International Hydrographic Organization (IHO)

Strategic Plan for 2027 – 2032

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Organisation Hydrographique Internationale

IHO

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I. PREAMBLE

Hydrography is the applied science dedicated to measuring and describing the physical features of oceans, seas, coastal areas, lakes, and rivers, along with predicting their changes over time. Hydrographic data, nautical charts, and other vital products and services derived from this science are indispensable for the **safe and efficient navigation** of our waterways. Beyond navigation, hydrography is crucial for advancing our **scientific understanding of marine environments** and supporting the **sustainable utilization of ocean resources**.

The **International Hydrographic Organization (IHO)** was established in 1921 as the world's inter-governmental consultative and technical authority in this critical discipline. With over 100 Member States, the IHO primarily champions **safety of navigation** and **protection of the marine environment** by publishing global hydrographic standards in coordination with other relevant international bodies. The Organization also plays a vital role in building, developing and sharing capacity among coastal states and national hydrographic services and growing the highly skilled worldwide hydrographic workforce. The IHO leads the continuous improvement of hydrographic services worldwide by facilitating discussion and resolution of technical challenges to assist Member States in delivering these essential services.

Purpose of this Strategic Plan

This Strategic Plan sets the course for the IHO as it navigates opportunities and challenges from **2027 to 2032**. This six-year period promises **profound transformation in world hydrography** with the introduction of a new generation of electronic navigation products and services in line with the International Maritime Organization (IMO) E-Navigation and maritime digitalization strategy. To succeed in this evolving landscape, this Plan identifies **specific strategic goals and targets** that will guide the IHO's Work Programme, fostering its vision, mission, and objectives, and establishing clear performance indicators to track progress.

Vision

To be the **authoritative worldwide hydrographic body** which actively engages all coastal and interested States to advance maritime safety and efficiency, ocean and coastal science, and the protection and sustainable use of the marine environment.

Mission

To create a global environment in which States provide adequate, standardized and timely hydrographic data, products and services and ensure their widest possible use.

Objectives

As a consultative and technical organization, the IHO's objectives are to:

- **Promote the use of hydrography** for the safety of navigation and all other marine purposes, and to raise global awareness of hydrography's importance.
- **Improve global coverage, security, availability, and quality** of hydrographic data, information, products, and services, and facilitate access to them.

- **Establish and enhance the development of international standards** for hydrographic data, security, information, products, services, and techniques, achieving the greatest possible uniformity in their use.
- **Improve global hydrographic capability**, capacity, workforce development, science, and techniques.
- **Provide authoritative and timely guidance** on all hydrographic matters to Coastal States and International Organizations.
- **Facilitate coordination of hydrographic activities** among Member States.
- **Enhance cooperation on hydrographic activities** among Coastal States on a regional basis.

II. CHALLENGES AND OPPORTUNITIES

Coastal States worldwide are experiencing **significant and rapidly evolving challenges** that profoundly shape the strategic context for the IHO's mission fulfillment. These dynamics within the global maritime environment simultaneously create **significant opportunities** for innovation, collaboration, and expanded influence. Recognizing and responding to these new dynamics is essential for ensuring the IHO's mission success over the coming decade.

Advancing Standards While Managing Transition

Increasing pressure to maximize the utilization of the world's ports, waterways, oceans, and coasts has created unprecedented demand for **accurate, reliable hydrographic data**. Modern navigation scenarios, including e-navigation and increasing use of autonomy in shipping require high-resolution, real-time, secure and interoperable hydrographic data presented to mariners and other users in formats that **synthesize multiple data sources to simplify risk management and operational decision-making**. As maritime operations become more sophisticated, the margin for navigational error decreases, placing greater emphasis on data accuracy, resolution, coverage, security, and clarity of presentation.

The IHO has responded by developing improved standards for hydrographic data and derived products, most notably the **S-100 Universal Hydrographic Data Model**. S-100 creates transformative opportunities to develop integrated solutions serving multiple maritime sectors, including the next generation of electronic navigation products and services necessary to enable the IMO e-navigation and maritime digitalization strategy. Concurrently, the IHO has sustained its support for legacy paper chart and first-generation S-57 Electronic Navigational Chart standards.

The critical challenge and opportunity for the IHO during **2027-2032** is to successfully drive the **global implementation of the S-100** ecosystem while ensuring all Member States are fully supported through this transition. By completing the ongoing development and deployment of **S-100** integrated data services, the IHO will enhance the future of maritime operations and increase recognition of hydrography as an essential component of marine geospatial infrastructure.

Leveraging Innovation and International Collaboration

While demand for hydrographic services expands globally, many national hydrographic authorities and associated government institutions face significant **resource constraints**, including budget limitations, workforce shortfalls, and gaps in technical infrastructure. **Capacity development** presents particular hurdles, as technological advancements require specialized expertise not equally distributed among Coastal States. The IHO is committed to ensuring that S-100 implementation and advanced hydrographic technologies reach as many coastal states as possible.

Automation technologies and **enhanced international collaboration** present powerful opportunities to address these challenges. Technologies such as uncrewed survey systems, automated data processing, and machine learning - often driven by advances in artificial intelligence - offer significant gains in efficiency for hydrographic offices and data producers worldwide. Strengthened international partnerships will enable the IHO to leverage collective expertise, coordinate training programs more effectively, and ensure that technological advances benefit the entire global hydrographic community. Moreover, the increasing public awareness and concern regarding ocean-related issues present valuable opportunities to enhance the visibility of hydrography and to embed it more effectively within relevant policy frameworks, thereby underscoring its critical role in maritime safety and ocean governance.

Building Resilient Infrastructure for Global Coordination

The expanding scope of hydrographic services demands a **robust core technical infrastructure**. The introduction of S-100-based services, while sustaining delivery of some legacy products, requires a comprehensive technical framework, including secure data protection schemes, quality standards, and international coordination operating at a global scale. **Cybersecurity and data integrity** are paramount to enable remote, frequent updates to authoritative hydrographic data into globally harmonized maritime services.

These infrastructure challenges present opportunities to establish the IHO as a leader in marine data management and security. By developing robust technical infrastructure and comprehensive cybersecurity frameworks aligned with IMO and other relevant International Organization's Standards, the IHO enables its Member States to enhance efficiency, improve accuracy, and provide value-added services extending beyond traditional navigation support. The IHO's expertise and leadership in secure and reliable e-navigation services are vital to their global success.

Dynamic Ocean Environments and Changing Maritime Landscapes

The combination of increasing human activity in the oceans and dynamic marine environments creates unprecedented challenges for maintaining accurate and current hydrographic information. With the expansion of maritime traffic and the emergence of new ocean-based industries, the demand for accurate and up-to-date bathymetric data is intensifying. Simultaneously, natural processes continue to reshape coastal zones, alter sediment dynamics, and transform seafloor conditions. Increasingly frequent weather-related hazards, water level fluctuations and seasonal variations further impact waterways and coastal approaches, necessitating adaptive hydrographic survey methodologies and the implementation of dynamic data flux.

The intersection of human activities and natural variability challenges national hydrographic authorities, demanding more responsive data services and products that can accommodate both planned maritime developments and environmental changes monitoring. These dynamic conditions create opportunities for national hydrographic authorities and other concerned organizations to demonstrate essential value in marine spatial planning and ocean management. The expansion of the **Blue Economy** particularly requires specialized hydrographic expertise and accurate data to support sustainable growth and resource management.

III. GOALS, TARGETS, AND NARRATIVES

GOAL 1 TITLE:
Evolve and sustain hydrography to ensure safety and efficiency of modern maritime navigation

Goal 1 NARRATIVE:
The IHO and its Member States will lead and accelerate maritime navigation's digitalization by developing and maintaining innovative hydrographic standards, unifying data services, and implementing coordinated strategies that respond to user requirements and align with IMO's e-navigation concept. We will guide the evolution of geospatial services while upholding the highest standards of maritime safety and efficiency in an increasingly automated and digitally connected maritime environment.

Target 1
Develop, enhance, and support standards for hydrographic data and S-100 product specifications while coordinating their regional and global service provision.

Target 2:
Advocate for, promote, and facilitate S-100 implementation to meet the evolving needs of marine navigation systems and enhance the provision of S-100 products for onshore services.

Target 3:
Coordinate the approval and implementation of S-100-based Electronic Navigational Data Service (ENDS) products for SOLAS-mandated Maritime Services in the context of e-navigation, ensuring compliance with evolving IMO regulations.

GOAL 2 TITLE:
Enhance and promote hydrography to advance science, benefit society, and support sustainable marine management

Goal 2 NARRATIVE:
The IHO and its Member States will promote and expand hydrographic data and services to support ocean science, environmental protection, and sustainable blue economy initiatives. Through active collaboration with international bodies, the IHO will influence oceans policy such that it supports the work and interest of the organization. The IHO will support integrated marine spatial data infrastructures, advance innovative survey methods, and implement interoperable data standards. These efforts will enable comprehensive understanding and responsible management of our oceans and seas for the benefit of society.

Target 1:
Complete a high-resolution global seafloor map aligned with UN Ocean Decade objectives.

Target 2:
Enhance and promote the Maritime Spatial Data Infrastructure (MSDI) framework through the IHO Geospatial Information Services to enable standardized data sharing and access.

Target 3:
Support Member States in advancing and implementing innovative survey methods and technologies to accelerate ocean mapping.

Target 4:
Strengthen, formalize and expand cooperation with maritime and ocean stakeholders to create a favourable policy environment, enhance data interoperability and expand collaborative initiatives.

GOAL 3 TITLE:
Strengthen the foundation of the global hydrographic community through the implementation of a robust and dynamic technical infrastructure along with a highly qualified workforce.

Goal 3 NARRATIVE:
To meet the growing demands on hydrographic knowledge, the IHO and its Member States will build robust and sustainable technical and human capacities across the global hydrographic community through coordinated capacity development, strategic partnerships, and knowledge sharing. The IHO will support digital transformation by establishing resilient infrastructure, developing diverse technical expertise, and cultivating strong international cooperation to ensure the continued evolution and effectiveness of relevant maritime services worldwide. The common global framework will be realized through the robust management of a body of knowledge that is readily discoverable and seamlessly accessible in real-time for member states and stakeholders through the iho.int platform.

Target 1:
Establish and manage a fully operational S-100 technical infrastructure to support the global S-100 ecosystem.

Target 2:
Enable all states which have navigable waters to achieve Phase 1 of the IHO Capacity Building Strategy and establish a plan to implement relevant elements of Phases 2 and 3[1].

Target 3:
Collaboratively with Coastal States and in conjunction with IMO and IALA, develop and manage a series of Country Profiles to characterize the state of hydrography in every coastal state.

Target 4:
Support and strengthen highly qualified, broad representation across the IHO Secretariat, committees and subordinate bodies drawn from the widest range of talent possible.

[1] IHO Capacity Building Strategy (2021), available here: Capacity_Building_Strategy_2021_ver05.pdf.

IV STRATEGIC PERFORMANCE INDICATORS[2]

SPI 1:
Percentage of Member States having operationalized production and distribution of S-100 Phase 1: Route Monitoring products and services (S-101 and at least one other S-100 Phase 1 product) based on IHO Universal Hydrographic Data Model (S-100).

Progressive targets:
- 30% by 2028
- 50% by 2030
- 70% by 2032

SPI 2:
Percentage of S-101 ENC coverage equivalent to S-57 ENC coverage (dual fuel - to assist with IMO sunset of S-57).

Progressive targets:
- 30% coverage by 2028
- 60% coverage by 2030
- 100% coverage by 2032

SPI 3:
Ensure availability of a connectivity service for the distribution of S-100-based Electronic Navigational Data Service (ENDS) products supporting the seamless transition of maritime service providers to S-100 standards.

Progressive Targets:
- 2027: IHO Infrastructure Center to deliver prototype implementation of connectivity service for operational testing
- 2029: full implementation and compliance with IMO strategy
- 2030 and beyond: Connectivity service (product and service catalogues) managed and supported by IHO Infrastructure Center

SPI 4:
S-100 Route Planning product specifications released meeting all SOLAS requirements for navigational products, publications, and services.

Progressive targets:
- S-122, 123, 127, 131 by 2027
- S-125 by 2028
- S-126 by 2031

[2] Further information is available in the most recent version of the IHO S-100 Roadmap at https://iho.int/en/s-100-implementation-strategy.
These S-100 Implementation Phases are distinct from the Capacity Building Phases defined in the IHO Capacity Building Strategy.

SPI 5:
Percentage of IHO Member States contributing to IHO GIS services[3].

Progressive targets:
- 2028: 70% of MS contributing with at least one layer/submission and 40% of MS contributing with at least more than one layer
- 2030: 80% of MS contributing with at least one layer/submission and 50% of MS contributing with at least more than one layer
- 2032: 90% of MS contributing with at least one layer/submission and 60% of MS contributing with at least more than one layer

SPI 6:
Annual percentage increase in GEBCO grid coverage according to Seabed 2030[4] requirements: 100m grid (0-1500m depth); 200m grid (1500-3000m depth); 400m grid (3000-5500m depth); 800m grid (>5500m depth), with aim to reach 100% by 2030 per Seabed 2030 objective.

Progressive targets:
Yearly increase (percentage)

SPI 7:
Coverage percentage increase of adequately surveyed areas per coastal state based on IHO Publication C-55.

Progressive targets:
- Shallow water target (Depth < 200 m): Yearly Increase (percentage)
- Deep water target (Depth > 200 m): Yearly Increase (percentage)

SPI 8:
IHO Infrastructure Centre (ICE) established and responsive to its customer base, including IHO MS, navigation equipment and software manufacturers, data providers, and national maritime regulators.

Progressive targets:
- ICE Service Level Agreement established, including key performance indicators tracking system availability and discrepancy resolution time, Response time to IHO WG requests, and technical support, by 2027.
- ICE conducts annual stakeholder survey assessing satisfaction with ICE services starting no later than 2027.
- Results of annual stakeholder satisfaction survey are made available.

SPI 9:
Percentage of Coastal States achieving at least Phase 1 of the IHO Capacity Building Strategy.

Progressive targets:
- 80% by 2028
- 90% by 2030
- Monitor status to support and encourage further progress thereafter

[3] Example data layers of interest include, but are not limited to, S-57 Category Zone of Confidence (CATZOC) or S-101 Quality of Bathymetry Data (QoBD), INT Catalogue, S-57 ENC Catalogue, and S-100 Product Scheme and Catalogue.
[4] Additional information on The Nippon Foundation – GEBCO Seabed 2030 initiative is available at https://seabed2030.org/

SPI 10:
Highly qualified representation from various hydrographic regions with broad/diverse backgrounds across the IHO secretariat, committees and subordinate bodies[5], with the aim to achieve proportional geographic and gender balance[6].

SPI 11:
Effectiveness of international and inter-organizational engagement to further the interests of the IHO, measured using a qualitative assessment of three key areas through an instrument determined by Council (Recommended criterion methodology in Appendix):

- Policy impact
- Effectiveness of collaboration
- Projection and impact of expertise

Performance Band Target:
The Target for 2026-2032 is to initially achieve 'Moderate Effectiveness', transition to 'High Effectiveness' and maintain this through the reporting period.

[5] Regional Hydrographic Commissions are not subordinate bodies of the IHO, and thus not included in this SPI. For bodies which jointly report to the IHO and other organizations, only the representatives appointed by the IHO will be considered for this SPI.
[6] These criteria will be assessed annually based on data collected on the IHO meeting registration system (e.g., IHO Portal). "Geographic Balance" will be assessed based on representation from the United Nations Continental Regions.

Appendix: SPI 11 Qualitative Performance Assessment Proposed Methodology

Table 1. Policy Impact Measurement

Criterion	Indicator	Score	Assessment Description
1. Policy Impact	Inclusion of IHO standards/positions in international and regional policy frameworks	0	No evidence of IHO input in any international or regional policies.
		1	Minimal reference to IHO inputs in external policy documents; no substantial influence noted.
		2	Moderate inclusion of IHO standards or guidance in external policies or resolutions
		3	Strong and recurring influence of IHO positions in international/regional policy and regulatory frameworks

Table 2. Effectiveness of Collaboration Measurement

Criterion	Indicator	Score	Assessment Description
2. Effectiveness of Collaboration	Level and quality of IHO participation in external forums and partnerships	0	No participation or collaboration with external organizations.
		1	Passive participation in external forums; few or outdated partnerships/MOUs
		2	Active participation in multiple forums with some leadership or joint initiatives
		3	Strategic and consistent leadership roles in key forums; high partner satisfaction and formalized collaboration mechanisms.

Table 3. Projection and Impact of Expertise Measurement

Criterion	Indicator	Score	Assessment Description
3. Projection and Impact of Expertise	Recognition and use of IHO technical expertise by external bodies	0	No requests for IHO expertise or use of IHO data/tools by external parties.
		1	Occasional invitations for IHO input; minimal external application of IHO tools or advice
		2	Regular contributions by IHO experts to external initiatives; IHO tools used in regional/global efforts
		3	High-profile demand and recognition of IHO expertise; demonstrable impact on external programs, capacity-building, and data integration

Table 4. SPI Cumulative Scoring and Performance Bands

Total Possible Score: 9	
Score	**SPI xx Performance Bands**
0-3	Low Effectiveness
4-6	Moderate Effectiveness
7-9	High Effectiveness