

IHO Input to the Report of the UN Secretary General on Oceans and Law of the Sea

This contribution is provided in response to your letter dated 19 February 2026 as the input from the International Hydrographic Organization to the report of the UN Secretary General on Oceans and Law of the Sea. It addresses developments and issues relating to ocean affairs and the law of the sea, including the implementation of resolution A/RES/80/110.

Executive Summary

The International Hydrographic Organization (IHO) is the inter-governmental international organization whose principal aim is to ensure that all the world's oceans, seas and navigable waters are properly surveyed and charted. The work is done by bringing together the national agencies responsible for the conduct of hydrographic surveys, the production of nautical charts and related publications, and the distribution of Maritime Safety Information (MSI) in accordance with the requirement set out in the International Convention for the Safety of Life at Sea (SOLAS) and other international regulations. The current membership of the IHO stands at 104 Member States.

Although safety of navigation remains a major driver for the IHO, hydrographic products and services are meant to support all activities associated with the oceans, seas and navigable waters. As every human activity conducted in, on or under the sea depends on knowing the depth and the nature of the seafloor and an understanding of the tides and the currents, hydrography is an essential enabler to the development of the Blue Economy. So far only about 29% of the world's oceans are adequately surveyed. Though all main shipping routes are well charted and the transformation to digital mapping has been successfully undertaken, there is a remaining lack of accurate charts for areas which haven't been of interest for navigation and other marine applications in the past. This has a significant impact on what mankind can do at sea today in a safe, economical, and sustainable manner. It is impeding progress and economic development in many, if not most, coastal States and has a major impact on the effective management, sustainable exploitation, and well-informed governance of the seas and oceans. This situation results notably from the fact that less than two third of the States which have ratified the SOLAS Convention have arrangements in place to provide adequate hydrographic surveying and nautical charting services. In this context, it is important to continue to call upon States, that have not yet done so, to consider becoming IHO Member States, actively contribute to the work of the IHO, and urge all States to work with the IHO to increase the coverage of hydrographic information on a global basis. However, whether a State is an IHO member or not, all coastal States should be encouraged to not only ensure that their seas and coastal areas are properly surveyed and charted but also place increased focus on deep sea surveys. The ultimate intention shall be to make hydrographic information available and accessible to all interested groups of stakeholders beyond shipping.

Through its active technical and capacity developing programmes conducted in close liaison with other international organizations, notably the International Maritime Organization (IMO), the Intergovernmental Oceanographic Commission of UNESCO-IOC and the International Organization for Marine Aids to Navigation (IALA) the IHO supports the development and improvement of hydrographic and nautical charting standards, products, and services, especially in digital formats. These capabilities contribute directly to safe navigation, informed marine spatial planning, coastal management, and marine protected area management in the deep sea as well as the limitation of and recovery from natural disasters. They also provide a technical basis for the implementation of the UN Convention on the Law of the Sea and assists activities addressed under the United Nations Decade of Ocean Science for Sustainable Development (2021-2030).

General

1. The International Hydrographic Organization (IHO) is the inter-governmental international organization whose principal aim is to ensure that all the world's oceans, seas and navigable waters are properly surveyed and charted, through the coordinated endeavours of national Hydrographic Offices that also contribute to the promulgation of Maritime Safety Information (MSI). The requirement to provide these services is set out in Regulation 9 of Chapter V of the International Convention for the Safety of Life at Sea (SOLAS) and is therefore an obligation placed on all contracting governments. Regulation 9 requires, among other things that States: “... ensure that hydrographic surveying is carried out, as far as possible, adequate to the requirements of safe navigation”. Regulation 4 of Chapter V places an obligation on Contracting Governments to ensure that appropriate navigational warnings are issued as part of the MSI services. The IHO has been hosted by the Government of Monaco since its creation in 1921 and its current membership stands at 104 Member States.

2. The reference to “navigable waters” does not imply that the IHO is concerned only with safety of navigation. Although supporting safety of navigation is a major priority for all national Hydrographic Offices, their products and services, in some way or another, support all activities that take place on, in or under the sea – preferably with contemporary digital means. This has been highlighted in the current theme for World Hydrography Day of 2026: “Transforming how ocean data is shared”.

3. Hydrography involves measuring the depth of the water (bathymetry), describing the physical features of the seafloor and fixing the position of all the navigational hazards that lie on the seafloor, such as wrecks and rocks. This is done mainly with specialized ships, crewed boats and remotely supervised floating drones operating echo sounders and sonars, but also using survey aircraft fitted with lasers and the processing of satellite imagery. Hydrography also involves measuring the physical features of the water column such as tide and the currents.

4. Hydrographic information is essential for the safe, efficient, and sustainable conduct of every human activity that takes place in, on or under the sea. Without hydrography, no ship sails; without hydrography, no port is built; without hydrography; no offshore infrastructure is developed; without hydrography, no marine environmental plan is implemented; without hydrography, no shore is defended, no island protected; without hydrography, no search and rescue operation is attempted, without hydrography, no maritime boundary is delimited. Thus, hydrography is inherent to the three dimensions of the sustainable development of the oceans, ensuring that the marine environment is respected and that no adverse economic or social impact is incurred.

5. The approved IHO Strategy is designed to foster the IHO vision, mission, and objectives for the years 2021 to 2026. The strategy is focused on three main goals:

1. Evolving the hydrographic support for safety and efficiency of maritime navigation, undergoing profound transformation;
2. Increasing the use of hydrographic data for the benefit of society;
3. Participating actively in international initiatives related to the knowledge and the sustainable use of the Ocean.

6. The activities of the IHO in 2025/2026 which specifically addressed the implementation of resolution A/RES/80/110 concerned four areas:

- developing standards, guidance, products and services;
- developing capacities;
- raising awareness on the role of hydrography; and
- contributing to the promotion of the marine dimension in global agendas.

Developing standards, guidance, products and services

7. IHO standards and guidelines, intended to assist coastal States in meeting their obligations and requirements, fall under five main themes:

- the global ocean map developed and made digitally available through the GEBCO programme (General Bathymetric Chart of the Oceans) operated jointly by the IHO and the Intergovernmental Oceanographic Commission (IOC) of UNESCO.
- the conduct and the assessment of the quality of sea surveys;
- nautical charts, issued on paper or in digital format (Electronic Navigational Charts), which are produced by national Hydrographic Offices to support safe navigation in accordance with the requirements of SOLAS;
- the maritime component of spatial data infrastructures being developed at the national and regional levels, which includes high-resolution bathymetry (depth data), water level and surface currents;
- maintaining an open standard policy which means that IHO publications are made freely available for no costs.

8. The current worldwide coverage of Electronic Navigational Charts is now effectively covering all major shipping routes and approaches to ports for international trade. However, some remote areas that are far away from the highly frequented shipping routes are still not sufficiently covered by modern up-to-date nautical chart information. The advent of larger vessels and the need for vessels to travel to new destinations, in particular with regard to the expansion of the cruise industry for example along the coasts of the Antarctic continent,, are not everywhere supported by adequate surveys and charts.

9. The IHO is also developing and maintaining guidelines to assist stakeholders in implementing the requirement of international instruments such as UNCLOS and SOLAS. An example is the Manual on Technical Aspects of the UN Convention on the Law of the Sea (TALOS Manual - IHO Publication C-51). The TALOS Manual is maintained jointly by the IHO and the International Association of Geodesy (IAG). Its purpose is to provide guidance in order to ensure maximum international standardization of the technical aspects of UNCLOS.

10. The IHO develops and sets standards and issues guidance which ensure that hydrographic information is available and can be delivered to users through appropriate harmonized and interoperable products and services. The current maintenance of existing standards and the development of new ones are driven by the need to continue to satisfy the SOLAS requirements of enhancing safety of navigation and supporting the implementation of “e-navigation”, which is being led by the UN’s International Maritime Organization (IMO). Both elements require easy access to standardized, high quality digital geospatial information that can support marine spatial management. Accordingly, the IHO continues to work on its S-100 framework to support the creation and maintenance of interoperable maritime data product specifications compliant with the ISO-19100 series of geographic information standards. The IHO member states have started to implement the agreed S-100 implementation roadmap which envisions the digital provision of all relevant marine geoinformation themes under this new paradigm. The foundation was now laid in this reporting period by the start of the provision of the new generation of ENCs (Electronic Navigational Charts) in S-101 format from 1st January 2026 onward.

11. Numerous IHO Member States currently engage in significant efforts to establish regular and frequent services utilizing S-100 based datasets with national and regional coverage. Since the S-100 framework and the associated web-based infrastructure is not limited to host data product specifications native to the hydrographic domain, the IHO is proactively supporting the expansion of the S-100 concept to related domains such as maintenance of fixed and floating aids to navigation (IALA), weather and sea ice coverage (WMO), route plan exchange format (IEC), inland electronic charting (IEHG) and oceanography (IOC).

Declaration of maritime limits and boundaries

12. The S-100 series also includes a product specification for maritime limits and boundaries (S-121). The purpose of S-121 is to provide UN DOALOS with a suitable format for the exchange of digital vector data pertaining to the maritime boundaries, limits and zones of States to meet their respective UNCLOS deposit obligations. As far as known here, DOALOS is receiving an increasing number of the national declarations of maritime boundaries, limits and zones made by means of the digital product.

Global dataset on the limits of oceans and seas

13. The IHO's responsible technical body has developed new Product Specification named Polygonal Demarcations of Global Sea Areas (S-130). The objective was to use the S-130 Product Specification as a dataset model for the subsequent production of the IHO global S-130 Dataset with global coverage of all geographic limits of the oceans and seas as maintained in analogue form by the IHO since 1919 by means of IHO publication S-23. Edition 1 of the IHO S-130 global dataset was approved by the 4th IHO Assembly in April 2026 and published for initial implementation, testing and further stakeholder review.

Global map of Marine Protected Areas

14. The adoption of the Agreement under the United Nations Convention on the Law of the Sea on the conservation and sustainable use of marine biological diversity of areas beyond national jurisdiction (BBNJ Agreement) on 19 June 2023 has motivated the IHO to invest into the creation of a specific format (S-122) to map Marine Protected Areas (MPA). The geographic coverage encoded in S-122 data are enriched with metadata contain the specific information on the applying regulations for each of the respective areas. The data format was created in collaboration with the private foundation *ProtectedSeas* and is open source with not limitation for encoding uses. S-122 also aims assist the process of the increased designation of Marine Protected Areas (thirty by thirty) while helping the shipping industry to take true regard of the constraints placed on such areas in terms of passage and other shipping operations.

Developing capacities

15. Capacity development continues to be an important component of the IHO Work Programme. The IHO defines capacity development as the process by which the Organization assesses the status of current arrangements and assists States to achieve sustainable development and improvement in their ability to meet hydrographic, cartographic, and maritime safety obligations with reference to recommendations in UNCLOS, SOLAS, and other international instruments. The scope encompasses all hydrographic needs as it underpins every other activity associated with the sea, including safety of navigation, protection of the marine environment, national infrastructure development, coastal zone management, marine exploration, marine resource exploitation (minerals, fishing, etc.), maritime boundary delimitation, maritime defence and security, and coastal disaster management. The IHO Capacity Development Strategy stipulates that the focus should be on achieving enduring output which will benefit safe navigation, safety of life at sea, protection of the marine environment and economic development, rather than on creating enabling infrastructure per se.

16. The IHO Capacity Development Programme is funded from the IHO budget and is supplemented by additional financial and in-kind support from Member States and other stakeholders such as the ENC distribution entities IC-ENC and PRIMAR, the Nippon Foundation of Japan, the Republic of Korea. Activities included in the 2025 Capacity Building Programme were conducted for the benefit of Regional Hydrographic Commissions and their members with a focus on the transition into the S-100 data production framework. The total amount of expenditure in 2025 was 1.025.000,0 Euro. Taking into account the growing demands for IHO CD activities, more funds and contributions are required. For this reason, the IHO representatives continuously engage with external stakeholders such as the United Nations, IMO, IALA, the European Commission, funding agencies, academia and industry in general, with priority for the Caribbean, West Africa and South West Pacific regions.

Promoting the marine dimension in global agendas

17. The IHO Marine Spatial Data Information Working Group and the UN-GGIM Marine Geospatial Information Working Group agreed to merge their initiatives under a single entity to be designated the UN-GGIM and IHO Joint Working Group on Marine Geospatial Information. The first in-person meeting of the integrated UNGGIM + IHO joint working group on Marine Geospatial Information convened in Chiang Mai, Thailand, over five days, with participation from UN, IHO, OGC, hydrographic offices, and member states from all regions. Participants confirmed a strategic direction, drafted joint vision and mission statements, agreed on five strategic work plan categories, and established task teams on metadata, standards harmonisation (C-17/IGIF-Hydro), legal and policy, and capacity development. The group agreed to pursue formal recognition via member-state sponsorship at the UNGGIM Committee of Experts (August 2026) and subsequently at the UN General Assembly, with the BBNJ treaty entering into force creating immediate demand for marine geospatial expertise.

18. DOALOS as the designated body to conduct the annual meetings of the Informal Consultative Process focused its discussions in 2025 on the theme "Capacity building and the transfer of marine technology: *New developments, approaches and challenges*". The aspirations of IHO's S-100 framework were presented as an offer for enhanced standardization of interoperable marine data streams embracing all aspects of the modelling of the statics and dynamics of the oceans navigable waters. With the realistic expectation of the soon ratification of the BBNJ instruments, digital tools were presented to assist Coastal States in the planning and design process for the establishment of new Marine Protected Areas within or adjacent to their respective sea areas of jurisdiction.

Ocean bathymetry

19. The General Bathymetric Chart of the Ocean (GEBCO) programme is a joint programme that is executed under the governance of the IHO and the Intergovernmental Oceanographic Commission (IOC) of UNESCO. GEBCO is directed by a Guiding Committee made up of representatives from both IHO and IOC and is supported by a Technical Sub-Committee on Ocean Mapping (TSCOM), a Sub-Committee on Undersea Feature Names (SCUFN), a Sub-Committee on Regional Undersea Mapping (SCRUM), a Sub-Committee on Communications, Outreach and Public Engagement (SCOPE) and a Nippon Foundation/GEBCO Training Project Management Committee. SCUFN maintains close liaison with the UN Group of Experts on Geographical Names (UN-GEGN) and with international or national authorities concerned with the naming of undersea features.

20. Through the work of its organs, GEBCO produces and makes available a range of bathymetric data sets and products, including the GEBCO Gazetteer of Undersea Feature Names; the GEBCO world map; the GEBCO Cookbook; Web Map Services and its lead bathymetric product: a global gridded bathymetric data set.

21. A significant source of data for these products is the IHO Data Centre for Digital Bathymetry (DCDB). One of the primary objectives of the IHO DCDB is to provide an authoritative source of bathymetry for ocean mapping requirements. To achieve this, GEBCO proactively collects, stores and disseminates bathymetric data for the world's oceans. GEBCO has worked towards improving its participation in regional mapping activities and has appointed representatives to participate in selected meetings of Regional Hydrographic Commissions that operate under the umbrella of the IHO. Traditionally, GEBCO has focused on waters deeper than about 200 m; however, it is now actively collecting data in shallow water areas to support activities such as coastal zone management and development, and the mitigation of marine disasters such as storm and tsunami inundation. IHO Member States are encouraged to contribute bathymetric data in shallower coastal areas to support the production of higher resolution gridded data products.

22. A new GEBCO 15 arc-second global grid is regularly published every June. The most current GEBCO grid was produced in cooperation with the Nippon Foundation-GEBCO Seabed 2030 Project. The grid uses as a 'base' Version 1 of the SRTM15+ data set (Olson et al, 2014) - a fusion of land topography with measured and estimated seafloor topography. This base grid is augmented with the gridded bathymetric data sets developed by the four Seabed 2030 Regional Centres and compiled into a global bathymetric grid at the Seabed 2030 Global Center. Information on how to access the grid and the data sets included can be

found on the GEBCO web site: www.gebco.net/data_and_products/gridded_bathymetry_data/. The new GEBCO grid released in June 2025, contains significantly more data, and the overall coverage has increased to approximately 29%.

23. The IHO initiated the Crowdsourced Bathymetry Initiative aiming to incorporate, manage and use bathymetric data acquired by other than conventional means for the benefit of all stakeholders interested in knowing the shape and nature of the seafloor and its depths. The IHO has published a guidance document named IHO B-12 “*Crowdsourced Bathymetry Guidance Document*”, which includes a maintained list of Coastal States which positively accept crowd sourced bathymetry activities and the provision of resultant datasets in national waters of jurisdiction: <https://iho.int/en/csbwg>

Empowering women in hydrography

24. The IHO also supports “Empowering Women in Hydrography” initiative as a work item in the Work Programme of the IHO Capacity Development Committee (CDSC). The project seeks to initiate and organize activities which raise awareness about career opportunities in hydrography and work to increase the number of women in leadership positions. The project includes outreach, education, internships, at-sea experiences, on-the-job training activities and a mentoring programme.

25. As part of its mission to induce “transformative ocean science solutions for sustainable development, connecting people and our ocean”, the UN Ocean Decade has endorsed the Empowering Women in Hydrography project as a United Nations Decade of Ocean Science for Sustainable Development action hosted by the World Maritime University’s Empowering Women for the United Nations Decade of Ocean Science for Sustainable Development Programme. The IHO and World Maritime University consult each other on matters of common interest to both entities with a view of ensuring maximum coordination of their respective work and activities. These activities include, but are not limited to, events, mentorship programs, workshops, and meetings.

Awareness of hydrography and the future - United Nations Ocean Conference (UNOC3) in Nice, France, June 2025

26. The Secretariat invested significant resources in fulfilling the commitment to intensifying IHO’s contribution to ocean policy and to the maritime community and in particular the support to IHO Strategic Plan Goal 3: “*Participating actively in international initiatives related to the knowledge and the sustainable use of the Ocean*”. The Secretariat had created a register to track IHO contributions to the Ocean Decade having invited IHO Member States to register their activities. In preparation for UNOC3, more than 40 Voluntary Commitments with a seabed mapping or hydrographic component had been formally registered with the Ocean Decade or via the UN Ocean Conference Series. Although hydrography was not the main topic of UNOC3, the relevance of IHO and GEBCO’s activities were highlighted by the presence of the Secretariat, with a small team attending, and proactively contributing to, a number of UNOC3 events. IHO’s engagement at UNOC3 was a clear success, with strong involvement and interest from new partners who invited the IHO team to their events. One evident expression of this judgement was the adoption of the IHO as a formal institutional member of the Ocean Decade Alliance.