Expert scoping workshop

"Charting future horizons: harnessing advanced technologies for the protection and sustainable use of the international seabed area"

3-5 April 2024

Porto, Portugal

Terms of Reference

Background

In accordance with the United Nations Convention on the Law of the Sea (UNCLOS) and the 1994 Agreement relating to the implementation of Part XI of the Convention, the International Seabed Authority (ISA), on behalf of the States Parties to UNCLOS, is mandated to administer the mineral resources located in the international seabed area (the Area) for the benefit of humankind. To that end, ISA is tasked to control and organize current exploration activities, as well as future exploitation activities, in the Area and take the necessary measures to ensure effective protection for the marine environment from harmful effects which may arise from such activities. In so doing, ISA has the duty to take the necessary measures to acquire technology and scientific knowledge relating to activities in the Area. ISA is also mandated to design and implement mechanisms to build capacity for developing States to promote and encourage the transfer of technology and scientific knowledge relating to activities in the Area so that all States Parties benefit therefrom.

In December 2020, the ISA Assembly unanimously adopted a dedicated Action Plan for marine scientific research (the MSR Action Plan)[1] in support of the UN Decade of Ocean Science for Sustainable Development (2021-2030). This Action Plan serves as the global agenda for facilitating deep-sea research, identifying six overarching strategic research priorities, including one on "facilitating technology development for activities in the Area, including ocean observation and monitoring".

The International Energy Agency estimates that mineral requirements will quadruple by 2040 to meet the demands for clean energy transitions and create the enabling conditions for countries to meet their obligations to achieve global climate goals, notably the Paris Agreement.[2] Building on the knowledge acquired over more than 40 years of exploration for seabed minerals, the potential role of seabed minerals in the Area in promoting the blue economy and ensuring stable supply of minerals has been increasingly highlighted. The importance of minimizing potential environmental impacts has also been emphasized, which altogether calls for advanced technologies and intelligent solutions to support sustainable management of activities in the Area.

To this end, exploration and exploitation activities, baseline studies, observation, and monitoring efforts, among others, should rely on the best available technologies, including advanced equipment and artificial intelligence. Reliable, transparent, and cost-effective systems for prediction and continuous monitoring of potential environmental impacts of exploration and future exploitation activities are of fundamental importance for developing such technology. Considering the extreme conditions within which such systems need to operate, emphasis is also placed on ensuring that activities integrate technology and novel solutions to operate autonomously in remote areas. It is also important to enable real-time submission of data to ISA for effective monitoring and management of contractors' activities,

[1] ISBA/26/A/4

[2] https://www.iea.org/reports/the-role-of-critical-minerals-in-clean-energy-transitions

in line with the provisions of the ISA regulatory framework, while facilitating sharing of information with other stakeholders.

In this context, five priority areas have been identified including: (i) ocean observation and communication; (ii) monitoring, (iii) autonomy, automation and robotics; (iv) machine learning and artificial intelligence; and (v) mining, energy and processing. Following these priority areas, ISA, in collaboration with the Institute for Systems and Computer Engineering, Technology and Science (INESC TEC) of Portugal, is convening an expert scoping workshop on Charting future horizons: harnessing advanced technologies for the protection and sustainable use of the international seabed area, from 3-5 April 2024 in Porto, Portugal. The workshop will be held both in-person and online to facilitate broader stakeholder engagement.

Objectives

The workshop aims to:

- Review existing technologies related to deep-sea observation, monitoring, exploration, and exploitation, including data management;
- Identify trends, as well as opportunities and challenges for advancing smart technological solutions, particularly for developing countries;
- Identify best practices and technological innovations to address knowledge and technological gaps and priorities for ensuring effective management of activities in the Area, including by promoting scientific advancement and robust monitoring and compliance mechanism;
- Identify concrete activities to facilitate technological innovations and capacity-building of ISA members, especially developing countries;
- Identify potential partners and stakeholders to be engaged in facilitating the advancement of technological solutions for the sustainable development of mineral resources in the Area and discuss possible modalities for collaboration; and
- Assess the technological readiness for effective and responsible recovery of seabed minerals and protection of the marine environment.

Expected Outcomes

It is anticipated that the workshop results will contribute to:

- Enhanced understanding of the current and future technologies for advanced deep-sea observation and monitoring, as well as for exploration and low-impact exploitation of seabed minerals;
- Development of intelligent, efficient, and environmentally sound technological solutions to ensure sustainable activities in the Area;
- Accelerated progress towards building technological capacity of developing countries related to deep-sea research and recovery of seabed minerals; and
- Ensuring effective fulfilment of ISA's regulatory role in managing activities in the Area through informed decision-making processes for the benefit of humankind.

Expected Outputs

The expected outputs include:

- Mapping of existing and future technologies that support sustainable management activities in the Area and recovery of seabed minerals;
- Compilation of information on best available technological tools and practices related to deep-sea research, monitoring, and recovery of seabed minerals;

- Identification of priority needs and opportunities to accelerate collective efforts towards technological innovations in support of sustainable activities in the Area; and
- Identification of potential partners and key areas of collaboration on facilitating technological innovations and relevant capacity-building efforts.

Expected Workshop Participants

The following participants are expected:

- Representatives of ISA's contractors;
- Members of ISA's organs;
- Members of the scientific community with expertise and experience in developing and applying various deep-sea technologies;
- Representatives of ISA's members and stakeholders; and
- Relevant UN/international/regional organizations/bodies/programmes/initiatives.

Selection Criteria of Participants

The call for interest will be distributed to the group of expected participants (see above). All participants should have a multi-year background in ocean technology, its development and use, and resulting data analyses. This covers experience and expertise in the ocean surface, the water column and the seabed and must include ISA's defined priorities, namely (i) ocean observation and communication; (ii) monitoring, (iii) autonomy, automation and robotics; (iv) machine learning and artificial intelligence; and (v) mining, energy and processing. The interested experts should provide evidence of a sufficient level of training in terms of knowledge and practical experience, including:

- Good level of knowledge in the related fields of ocean technology, smart technologies, marine engineering, and ocean sciences.
- Good level of experience in the development and use of ocean technologies and data analyses related to the five priorities identified in the workshop terms of reference.
- Sufficient demonstration of expertise through publications, peer-reviewed articles, and participation in relevant projects, as well as professional roles and certifications.
- Proven record of contribution to facilitating relevant technological and research innovations.