in isolation, but as one of the maritime activities (current and potential) under the common goals set by the 2030 Sustainable Development Goals (SDGs), and in particular by SDG14 to broaden the scope of interdisciplinary reflection (natural and social sciences) requires participation of local governments and populations (including local knowledge) in the decision-making process.

With regard to technological development, the workshop participants noted that the underpinning rationale of the workshops was to develop technologies and methods that may be easily made available to developed and developing countries hence the importance of sustaining a dialogue between administrators (ISA, regional and national administrations), the research institutions (e.g., JAMSTEC, IFREMER), and the private sector (providers and users) particularly in the Asia-Pacific region.

The keynote addresses were given by JAMSTEC Executive Director, Yoshihisa Shirayam on the *Role of Science for Conservation of Marine Biodiversity* and ISA

Yves Henocque, Senior Adviser, Maritime Policy and Governance, Ifremer

Secretary-General Michael Lodge on *Current topics of ISA's efforts concerning Ocean Environmental Conservation*.

Presentations were made by Akuila Tawake of the Pacific Community on *Deep Seabed Minerals Development in the Pacific Islands Region – Current Status and Challenges;* Pierre Yves Le Meur of Institut de Recherche pour le Développement (IRD), *Mining and environmental impact assessment in French territory in the Pacific*; and Jean-Marc Daniel of IFREMER on the *EU project for Environmental Impact Assessment in the EU* respectively.

Session discussion topics included objectivity and reliability of data; working efficiency; technical feasibility; unexpected impacts; and potential technology.

The Eco-Deep-SIP Workshop was held at the JAMSTEC Tokyo office and was attended by 72 participants from a wide range of Japanese institutions, universities and organizations together with representatives from IFREMER, ISA, Institut de Recherche pour le Développement (IRD), Nouvelle-Calédonie and the Pacific Community (SPC).

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