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 11 April 2022 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/75/239.

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

General

1. The International Hydrographic Organization (IHO) is the inter-governmental international organization whose principal aim is to ensure that all the worldôs 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: ñ *hydrographic surveying is carried out, as far as possible, adequate to the requirements of safe navigation*ò 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 98 Member States.

2. The reference to ñavigable watersòdoes not mean that the IHO is concerned only with safety of navigation. Although supporting safety of navigation is a major

Developing standards, guidance, products and services

7. 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 navigational, and more recently, 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 continued 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. S-100 based products of S-101 - Electronic Navigational Chart, S-102 - Bathymetric Surface, S-111 - Surface Currents and S-129 - Under Keel Clearance are under initial implementation, testing and evaluation for vessel navigation in IHO testbed programmes. The 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.

8. IHO also approved a new project S1OOP - S-100 Open Online Platform that is aimed to be

- 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 in particular high resolution bathymetry (depth data) compiled by national Hydrographic Offices;
- the global reference bathymetric data sets developed and made available through the GEBCO programme (General Bathymetric Chart of the Oceans) operated jointly by the IHO and the Intergovernmental Oceanographic Commission (IOC) of UNESCO.

13. The current worldwide coverage of Electronic Navigational Charts is now effectively corresponding with paper chart coverage. However numerous areas remote from the highly frequented shipping routes are still not sufficiently covered by modern up to date nautical chart information. Further progress is hindered by the lack of reliable survey data and the allocation of appropriate resources and priority by the governments of many coastal States. While most of the worldôs established shipping routes are relatively safe navigationally because of widespread use by many ships over many years, 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, are not being supported by adequate surveys and charts.

Building capacities

14. Capacity building continues to be an important component of the IHO Work Programme. The IHO defines capacity building 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 particular 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 Building 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.

15. The IHO Capacity Building programme is funded from the IHO budget and is supplemented by additional support from Member States. Thanks to the impact of the global pandemic, the level of activity of the IHO Capacity Building (CB) Programme in 2021 was significantly lower compared to the level of the preceding years. Expenditure in the IHO 2021 CB Work Programme (CBWP) was 339,493 Euros, approximately 50% smaller than the usual expenditure in the years before COVID. Ongoing financial support is provided by the Nippon FBT0Cc5( )50(de)14(f)-14(S30 1 151.82 5013

hydrography by showing the important work of early hydrographers, progress in technology, and state of the art in technology.

18. The IHO is one of the important actors underpinning the sustainable development of the oceans. This ambition is expressed by the theme for the celebration of World Hydrography Day (WHD) 2022 ñHydrography ï contributing to the Ocean Decadeò. The theme is designed to highlight the relevant contribution of hydrography as a discipline of applied sciences to the United Nations Decade of Ocean Science for Sustainable Development (2021ï 2030). The suggested theme offers the opportunity to emphasize the ability of hydrographers to gather and manage marine data and their strengths in technical collaboration on a global scale. It also underlines the strategic evolution of national, inter-regional and global activities to support an expanding group of stakeholders with hydrographic information and services.

Promoting the marine dimension in global agendas

19. The IHO Secretariat has continued to contribute directly to the UN Committee of Experts on Global Geospatial Information Management (UN-GGIM). At its 11th session in August 2021 the report on the *Implementation and adoption of standards for the global geospatial information community* (Agenda Item 13), was brought to the attention of the Committee by the three Standard Developing Organizations ISO, OGC and IHO Group. This group being integral part of the global geospatial information management community agreed to continue the strong liaison on all levels

bathymetry for ocean mapping requirements. In order to achieve this, GEBCO proactively collects, stores and disseminates bathymetric data for the worldôs 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.

24. A new GEBCO 15 arc-second global grid, GEBCO_2021, was published in June 2021. This is the third GEBCO grid produced in cooperation with the Nippon Foundation-GEBCO Seabed 2030 Project. The grid uses as a ôbaseô 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 Centers 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/.

25. Initiated at the Forum for Future Ocean Floor Mapping by Mr Sasakawa, chairman of the Nippon Foundation, in Monaco in June 2016, the Nippon Foundation-GEBCO Seabed 2030 project commenced its operational phase at the beginning of February 2018. Under the Directorship of Mr Jamie McMichael-Phillips, the project has established the four regional centres (North Pacific-Arctic Oceans, South and West Pacific Ocean, Atlantic-Indian Oceans, and Southern Ocean) and the Global Center based at the British Oceanographic Data Centre (BODC) of the National Oceanographic Centre (NOC) in the United Kingdom (UK). The Seabed 2030 project has a goal of completing the GEBCO grid by 2030, such that each grid cell at the defined target resolutions that varies by depth, will contain at least one depth sounding. The new GEBCO grid released in June 2021, contains significantly more data, and the overall coverage has increased to approximately 21%. Work continues on making additional datasets available and encouraging the IHO Crowdsourced Bathymetry (CSB) initiative to help increase the publicly available bathymetric data. The Seabed 2030 regional and global centers continue to work closely with the CSBWG.

26. The IHO established a Crowdsourced Bathymetry Working Group (CSBWG) in 2015 to examine how best to incorporate, manage and use bathymetric data acquired by other than conventional means and develop principles and guidelines to enable the appropriate collection and use of crowdsourced bathymetry for the benefit of all stakeholders interested in knowing the shape and nature of the seafloor and its depths. In 2019, the CSBWG, comprising representatives from national Hydrographic Offices, academia, and industry finalised the first Edition of a guidance document that sets out the key issues regarding crowdsourcing - both from a collectorôs and a userôs perspective. The guidance document provides general advice and information for those considering collecting or using crowdsourced bathymetry. It is not intended to be either prescriptive or authoriu46.35 T4800360004A>88.024 301.13 Tm[3058007360036>653473600307ETBT1 0 0 1 347.47 339