

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

The following notes provide information on activities of the International Hydrographic Organization that are relevant to the report of the UN Secretary General on Oceans and Law of the Sea. They are provided in response to letter *LOS/SGR/2014/Add.1* dated 3 April 2014.

Executive Summary

The International Hydrographic Organization (IHO) is the intergovernmental body that brings together the national hydrographic agencies responsible for the conduct of hydrographic surveys, the production of nautical charts 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). The current membership of the IHO comprises 82 Member States.

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 foundation to the development of the *Blue Economy*.

Yet, mankind has higher resolution maps of the Moon and Mars than for most of the seas and oceans. This has a big impact on what mankind can do at sea today in a safe, and economical and sustainable way. It is impeding progress and economic development in many, if not most, States. This is a major concern as many of the national hydrographic agencies represented in the IHO are reporting that government-sponsored surveying activity is now decreasing because of financial pressures and conflicting priorities in home waters. The IHO stands ready to assist, advise and to coordinate national and regional surveying and charting priorities - but cannot do so without appropriate levels of government commitment and support.

All coastal States should be encouraged to ensure that their seas and coastal areas are properly surveyed and charted. All coastal States should consider membership of the IHO as an important way to ensure that appropriate and effective national hydrographic services can be implemented in their waters. This will directly support safety of navigation, protection of the marine environment and unlock benefits from the *Blue Economy*.

There are currently 162 States party to SOLAS, 166 States party to the UN Convention on the Law of the Sea and more than 180 States that have a recognisable coastline. Perversely, there are only 82 Member States that are Members of the IHO, with a further seven States in various stages of joining the Organization.

Through its active technical and capacity building programmes conducted in close liaison with other international organizations, notably the International Maritime Organization and the Intergovernmental Oceanographic Commission, 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 and coastal management and the prevention of natural disasters. They provide also a technical basis for the implementation of the UN Convention on the Law of the Sea.

General

1. The International Hydrographic Organization (IHO) is the intergovernmental body that brings together the national hydrographic agencies responsible for the conduct of hydrographic surveys, the production of nautical charts and the distribution 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*”.

2. As the international authority for hydrography and nautical charting, the IHO sets the international standards for hydrographic surveying and charting.
3. Another important role of the IHO is to coordinate nautical charting services across the world - so that mariners have charts to navigate wherever they need to go. This is done primarily through the 15 Regional Hydrographic Commissions and an IHO Hydrographic Commission on Antarctica that have been established by IHO Member States to coordinate and where possible improve the levels of surveying and charting at the regional level.
4. The IHO has an active capacity building programme that assists countries to develop and improve their hydrographic capabilities. Capacity building projects are often undertaken in collaboration with other international organizations and increasingly with active industry participation.
5. **Hydrography supporting the Blue Economy.** The seas and oceans are major contributors to the world economy and therefore the well-being of everyone that lives on the planet. Over 90% of all the world's trade travels by sea. In addition, the seas and oceans represent a vast resource for food, mineral resources, energy, water, bio-medicines, and infrastructure that in turn creates wealth for individuals and for nations. Each of these important and growing maritime sectors also creates jobs; however without good maps and charts of the seas, these benefits are difficult to realize.
6. **State of surveying and charting worldwide.** 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. However, many parts of the world's seas, oceans and coastal waters remain unsurveyed. This has a major impact on the effective management, sustainable exploitation, and well-informed policing of the seas and oceans.
7. While most of the world's 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 is not being supported by adequate surveys and charts. In that respect, the Polar regions are a major area of concern.
8. It is a fact that mankind has higher resolution maps of the Moon and Mars than for most of the seas and oceans. This has a big impact on what mankind can do at sea today in a safe and economically sustainable manner. It is impeding progress and economic development in many, if not most, States.
9. Many of the national hydrographic authorities represented in the IHO are reporting that government-sponsored surveying activity is now decreasing because of financial pressures and competing priorities in home waters.
10. The IHO, through its Member States' national hydrographic agencies stand ready to assist, advise and coordinate national and regional surveying and charting priorities - but cannot do so without appropriate levels of government commitment and support and the provision of suitable resources.

Status of Membership of the IHO

11. There are 82 Member States of the IHO, with a further seven States in various stages of joining the Organization. Meanwhile, there are currently 162 States party to SOLAS, 166 States party to the UN Convention on the Law of the Sea and more than 180 States that have a recognisable coastline. Every coastal State has a dependence on hydrography and nautical charting and will be in some way impeded in its development if there are gaps in its knowledge of the nature of the sea, the seafloor and any hazards that may exist on it. All coastal States should be encouraged to ensure that their seas and coastal areas are properly surveyed and charted. All coastal States should consider membership of the IHO as an important way to ensure that appropriate and effective national hydrographic services can be implemented in their waters.

Safety of navigation

12. Through its technical programme, the IHO seeks to develop, maintain and extend technical standards, specifications and guidelines that enable the provision of standardised products and services that meet the requirements of mariners and other users of hydrographic information.

13. In support of the work of the IMO, the IHO continues to monitor and address issues related to the implementation of the requirements of SOLAS that certain ships carry Electronic Chart Display and Information Systems (ECDIS) according to a progressive scheme that started on 1 July 2012. In particular, the IHO is ensuring that feedback from mariners and equipment manufacturers are taken into account in the relevant IHO standards. The IHO continues to encourage and assist its Member States to achieve an adequate global coverage of Electronic Navigational Charts. In that respect, the issue of overlapping data continues to be a problem in those sea areas where geopolitical issues hamper swift resolution.

14. In the context of the development by the IMO of a strategy to implement “e-Navigation”, the IHO continues to develop standards related to new generation digital products and services under the framework of the IHO standard known as S-100 - *Universal Hydrographic Model*. This work is being conducted in close liaison with other international organizations representing would-be digital e-Navigation information providers such as the Intergovernmental Oceanographic Commission (IOC), the World Meteorological Organization (WMO) and the International Association of Marine Aids to Navigation and Lighthouse Authorities (IALA).

Marine science and technology

15. The IHO oversees, jointly with the IOC, the GEBCO project (General Bathymetric Chart of the Oceans). The GEBCO project is a long-standing collaborative effort to provide the most comprehensive and authoritative maps and depth datasets covering the world’s seas and oceans. GEBCO develops and makes available a range of global reference bathymetric data sets and data products, including gridded bathymetric data, the GEBCO Digital Atlas, the GEBCO world map and the GEBCO Gazetteer of Undersea Feature Names. The data sets and products can be accessed through the GEBCO website at <http://www.gebco.net>.

16. GEBCO’s latest bathymetric products are a global terrain model at 30 arc-second intervals and an on-line gazetteer of undersea feature names (released in September 2013). The "GEBCO Grid" was originally released in January 2009, with updated versions made available in November 2009 and October 2010. A new release of the GEBCO world map with undersea feature names was released in late 2013.

17. Regional ocean mapping projects are an important part of the GEBCO project. The International Bathymetric Chart of the Arctic Ocean (IBCAO) version 3.0 was completed at the end of 2012. The International Bathymetric Chart of the Southern Ocean version 1.0 was completed at the beginning of 2013. The Indian Ocean Bathymetric Compilation Project is now beginning and will result in a new bathymetric map and grid of the Indian Ocean, north of 60°S. A new regional mapping project has been initiated under the auspices of the Baltic Sea Hydrographic Commission to create a digital gridded model representing the bathymetry of the entire Baltic Sea.

18. The series of ISO-based S-100 standards provide a framework to meet the growing requirement to include a maritime component in Spatial Data Infrastructures at the national, regional and worldwide levels. A number of IHO Member States are developing programmes to provide seamless land-sea mapping in order to support such things as integrated coastal zone management and marine spatial planning.

19. In relation to the development of Marine Spatial Data Infrastructures (MSDI) as well as for scientific applications (including monitoring sea-level changes), IHO Member States are active in:

- maintaining tidal observatories,
- collecting, processing and making available long term series of tidal observations, and

- defining, establishing and maintaining vertical reference frameworks.

Law of the Sea

20. The IHO provides advice, guidance and expertise on the hydrographic, geodetic and marine geo-scientific aspects of the Law of the Sea. IHO-IAG Advisory Board on Technical Aspects of UNCLOS publishes a manual on Technical Aspects of the UN Convention on the Law of the Sea (TALOS Manual – IHO publication S-51), the 5th edition was adopted in June 2014 and is available for download from the IHO website.

21. Current ABLOS activities are focused on preparations for the 8th ABLOS Conference (*UNCLOS contributing to a Blue Economy in a Digital World*) to be held in Monaco in October 2015 and initial work on the 6th edition of the TALOS Manual.

22. Product Specifications based on the IHO S-100 standard being developed with other organizations include IHO S-121 - *Maritime Limits and Boundaries Product Specification*, progressed by Australia's national geoscience agency, Geoscience Australia, on behalf of the IHO and in liaison with the United Nations Division for Ocean Affairs and the Law of the Sea (DOALOS).

23. The IHO maintains a list of Law of the Sea Experts which is available on the IHO website (www.iho.int).

Capacity Building

24. Capacity Building continues to be a major component of the IHO Work Programme and a key focus for most of the Regional Hydrographic Commissions. This effort benefits from dedicated support received from the Nippon Foundation of Japan and the Ministry of Land, Transport and Maritime Affairs of the Republic of Korea. The programme is implemented in close cooperation with other intergovernmental organizations such as IMO and international organizations such as IALA. The main capacity building activities conducted in the last twelve months include:

Technical and advisory visits:

Albania, Bulgaria, Cambodia, Cook Islands, Maldives, Malta, Montenegro, Tonga, United Arab Emirates, Maritime Organization of West and Central Africa (MOWCA)

Courses, workshops, seminars:

- MSDI and database management (East Asia region) in Singapore,
- S-100 Exchange of Information Workshops in Korea and Ecuador,
- Regional Workshop on Hydrographic Production Database (HPD) in Peru
- Workshop on technical aspects of maritime boundaries, baselines and the extended continental shelf in Oman,
- Hydrographic Administration Training (Vanuatu and Timor Leste),
- Regional training course on basic hydrography and hydrographic awareness (North Indian Ocean and South-West Pacific regions) in collaboration with IMO,
- Regional training course on basic ENC and ENC production (East Atlantic and South Africa and Islands regions)
- 5th Course on hydrographic data processing and marine cartography (sponsored by the Nippon Foundation),
- Chart production course in Mozambique,
- Advanced chart production course in Sri Lanka,
- Category A Hydrographic programme in collaboration with Ministry of Land, Transport and Maritime Affairs of the Republic of Korea,

- Marine safety information training courses in the Caribbean and South Africa and Islands regions,
- GEBCO training project in collaboration with the Nippon Foundation of Japan,
- Basic course on Training for trainers in Korea.