

Publication P-6

# 3<sup>rd</sup> Session of the IHO Assembly

May 2023

# Report of Proceedings Volume 1

IHO



International  
Hydrographic  
Organization

Published by the  
International Hydrographic Organization  
4b quai Antoine 1<sup>er</sup>  
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IHO 3<sup>rd</sup> Session of the Assembly (A-3)  
2<sup>nd</sup>~5<sup>th</sup> May 2023



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## **GENERAL INFORMATION**





## GENERAL DESCRIPTION OF THE THIRD SESSION OF THE ASSEMBLY OF THE INTERNATIONAL HYDROGRAPHIC ORGANIZATION

The 3<sup>rd</sup> Session of the Assembly of the International Hydrographic Organization was held at the Grimaldi Forum in Monaco from Tuesday 2 May to Friday 5 May 2023. The session took place as an in-person event which marked the return to the normal practice stipulated in the General Regulations after the conduct of the 2<sup>nd</sup> Session of the Assembly in 2020 as a remote event due to the limitations induced by the COVID-19 pandemic.

The session was attended by just under 300 representatives from 75 of the 98 Member States of the IHO, together with 3 non-Member States. In addition, 28 representatives from observer international, regional or national organizations took part in the discussions. A meeting of the Finance Committee was held prior to the opening of the Assembly on 1 May. Two groups of exhibitions, one illustrating the work of the IHO Member States and another provided by 23 commercial exhibitors, ran from 2 to 5 May.

Mrs Pia Dahl Højgaard, the Hydrographer of Denmark, and Mr Adam Greenland, the Hydrographer of New Zealand, were elected as Chair and Vice-Chair of the Assembly, respectively.

The IHO was honoured by the presence of His Serene Highness Prince Albert II of Monaco who formally opened the Assembly and the exhibitions on Tuesday 2 May. In addition, His Serene Highness Prince Albert II of Monaco presented the Prince Albert I Medal for Hydrography to Mr Peter Doherty (USA) and Captain Marc Van der Donck (The Netherlands) in recognition of their long-standing contribution to the world of hydrography and the IHO's work.

The Secretary-General, Dr Mathias Jonas, and the Chair of the Assembly delivered welcoming addresses during the opening ceremony which featured keynote speakers Dr Heike Deggim of the IMO, Dr Kerri-Ann Jones of OECD - OCDE, and Dr Vladimir Ryabinin of IOC UNESCO. Representatives of Bulgaria, Guyana, the Solomon Islands, Ghana, Iraq, Angola and Albania presented their flags to the Organization in recognition of joining the Organization since its first Assembly in 2017.

The Assembly examined 15 proposals and several reports tabled by Member States, subordinate organs and the Secretary-General. It agreed on 35 decisions including the approval of the Work Programme and Budget of the Organization for the next three-year period.

An important item on the Agenda of the Assembly was the election of the Secretary-General and a Director for the forthcoming period. The elections took place on Friday 5 May: Dr Mathias Jonas (Germany) was re-elected as the Secretary-General for a three-year term and Dr John Nyberg (USA) was elected as a Director for the period 2023-2029. Both will take up their posts on 1 September 2023.

The Assembly unanimously adopted a Resolution expressing the IHO's appreciation to His Serene Highness Prince Albert II of Monaco and his Government for the support provided for this important event and the IHO in general.

A survey vessel, the USNS BRUCE C. HEEZEN, from the USA called at Monaco on the occasion of the Assembly, and delegates had the opportunity to visit the ship.

In principle, the Assembly agreed to host its fourth session from 21 to 24 April 2026 in Monaco, subject to confirmation in due course by the Secretary-General, in liaison with the Government of the Principality of Monaco.



## LIST OF PARTICIPANTS LISTE DES PARTICIPANTS

### DELEGATES FROM MEMBER STATES DELEGUES DES ETATS MEMBRES

For the Heads of Delegations see in bold / *En gras les Chefs de délégation*

#### ALBANIA / ALBANIE

<b>Giuseppe DURAZZO</b>	<b>Head of delegation / Chef de délégation</b>
Elvis CENKA	Alternate and Advisor / <i>Adjoint et conseiller</i>
Artan MALO	Alternate and Advisor / <i>Adjoint et conseiller</i>
Dritan TOLA	Consulat of Albania in Monaco / <i>Consulate of Albania in Monaco</i>

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Abdelkader BOUHERROU	Alternate and Advisor / <i>Adjoint et conseiller</i>
Sofiane TADJER	Alternate and Advisor / <i>Adjoint et conseiller</i>

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<b>Helder CONCEIÇÃO</b>	Alternate and Advisor / <i>Adjoint et conseiller</i>
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María Eugenia GOYA	Alternate and Advisor / <i>Adjoint et conseiller</i>

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Rod NAIRN	Alternate and Advisor / <i>Adjoint et conseiller</i>
Tracey MAGYAR	Alternate and Advisor / <i>Adjoint et conseiller</i>

#### BANGLADESH / BANGLADESH

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Cesar Reinert BULHÕES DE MORAIS

Nickolas ROSCHER

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**Dk Siti Saihalina PG HJ IBRAHIM**

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**BULGARIA / BULGARIE**

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Ivan IVANOV

**Head of delegation / Chef de délégation**

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**CAMEROON / CAMEROUN**

**CYRUS NGO'O**

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Alphonse AKOA

Beye IDRIS

Claude Eitel BIBI

Joël MBITA

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Alternate and Advisor / Adjoint et conseiller

**THAILAND / THAILANDE**

**Pathompote KAENCHAN**

Chatchai LUANGTHONGKUM

Intira NETMUKDA

Natapong PHATTANAJONGRAK

**Head of delegation / Chef de délégation**

Alternate and Advisor / Adjoint et conseiller

Alternate and Advisor / Adjoint et conseiller

Alternate and Advisor / Adjoint et conseiller

**TUNISIA / TUNISIE**

**Raouf LOUDHA**

Yassine MATAR BECHA

Mahmoud GHORBAL

**Head of delegation / Chef de délégation**

Alternate and Advisor / Adjoint et conseiller

Alternate and Advisor / Adjoint et conseiller

**TÜRKIYE / TURQUIE**

**Emre GÜHLER**

**Head of delegation / Chef de délégation**

**UNITED KINGDOM OF GREAT BRITAIN AND NORTHERN IRELAND /  
ROYAUME UNI DE GRANDE BRETAGNE ET D'IRLANDE DU NORD**

**Peter SPARKES**

Amy LOVE

Andrew MILLARD

Andrew Nicholas RODWELL

**Head of delegation / Chef de délégation**

Alternate and Advisor / Adjoint et conseiller

Alternate and Advisor / Adjoint et conseiller

Alternate and Advisor / Adjoint et conseiller

## General Information

Chris HUNT	Alternate and Advisor / <i>Adjoint et conseiller</i>
Colin SEDDON	Alternate and Advisor / <i>Adjoint et conseiller</i>
Heather OSBORNE	Alternate and Advisor / <i>Adjoint et conseiller</i>
Helena PATTON	Alternate and Advisor / <i>Adjoint et conseiller</i>
Jackie SYDENHAM	Alternate and Advisor / <i>Adjoint et conseiller</i>
James COOKE	Alternate and Advisor / <i>Adjoint et conseiller</i>
Lucy FIELDHOUSE	Alternate and Advisor / <i>Adjoint et conseiller</i>
Nathanael KNAPP	Alternate and Advisor / <i>Adjoint et conseiller</i>
Rhett HATCHER	Alternate and Advisor / <i>Adjoint et conseiller</i>
Simon HARDERN	Alternate and Advisor / <i>Adjoint et conseiller</i>
Thomas MELLOR	Alternate and Advisor / <i>Adjoint et conseiller</i>
Tim LEWIS	Alternate and Advisor / <i>Adjoint et conseiller</i>

## UNITED STATES OF AMERICA / ETATS UNIS D'AMERIQUE

<b>Ron PIRET</b>	<b>Head of delegation / <i>Chef de délégation</i></b>
David BRAZIER	Alternate and Advisor / <i>Adjoint et conseiller</i>
Jessica MIHAILIN	Alternate and Advisor / <i>Adjoint et conseiller</i>
Matthew BORBASH	Alternate and Advisor / <i>Adjoint et conseiller</i>
Olivia MORRELL	Alternate and Advisor / <i>Adjoint et conseiller</i>
Robert J. DIXON	Alternate and Advisor / <i>Adjoint et conseiller</i>
Rodney LADNER	Alternate and Advisor / <i>Adjoint et conseiller</i>
Sandy CARNLEY	Alternate and Advisor / <i>Adjoint et conseiller</i>
Stephan HOWDEN	Alternate and Advisor / <i>Adjoint et conseiller</i>
Amanda WILLIAMS	Alternate and Advisor / <i>Adjoint et conseiller</i>
Carisa LACROSSE	Alternate and Advisor / <i>Adjoint et conseiller</i>
Alex SHERNOFF	Alternate and Advisor / <i>Adjoint et conseiller</i>
Dwight SMITH	Alternate and Advisor / <i>Adjoint et conseiller</i>
Jenna JOHNSON	Alternate and Advisor / <i>Adjoint et conseiller</i>
John LOWELL	Alternate and Advisor / <i>Adjoint et conseiller</i>
Keith DOMINIC	Alternate and Advisor / <i>Adjoint et conseiller</i>
Peter DOHERTY	Alternate and Advisor / <i>Adjoint et conseiller</i>
Shelby PIERSON	Alternate and Advisor / <i>Adjoint et conseiller</i>
Steven Geoffrey KEATING	Alternate and Advisor / <i>Adjoint et conseiller</i>
Andrew ARMSTRONG	Alternate and Advisor / <i>Adjoint et conseiller</i>
Benjamin EVANS	Alternate and Advisor / <i>Adjoint et conseiller</i>
Jennifer JENCKS	Alternate and Advisor / <i>Adjoint et conseiller</i>
John NYBERG	Alternate and Advisor / <i>Adjoint et conseiller</i>
Jonathan JUSTI	Alternate and Advisor / <i>Adjoint et conseiller</i>

## General Information

Julia POWELL	Alternate and Advisor / <i>Adjoint et conseiller</i>
Megan BARTLETT	Alternate and Advisor / <i>Adjoint et conseiller</i>
Peter OPPENHEIMER	Alternate and Advisor / <i>Adjoint et conseiller</i>
Jared JUDY	Alternate and Advisor / <i>Adjoint et conseiller</i>
Miroslav STAMENKOVICH	Alternate and Advisor / <i>Adjoint et conseiller</i>
Alexis MAXWELL	Alternate and Advisor / <i>Adjoint et conseiller</i>

### URUGUAY / URUGUAY

<b>José DOMINGUEZ</b>	<b>Head of delegation / <i>Chef de délégation</i></b>
Lorena GONZALEZ	Alternate and Advisor / <i>Adjoint et conseiller</i>
Marcelo OLIVERA	Alternate and Advisor / <i>Adjoint et conseiller</i>

### VENEZUELA / VENEZUELA

<b>Oscar MENDOZA</b>	<b>Head of delegation / <i>Chef de délégation</i></b>
Crisbemar Jose RONDON GIRON	Alternate and Advisor / <i>Adjoint et conseiller</i>
Luis Noel BENCOMO CAMACHO	Alternate and Advisor / <i>Adjoint et conseiller</i>

### VIET NAM / VIETNAM

<b>Pham MANH HUNG</b>	<b>Head of delegation / <i>Chef de délégation</i></b>
Nguyen THE LONG	Alternate and Advisor / <i>Adjoint et conseiller</i>
Nguyen MANH DONG	Alternate and Advisor / <i>Adjoint et conseiller</i>
Tran VAN HIEU	Alternate and Advisor / <i>Adjoint et conseiller</i>
Tran XUAN HOA	Alternate and Advisor / <i>Adjoint et conseiller</i>
Vu THANH TUNG	Alternate and Advisor / <i>Adjoint et conseiller</i>
Trung Kien DONG	Alternate and Advisor / <i>Adjoint et conseiller</i>

**OBSERVERS - IHO DIRECTORS and STAFF MEMBERS**  
*OBSERVATEURS - DIRECTEURS et MEMBRES DU PERSONNEL DE L'OHI*

**GUINEA / GUINEE**

Moustapha BALDE  
Souleymane BAH

**IVORY COAST / COTE D'IVOIRE**

Kouadio André N'DOLI  
Seydou SANGARE

**TOGO / TOGO**

NEYO TAKOUGNADI  
Piyalo Abire D'ALMEIDA BILABINA

**CNITA**

Simon JACKSON

**CIRM**

Richard DOHERTY

**IAIN**

Adam WEINTRIT

**International Association of Marine Aids to Navigation and Lighthouse Authorities /  
*Association internationale de signalisation maritime***

Francis ZACHARIAE  
Minsu JEON

**International Cable Protection Committee /**

Graham EVANS

**International Maritime Organization /  
*Organisation maritime internationale***

Heike DEGGIM

**International Federation of Hydrographic Societies /**

David VINCENTELLI

**IOC of UNESCO**

Louis DEMARGNE  
Vladimir RYABININ

**Organization for Economic Co-operation and Development/**

Kerri-Ann JONES

**Open Geospatial Consortium**

Scott SIMMONS  
Trevor TAYLOR

**Professional Yachting Association (PYA)**

Andrew SCHOFIELD

**The Hydrographic Society of America /**

Brian CONNON  
Rafael PONCE

**World Meteorological Organization /**

David WYATT

**European Global Ocean Observing System /**

Inga LIPS

**NF-GEBCO-Seabed2030 Project**

Jamie MCMICHAEL-PHILIPS  
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Kira COLEY  
Rochelle WIGLEY  
Steve HALL

**FUGRO**

Mark R.F. HEINE

**GEOMARES**

Durk HAARSMA



**GEOMAR**

Martin VISBECK

**IC-ENC**

Jake SHARLAND

James HARPER

Ruth WHITE

Su MARKS

Thomas RICHARDSON

**Japan Hydrographic Association**

Takeharu MIYAKE

Tomotaka ITO

**Nippon Foundation**

Kazuhiro YAGASAKI

Kyoko KIKUCHI

Mitsuyuki UNNO

**PRIMAR**

Hans Christoffer LAURITZEN

Ilda LURA

Mikus RANKA

Robert SANDVIK

**Former IHO Directors & Staff / Anciens Directeurs et personnel de l'OHI**

Giuseppe ANGRISANO

Gilles BESSERO

Mustafa IPTES

Pascale BOUZANQUET

**IHO Secretary-General / Secrétaire Général de l'OHI**

Mathias JONAS

**IHO Directors / Directeurs de l'OHI**

Abri KAMPFER

Luigi SINAPI

**IHO Assistant Directors / Assistants aux Directeurs de l'OHI**

Yong BAEK  
Yves GUILLAM  
Samuel HARPER  
Leonel MANTEIGAS

**Project Officers**

Javier FERNANDEZ  
Kazufumi MATSUMOTO  
Insung PARK

**Members of Staff / Membres du personnel**

Astrid ALONSO  
Isabelle BELMONTE  
Tracy BOWENS  
Sandrine BRUNEL  
Lorène CHAVAGNAS  
Dan COSTIN  
Caroline FONTANILI  
Isabelle ROSSI  
Sarah JONES COUTURE  
Arezki MAACHE  
Rémy ROQUEFORT  
Takumi SUZUKI (Intern)  
Jeff WOOTTON

## AGENDA

### 3<sup>rd</sup> SESSION OF THE IHO ASSEMBLY

Monaco, 2-5 May 2023

*Note: all events will take place at the Grimaldi Forum except where indicated otherwise*

Item	Time	Date / Description	Document
<b>Sunday 30 April</b>			
	08:00 - 20:00	<b>Preparation for Industry Exhibition and Member States' Exhibitions</b>	
<b>Monday 1 May</b>			
	08:00 - 20:00	<b>Preparation for Industry and Member States' Exhibitions</b>	
	10:00 - 18:00	<b>Registration of Participants</b>	
<b>F1</b>	14:00 -15:00	<b>Finance Committee Meeting (open for all delegations)</b>	FCCL03_EN_2022_v1
<b>F1.1</b>		Finance report 2020 – 2022	A3_2023_F_01_EN
<b>F1.2</b>		Annual Finance Report 2022	A3_2023_F01_EN A3_2023_G_09_EN Part II A3_2023_F_02_Add1_EN
<b>F1.3</b>		Implementation of the Budget for 2023	C6-05.1A
<b>F1.4</b>		The 3 years' budget 2024 – 2026	Proposal 1.4 Annex B
<b>F1.5</b>		Financial aspects of the revision of IHO M-7 Staff Regulations	Proposal 1.5
<b>F1.6</b>		Election of the Finance Committee Chair and the Vice-Chair for the term 2024 - 2026	
	15:00 - 15:30	<i>Coffee break</i>	

## Assembly Agenda

	15:30 - 16:45	<p><b>Event: Empowering Women in Hydrography (open to all)</b></p> <p>Workshop: Gender balance: how to empower organizations and leaders to change?</p> <ul style="list-style-type: none"> <li>• Overview of achievements of EWH project over the past two years</li> <li>• Feedback from RHCs on actions in their regions</li> <li>• Perspective from a hydrographer</li> <li>• Presentation on 21st century leadership</li> </ul>	
	17:00 - 18:00	<b>Meeting of Heads of Delegations</b>	
		IHO Secretary-General welcomes Member States, introduces the Assembly Chair and explains the format and procedures of the Assembly session	
		Designation of the Vice-Chair of the Assembly	
		General overview of the Agenda	
		Records of the Session, circulation of documents, role of Rapporteurs	
		Any other business	
	18:30 - 20:30	<p><b><i>Icebreaker Reception</i></b></p> <p><b><i>Heads of Delegation +1 and EWH event participants</i></b></p>	

## Assembly Agenda

Item	Time	Date / Description	Document
	<b>Day 1</b>	<b>Tuesday 2 May</b>	
	08:00 - 18:30	<b>Registration of Participants</b>	
<b>1</b>	09:00 - 09:40	<b>Assembly Administration</b>	
1.1		Welcome Remarks by the Secretary-General	
1.2		Confirmation of the Election of the Chair of the Assembly	
1.3		Election of the Vice-Chair of the Assembly	
1.4		Appointment of the Scrutineers	
1.5		Appointment of the Rapporteurs	
	09:40 -10:00	<b>Recess</b> <i>Invited guests take their seat</i>	
	10:00	<b>Arrival of HSH Prince Albert II</b>	
<b>2</b>	10:00 - 13:00	<b>Opening Ceremony</b>	
2.1		Address by the Secretary-General	
2.2		Address by the Chair of the Assembly	
2.3		Keynote address by IMO Representative	
2.4		Keynote address by IOC Representative	
2.5		Keynote address by OECD Representative	
2.6		Assembly Opening Address by HSH Prince Albert II of Monaco	
2.7		Presentation of the Prince Albert 1 <sup>st</sup> Medals (2020 and 2023)	
2.8		Presentation of New Member States' Flags	
2.9		HSH Prince Albert II Opens and visits the Member States' Exhibition and Hydrographic Industry Exhibition	
2.10		Member States' Exhibition and Hydrographic Industry Exhibition open to delegates and guests	

## Assembly Agenda

Item	Time	Date / Description	Document
	<b>Day 1</b>	<b>Tuesday 2 May</b>	
	13:00 - 14:15	<i>Lunch Break</i>	
	14:15	Official Photograph (Grimaldi Forum main entrance hall)	
<b>3</b>	14:30 - 14:40	<b>Adoption of the Agenda</b>	
<b>4</b>	14:30 - 15:30	<b>Consideration of Council Chair Report and Proposals (Work Programme 1)</b>	
4.1		Summary report on Council activities (Council Chair)	A3_2023_G_05_EN
4.2		Summary report on WP1 (Secretary-General)	A3_2023_G_05.1_EN
	15:30 - 16:00	<i>Coffee Break</i>	
	16:00 - 17:30	<b>Consideration of Council Chair Report and Proposals (Work Programme 1) (continued)</b>	
4.3		PRO 1.1 - New IHO Resolution – S-100 Implementation (IHO Council)	A3_2023_EN_PRO_1.1
4.4		PRO 1.2 - Implementation and review of the Strategic Plan (IHO Council)	A3_2023_EN_PRO_1.2
4.5		PRO 1.3 - Gender-inclusive language to be used in IHO documents and communications (IHO Council)	A3_2023_EN_PRO_1.3
	18:00 - 20:00	<b><i>Reception to be held in the Exhibition area – ALL PARTICIPANTS WELCOME + accompanying persons</i></b>	

## Assembly Agenda

Item	Time	Date / Description	Document
	<b>Day 2</b>	<b>Wednesday 3 May</b>	
	08:00 - 18:30	<b>Registration of Participants</b>	
	09:00 - 10:30	<b>Consideration of Council Chair Report and Proposals (Work Programme 1)</b> (continued)	
4.6		PRO 1.5 - Revision of M-7 IHO Staff regulations (Secretary-General)	A3_2023_EN_PRO_1.5
4.7		PRO 1.6 – Polygonal demarcation of global sea areas (Secretary-General)	A3_2023_EN_PRO_1.6
4.8		PRO 1.7 - Deprivation of the IHO member state status from the Russian Federation (Ukraine)	A3_2023_EN_PRO_1.7
	10:30 - 11:00	<i>Coffee Break</i>	
<b>5</b>	11:00 - 12:30	<b>Consideration of Reports and Proposals (Work Programme 2)</b>	
5.1		Presentation of the highlights of WP2 (HSSC Chair)	
5.2		PRO 2.1 - Dual Fuel Concept for S-100 ECDIS (IHO Council)	A3_2023_EN_PRO_2.1
5.3		PRO 2.2 - Establishment of an S-100 Infra Center to support the implementation of S-100 (Republic of Korea)	A3_2023_EN_PRO_2.2
	12:30 - 14:00	<i>Lunch break</i>	
5.4	14:00 - 14:30	PRO 2.3 - The future of digital charting (United Kingdom)	A3_2023_EN_PRO_2.3
<b>6</b>	14:30 - 15:30	<b>Consideration of Reports and Proposals (Work Programme 3)</b>	
6.1		Presentation of the highlights of WP3 (IRCC Chair)	
6.2		PRO 3.1 - Amendments to General Regulations, Art. 8.e – Membership of the HCA (IHO Council)	A3_2023_EN_PRO_3.1
	15:30 - 16:00	<i>Coffee Break</i>	
	16:00 - 17:30	<b>Consideration of Reports and Proposals (Work Programme 3)</b> (continued)	

## Assembly Agenda

Item	Time	Date / Description	Document
	<b>Day 2</b>	<b>Wednesday 3 May</b>	
6.3		PRO 3.2 - Revised Capacity Building Strategy (IHO Council)	A3_2023_EN_PRO_3.2
6.4		PRO 3.3 – Recognition of Southern Ocean (Secretary-General)	A3_2023_EN_PRO_3.3
6.5		PRO 3.4 - Access to software, hardware and training courses (Islamic Rep. of Iran)	A3_2023_EN_PRO_3.4
	18:00 - 20:00	<b><i>Reception hosted by the United Kingdom at Monaco Yacht Club (by invitation)</i></b>	



Item	Time	Date / Description	Document
	<b>Day 3</b>	<b>Thursday 4 May</b>	
	08:00 - 18:30	<b>Registration of Participants</b>	
	09:00 - 09:30	<b>Consideration of Reports and Proposals (Work Programme 3)</b> (continued)	
6.6		PRO 3.5 - Establishment of a task force to explore the potential merits, structures, and options for alternate fund generation to support capacity building and other IHO initiatives (United States of America, Canada, Norway, United Kingdom and Australia)	A3_2023_EN_PRO_3.5
7	09:30 - 10:20	<b>Presentation of the reports of the 15 RHCs</b> <b>Presentation of the HCA report</b>	
8	10:20-10:30	<b>Official signature ceremony of HCA Statutes by the new HCA members Netherlands, Poland, and Türkiye in the presence of HCA Chair</b>	
	10:30 - 11:00	<i>Coffee Break</i>	
7	11:00 - 12:30	<b>Presentation of the reports of the 15 RHCs</b> (continued)	
9	12.30 - 12.45	<b>International Hydrographic Review Centenary (IHR editor)</b>	
	12:45 - 14:00	<i>Lunch Break</i>	
10	14:00 -17:30	<b>Thematic session: future challenges for hydrography in the Ocean Decade moderated by IHO Directing Committee (open to industry and invited guests)</b>	
10.1	14:00 - 15:00	Thematic Block 1: Ocean Mapping	
10.2	15:00 - 16:00	Thematic Block 2: S-100 - Next level of digitalization of hydrographic information	
	16:00 - 16:30	<i>Coffee Break</i>	
10.3	16:30 - 17:30	Thematic Block 3: Hydrography – Underpinning the digital twin of the Ocean	
	18:00 - 20:00	<b>US Navy Ship reception (by invitation)</b>	

## Assembly Agenda

Item	Time	Date / Description	Document
	<b>Day 4</b>	<b>Friday 5 May</b>	
	08:00 - 13:00	<b>Information desk</b>	
<b>11</b>	09:00 - 10:00	Finance Reports, Work Programme and Budget matters	
11.1		Presentation of Finance Committee Report	A3_2023_F_01_EN A3_2023_F_02_EN A3_2023_F_03_EN (A3_2023_G_09_EN)
11.2		PRO 1.4 - 3-year Work Programme and budget 2024-2026 (Secretary-General)	A3_2023_EN_PRO_1.4
11.3		Approval of the proposed Table of Tonnages 2024 - 2026	A3_2023_G_03_EN
11.4		Announcement and first Instructions for the election process	
	10:00 - 10:15	<i>Coffee Break</i>	
<b>12</b>	10:15 - 11:45	<b>Election for the position of IHO Secretary-General and IHO Director</b>	A3_2023_E_01_EN A3_2023_E_02_EN
12.1		Endorsement of the selection process of the Members of the Council 2023 - 2026	A3_2023_G_07_EN
	11:45 - 12:15	Approval of the Members of the Council 2023-2026	A3_2023_G_08_EN
12.2		Review Assembly Decisions	A3_2023_G_10_EN
12.3	12:15	Award of the best MS exhibition Hydrographic Industry and Member States' Exhibitions close	
12.4	12:30	Presentation of a video of the French Government to invite for the UN Ocean Conference 2025 in Nice, France	

## Assembly Agenda

Item	Time	Date / Description	Document
	<b>Day 4</b>	<b>Friday 5 May</b>	
<b>13</b>	12:35 - 13:00	<b>Closing Ceremony</b>	
13.1		Setting the date of the 4 <sup>th</sup> Session of the Assembly (A-4) in 2026	
13.2		Setting the seating order at A-4	
13.3		<p>Any other business:</p> <ul style="list-style-type: none"> <li>- <i>Resolution expressing gratitude to the Principality of Monaco as Host Country of the Assembly and the Secretariat</i></li> <li>- <i>Statements by outgoing and incoming Secretary-General and Directors</i></li> </ul>	
13.4		Closing Remarks by the Chair of the Assembly	
	13:00	<b>END OF 3<sup>rd</sup> SESSION OF THE ASSEMBLY</b>	
	18:00 - 20:00	<p><b><i>Closing Reception offered by the Chair of the Assembly and the IHO Secretary-General at IHO Secretariat</i></b></p> <p><b><i>BY INVITATION Heads of Delegation +1 and invited MC Government guests</i></b></p>	



## **OPENING ADDRESSES**



**OPENING AND WELCOME ADDRESSES**

1. His Serene Highness Prince Albert II of Monaco
  2. The Secretary-General of the IHO, Dr Mathias Jonas
  3. The Chair of the Assembly, Ms Pia Dahl Højgaard (Denmark)
  4. The Secretary-General of the International Maritime Organization (IMO),  
Dr Heike Deggim
  5. The representative of the Intergovernmental Oceanographic Commission of the  
United Nations Educational, Scientific and Cultural Organization (UNESCO),  
Executive Secretary of the IOC, Mr Vladimir Ryabinin
  6. The Deputy Secretary-General of the Organization for Economic Cooperation and  
Development (OECD), Dr Kerri-Ann Jones
-





**OPENING ADDRESS BY HIS SERENE HIGHNESS  
PRINCE ALBERT II OF MONACO**

Madam President of the 3<sup>rd</sup> IHO Assembly,  
Minister of State,  
Ladies and Gentlemen Counsellors and Ministers of the Government,  
Excellencies,  
Secretaries-General,  
Ladies and gentlemen,  
Dear friends,

I am delighted to be here with you at the Assembly of the International Hydrographic Organization (IHO), which has been held in Monaco for decades, and I wish you a very warm welcome.

Your session comes at a time of serious disruption – geopolitical, environmental and in other areas. This makes us all deeply uneasy about the state of our planet, particularly its seas and oceans.

As we all know, the vast expanse of the seas is vital to the continued existence of humanity on the Earth. Its protection and sustainable exploitation by humans is thus of absolutely fundamental importance; this is clear to every one of us.

Seen from this perspective, I feel that the contribution of sciences such as marine cartography is not recognized as it deserves.

For instance, gaps persist in bathymetry of our oceans, mapping of the principal deep seabeds and surveys of their rich biological and mineral resources.

Accordingly, more attention needs to be paid to hydrography.

As well as the traditional role of hydrography in supporting navigation, today it is required to make an increasingly in-depth contribution to protection of the marine environment and coastal zones and sustainable exploitation of fish stocks.

Let me remind you here of IHO's long-standing mission to provide technical assistance for Member States through training for the staff of national hydrographic services and other activities.

I am particularly pleased to see among you the representatives of OECD and to hear that IHO will contribute to the forthcoming OECD foresight exercise "The Ocean Economy in 2045".

This positive initiative should help to raise awareness of the economic importance of seas and oceans and – we hope – encourage more governments to invest in hydrography and oceanography.

Madam Chair,  
Ladies and Gentlemen,

The achievements of the IHO, throughout its 100 years of existence, are a sign of the role and necessity of this enduring notion of international cooperation for technical consultations in favour of the marine domain.

The beginnings of the IHO were guided by a vision. Motivated by the early mapping of the continents and the benefits this presented, my great-great-grandfather initiated the first global map of the oceans.

This idea was turned into the GEBCO programme, which to this day upholds values dear to the Principality of Monaco.

I am happy to notice the progress made in ocean mapping since we were last together for the Assembly in 2017.

Data coverage has now grown from 6% to 25% of the total ocean area. This quantum leap has been possible thanks to the creation of the Seabed 2030 project.

GEBCO is celebrating its 120 years of existence this year, but it is just as relevant today as it was when Prince Albert I invited the International Hydrographic Bureau – predecessor of the International Hydrographic Organization – to set up its headquarters here in Monaco in 1921.

While the IHO's work originally focused on safety at sea and nautical charts, its scope has expanded over the years to cater for the wider need for ocean data. The oceans and the seafloor are constantly changing due to weather, currents and other natural events such as volcanic activity, not to speak of the impact of human activities.

Regular surveys and hydrographic measurements are necessary to monitor these changes. The IHO in its coordinating role [ensures that] this permanent task proves positive.

In this past century, the idea of preserving the ocean has become more and more important.

Two years ago, I commemorated the one hundredth anniversary of my great-great-grandfather's "*Speech on the Ocean*" which he gave in Washington, DC in 1921. In studying his words, I realized that much of what he said is still very relevant to this day.

In this way, the IHO, as an independent intergovernmental organization hosted by my country, is a very welcome guest.

It embodies the principles that Monaco stands for: a focus on the marine environment, the capacity to reinvent itself and the belief in international cooperation across political and social boundaries.

Like my predecessors, I reiterate Monaco's continued support to the IHO, both as a Member State and as host of the IHO Secretariat.

I would also like to take this opportunity to salute its 98 Member States, whom I encourage to support the strategic goals which have been agreed upon; initiatives related to the knowledge and the sustainable use of the ocean which contribute to SDG 14.

The IHO has a crucial role to play in this field.

Accordingly, I now have the great pleasure of declaring open the third session of the IHO Assembly and I have no doubt that your work will be extremely fruitful, as it always has been in the past. Thank you.

**ADDRESS BY THE SECRETARY-GENERAL  
OF THE INTERNATIONAL HYDROGRAPHIC ORGANIZATION**

Dr Mathias Jonas

Your Serene Highness,  
Your Excellencies,  
Honourable Ministers,  
Distinguished Guests,  
Distinguished Delegates and Colleagues,  
Observers,  
Ladies and Gentlemen,

Your Serene Highness, all of us present at this Opening Ceremony are extremely privileged and grateful that you have honoured us, once again, with your presence. May I, on behalf of the International Hydrographic Organization, thank you, Your Serene Highness, and your Government, for your continuing interest in and significant support of our Organization.

With the same pleasure, I would like to say how happy I am to welcome you all here today on the occasion of the third Assembly of the IHO. After the Assembly in 2017, this Conference is the first that we are able to hold again in person.

Modern communication tools have helped us in the past triennium to continue to progress on our extensive work programme despite the constraints of the pandemic. I would like to thank the Council, the Committees and Working Groups for their support at the working level and in operational management without which we would not have been able to make such good progress under these extraordinary circumstances.

However, one of the lessons learned during the difficult period since the second Assembly, which was held virtually in 2020, was the fact that virtual and hybrid meetings will never fully replace personal encounters. Six years without face-to-face discussions on this level is a long time. In many hydrographic services, there have been changes at the top since, and therefore for quite a number of delegations it is a completely new experience to be here in Monaco and to participate in an Assembly.

The Assembly is the IHO's principal organ and is the Organization's decision-making body. By virtue of the current IHO Convention, the Assembly has the competence to look back at what has been achieved, to assess the work done, to define the goals for future activities and to initiate measures to achieve these. All decisions should be based on a common understanding which requires us to explain, to reach a certain level of consensus, and then to enact the decisions.

The Assembly is committed to two principles: democracy through the rules of the Convention and diplomacy through the way it is conducted. It is a perfect example of these two pillars of multilateralism in action; multilateralism being the principle on which the Convention of the IHO is based.

The IHO was founded on the notions of collaboration and mutual respect, understanding and support. It focuses on technical solutions in a politically complicated world, and this should be our compass for the conduct of the Assembly. To take advantage of this coming together of the global hydrographic community, the Directing Committee suggested the introduction of a thematic session addressing new horizons in hydrography. I am particularly excited to hear the views of fellow experts in the marine domain beyond the traditional subjects of our discipline.

The Assembly itself follows a sequence that is designed to allow the making of important decisions about the future course of the Organization and, through the election scheduled for

Friday, about the staffing of the Secretariat's senior management. For the duration of the Assembly, the Assembly Chair is entrusted with the leadership of the Organization. The General Regulations provide us with a stable basis for holding the Assembly. The Secretariat will do all it can to ensure that the Assembly runs smoothly and to assist the Chair as she moves through the agenda. But the Assembly is not just an instrument that produces good solutions when operated correctly; it also provides a forum for people to work together on behalf of their nations.

This cooperation thrives on lively and direct exchanges. We see this when addressing agenda items, in the ritualized procedures, but also in the encounters before, during and in parallel to the official discussions. We all know how important this informal aspect is. What matters most, however, are the contributions of the delegations in plenary. The decisions to be taken can only represent the collective will of Member States if they are based on constructive discussions that reflect the diversity of positions. Every view should and will be heard. But whatever is presented should be in the spirit of cooperation and in accordance with the purpose of the Organization.

It is this commitment which made the IHO a highly respected member of the international maritime community and that is looking forward to continuing to contribute the expertise, capacity and vigour of its Member States to the evolving marine narrative. The IHO is among the few intergovernmental organizations that can claim that its resolutions, standards and guidelines are universally and effectively implemented.

It has always done this by considering what can we do together that we cannot do separately, since no single nation can deliver on its own the hydrographic capacity we need for the oceans and seas we want.

I have every reason to believe that all of you present here are driven by this commitment.

Thank you.

### ADDRESS OF THE CHAIR OF THE ASSEMBLY

Ms Pia Dahl Højgaard (Denmark)

You Serene Highness, Excellencies, Secretary-General, Directors, distinguished delegates and observers, dear colleagues, dear friends, good morning and welcome.

I was honoured when Secretary-General Dr Mathias Jonas asked me to chair the 3<sup>rd</sup> Assembly of the International Hydrographic Organization, and I am even more honoured by your trust in me to take on this task. I am not a hydrographer by training, but during the last six to seven years, hydrography has become a prominent part of my life. I have learned, I have asked uncommon questions, and most of all, I have realized that we have so much to offer in terms of hydrographic knowledge and data.

But I have also realized that we have quite some work to do to fulfil the needs and expectations of our users. We need to make our knowledge and data productive. At this Assembly we have very important decisions to make together, decisions that will bring forward our common endeavours to serve society with charts and interoperable data on the oceans and waters. Data that can ensure safe and efficient navigation. Data which will enable politicians, scientists and the public at large to take good decisions on the sustainable use and preservation of our oceans. We are gathered here, at the Grimaldi Forum, we are a total number of 81 registered Member States, and together with the guests and observers from related organizations we are more than 400 people here participating in the 3<sup>rd</sup> Assembly. It has been a long time since we have been here together. I am very, very happy that it is possible for us to meet again in person.

The last three years were difficult for our cooperation within the hydrographic community. However, the COVID-19 pandemic had much more devastating consequences around the world, with many lives lost. So just to bear in mind, our difficulties were actually small in comparison. But we also managed; we found ways to hold virtual Council meetings. The 2<sup>nd</sup> Assembly was virtual, and lots of working groups found new ways of cooperating, and thus we moved forward with our common tasks. I hope that during coffee breaks and lunch you will meet up with your old colleagues, but also take time to get to know some of the new representatives who are attending an Assembly for the first time.

The International Hydrographic Organization has a long history going back more than 100 years. The Organization has been supported through all the years by the Government of Monaco and the Grimaldi family. Thank you. The IHO works to ensure that all the world's seas, oceans and navigable waters are surveyed and charted, thereby supporting the safety of navigation and the protection of the marine environment through its standards. In order to promote uniformity in nautical charts and data, it issues best practices for surveys and data acquisition and provides guidelines to maximize the use of hydrographic information. But we do not work in a vacuum. We are simply not alone. We work substantially together with the United Nations through United Nations bodies such as IMO, UNESCO, IOC and the World Meteorological Institute.

We strive to gather information about the oceans, to share it through GEBCO and thus support the United Nations Sustainable Development Goal 14 regarding healthy oceans and the United Nations Decade of Ocean Science for Sustainable Development (2021–2030). With the S-100 implementation, we provide standards for interoperable data and services so all our users are prepared for a digital future. To succeed in this digital transformation, we, the IHO, must look even more to enhance our technical capabilities and the cooperation among Member States through capacity building programmes and we must share our experiences, incorporating new technological survey techniques, data processing and automation. I believe that we must also work together to ensure the best knowledge, to build efficient database structures, to maintain and safeguard our data and to develop secure, timely and trustworthy infrastructures for delivery of our services, with the help of the regional ENC coordinating centres (RENCs).

We must also look at our staff. Do we have the necessary diversity and mix of competencies?

I was happy to see that there were so many participants yesterday at the Empowering Women in Hydrography event. Listening to the tales of projects and campaigns to overcome the unconscious bias and discrimination to encourage more women in hydrography. If we do not support and cultivate the talents, the skills, and the creativity of women in hydrography and hydrosatial disciplines, we will not succeed in our own mission to provide data and services for the benefit of society. To help us with knowledge exchange and Inspiration, 15 Member States have signed up for the IHO Member States' exhibition, which has the theme "mapping the marine environment in the Ocean Decade" and is coupled with 24 stands for the Hydrographic Industry exhibition. This totals nearly 40 opportunities to get wiser on technology, standards, procedures, products and services. The exhibition stands will be set up outside. You might have seen them and they will be here throughout the whole of the Assembly, so please go and visit during the breaks.

During this Assembly we have some very important decisions to take, proposals from Council, from the Secretary-General and not least from Member States. We are going to decide on the roadmap for implementation of the S-100, how to proceed with the strategic plan, and on a revised capacity building strategy. This is just to mention a few of the proposals; we will get to the individual proposals in due time as we work our way through the agenda and the reports and proposals.

It is the spirit in which we conduct our Assembly that is the key factor too. In previous assemblies I have experienced, we have respected each other's opinion and professionalism and have shown goodwill to reach a collective conclusion, keeping our overarching mission in support of safety at sea and with protecting the marine environment always in mind. So I will do my best to honour your appointment of me as your Chair by listening respectfully and in an unbiased way to proposals and statements, leading discussion to find a common ground and the best way forward. So please help me to ensure a cooperative approach during this 3<sup>rd</sup> Assembly too.

Thank you.

**ADDRESS OF THE DIRECTOR, MARITIME SAFETY DIVISION,  
INTERNATIONAL MARITIME ORGANIZATION**

Dr Heike Deggim

Your Serene Highness Prince Albert II, ladies and gentlemen,

I am delighted to be here in Monaco to address the 3rd International Hydrographic Assembly of the IHO, and I bring you the best wishes of the Secretary-General of the International Maritime Organization (IMO), Mr Kitack Lim, for a successful meeting.

Hydrographic services are essential for maritime safety and safe navigation, which are among the core objectives of the International Maritime Organization. This strong linkage underpins the solidarity that exists between our two organizations, and the valuable contribution of IHO towards the work of IMO, its membership and the shipping community as a whole.

Shipping and other maritime activities rely heavily on accurate and up-to-date information provided by hydrographic services, including that related to surveying and charting, notices to mariners and provisions of navigational warnings. Indeed, hydrographic data is deemed to be so crucial that Contracting Governments to the International Convention on the Safety of Life at Sea, better known by its acronym SOLAS, are required to provide and maintain, or arrange for, hydrographic services and products. New generations of ships with exceptionally deep draughts, new ports and coastal zone management plans are being developed owing to changing trade patterns, as well as new demands for the use of coastal sea areas for other purposes, such as wind farms.

Some of the findings emanating from the audits of IMO Member States conducted within the framework of the IMO Member States Audit Scheme to date indicate that some countries are not in full compliance with the SOLAS requirements for providing or arranging hydrographic services. The identified root causes are mainly a lack of expertise and resources in the area of hydrographic activities. Capacity building activities jointly organized by our two organizations contribute to supporting our common objectives, by helping those countries in need of assistance. In this regard, the development of national hydrographic surveying and nautical charting capability is of fundamental importance, and we have been delivering relevant joint capacity-building activities over many years, contributing to a safe and sound maritime transport system that we are all striving to ensure and maintain.

Our two organizations have a great deal in common, from our shared pursuit of safer seas and more reliable navigation to the fact that most, if not all, of your IHO Member States are also Members of IMO. Given that your IHO's aim and mission are to ensure that all the world's seas, oceans and navigable waters are surveyed and charted and to create a global environment in which States provide adequate and timely hydrographic data, products and services, ensuring also their widest possible use, it is no surprise that both organizations also share a long history of cooperation and working together. Indeed, cooperation arrangements between IMO and IHO go back in time more than 50 years.

IHO contributes significantly to the work of IMO, in particular, by means of the IHO's Sub-Committee on the World-Wide Navigational Warning Service, the work of which is very relevant in relation to matters concerning dissemination of maritime safety information as part of the Global Maritime Distress and Safety System (GMDSS), providing also the necessary guidance to NAVAREA Coordinators across the world.

IHO also actively contributes to developments related to e-navigation, acting as domain coordinating body for the harmonization of the format and structure of certain maritime services. In this context, IHO's work is particularly important to support the e-navigation concept through the availability, development and extension of the IHO S-100 Universal Hydrographic Data Model to cater for future demands for digital products and services and facilitate the exchange of information through different maritime services.

In recent years, our collaboration has also been truly vital in a number of other areas, most importantly with regard to developments related to electronic navigation charts (ENCs) and the implementation of the Electronic Chart Display and Information System (ECDIS). These technologies, which seafarers nowadays rely on, were driven by the development of necessary standards and the harmonization and adoption of a regulatory framework, both by IHO and IMO. You may be aware that IMO's Maritime Safety Committee, at its 106<sup>th</sup> session in 2022, adopted resolution MSC.530(106) setting out revised performance standards for ECDIS, which will gradually introduce the new IHO standards starting from 2026. By 2029, new ECDIS being installed should be fully conforming to the new standards. Also, next week, IMO's Sub-Committee on Navigation, Communications and Search and Rescue, meeting for its tenth session, will be embarking on adding a new function in ECDIS to facilitate a standardized digital exchange of ships' route plans. All these enhancements would not be possible without the inputs and contributions from IHO.

Of course, digitalization of nautical charting and other navigational information on the screen of ECDIS on the bridge may be a useful revolution, but we must not forget that not all ships and vessels, particularly smaller ones, are capable of carrying equipment or suitable devices to display charts electronically. In this context, we may also need to be mindful of the importance to ensure continued availability of paper charts, taking into account the diversity of end-users of nautical charts.

Some of the other important developments in IMO that may be relevant to the work of IHO include the modernization of the GMDSS, the recognition of new mobile satellite service providers and the introduction of NAVDAT, to name just a few.

In recent years IMO has undertaken a comprehensive scoping exercise for maritime autonomous surface ships, or MASS as we usually call them, and identified a number of gaps in existing IMO instruments, including those relating to hydrography and navigational equipment. The scoping exercise found that developing a separate and dedicated mandatory instrument for MASS to encompass provisions to mitigate gaps identified would be the least complex solution. We are now in the early stages of the development of a non-mandatory code to start things off, and it has turned out to be more complicated than anticipated, with several IMO committees, in particular the Legal Committee, contributing to the work.

IMO usually regulates shipping undertaking international voyages. Smaller, unmanned vessels, particularly underwater vehicles, are considered outside the scope of IMO's regulatory framework. I am aware that innovation and technology are thriving to enable improved hydrographic services and I am encouraged to hear about the progress with smaller uncrewed maritime systems used for hydrographic and scientific research.

Distinguished delegates, ladies and gentlemen,

With IHO having been in existence for more than 100 years, international cooperation in the field of hydrography goes back a long, long way, which serves to emphasize how relevant IHO has been, is, and will continue to be, as we move into a future driven by the potential of digital technology.

In concluding, I wish you a successful and fruitful third IHO Assembly, and I look forward to the continued close cooperation of our two organizations in the years to come. Thank you.



**ADDRESS OF THE EXECUTIVE SECRETARY OF THE  
INTERGOVERNMENTAL OCEANOGRAPHIC COMMISSION OF UNESCO**

Mr Vladimir Ryabinin

Your Serene Highness, Chair of the IHO Assembly, Secretary-General, IHO colleagues, Excellencies, representatives of partner organizations, participants in the 3<sup>rd</sup> IHO Assembly,

All courtesies observed!

Warm greetings to IHO from the sister organization, the Intergovernmental Oceanographic Commission of UNESCO, or simply IOC — the home of ocean science in the United Nations system. Let me wish the 3<sup>rd</sup> IHO Assembly fruitful deliberations, friendly spirit, and great outcomes!

And please forgive me for starting my address with a personal recollection. Eight years ago, IOC had to decide, in view of budgetary constraints, whether to continue to cosponsor GEBCO, or not. For me, this was the very first strategic decision I had to take as IOC Executive Secretary. I recommended to the 28<sup>th</sup> IOC Assembly in 2015 to evaluate all aspects of IOC's relation to GEBCO and IHO, focusing on programme needs in bathymetric data. The Assembly resolved to undertake a review and established a working group for that purpose. Two years later, in 2017, the 29<sup>th</sup> IOC Assembly unequivocally agreed to continue the joint IHO—IOC sponsorship of GEBCO. This was an important, well-substantiated and, as our current knowledge shows, correct decision by IOC.

Today, our cooperation with IHO is strong, and I wish to thank IHO for continued trust in IOC as a partner. After IOC decided to continue to cosponsor GEBCO, both IHO and IOC were thinking very intensively how to bring more energy into the work on ocean mapping. Great support came from the Nippon Foundation. Let me thank Mr Sasakawa, its Chair, and Mr Unno, the Director, for coming forward to support GEBCO through the Nippon Foundation/GEBCO Seabed 2030 project. As a result, major progress in mapping the ocean has been achieved, especially, in the acquisition of bathymetric data. In 2017, 114 years after HSH Prince Albert I initiated GEBCO, the modern GEBCO grid covered roughly 5% of the ocean area. Today, only seven years later, we added approximately 20% to the previous 5%, approaching the symbolic milestone of one quarter of the ocean area. This clearly shows the enormous potential of international cooperation in ocean affairs.

But let me refer now to something else that happened eight years ago, in 2015–2016. During that time, the first World Ocean Assessment by the United Nations, a 1,000-page document, was completed and then published. If I try to summarize it in one sentence, it would be that humankind is running out of time to start managing the ocean sustainably. That conclusion was made less than a year after the decision of the United Nations General Assembly to adopt the United Nations Sustainable Development Agenda. And that conclusion required a response.

Our response to it was the proposal to the United Nations to conduct a Decade of Ocean Science for Sustainable Development. Why? Because the ocean is a key factor of sustainability, and also because reversing the decline in ocean health is a science-intensive task. In December 2017, after extremely hard negotiations, in which IOC relied on critical support of several countries, including Monaco, the Decade was proclaimed for the years 2021–2030. Today, the Decade, which IOC has the honour to coordinate on behalf of the United Nations, is in full swing and has grown into the largest undertaking in ocean sciences: 45 programmes, more than 200 projects, hundreds of activities, very many partners. Let me thank the Government of Monaco for being one of the first members of the Decade Alliance and personally HSH Albert II for being the Patron of the Ocean Decade. This really helped IOC to move the Decade forward, together with partners. Great support also came from IHO. Thank you!

Despite the fact that the Decade is the largest initiative in the history of ocean science, its story is not about size, really. It is very much about transforming the science, and the innovation in this regard is twofold. First, it is in the focus on science for sustainability, which very urgently requires solutions: for climate, for marine life, and for people. Second, it is in the approach. It is a co-designed and inclusive science, driven by ethics and a sense of fairness and equity. One of the expected outcomes of the Ocean Decade is an engaging and inspiring ocean, and a key Decade challenge is to build harmonious relations between humans and the ocean, leaving no one behind.

I think that we are approaching now a historic moment in our relations with the ocean. Surprisingly, it is a positive one. For the first time in history, science tells us that there is a real possibility to reverse the decline in ocean health and to start living in harmony with the ocean. The way forward is, importantly, climate-smart, ecologically oriented, ethical ocean management on the basis of science-supported ocean planning for a sustainable ocean economy. Every one of these words matters. But we still need to design it.

The climate convention, the new biodiversity framework, the disaster risk framework, the new high seas treaty and many other environmental instruments in the United Nations system provide us with the legal foundation. However, to save the ocean we need to change the approach to implementation of these conventions. Acting in silos and through parallel structures will not help us to escape the highway to hell, as the United Nations Secretary-General Antonio Guterres describes the current path of our civilization.

In my view, there are three promising avenues for future ocean work. First, the overarching solution is to initiate sustainable ocean management. Many details of its practical realization still need to be designed. However, it is feasible and starting to happen already. The chief hurdle is the still underdeveloped ocean science/policy interface in many countries. Second, we also need to transform ocean science and enable it to systematically generate solutions for managing the ocean. This can be achieved through the Ocean Decade. And third, key stakeholders should stop working in silos and should develop a common plan of action for the ocean in the United Nations system.

How do we make sure that this approach succeeds? The United Nations Ocean Conference in Nice in 2025, co-hosted by Costa Rica and France, with a key role to be played by Monaco, will be a critical milestone in that regard. Historic decisions can be taken there, but first they need to be elaborated and second broadly communicated, to be adopted. IHO will have an important role in this process. Like IOC, IHO is a standard-setting organization. Without IHO, we will not be able to learn the geometry of 70% of our planet. So I really look forward to the outcomes of this Assembly.

I hope very much that your discussions will be productive, and that our joint work — of IHO and IOC, partner organizations and the United Nations system — will help us to escape the highway to hell and reliably and irreversibly take us on the road towards the ocean we need for the future we want. Thank you!

### ADDRESS OF THE DEPUTY SECRETARY-GENERAL OF THE ORGANISATION FOR ECONOMIC CO-OPERATION AND DEVELOPMENT

Dr Kerri-Ann Jones

Your Serene Highness Prince Albert II of Monaco, dear IHO Secretary-General Jonas, dear Chair of the Assembly Højgaard, distinguished delegates and guests,

It is my pleasure to join you at the 3<sup>rd</sup> session of the Assembly of the International Hydrographic Organization (IHO) here in Monaco.

For more than a century, the IHO has supported safe and efficient transport on our oceans, seas and navigable waters. By coordinating the activities of national hydrographic offices and promoting standards in nautical charts and surveys, you help map our waters and make them safer.

I would also like to congratulate you on the 120<sup>th</sup> anniversary of the General Bathymetric Chart of the Ocean (GEBCO) programme. Founded by His Serene Highness Prince Albert I of Monaco, this international group of experts in ocean mapping helps improve the safety of navigation by making bathymetric data sets and data products available for the entire world.

In the 120 years since the founding of the GEBCO programme, the uses of seabed mapping have grown significantly. Today, surveys support multiple activities in climate science, ocean circulation modelling and biodiversity conservation, as well as numerous economic activities, from port activities, offshore wind installations and sand extraction to laying out undersea communications cables.

Despite decades of ocean exploration and an acceleration of scientific research in recent years, detailed knowledge of seabed composition and structure is poor, even non-existent, in large parts of the world. Although the ocean covers some 70% of the surface of the earth, as of late 2022, less than a quarter of the seafloor had been mapped. However, international collaboration like the work of the Nippon Foundation, GEBCO and UNESCO on the Seabed 2030 project, are helping to increase access to data.

At the OECD, our essential mission is to promote better policies for better lives. Through data-driven analysis, we seek to identify the best policies for addressing the global challenges of today; for example, seizing the opportunities in, and better managing the risks of, the digital transformation, and driving and promoting effective action on climate change.

Learning more about the seabed will help us develop more effective policies. The global mapping of the seabed can help lead to new scientific discoveries and contribute to the development of conservation strategies to balance economic interests with the protection of ecosystems.

The oceans are faced with multiple threats: acceleration of climate change impacts, increasing and diverse sources of pollution, habitat destruction and biodiversity loss. We need a healthy ocean to regulate weather and climate and to keep our planet habitable. We know that at least half the oxygen we breathe comes from the ocean. A healthy ocean is also key to sustaining economic activities, as more than a billion people depend on fisheries for sustenance.

With the right policy and regulatory instruments, such as the “polluters pay” principles, the ocean can become an important source of positive innovation and a source of sustainable economic growth. The new High Seas Treaty and the ongoing intergovernmental negotiations on the elimination of plastic pollution demonstrate commitment from the international community to step up efforts for better ocean governance.

The OECD ocean statistics team is launching an important foresight exercise called “The Ocean Economy in 2045”. This exercise will try to encourage more positive international policy work on oceans and feed into the next United Nations Ocean Conference in 2025.

## Opening Addresses

We look forward to continuing our close collaboration with the IHO as we undertake this important work. I am particularly looking forward to the joint OECD–IHO ocean foresight workshop in November. This workshop will bring together experts to look at the future of seabed mapping and seabed uses by 2045.

Let me conclude by thanking IHO once again for this invitation. The OECD stands ready to support the efforts of countries to develop more responsible and sustainable ocean economies. I believe our cooperation can and will contribute to that goal.

I wish you a very productive Assembly.

Thank you.

**PROPOSALS SUBMITTED  
TO THE 3<sup>rd</sup> SESSION OF THE IHO ASSEMBLY**



**PROPOSALS SUBMITTED FOR CONSIDERATION BY  
THE 3<sup>rd</sup> SESSION OF THE IHO ASSEMBLY**

<b>PROPOSAL No.</b>	<b>OBJECT OF THE PROPOSAL</b>	<b>SUBMITTED BY</b>	<b>WORK PROGRAMME</b>
<a href="#"><u>1.1</u></a>	New IHO Resolution on S-100 Implementation	IHO Council	1
<a href="#"><u>1.2</u></a>	Implementation and review of the Strategic Plan	IHO Council	1
<a href="#"><u>1.3</u></a>	Amendments to IHO Resolution 1/2020 – Gender-Inclusive Language	IHO Council	1
<a href="#"><u>1.4</u></a>	3-year Work Programme and Budget 2024-2026	IHO Council	1
<a href="#"><u>1.5</u></a>	Revision of M-7 IHO Staff Regulations	Secretary-General	1
<a href="#"><u>1.6</u></a>	Polygonal demarcation of global sea areas	Secretary-General	1
<a href="#"><u>1.7</u></a>	Deprivation of the IHO member state status from the Russian Federation as its military aggression against Ukraine since 24 February 2022 has caused major threatens to navigation in the Black Sea and the Sea of Azov, in particular, has deprived Ukraine of performing the hydrographic surveying within its area of responsibility and issue and update its navigational charts	Ukraine	1
<a href="#"><u>2.1</u></a>	Adoption of dual fuel concept for S-100	IHO Council	2
<a href="#"><u>2.2</u></a>	Establishment of an S-100 Infra Center to support the implementation of S-100	Republic of Korea	2
<a href="#"><u>2.3</u></a>	Future of Digital Charting	United Kingdom	2
<a href="#"><u>3.1</u></a>	Amendments to General Regulations, Art. 8.e – Membership of the HCA	IHO Council	3
<a href="#"><u>3.2</u></a>	Revised Capacity Building Strategy	IHO Council	3
<a href="#"><u>3.3</u></a>	Recognition of the Southern Ocean	HCA Chair	3
<a href="#"><u>3.4</u></a>	Access to Software, Hardware and Training Courses	Islamic Republic of Iran	3
<a href="#"><u>3.5</u></a>	Establishment of a task force to explore the potential merits, structures, and options for alternative fund generation to support capacity building and other IHO initiatives	United States of America, Canada, Norway, United Kingdom and Australia	3





**PRO-1.1 Adoption of IHO Resolution – S-100 Implementation**

**Submitted by: Council (Secretary-General, as Council Secretary)**

**References** : A. IHO Publication M-3 – *Resolutions of the IHO*, 2<sup>nd</sup> Edition - 2010, Updated April 2022

B. 6<sup>th</sup> Meeting of the Council – Summary Report.

**PROPOSAL**

**The proposed IHO Resolution on S-100 Implementation introduces an overarching IHO Resolution on S-100, embracing concepts and pathways depicted in the Roadmap for the S-100 Implementation Decade (2020 – 2030) and with reference to the IMO Resolution on Performance Standards for ECDIS and the in force dates agreed upon.**

**Noting the endorsement by the Council, the Assembly is invited:**

**- to approve the proposed Resolution as presented in Annex A.**

**EXPLANATORY NOTE**

1. Following a proposal by the ROK at A-2 (A2 PRO 2.3) and Council action C5/05, to review the IHO Resolutions when the operational implementation of S-100 concept becomes mature enough, the IHO Secretariat prepared and presented amendments to applicable IHO Resolutions to HSSC14. HSSC endorsed the recommendations and an IHO Circular Letter (CL 20/2022) was distributed to IHO Member States requesting approval of amendments to IHO Resolutions 7/1919, 1/1987, 1/2007 and 2/2012. The approval by Member States of the recommended amendments was reported by IHO Circular Letter (CL 38/2022).
2. HSSC-14 also agreed that a submission should be made to the Council for an overarching IHO Resolution on S-100, embracing concepts and pathways already depicted in the Roadmap and in the Dual Fuel Concept for S-100 ECDIS (See IHO CL 38/2022, paragraph 5 in particular).
3. A revised text was prepared by the HSSC Chair and the Secretariat, which was subsequently endorsed by the Council at its 6<sup>th</sup> meeting in October 2022 (Reference B, Decision C6/28) and is now submitted for approval by A-3 by means of this Proposal.

Annex A to PRO-1.1

TITLE	Reference	Last amendment (CL or IHC/A)	1 <sup>st</sup> Edition Reference
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<b>S-100 Implementation</b>	<b>Decision A3/xx</b>		
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It is resolved that S-100 implementation be monitored by the Council through the Roadmap for the S-100 Implementation Decade 2020 – 2030 and guided by its Annexes.

- a) Collaboration with IMO and other liaising Organizations.
- b) S-100 Timelines
- c) WEND-100 Principles
- d) Dual Fuel Concept for S-100 ECDIS

The IHO Member States should respect the IMO Resolution on Performance Standards for ECDIS and the in force dates agreed upon, understanding that adequate S-101 ENC coverage and appropriate complementary S-100 data/products services are expected when S-100 ECDIS becomes operational.

Proposal n°	Object of the Proposal	Submitted by	Reference
<a href="#">1.1</a>	New IHO Resolution on S-100 Implementation	IHO Council	1

<b>Brazil</b>
Brazil supports this proposal.

<b>Canada</b>
<p>Canada endorses this proposal.          It invites the submitters to consider the following observation: In the proposed Resolution, the list of Annexes to the Roadmap for the S-100 Implementation Decade is notated by:</p> <ul style="list-style-type: none"> <li>a) Collaboration with IMO and other liaising Organizations.</li> <li>b) S-100 Timelines</li> <li>c) WEND-100 Principles</li> <li>d) Dual Fuel Concept for S-100 ECDIS</li> </ul> <p>It is suggested that the notation be Annex 1, Annex 2, etc., to correspond to how these annexes are listed on the IHO S-100 Implementation Strategy web page. That is:</p> <p>Annex 1. Collaboration with IMO and other liaising Organizations.          Annex 2. S-100 Timelines.          Annex 3. WEND-100 Principles.          Annex 4. Dual Fuel Concept for S-100 ECDIS</p>

<b>Finland</b>
Finland supports the proposal.

<b>GERMANY</b>
Germany supports this proposal.

<b>Italy</b>
As member of the IHO Council, Italy supports the proposal.

**Japan**

Japan supports this proposal.

**Portugal**

Portugal endorses this proposal.

**Sweden**

Sweden supports this proposal.

**United Kingdom**

The United Kingdom supports this proposal.

**UNITED STATES OF AMERICA**

The United States congratulates the Council and S-100 implementation team and fully approves the Resolution.

**SECRETARY-GENERAL`S RESPONSE TO MEMBER STATES COMMENTS**

The Secretariat thanks Canada for their relevant editorial suggestions.

**PRO-1.2 Implementation and Review of the Strategic Plan**

**Submitted by: Council (Council Chair)**

**References:**

- A. IHO Strategic Plan 2021 - 2026
- B. 6<sup>th</sup> Meeting of the IHO Council IHO C-6 – *Summary Report*
- C. M-3 Resolutions of the IHO - IHO Resolution 12/2002 as amended – *Planning Cycle [for Assembly Years]*.

**PROPOSAL**

**Noting the endorsement by the Council, the Assembly is invited:**

- a. **to agree on the continuation of conduct of the annual Work Programmes on the basis of the Strategic Plan in place for 2021 – 2026 and direct the Council accordingly;**
- b. **to approve that Goal 1 of the IHO Strategic Plan and its targets shall have the highest priority in the implementation of the 2024–2026 Work Programme;**
- c. **to direct IRCC to provide guidance to the MSDI Working Group on the focus shift in implementation of Goal 2/Target 2.1 towards an IHO Data-Products-Services portal providing global thematic layers;**
- d. **to continue to measure the effectiveness and the efficiency of the three Work Programmes implementation by means of the Strategic Performance Indicators as endorsed by the Council;**
- e. **to provide directions to the next Council for the preparation of the Strategic Plan 2027–2032.**

**EXPLANATORY NOTE**

1. The Strategic Plan in place, designed for the rolling period 2021 – 2026, shall be reviewed at each ordinary session of the Assembly (Reference C, Art. 1). The Council, tasked to provide input for this review, confirmed the general appropriateness and usability of the existing Strategic Plan. The Council therefore recommends to continue with the Strategic Plan in place for 2021–2026 in general (Council Decision C6/56), but proposes priority and focus adjustments which are explained in the following paragraphs.
2. At its ninth meeting in 2022 (NCSR9), the Sub-Committee on Navigation, Communications, Search and Rescue of the International Maritime Organization (IMO) had endorsed and transmitted to the IMO Maritime Safety Committee (MSC) the proposal, initiated by IHO, to include S-100 compatible data sets as a valid format in ECDIS.
3. The 6th Council noted the outcome of the 9th session of the IMO NCSR on the revision of MSC.1/Circ.1503/Rev1 – ECDIS Guidance for Good Practice and Revision of MSC.232(82) – ECDIS Performance Standard (IHO CL 31/2022 refers) and took note of the associated IHO commitments made towards the IMO and the IEC in particular (transition period for S-100 ECDIS, to become legal to use after 1 January 2026 and from 1 January 2029, new systems must comply with the new IMO Resolution on ECDIS Performance Standards). Both documents have subsequently been approved in November 2022 by the IMO Maritime Safety Committee (MSC 106).

4. Of particular note is this intended timeline for S-100 ECDIS. Rapidly growing S-101 ENC coverage and appropriate complementary S-100 data/products services is now expected when S-100 ECDIS becomes operational. In order to meet these expectations, it is now of strategic importance to facilitate IHO Member States and wider stakeholders to actively support the development of S-101 and other S-1xx Product Specifications and, potentially, accelerate delivery of operational versions of S-128, S-164 and S-98.
5. As a consequence it is proposed that the implementation of Work Programme 2024 – 2026 should focus on activities in support of Goal 1 and its targets which means priority in
  - a. application of material and human resources;
  - b. liaison with public sector and industry partners;
  - c. promotion of concerted regional approaches including increased collaboration with the RENCs; and
  - d. support of test beds delivering best practice examples for the production, maintenance and distribution of all prioritised S-100 derivatives.
6. An important means for creation and maintenance of services for S-100 derivatives services is a matured MSDI infrastructure. The Strategic Plan addresses this under Goal 2 / Target 2.1 to “Build a portal to support and promote regional and international cooperation in marine spatial data infrastructures (MSDI)”. The implementation of this target is addressed under the Working Programme of the MSDI Working Group which is overseen by IRCC. The anticipated solution so far was to build up a dedicated IHO web page which serves as a gateway to the respective national MSDI infrastructure of Member States.
7. This concept has turned out in the interim to be an unbearable task in terms of completeness and up to dateness. Moreover, web page statistics indicates an insignificant number of visitors searching for national MSDI resources via the IHO website. The Council has therefore agreed on the Secretary-General’s recommendation to refocus the function and the layout of a future MSDI portal (Reference B C6/53). Instead of referencing to the respective national MSDI infrastructure, with links that will never be complete nor fully up to date, it is proposed to focus on global thematic layers of information which are limited to the IHO scope such as those which are already provided under IHO online catalogues. Some examples are listed here:
  - Global IHO Membership
  - Global INT Chart coverage
  - Global ENC coverage
  - Global CATZOC status (for those ENC producers willing to make it publicly available)
  - Global AIS indicated ships traffic
  - INTogIS III (as a worldwide simplified version of the global S-128 catalogue)
  - GEBCO SCUFN Gazetteer and SCUFN Archive
  - Global Bathymetric layer (GEBCO Grid)
  - Global Survey Coverage
  - C-55 content
  - Global MSI NAVAREA layout
  - S-100 showcases / best practice examples
8. This approach can be extended to other themes such as future digital catalogues of hydrographic products and services (S-128) and a global repository of Marine Protected Areas (S-122). These and other themes of global thematic layers of interest, such as “green” spatial planning, would help to increase IHO’s visibility and assist Member States in their respective domestic duties. It is proposed therefore to direct IRCC to provide guidance to MSDIWG on the focus shift in implementation of Goal 2/Target 2.1 and add appropriate action on MSDIWG Work Programme for the development of a concept approach for an IHO portal on global thematic layers relevant for the pursuance of Goal 2.
9. The Council proposes to be tasked with the development of the next Strategic Plan to be put in place for 2027 – 2032 in compliance with the Planning Cycle (Reference C, Art. 1)). Noting the implementation of the Strategic Performance Indicators in progress for all three

Work Programmes, aiming to deliver a comprehensive assessment of the efficiency of IHO activities in support of the drafting process of the Strategic Plan 2027 – 2032, the Council proposes to continue to measure the effectiveness and the efficiency of the three Work Programmes implementation by means of the Strategic Performance Indicators as endorsed by the Council.

10. Based on the expected guidance received from A-3, it is assumed that C-7 will set up a Strategic Plan Review Working Group that would start the drafting process with direction to present a first report to C-8, endorsement of the final draft at C-9, and submit the result for adoption by A-4.





Proposal n°	Object of the Proposal	Submitted by	Reference
<a href="#">1.2</a>	Implementation and review of the Strategic Plan	IHO Council	1

<b>Brazil</b>
Brazil supports this proposal.

<b>Canada</b>
Canada endorses each of the elements of this proposal. Related to the change in focus for SP Target 2.1 from, “Build a portal to support and promote regional and international cooperation in marine spatial data infrastructures,” to developing an, ‘IHO Data-Products-Services portal providing global thematic layers’, will the IHO Work Programme 2024-2026 be modified to reflect this task? [This also relates to PRO 1.4]

<b>Finland</b>
Finland supports the proposal.

<b>FRANCE</b>
France supports the Secretary General’s recommendation to refocus the function of the "MSDI" portal in target 2.1 of the 2021-2026 Strategic Plan on access to global thematic layers of information that can be easily maintained by the IHO Secretariat on the basis of information already available in the Organization’s publications or on the website. In terms of global survey coverage, the most efficient way to populate this layer of the future portal for EU waters is to rely on the common data index of the EMODnet Bathymetry Portal (CDI Data Discovery and Access Service - <a href="https://www.emodnet-bathymetry.eu/search">https://www.emodnet-bathymetry.eu/search</a> ).

<b>Germany</b>
Germany supports this proposal.

<b>Italy</b>
As member of the IHO Council, Italy supports the proposal.

<b>Japan</b>
Japan supports this proposal.

**Portugal**

Portugal endorses this proposal.

**Sweden**

Sweden supports the proposed implementation and review of the IHO Strategic Plan. It is of particular importance that IHO focus on the S-100 implementation during the period of 2023 - 2026. Thus the highest priority on Goal 1 of the IHO Strategic Plan is welcomed by Sweden.

**United Kingdom**

The United Kingdom supports this proposal.

**UNITED STATES OF AMERICA**

The United States supports all items as key implementation components to move the IHO Strategic Plan forward.

**SECRETARY-GENERAL`S RESPONSE TO MEMBER STATES COMMENTS**

The Secretariat is of the view that the wording in place is of generic nature and covers the proposed change of the focus towards global thematic layers of IHO Products and services.

**PRO-1.2 Implementation and Review of the Strategic Plan**

**Submitted by: Council (Council Chair)**

- References:**
- D. IHO Strategic Plan 2021 - 2026
  - E. 6<sup>th</sup> Meeting of the IHO Council IHO C-6 – *Summary Report*
  - F. M-3 Resolutions of the IHO - IHO Resolution 12/2002 as amended – *Planning Cycle [for Assembly Years]*.

**PROPOSAL**

**Noting the endorsement by the Council, the Assembly is invited:**

- f. to agree on the continuation of conduct of the annual Work Programmes on the basis of the Strategic Plan in place for 2021 – 2026 and direct the Council accordingly;**
- g. to approve that Goal 1 of the IHO Strategic Plan and its targets shall have the highest priority in the implementation of the 2024–2026 Work Programme;**
- h. to direct IRCC to provide guidance to the MSDI Working Group on the focus shift in implementation of Goal 2/Target 2.1 towards an IHO Data-Products-Services portal providing global thematic layers;**
- i. to continue to measure the effectiveness and the efficiency of the three Work Programmes implementation by means of the Strategic Performance Indicators as endorsed by the Council;**
- j. to provide directions to the next Council for the preparation of the Strategic Plan 2027–2032.**

**EXPLANATORY NOTE**

11. The Strategic Plan in place, designed for the rolling period 2021 – 2026, shall be reviewed at each ordinary session of the Assembly (Reference C, Art. 1). The Council, tasked to provide input for this review, confirmed the general appropriateness and usability of the existing Strategic Plan. The Council therefore recommends to continue with the Strategic Plan in place for 2021–2026 in general (Council Decision C6/56), but proposes priority and focus adjustments which are explained in the following paragraphs.
12. At its ninth meeting in 2022 (NCSR9), the Sub-Committee on Navigation, Communications, Search and Rescue of the International Maritime Organization (IMO) had endorsed and transmitted to the IMO Maritime Safety Committee (MSC) the proposal, initiated by IHO, to include S-100 compatible data sets as a valid format in ECDIS.
13. The 6th Council noted the outcome of the 9th session of the IMO NCSR on the revision of MSC.1/Circ.1503/Rev1 – ECDIS Guidance for Good Practice and Revision of MSC.232(82) – ECDIS Performance Standard (IHO CL 31/2022 refers) and took note of the associated IHO commitments made towards the IMO and the IEC in particular (transition period for S-100 ECDIS, to become legal to use after 1 January 2026 and from 1 January 2029, new systems must comply with the new IMO Resolution on ECDIS Performance Standards). Both documents have subsequently been approved in November 2022 by the IMO Maritime Safety Committee (MSC 106).

14. Of particular note is this intended timeline for S-100 ECDIS. Rapidly growing S-101 ENC coverage and appropriate complementary S-100 data/products services is now expected when S-100 ECDIS becomes operational. In order to meet these expectations, it is now of strategic importance to facilitate IHO Member States and wider stakeholders to actively support the development of S-101 and other S-1xx Product Specifications and, potentially, accelerate delivery of operational versions of S-128, S-164 and S-98.
15. As a consequence it is proposed that the implementation of Work Programme 2024 – 2026 should focus on activities in support of Goal 1 and its targets which means priority in
- e. application of material and human resources;
  - f. liaison with public sector and industry partners;
  - g. promotion of concerted regional approaches including increased collaboration with the RENCs; and
  - h. support of test beds delivering best practice examples for the production, maintenance and distribution of all prioritised S-100 derivatives.
16. An important means for creation and maintenance of services for S-100 derivatives services is a matured MSDI infrastructure. The Strategic Plan addresses this under Goal 2 / Target 2.1 to “Build a portal to support and promote regional and international cooperation in marine spatial data infrastructures (MSDI)”. The implementation of this target is addressed under the Working Programme of the MSDI Working Group which is overseen by IRCC. The anticipated solution so far was to build up a dedicated IHO web page which serves as a gateway to the respective national MSDI infrastructure of Member States.
17. This concept has turned out in the interim to be an unbearable task in terms of completeness and up to dateness. Moreover, web page statistics indicates an insignificant number of visitors searching for national MSDI resources via the IHO website. The Council has therefore agreed on the Secretary-General’s recommendation to refocus the function and the layout of a future MSDI portal (Reference B C6/53). Instead of referencing to the respective national MSDI infrastructure, with links that will never be complete nor fully up to date, it is proposed to focus on global thematic layers of information which are limited to the IHO scope such as those which are already provided under IHO online catalogues. Some examples are listed here:
- Global IHO Membership
  - Global INT Chart coverage
  - Global ENC coverage
  - Global CATZOC status (for those ENC producers willing to make it publicly available)
  - Global AIS indicated ships traffic
  - INTogIS III (as a worldwide simplified version of the global S-128 catalogue)
  - GEBCO SCUFN Gazetteer and SCUFN Archive
  - Global Bathymetric layer (GEBCO Grid)
  - Global Survey Coverage
  - C-55 content
  - Global MSI NAVAREA layout
  - S-100 showcases / best practice examples
18. This approach can be extended to other themes such as future digital catalogues of hydrographic products and services (S-128) and a global repository of Marine Protected Areas (S-122). These and other themes of global thematic layers of interest, such as “green” spatial planning, would help to increase IHO’s visibility and assist Member States in their respective domestic duties. It is proposed therefore to direct IRCC to provide guidance to MSDIWG on the focus shift in implementation of Goal 2/Target 2.1 and add appropriate action on MSDIWG Work Programme for the development of a concept approach for an IHO portal on global thematic layers relevant for the pursuance of Goal 2.

19. The Council proposes to be tasked with the development of the next Strategic Plan to be put in place for 2027 – 2032 in compliance with the Planning Cycle (Reference C, Art. 1)). Noting the implementation of the Strategic Performance Indicators in progress for all three Work Programmes, aiming to deliver a comprehensive assessment of the efficiency of IHO activities in support of the drafting process of the Strategic Plan 2027 – 2032, the Council proposes to continue to measure the effectiveness and the efficiency of the three Work Programmes implementation by means of the Strategic Performance Indicators as endorsed by the Council.
20. Based on the expected guidance received from A-3, it is assumed that C-7 will set up a Strategic Plan Review Working Group that would start the drafting process with direction to present a first report to C-8, endorsement of the final draft at C-9, and submit the result for adoption by A-4.



Proposal n°	Object of the Proposal	Submitted by	Reference
<a href="#">1.3</a>	Amendments to IHO Resolution 1/2020 –Gender-Inclusive Language	IHO Council	1

<b>Brazil</b>
Brazil supports this proposal.

<b>Canada</b>
Canada endorses this proposal.

<b>Finland</b>
Finland supports the proposal.

<b>Germany</b>
Germany supports this proposal.

<b>Italy</b>
As member of the IHO Council, Italy supports the proposal.

<b>JAPAN</b>
Japan supports this proposal.

<b>Portugal</b>
Portugal endorses this proposal.

<b>Sweden</b>
Sweden supports this proposal.

**United Kingdom**

The United Kingdom supports activities that aim to enhance gender equality and inclusivity and endorses the proposed amendment to IHO Resolution 01/2020 together with edited versions of M-1 and M-3.

**UNITED STATES OF AMERICA**

The United States fully supports the proposed actions.



**PRO-1.3 Gender-inclusive language to be used in IHO documents and communications**

**Submitted by: Council (Council Chair)**

- References:**
- G. IHO Publication P-6 Proceedings of the 2<sup>nd</sup> session of the IHO Assembly 16-18 November 2020
  - H. Update on the implementation of Decision A2/07 Gender-inclusivity Doc: C5-7.1A
  - I. 5<sup>th</sup> Meeting of the IHO Council IHO C-5 – *Summary Report*
  - J. 6<sup>th</sup> Meeting of the IHO Council IHO C-6 – *Summary Report*
  - K. IHO Publication M-1 Basic Documents of the International Hydrographic Organization Edition 2.1.1 - Updated October 2020
  - L. IHO Publication M-3 (April 2022) Resolutions of the International Hydrographic Organization

<b>Annexes:</b>	<p>Annex A Proposed Revised version (Amendments to) of IHO Resolution 1/2020: GENDER-INCLUSIVE LANGUAGE TO BE USED IN IHO DOCUMENTS AND COMMUNICATIONS</p> <p>Annex B A3_PRO1-10_EN_Annex_B_M-1_EN_Draft_v2.1.2 - Test English gender neutral version of IHO Publication M-1 (Draft Edition 2.1.2, 2023) Basic Documents of the International Hydrographic Organization (red line version)</p> <p><i>Note: This Annex is not included in in the Assembly Proceedings because of its extent but is publicly available in the IHO Digital Archive.</i></p>
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**PROPOSAL**

**Noting the endorsement by the Council, the Assembly is invited:**

- k. to approve the proposed amendment to IHO Resolution 1/2020 GENDER-INCLUSIVE LANGUAGE TO BE USED IN IHO DOCUMENTS AND COMMUNICATIONS;**
- l. to direct the IHO Secretariat to implement the gender-inclusive language in M-1 as a first step and invite Committees and Working Groups to review their TORs and ROPs in application of the new IHO Resolution; and**
- m. to endorse that the application process of the proposed revised version of the IHO Resolution 1/2020 will become part of the regular drafting and revision process of all IHO documents and communication.**

**EXPLANATORY NOTE**

1. The 2<sup>nd</sup> Assembly tasked the Secretary-General in the second part of Decision A2/07 (Reference A refers):
  - a. to conduct a comprehensive review of the IHO Basic Documents and Resolutions, adopting the UN Guidelines on Gender-inclusive Language, and to provide draft revisions of IHO Publications M-1 and M-3 for the consideration of the Assembly at the next ordinary session (A-3), and
  - b. to monitor the IHO's progress towards the implementation of the UN Guidelines on Gender-inclusive Language to all IHO documentation and communications and report to the Assembly at the next ordinary session (A-3).
2. Based on the Secretary-General's report on the subject to C-5 (Reference B refers), the Council agreed that to the greatest extent possible, the updating of gender references in existing IHO documents will take place in conjunction with other edits and revisions which have been received as proposals from IHO bodies. That is, there will be no systematic updating of all IHO documents for the single purpose of addressing gender language issues.
3. The Council also agreed that guiding principles on gender-inclusive language, once approved, will apply to all new IHO documents and communications.
4. Based on this agreement reached by the C-5 the Secretary-General with assistance from Canada evaluated the UN Guidelines on gender-inclusive language for the English language - being the only available for IHO's two working languages English and French at that time - and cleaned those relevant to the IHO to use as guiding principles. This joint approach resulted into a proposed revised version (amendments to) of the IHO Resolution 1/2020 on gender-inclusive language adopted at A-2 (Annex A).
5. In order to verify the suitability of the recommendations made by the presented revised version of the IHO Resolution and the prospective editorial work resulting from for IHO Basic Documents, the Secretariat applied the new guiding principles to the English editions of M-1 (Annex B) and M-3 as a test case. The text of the IHO Convention and other historic documents included in M-1 were excluded from any modification for formal reasons. For M-3, it appears that there is only one correction to be made for IHO Resolution 2/2004. In its paragraph 2, "he" will be replaced by "they" at the first opportunity when the next update of M-3 is published (likely after A-3).
 

It turned out that the application of the proposed guiding principles for the English editions on those two documents resulted in a few requirements for modifications only, does not decrease the overall readability and does not lead to possible ambiguities in terms of understanding of the content.

As pointed out in the main body text of the proposed new resolution, the referenced UN Guidelines are now available in Arabic, Chinese, English, French, Russian or Spanish. This led to a post-Council modification of the originally endorsed text of this Proposal (Reference D C6/58). The resulting modifications are marked up in the wording provided in Annex A of this proposal.
6. In anticipation of the approval of this Proposal it is planned to direct the IHO Secretariat to implement the gender-inclusive language in both the English and French edition of M-1 as a first step (deadline C-7) and invite Committees and Working Groups to review their TORs and ROPs in application of the new IHO Resolution.
7. Once approved, the application process of the proposed revised version of the IHO Resolution 1/2020 will become part of the regular drafting and revision process of all IHO documents and communication.

**Proposed Amendment to IHO Resolution 1/2020**

TITLE	Reference	Last amendment	Reference from 1 <sup>st</sup> Edition
<b>GENDER-INCLUSIVE LANGUAGE TO BE USED IN IHO DOCUMENTS AND COMMUNICATIONS</b>	1/2020 as amended	IHO A-3	IHO A-2

*Current version of IHO Resolution 1/2020 in force*

1 Given that language plays an important role in shaping cultural and social attitudes, it is resolved that the Secretariat and all IHO organs must ensure that the language used in IHO documents and communications issued or amended will be gender inclusive as per the UN Guidelines on Gender-inclusive Language in both official languages English and French. For the case that Spanish translations are provided by the Secretariat the above guidelines will apply too.

2 Documents produced prior to the approval of this resolution will be updated at the earliest possible opportunity and, preferably, in conjunction with other content editing or revision.

*New proposed amended version of IHO Resolution 1/2020*

**INTRODUCTION**

1. Given that language plays an important role in shaping cultural and social attitudes and IHO’s clear commitment to gender equity, it is resolved that the Secretariat of the International Hydrographic Organization (IHO) and the organs of the IHO must ensure that the language used in IHO documents and communications issued or amended after the 3rd Session of the IHO Assembly will be gender inclusive as per the United Nations (UN) Guidelines on Gender-inclusive Language ([UNITED NATIONS Gender-inclusive language](#) -English, and, [NATIONS UNIES Le langage inclusif](#) -French).
2. Documents produced prior to the approval of this resolution will be updated at the earliest possible opportunity and, preferably, in conjunction with other content editing or revision.
3. The guidelines and the related resource materials (also known as the ‘Toolbox’) were developed to support gender equality in multilingual contexts as part of the [UN System-wide Strategy on Gender Parity](#).
4. It is noted on the relevant UN communication source that these guidelines may be “updated and revised to reflect feedback, suggestions and changes in the use of language”. It is important for the IHO to remain aware of that these guidelines will continue to evolve.

**IHO IMPLEMENTATION OF THE UN GUIDELINES FOR GENDER-INCLUSIVE LANGUAGE**

5. IHO documents, Committees and Working Groups Terms of Reference and Rules of Procedures, produced prior to the approval of this resolution will be updated at the earliest possible opportunity and, preferably, in conjunction with other content editing or revision.
6. The approval of documents amended solely to address gender language issues is delegated to the IHO Council by the IHO Assembly.

7. Documents amended for any other reason will follow the approval process that is appropriate for that particular document.

**UN GUIDELINES FOR GENDER-INCLUSIVE LANGUAGE IN ENGLISH AND FRENCH**

8. The current UN Guidelines for gender-inclusive language in Arabic, Chinese, English, French, Russian or Spanish can be found at:

[UNITED NATIONS Gender-inclusive language - Guidelines](#)

Annex A and Annex B of this Resolution reproduces these Guidelines for English and French, respectively, and uses annotations to highlight, clarify, or expand upon some elements of the Guidelines that may be more relevant to the IHO.

**ADDITIONAL RESOURCES TO SUPPORT THE PRACTICAL APPLICATION OF THE GUIDELINES**

The UN Guidelines for using gender-inclusive language in Arabic, Chinese, English, French, Russian or Spanish are supported by training materials, activities, and resources which can be found at:

[UNITED NATIONS Gender-inclusive language -Toolbox](#)

**Annex A of IHO Resolution 1/2020 as amended****UN GUIDELINES FOR GENDER-INCLUSIVE LANGUAGE IN ENGLISH – ANNOTATED BEST PRACTICES AND STRATEGIES FOR THE IHO**

## NOTES

1. The complete UN guidelines for gender-inclusive language in English can be found at: [UNITED NATIONS Gender-inclusive language - Guidelines](#)
2. The UN Guidelines are copied below for easy reference. As previously noted, however, the original guidelines may be subject to change.
3. Some annotations to the text have been made to emphasize or contextualize certain points for the IHO. *These annotations will be in italics.*

**GUIDELINES FOR GENDER-INCLUSIVE LANGUAGE IN ENGLISH.**

*For this Annex, ‘United Nations staff’ should be read as, ‘the IHO’, which is taken to mean the IHO Secretariat and the organs of the IHO.*

These *Guidelines* include a number of strategies to help United Nations staff use gender-inclusive language. They may be applied to any type of communication, whether it is oral or written, formal or informal, or addressed to an internal or external audience.

When deciding what strategies to use, United Nations staff should:

- Take into account the type of text/oral communication, the context, the audience and the purpose of the communication;
- Ensure that the text is readable and the text/oral communication clear, fluid and concise;
- Seek to combine different strategies throughout the text/oral communication.

## Gender in English

In English, there is a difference between “grammatical gender”, “gender as a social construct” (which refers to the roles, behaviors, activities and attributes that a given society at a certain time considers appropriate for men or women) and “sex” as a biological characteristic of living beings.

English has very few gender markers: **the pronouns and possessives** (*he, she, her* and *his*); and **some nouns and forms of address**. Most English nouns do not have grammatical gender forms (*teacher, president*), whereas a few nouns are specifically masculine or feminine (*actor/actress, waiter/waitress*). Some nouns that once ended in *-man* now have neutral equivalents that are used to include both genders (*police officer* for *policeman/policewoman*, *spokesperson* for *spokesman*, *chair/chairperson* for *chairman*).

A challenge for gender-inclusive communication in English is the use of the masculine form by default. For example, “Every Permanent Representative must submit **his** credentials to Protocol.”

## Best practices/strategies

A number of strategies can be applied, when speaking or writing in English, to be more gender-inclusive:

1. Use non-discriminatory language.

## 1.1 Forms of address

When referring to or addressing specific individuals, use forms of address and pronouns that are consistent with their gender identity.

*It is important not to assume the gender of a person nor the pronoun they prefer.*

For United Nations staff members, you may check the intranet or the organizational or staff directory. If the staff member appears as “Ms.,” that is the form of address that should be used for her, and female pronouns are appropriate. Alternatively, and if the situation permits, you may ask the persons you are addressing or writing about what pronoun and form of address should be used for them.

*In all cases, the wishes of the individual concerning their choice of title and pronouns must be respected.*

*Note for United Nations staff members who draft texts to be translated:* If you are the author of a text that is going to be translated, and your text is referring to a specific person, please let translators know what the gender of that person is so they can use appropriate language in their translations. This is crucial for languages such as Arabic, French, Russian and Spanish.

There should also be consistency in the way women and men are referred to: if one of them is addressed by their name, last name, courtesy title, or profession, the other one should be as well.

<b>Less inclusive:</b>	<b>More inclusive:</b>
“Professor Smith (surname and title for a man) and Madeline (first name for a woman) will attend the luncheon.”	“Professor Smith and Professor Jones will attend the luncheon (surname and title for both).”

### ***Ms. or Mrs.?***

Care should be taken to use the form of address preferred by each individual. However, when that preference is not known, precedence is given to Ms. over Mrs., as the former is more inclusive and can refer to any woman, regardless of marital status

1.2 Avoid gender-biased expressions or expressions that reinforce gender stereotypes

Discriminatory examples:

- “She throws/runs/fights like a girl.”
- “In a manly way.”
- “Oh, that’s women’s work.”
- “Thank you to the ladies for making the room more beautiful.”
- “Men just don’t understand.”

<b>Less inclusive:</b>	<b>More inclusive:</b>
“Guests are cordially invited to attend with their wives.”	“Guests are cordially invited to attend with their partners.”
“Fathers babysit their children.”	“Fathers care for their children.”

### ***How do I know if I am using discriminatory language?***

Reverse the gender: Would reversing the designation or the term from masculine to feminine or vice versa change the meaning or emphasis of the sentence? Would it make the sentence sound odd?

Examples:

- “Women should not seek out leadership positions.”

- “Men cannot do two things at the same time.”

## 2. Make gender visible when it is relevant for communication

*In general, IHO should avoid the use of these strategies to ‘make gender visible’ in English as they may inadvertently exclude people who do not refer to themselves using either male or female pronouns and/or do not identify as male or female.*

### 2.1 Using feminine and masculine pronouns

“Pairing” is the use of both feminine and masculine forms (he or she; her or his). It is a strategy that may be used when the author/speaker wants to explicitly make both women and men visible. **It is advisable not to overuse this strategy in English**, however, as it may be distracting to the reader, in particular in narrative texts. It may also create inconsistencies or render the text less accurate — for example, in legal texts.

The feminine and masculine forms can be alternated throughout the text. This strategy should be used with caution, however, in particular when its use may affect the meaning of the text, cause confusion or be distracting to the reader. It may be more appropriate to alternate masculine and feminine forms by paragraph or section, rather than by sentence or phrase.

Example: “When a staff member accepts an offer of employment, **he or she** must be able to assume that the offer is duly authorized. To qualify for payment of the mobility incentive, **she or he** must have five years’ prior continuous service on a fixed-term or continuing appointment.”

### 2.2 Using two different words

In cases in which highlighting gender would make the sentence more inclusive, two separate words can be used. This strategy should be used only when popular beliefs or preconceptions may obscure the presence or action of either gender.

Examples:

- “Boys and girls should attend the first cooking class with their parents.”
- “All of the soldiers, both men and women, responded negatively to question 5 in the survey on gender inclusivity.”

## 3. Do not make gender visible when it is not relevant for communication

### 3.1 Use gender-neutral words

Less inclusive:	More inclusive:
“Mankind”	“Humankind”; “humanity”; “human race”
“Plans to outsource some 19 services have not proceeded at the anticipated pace, as there are significant <b>manpower</b> shortages.”	“Plans to outsource some 19 services have not proceeded at the anticipated pace, as there are significant <b>staffing</b> shortages.”
“Man-made”	“Artificial”; “human-caused”

### 3.2 Using plural pronouns/adjectives

In informal writing, such as emails, plural pronouns may be used as a shortcut to ensure gender inclusiveness. Such strategies are not recommended in formal writing.

Example: “Before submitting your document, send it to the focal point for **their** review; **they** will return it to you with comments.”

3.3 Use the pronoun **one**

Less inclusive:	More inclusive:
“A staff member in Antarctica earns less than <b>he</b> would in New York.”	“A staff member in Antarctica earns less than <b>one</b> in New York.”

3.4 Use the relative pronoun **who**

Less inclusive:	More inclusive:
“If a complainant is not satisfied with the board’s decision, <b>he</b> can ask for a rehearing.”	“A complainant <b>who</b> is not satisfied with the board’s decision can ask for a rehearing.”

3.5 Use a plural antecedent

When referring to generic subjects, plural antecedents may be used in order to avoid gendered pronouns.

Less inclusive:	More inclusive:
“A substitute judge must certify that <b>he</b> has familiarized <b>himself</b> with the record of the proceedings.”	“Substitute judges must certify that <b>they</b> have familiarized <b>themselves</b> with the record of the proceedings.”
<i>“The External Auditor may proceed to such detailed examination and verification as <b>he</b> chooses of all financial records including those relating to supplies and equipment”. [IHO Resolution 2/2004 (2).]</i>	<i>“The External Auditor may proceed to such detailed examination and verification as <b>they</b> choose of all financial records including those relating to supplies and equipment”.</i>
<i>“A Secretary-General or a Director elected at an ordinary session of the Assembly shall assume <b>his/her</b> duties on the following 1 September”. [IHO General Regulations Art. 15.]</i>	<i>“A Secretary-General or a Director elected at an ordinary session of the Assembly shall assume <b>their</b> duties on the following 1 September”.</i>

3.6 Omit the gendered word

Less inclusive:	More inclusive:
“Requests the Emergency Relief Coordinator to continue <b>his/her</b> efforts to strengthen the coordination of humanitarian assistance.”	“Requests the Emergency Relief Coordinator to continue efforts to strengthen the coordination of humanitarian assistance.”
<i>“An external auditor shall be appointed by the Assembly; <b>his/her</b> term of appointment shall be for a period of three years, subject to Article 19 (b) below”. [IHO Financial Regulations Art. 19(a).]</i>	<i>“An external auditor shall be appointed by the Assembly; <b>the</b> term of appointment shall be for a period of three years, subject to Article 19 (b) below”.</i>

3.7 Use the passive voice

The passive voice is not an appropriate option for all sentences in English, as employing the passive voice often changes the emphasis of the sentence. However, it does offer an option for avoiding gendered constructions.



Less inclusive:	More inclusive:
“The author of a communication must have direct and reliable evidence of the situation <b>he</b> is describing.”	“The author of a communication must have direct and reliable evidence of the situation being described.”

*APPENDIX 1 A complementary reference.*

*A checklist for gender-related revisions (adapted from The Writing Center – University of North Carolina at Chapel Hill)*

*Consider the following questions when reviewing or writing documents or communications:*

- 1. Has “man” or “men” or words containing them been used to refer to people who may not be men?*
- 2. Has “he,” “him,” “his,” or “himself” been used to refer to people who may not be men?*
- 3. If someone’s sex or gender has been mentioned, was it necessary to do so?*
- 4. Have any occupational (or other) stereotypes been used?*
- 5. Has same kinds of information and descriptions been provided when writing about people of different genders?*



Proposal n°	Object of the Proposal	Submitted by	Reference
<a href="#">1.4</a>	3-year Work Programme and Budget 2024-2026	IHO Council	1

**CANADA**

Canada endorses each of the elements of this proposal.  
 Related to the change in focus for SP Target 2.1 from, “Build a portal to support and promote regional and international cooperation in marine spatial data infrastructures,” to developing an, ‘IHO Data-Products-Services portal providing global thematic layers’, will the IHO Work Programme 2024-2026 be modified to reflect this task? [This also relates to PRO 1.2.]

**Finland**

Finland supports the proposal.

**Germany**

Germany supports this proposal.

**ITALY**

As member of the IHO Council, Italy supports the proposal.

**JAPAN**

Japan supports this proposal and appreciates IHO Secretariat’s effort to contain the annual value of a contribution share for Member States.

**Portugal**

At a time of deep transformations on the standards, Portugal does not agree with the reduction of the budget allocated to Capacity Building to 60.000 Euros. If this value goes forward, both the transformation to the S-100 and the training of hydrographic services will be very limited and therefore hindered.

**Sweden**

Sweden supports the Council proposal of the 3-Year Work Programme and the Budget 2024 – 2026.

**UNITED KINGDOM**

The United Kingdom supports this proposal.

**UNITED STATES OF AMERICA**

The United States supports the proposal, and encourages the IHO Secretariat to continue with its demonstrated conservative fiscal management.

**SECRETARY-GENERAL`S RESPONSE TO MEMBER STATES COMMENTS**

The 3-year budget estimates for the period 2024 – 2026 were drafted based on the Council endorsement (Decision and Action C6/48 refers) of the proposed 3-year Work Programme and Budget\* provided by the Secretary-General for submission at A-3 by Council Chair for the approval of Member States.

\* subject to an update prior to submission to A-3 by 20 December 2022 in consideration of the volatility of the global finance situation.

A detailed explanation of the financial situation of the Organization will be given at the meeting of the Finance Committee prior to the Assembly.

**PRO-1.4 3-Year Work Programme and budget 2024 – 2026 (v2)**

**Submitted by:** Council (Council Chair)

- References:**
- A. IHO Convention
  - B. General Regulations
  - C. Proceedings of the first Session of the Assembly
  - D. IHO Strategic Plan 2021 - 2026
  - E. 6<sup>th</sup> Meeting of the Council – Summary Report
  - F. IHO Resolution 12/2002 as amended – *Planning Cycle*

- Annexes:**
- A. 3-year Work Programme 2024 – 2026
  - B. 3-year Budget Estimates 2024 – 2026

**PROPOSAL**

**Noting the endorsement by the Council, the Assembly is invited:**

- **to approve the 3-year work programme 2024 – 2026 based on the Strategic Plan in force.**
- **to approve the 3-year budget estimates 2024 - 2026.**
- **to approve the option of an increase of the Member States contribution share value up to a maximum of 3% percent subject to the approval by C-7, C-8 or C-9 as part of Council’s approval process of the annual budget.**

**EXPLANATORY NOTE**

1. As part of the IHO Planning Cycle for Assembly years (Reference F), the IHO Convention (Reference A, Article VI) mandates the Council to prepare a proposal for the 3-year IHO work programme and budget estimates for Assembly adoption.
2. The Council, assisted by the Secretary-General (Reference B), drafted a proposal of a 3-year work programme 2024 – 2026 (Annex A). This proposal is based on the priorities of existing IHO Strategic Plan (Reference D) as adopted at the second Session of the Assembly (Decision A2/12 refers), and was endorsed by the Council (Reference E, Decision C6/48).
3. If at the third Session of the Assembly, the Council’s proposal by which Goal 1 and its Targets in the IHO Strategic Plan should have the highest priority in the 2024–2026 Work Programme is adopted, it is expected that the Assembly will task the Council to review and possibly adapt the Work Programme 2024 – 2026 (Annex A) at its seventh meeting in October 2023 accordingly.
4. The Council endorsed the 3-year budget estimates 2024 – 2026 (Annex B) including recommendations regarding pragmatic allocations as prepared by the Secretary-General in consideration of the volatility of the global finance situation (Reference E, Decision C6/48).
5. The Council took note of the explanations of the Secretary-General that illustrated how staff costs, salary costs and medical costs had increased between 2008 and 2022. Aside from a significant increase in medical costs, the most concerning was a rapid increase

in the cost of living rate for Monaco over the previous two years amounting to 20.6% increase since 2008.

6. In order to manage these budgetary challenges and supported by evidence of efficient saving measures taken by the Secretary-General, the Council endorsed the principle for proposing an increase of the Member States contribution share value from 2024 to 2026.
7. The Council endorsed the recommendation made by the Secretary-General to request A-3, for renewal of Council's authority for the increase of Member States contribution share value up to 3%, subject to the Council's annual budget review between 2024 and 2026, with validity for the 2024 budget as the earliest.
8. A 1% increase would result in a contribution increase of approximately 40 € per share. The effect for the IHO Budget would be approximately 35.000 € per year; the cumulative effect of a 3% contribution increase would effectively conclude with an overall increase of approximately 105.000 € per year.
9. Given the volatility of global inflation and the risks that global and local inflation posed for the IHO budget, a one-step increase of 3% in 2024 is expected to balance the budgetary efforts expected for the period 2024 - 2026.
10. If approved by the Assembly, it will be then up to the judgement and the decision of the Council at C-7 or C-8 or C-9 if, when and to what the increase of the contribution share value up to the cumulated maximum of 3% will be implemented.

# WORK PROGRAMME 1

## CORPORATE AFFAIRS

**Concept:**

Programme 1 covers the provision of the services provided by the Secretariat of the IHO and, through the Secretary-General and the Directors, the management and fostering of relations with intergovernmental and other international organizations. Work Programme 1 is directed primarily by the Secretary-General. It is integral to the achievement of all the Strategic Directions; some directly, others indirectly.

Element 1.1	Cooperation with International Organizations and participation in relevant meetings
Element 1.2	Information Management
Element 1.3	Public Relations and Outreach
Element 1.4	Work Programme & Budget, Strategic Plan and Performance Monitoring
Element 1.5	Secretariat Services
Element 1.6	IHO Council and Assembly

**Element 1.1 Co-operation with International Organizations and participation in relevant meetings**

**Objective:** Maintain relationships with relevant international organizations in order to further the interests of the IHO by enlisting their support and cooperation, and participate in projects of common interest. Represent the IHO and participate in international forums dealing with matters of relevance to the objectives of the IHO and the IHO WP, including:

Task	Description	G&T	Notable stakeholder(s) outside the IHO	Notable deliverables / milestones and timing	Lead authority / Participants	Notable specific resources from the IHO budget	Other resources	Significant risk to delivery
1.1.1	Maintain relationships with the Government of Monaco and the diplomatic corps accredited in Monaco			Continuous	Secretariat			
1.1.2	Maintain relationship with the Antarctic Treaty Consultative Meeting (ATCM)	3.2	Mariners, Ship operators, Marine scientific community	continuous	Secretariat	1 meeting annually Travel cost for SG or Dir		



Task	Description	G&T	Notable stakeholder(s) outside the IHO	Notable deliverables / milestones and timing	Lead authority / Participants	Notable specific resources from the IHO budget	Other resources	Significant risk to delivery
1.1.3	Maintain relationship with the Comité International Radio Maritime (CIRM)	1.2	Navigation equipment manufacturers	continuous	Secretariat	1 meeting annually Travel cost for 1 SG/Dir/AD		
1.1.4	Maintain relationship with European Union Initiatives (such as INSPIRE and EMODnet)	3.2		continuous	Secretariat IENWG	2 meetings annually. Travel cost for 1 SG/Dir/AD per meeting		
1.1.5	Maintain relationship with the Group on Earth Observation (GEO)	2.3		continuous	Secretariat GEBCO GC MSDIWG	1 meeting annually. Travel cost for 1 SG/Dir/AD		

Task	Description	G&T	Notable stakeholder(s) outside the IHO	Notable deliverables / milestones and timing	Lead authority / Participants	Notable specific resources from the IHO budget	Other resources	Significant risk to delivery
1.1.6	Maintain relationship with the International Association of Marine Aids to Navigation and Lighthouse Authorities (IALA ) including the IALA e-NAV Committee and IALA World Wide Academy	3.1	Aids to Navigation authorities, e- Navigation data service providers, maritime community	continuous	Secretariat HSSC WGs CBSC	2 meetings annually. Travel cost for 1 SG/Dir/AD per meeting		
1.1.7	Maintain relationship with the International Electrotechnical Commission (IEC), including:  IEC Technical Committee 80	1.1	Equipment manufacturers Type approval bodies	continuous	Secretariat HSSC WGs	1 meeting annually. Travel cost for 1 Dir/AD		
1.1.8	Maintain relationship with the International Maritime Organization (IMO), including:  Assembly, Council, MSC, NCSR, TCC	1.1 3.1	Mariners, Ship Operators  Maritime Administrations	continuous	Secretariat	5 meetings annually, Travel cost for each meeting for 1 SG/Dir + AD or 1 AD.		

Task	Description	G&T	Notable stakeholder(s) outside the IHO	Notable deliverables / milestones and timing	Lead authority / Participants	Notable specific resources from the IHO budget	Other resources	Significant risk to delivery
1.1.9	Maintain relationship with the Intergovernmental Oceanographic Commission (IOC) of UNESCO, including: Assembly Council Specialized WGs	3.2	Marine scientific community	continuous	Secretariat GEBCO GC MSDIWG	2 meetings annually. Travel cost for 1 SG/Dir/AD		
1.1.10	Maintain relationship with the International Organization for Standardization (ISO), including: ISO Technical Committee 211	1.1 1.2		continuous	Secretariat	2 meetings annually. Travel cost for 1 Dir/AD		
1.1.11	Maintain relationship with the Joint Board of Geospatial Information Societies (JB-GIS)	1.1		annual	Secretariat	1 meeting annually if coinciding with other meetings. No significant additional cost		

Task	Description	G&T	Notable stakeholder(s) outside the IHO	Notable deliverables / milestones and	Lead authority / Participants	Notable specific resources from the IHO budget	Other resources	Significant risk to delivery
1.1.12	<p>Maintain relationship with United Nations (UN) organizations based in New York, including:</p> <ul style="list-style-type: none"> <li>the UN Committee of Experts on Global Geospatial Information Management (UN-GGIM) and its Working Group on Marine Geospatial Information (WGMGI)</li> <li>the UN Division on Ocean Affairs and Law of the Sea (UN-DOALOS)</li> <li>the UN Group of Experts on Geographical Names (UNGEGN)</li> </ul>	2.3	Marine geospatial data providers and users	<p>continuous</p> <p>Standardization in toponymic matters</p>	Secretariat MSDIWG ABLOS	<p>3 meetings annually.</p> <p>Travel cost for 1 SG/Dir</p> <p>Travel cost for 1 AD (on case-by-case basis)</p>		
1.1.13	Maintain relationship with the World Meteorological Organization (WMO)		Mariners, Ship operators, Maritime Administrations	continuous	Secretariat	<p>1 meeting annually</p> <p>Travel cost for 1 SG/Dir/AD</p>		
1.1.14	Maintain relationship with the Open Geospatial Consortium, including the Marine Domain Working Group (Marine DWG)	1.1 2.3	Mariners Oil and Gas industry UN-GGIM UN-WGMGI	continuous	Secretariat MSDIWG	1 meeting annually if coinciding with other meetings. No significant additional cost		

Task	Description	G&T	Notable stakeholder(s) outside the IHO	Notable deliverable/ milestones and timing	Lead authority / Participants	Notable specific resources from the IHO budget	Other resources	Significant risk to delivery
1.1.15	Maintain relationship with the International Seabed Authority (ISA)	3.2	Marine geospatial data providers and users	continuous	Secretariat	1 meeting annually. Travel cost for 1 SG/Dir		
1.1.16	Maintain relationships with other international and observer organizations when their agendas have relevance to the programme of the IHO	3.2		continuous	Secretariat	Participation to be determined on an annual basis, subject to the agenda of the organization and its significance to the IHO WP  Up to 10 meetings annually  Travel cost for 1 SG/Dir/AD per meeting		

**Element 1.2 Information Management**

**Objective:** Provide Member States and IHO stakeholders with accurate and relevant information in a timely and accessible manner.

Task	Description	G&T	Notable stakeholder(s) outside the IHO	Notable deliverables / milestones and timing	Lead authority / Participants	Notable specific resources from the IHO budget	Other resources	Significant risk to delivery
1.2.1	Maintain and extend the IHO website	3.3		continuous	Secretariat	Use of commercial contract support Maintenance included in 1.2.4		
1.2.2	Maintain and extend the IHO GIS, webserver and web mapping services in support of RHCs, ENC production coordination, INT chart coordination, C-55 and other related activities	3.3		continuous	Secretariat	Use of commercial contract support Maintenance included in 1.2.3		
1.2.3	Maintain and extend the Secretariat Admin IT infrastructure, including in- house publishing facilities	3.3		continuous	Secretariat	80k€ annually (includes hardware, software and contract maintenance support)		

<b>Task</b>	<b>Description</b>	<b>G&amp;T</b>	<b>Notable stakeholder(s) outside the IHO</b>	<b>Notable deliverables / milestones and timing</b>	<b>Lead authority / Participants</b>	<b>Notable specific resources from the IHO budget</b>	<b>Other resources</b>	<b>Significant risk to delivery</b>
1.2.4	Maintain the IHO reference library collection including the incorporation of new material			continuous	Secretariat	1K€ annually		
1.2.5	Implement and maintain online forms for the input from Member States to the IHO databases and in response to circular letters			continuous	Secretariat	1K€ annually		

**Element 1.3 Public Relations and Outreach**

**Objective:** Raise awareness of the role of the IHO and the value and importance of hydrography and nautical charting services. Provide advice and guidance on States obligations under international regulations such as SOLAS Chapter V and highlight the importance of coordinated efforts in providing for safety of navigation, protection of the marine environment and the sustainable management and development of the oceans, seas and waterways. Stress the importance of becoming an IHO Member State.

Task	Description	G&T	Notable stakeholder(s) outside the IHO	Notable deliverables / milestones and timing	Lead authority / Participants	Notable specific resources from the IHO budget	Other resources	Significant risk to delivery
1.3.1	Promote the IHO through publicity and public relations initiatives	3.3		Continuous	Secretariat Member States	10k€ annually		
1.3.2	Encourage new membership of the IHO			Participation of non- Member States in RHC and IHO activities New Member States	Secretariat RHC Chairs (except: ARHC, NHC, NSHC, USCHC)	Visits normally undertaken as side-trips in conjunction with travel to other meetings  Some high-level visits funded by Capacity Building Fund (see programme 3)		



Task	Description	G&T	Notable stakeholder(s) outside the IHO	Notable deliverables / milestones and timing	Lead authority / Participants	Notable specific resources from the IHO budget	Other resources	Significant risk to delivery
1.3.3	Celebrate World Hydrography Day including the preparation of information to support the themes	3.3		annual	Secretariat Member States	10K€ annually		
1.3.4	Compile and publish P-1 – <i>International Hydrographic Review</i> with the assistance of a paid editor	3.3		continuous	Secretariat Member States	10K€ annually		Lack of suitable papers provided by MS and other contributors
1.3.4	Maintain a digital repository for the overall collection of P-1 available for worldwide access	3.3		continuous	Secretariat Member States	1K€ annually		

**Element 1.4 Work Programme & Budget, Strategic Plan and Performance Monitoring**

**Objective:** Ensure that the formulation and the execution of the IHO Work Programme and Budget is managed, monitored and executed efficiently to best meet the requirements of Member States and the interests of stakeholders. This Element focuses on the implementation of the IHO’s Strategic Plan particularly with regard to risk assessment and performance indicators.

Task	Description	G&T	Notable stakeholder(s) outside the IHO	Notable deliverables / milestones and timing	Lead authority / Participants	Notable specific resources from the IHO budget	Other resources	Significant risk to delivery
1.4.1	Execute the IHO Work Programme and Budget approved by the 3 <sup>rd</sup> Session of the Assembly, monitoring its progress and proposing or implementing any necessary adjustments according to the circumstances and the regulations	All Goals &Targets		continuous	Secretariat Council			
1.4.2	Develop and propose future IHO Work Programme, Budget and Strategic Plan	All Goals &Targets		continuous	Secretariat Council Assembly			

Task	Description	G&T	Notable stakeholder(s) outside the IHO	Notable deliverables / milestones and timing	Lead authority / Participants	Notable specific resources from the IHO budget	Other resources	Significant risk to delivery
1.4.3	Conduct biennial IHO stakeholders' forums	2.2 3.1			Secretariat	1 meeting every 2 years back-to-back with another meeting  Cost subject to the venue	Travel cost, per diem. and working hours for MS and other representatives to prepare for and attend the meetings	

**Element 1.5 Secretariat Services**

**Objective:** Ensure that the Secretariat meets the requirements set by the Member States, by providing the best service within the resources available.

Task	Description	G&T	Notable stakeholder(s) outside the IHO	Notable deliverables / milestones and timing	Lead authority / Participants	Notable specific resources from the IHO budget	Other resources	Significant risk to delivery
1.5.1	Maintain formal communication between the Secretariat and the Member States through Circular Letters	3.3		continuous	Secretariat			
1.5.2	Maintain, update and develop procedures to facilitate and improve the effectiveness of the finance and administrative work of the Secretariat			continuous	Secretariat			
1.5.3	Provide in-house translation services English/French and French/English in support of the IHO WP  Include Spanish translations as much as possible in accordance with the relevant IHO Resolutions			continuous	Secretariat		MS encouraged to volunteer to translate lower priority IHO publications from EN to FR and SP	Translation workload exceeds the translating capacity of the existing number of staff

Task	Description	G&T	Notable stakeholder(s) outside the IHO	Notable deliverables / milestones and timing	Lead authority / Participants	Notable specific resources from the IHO budget	Other resources	Significant risk to delivery
1.5.4	Engage contract support to supplement the maintenance and development of IHO publications beyond the resources or competence of the Secretariat or the IHO WGs, including: - Translation - Technical editing			continuous	Secretariat	10k€ each year		
1.5.5	Compile, maintain and publish IHO publications that are not allocated to a specific IHO body, including: P-5 – IHO Yearbook P-7 – IHO Annual Report P-6 – Proceedings of the Assembly and of the Council M-3 –Resolutions of the IHO			As required	Secretariat			
1.5.6	Secretariat Staff training					7k€ each year		

Task	Description	G&T	Notable stakeholder(s) outside the IHO	Notable deliverables / milestones and timing	Lead authority / Participants	Notable specific resources from the IHO budget	Other resources	Significant risk to delivery
1.5.7	Monitor and maintain the Staff Regulations and the Job Descriptions of the Staff of the IHO Secretariat in step with the evolution of the IHO Work Programme and IHO requirements			continuous	Secretariat			
1.5.8	Maintain the premises and facilities of the IHO Secretariat as required as the occupant, including renovations or modifications as requirements arise			continuous	Secretariat	62K€ each year		

**Element 1.6 IHO Council and Assembly**

**Objective:** Ensure the successful functioning of sessions of the Council and the Assembly so that they fulfil their top-level governance and decision- making functions in accordance with the Convention and the other basic documents of the Organization.

Task	Description	G&T	Notable stakeholder(s) outside the IHO	Notable deliverables / milestones and timing	Lead authority / Participants	Notable specific resources from the IHO budget	Other resources	Significant risk to delivery
1.6.1	Prepare and conduct the 3 <sup>rd</sup> session of the IHO Assembly				Secretariat	Funded by the Conference Fund	Travel cost, per diem. and working hours for MS and other representatives to prepare for and attend the Assembly	
1.6.2	Prepare and conduct annual sessions of the IHO Council			annual	Secretariat	15K€ each year Travel for minimum of SG, 2 Dir, 2AD if session held outside Monaco	Travel cost, per diem. and working hours for MS and other representatives to prepare for and attend a session of the Council	





# WORK PROGRAMME 2

## HYDROGRAPHIC SERVICES AND STANDARDS

**Concept:**

Programme 2 focuses on the implementation of component 1.4 of Strategic Direction (SD) 1: “*developing, improving, promulgating and promoting clear, uniform, global hydrographic standards to enhance safety of navigation at sea, protection of the marine environment, maritime security and economic development*”.

Element 2.1	Programme Coordination
Element 2.2	Foundational Nautical Cartography Framework
Element 2.3	S-100 Framework
Element 2.4	S-57 Framework
Element 2.5	Support the implementation of e-navigation and Marine Spatial Data Infrastructures (MSDI)
Element 2.6	Hydrographic Surveying
Element 2.7	Hydrographic aspects of UNCLOS
Element 2.8	Other technical standards, specifications, guidelines and tools

**Element 2.1 Programme Coordination**

**Objective:** Monitor and implement Programme 2 through the HSSC and its subordinate organs.

Task	Description	G&T	Notable stakeholder(s) outside the IHO	Notable deliverables / milestones and timing	Lead authority / Participants	Notable specific resources from the IHO budget	Other resources	Significant risk to delivery
2.1.1	Organize, prepare, and report annual meetings of HSSC	1.1 1.2		Monitor and approve HSSC Work Programme - Annual	HSSC Chair WG Chairs Secretariat	Travel cost for 1 Dir + 1 AD Travel cost and per diem for pre-meeting briefing of Chair	Travel cost, per diem. and working hours for MS and other representatives to prepare for and attend the meeting	Inability of MS and others to participate in meetings
2.1.2	Organize, prepare and report meetings of HSSC working groups	1.1 1.2		As defined in the HSSC Work Programme	WG Chairs Secretariat	Travel cost, per diem and working hours 1 AD / meeting	Travel cost, per diem. and working hours for MS and other participants to prepare for and attend the meeting	Inability of MS and others to participate in meetings
2.1.3	Prepare for and represent HSSC at meetings of the Council			Submit report and recommendations - Annual	HSSC Chair Secretariat	Travel cost and per diem for HSSC Chair		

Task	Description	G&T	Notable stakeholder(s) outside the IHO	Notable deliverables / milestones and timing	Lead authority / Participants	Notable specific resources from the IHO budget	Other resources	Significant risk to delivery
2.1.4	Prepare for and represent HSSC at the IHO Assembly			Submit reports and recommendations (through the Council)	HSSC Chair Secretariat			
2.1.5	Monitor the development of related international standards, specifications and guidance	1.1 1.2	IALA IEC IMO ISO OGC	Identify and attend relevant meetings and activities and report outcome - as required (see also programme 1)	HSSC Chair Group Secretariat			
2.1.6	Provide technical outreach, advice and guidance in relation to IHO standards, specifications and guidance	1.1 1.2		Identify and attend relevant meetings and activities and report outcome - as required	HSSC Chair Group Secretariat	3 meetings per year Travel cost 1 Dir/AD per meeting		
2.1.7	Maintain and extend IHO Resolutions (M-3) related to technical issues	1.1 1.2		Draft proposed amendments for the consideration of the Council	HSSC & All WGs			

**Element 2.2 Foundational Nautical Cartography Framework**

**Objective:** Develop, maintain and promote the foundational standards, specifications, guidelines and services related to nautical cartography to meet the requirements of the stakeholders.

Task	Description	G&T	Notable stakeholder(s) outside the IHO	Notable deliverables / milestones and timing	Lead authority / Participants	Notable specific resources from the IHO budget	Other resources	Significant risk to delivery
2.2.1	Maintain S-4 ( <i>Regulations for International (INT) Charts and Chart Specifications of the IHO</i> ) and related publications (INT 1/2/3)	1.1 1.2			NCWG			Way forward and Maintenance of INT 1 to be decided
2.2.2	Maintain S-11 Part A - <i>Guidance for the Preparation and Maintenance of International Chart Schemes and Catalogue of International (INT) Charts</i>	1.1 1.2			NCWG			
2.2.3	Maintain the INTOGIS infrastructure	1.1			NCWG Secretariat		Support of the Republic of Korea	
2.2.4	Implement the decisions made following the report on the Future of the Nautical Paper Chart	1.1			NCWG			

**Element 2.3 S-100 Framework**

**Objective:** Develop, maintain and promote the S-100 framework in order to meet the requirements of the stakeholders.

Task	Description	G&T	Notable stakeholder(s) outside the IHO	Notable deliverables / milestones and timing	Lead authority / Participants	Notable specific resources from the IHO budget	Other resources	Significant risk to delivery
2.3.1	Maintain and extend the S-100 GI Registry	1.1 1.2			S-100WG Secretariat		Support of the Republic of Korea	
2.3.2	Maintain and extend S-100 - <i>IHO Universal Hydrographic Data Model</i>	1.1 1.2			S-100WG			Inability of MS and others to participate in the work
2.3.3	Develop and maintain S-99 - <i>Operational Procedures for the Organization and Management of the S-100 Geospatial Information Registry</i>	1.1 1.2			S-100WG			

Task	Description	G&T	Notable stakeholder(s) outside the IHO	Notable deliverables / milestones and timing	Lead authority / Participants	Notable specific resources from the IHO budget	Other resources	Significant risk to delivery
2.3.4	Develop and maintain S-10x Product Specifications and engage on S-100 Implementation Strategy	1.1 1.2	ECDIS OEM GIS Community Data providers		Project teams Relevant WGs	Contract support funded by the Special Projects Fund		Inability of MS and others to participate in the work
2.3.5	Provide advice and guidance to other organizations developing S-100 based Product Specifications	1.1 1.2			S-100WG Secretariat	2 meetings per year Travel cost 1 AD	Travel cost and working hours MS Rep.	Limited expertise available

**Element 2.4 S-57 Framework**

**Objective:** Maintain the S-57 framework fit for purpose.

Task	Description	G&T	Notable stakeholder(s) outside the IHO	Notable deliverables / milestones and timing	Lead authority / Participants	Notable specific resources from the IHO budget	Other resources	Significant risk to delivery
2.4.1	Maintain S-52 - <i>Specifications for Chart Content and Display Aspects of ECDIS</i>	1.1 1.2	ECDIS OEM		ENCWG			
2.4.2	Maintain S-57 - <i>IHO Transfer Standard for Digital Hydrographic Data</i> , including ENC Product Specification	1.1 1.2	ECDIS OEM Data servers		ENCWG			Inability of MS and others to participate in the work
2.4.3	Maintain S-58 - <i>ENC Validation Checks</i>	1.1 1.2	RENCs		ENCWG			Inability of MS and others to participate in the work
2.4.4	Maintain S-61 - <i>Product Specification for Raster Navigational Charts (RNC)</i>	1.1	ECDIS OEM Data servers	No action expected	ENCWG			
2.4.5	Maintain S-63 - <i>IHO Data Protection Scheme</i>	1.2			ENCWG			Inability of MS and others to participate in the work

Task	Description	G&T	Notable stakeholder(s) outside the IHO	Notable deliverables / milestones and timing	Lead authority / Participants	Notable specific resources from the IHO budget	Other resources	Significant risk to delivery
2.4.6	Maintain S-64 - <i>IHO Test Data Sets for ECDIS</i>	1.1 1.2			ENCWG			
2.4.7	Maintain S-65 - <i>ENCs: Production, Maintenance and Distribution Guidance</i>	1.1 1.2			ENCWG			
2.4.8	Maintain S-66 - <i>Facts about Electronic Charts and Carriage Requirements</i>	1.1			ENCWG			



**Element 2.5 Support the implementation of e-navigation and Marine Spatial Data Infrastructures (MSDI)**

**Objective:** Provide technical support to the development of new services and functionalities required by the implementation of e-navigation and MSDI.

Task	Description	G&T	Notable stakeholder(s) outside the IHO	Notable deliverables / milestones and timing	Lead authority / Participants	Notable specific resources from the IHO budget	Other resources	Significant risk to delivery
2.5.1	Monitor and assess requirements related to data flow, data security, data quality, backup arrangements, time-varying information, etc.	1.2		Implementation of S-100 Security Scheme	Secretariat			Inability of MS and others to participate in the work
2.5.2	Support the development and implementation of Maritime Services in relation to e-Navigation	1.1	IALA IMO	Maintenance of Maritime Service descriptions	NIPWG NCWG ENCWG TWCWG WWNWS-SC			Inability of MS and others to participate in the work

**Element 2.6 Hydrographic Surveying**

**Objective:** Maintain S-44 and related IHO documents fit for purpose.

Task	Description	G&T	Notable stakeholder(s) outside the IHO	Notable deliverables / milestones and timing	Lead authority / Participants	Notable specific resources from the IHO budget	Other resources	Significant risk to delivery
2.6.1	Maintain and extend S-44 - <i>IHO Standards for Hydrographic Surveys</i>	1.1 2.2			HSWG			

**Element 2.7 Hydrographic aspects of UNCLOS**

**Objective:** Monitor developments related to the hydrographic aspects of UNCLOS and maintain the relevant IHO publications fit for purpose.

Task	Description	G&T	Notable stakeholder(s) outside the IHO	Notable deliverables / milestones and timing	Lead authority / Participants	Notable specific resources from the IHO budget	Other resources	Significant risk to delivery
2.7.1	Organize the biennial ABLOS Conference			ABLOS Conferences			Self-funding	Lack of participation or insufficient volunteers to present papers
2.7.2	Maintain C-51 - <i>Manual on Technical Aspects of the UN Convention on the Law of the Sea</i>							

**Element 2.8 Other technical standards, specifications, guidelines and tools**

**Objective:** Maintain technical standards, specifications, guidelines and tools not included in the previous elements fit for purpose.

Task	Description	G&T	Notable stakeholder(s) outside the IHO	Notable deliverables / milestones and timing	Lead authority / Participants	Notable specific resources from the IHO budget	Other resources	Significant risk to delivery
2.8.1	Maintain S-12 - <i>Standardization of List of Lights and Fog Signals</i>	1.2		Revision as appropriate No action expected	NIPWG			
2.8.2	Maintain S-32- <i>Hydrographic Dictionary</i>	1.2		Database version to be expanded with multiple languages	HDWG Secretariat			Inability of MS and others to participate in the work
2.8.3	Maintain S-49 - <i>Standardization of Mariners' Routeing Guides</i>	1.2		Revision as appropriate	NIPWG			
2.8.4	Maintain the list of standard tidal constituent	2.2		Continuous	TWCWG			
2.8.5	Maintain the inventory of national tide gauges and current meters	2.2		Continuous	TWCWG			
2.8.6	Ensure that data quality aspects are addressed in an appropriate and harmonized way for all relevant standards	1.2		Continuous	DQWG			



# WORK PROGRAMME No. 3

## INTER-REGIONAL COORDINATION AND SUPPORT

### Concept:

This programme refers primarily to the Organization's strategic direction "*Facilitate global coverage and use of official hydrographic data, products and services*" through enhancing and supporting cooperation on hydrographic activities among the IHO Member States (MS) under the aegis of the Regional Hydrographic Commissions (RHCs). It also contributes to the strategic direction "*Assist Member States to fulfil their roles*" through the IHO Capacity Building Work Programme in supporting MS as well as non-Member States to build national hydrographic capacities where they do not exist and to contribute to the improvement of the already established hydrographic infrastructure. The programme includes major topics that require a regionally coordinated approach, such as ENC adequacy, availability, coverage and distribution, maritime safety information and ocean mapping.

Element 3.1	Programme Coordination
Element 3.2	Regional Hydrographic Commissions and the HCA
Element 3.3	Capacity Building
Element 3.4	Coordination of Global Surveying and Charting Coverage
Element 3.5	Maritime Safety Information
Element 3.6	Ocean Mapping Programme
Element 3.7	Marine Spatial Data Infrastructures
Element 3.8	International Standards for Hydrographic Surveyors and Nautical Cartographers

**Element 3.1 Programme Coordination**

**Objective:** Promote and coordinate those activities that might benefit from a regional approach:

- establish, coordinate and enhance cooperation in hydrographic activities amongst States on a regional basis, and between regions;
- establish cooperation to enhance the delivery of the Capacity Building Work Programme;
- monitor the work of specified IHO inter-organizational bodies engaged in activities that require inter-regional cooperation and coordination.

The IRCC will foster coordination between all RHCs and other bodies that have a global/regional structure (including: HCA, GGC, CBSC, IBSC, WVNWS-SC, WEND-WG).

Task	Description	G&T	Notable stakeholder(s) outside the IHO	Notable deliverables / milestones and timing	Lead authority / Participants	Notable specific resources from the IHO budget	Other resources	Significant risk to delivery
3.1.1	Organize, prepare and report annual meetings of IRCC	3.1		Monitor and approve IRCC Work Programme – Annual	IRCC Chair RHC Chairs Chairs of the IRCC Bodies Secretariat	Travel cost for 1 Dir + 1 AD Travel cost and per diem for pre-meeting briefing of Chair		Inability of MS and others to participate in meetings
Task	Description	G&T	Notable stakeholder(s) outside the IHO	Notable deliverables / milestones and timing	Lead authority / Participants	Notable specific resources from the IHO budget	Other resources	Significant risk to delivery
3.1.2	Prepare for and represent IRCC at meetings of the Council			Submit report and recommendations - Annual	IRCC Chair Secretariat	Travel cost and per diem for IRCC Chair		
3.1.3	Prepare for and represent IRCC the IHO Assembly			Submit reports and recommendations (through the Council)	IRCC Chair Secretariat			

3.1.4	Maintain and extend IHO Resolutions (M-3) related to coordination issues	3.1 3.2		Draft proposed amendments for the consideration of the Council	IRCC			
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**Element 3.2 Regional Hydrographic Commissions and the HCA**

**Objective:** Facilitate regional coordination, cooperation and collaboration to improve hydrographic services and the provision of hydro-cartographic products through the structure of the Regional Hydrographic Commissions and of the Hydrographic Commission on Antarctica.

Task	Description	G&T	Notable stakeholder(s) outside the IHO	Notable deliverables / milestones and timing	Lead authority / Participants	Notable specific resources from the IHO budget	Other resources	Significant risk to delivery
3.2.1	Prepare for and report meetings of the Regional Hydrographic Commissions (RHC): ARHC – Arctic Regional Hydrographic Commission BSHC – Baltic Sea Hydrographic Commission EAHC- East Asia Hydrographic Commission EAtHC – Eastern Atlantic Hydrographic Commission MACHC – Meso American and Caribbean Hydrographic Commission MBSHC – Mediterrainean and Black Seas Hydrographic Commission NHC – Nordig Hydrographic Commission NIOHC – North Indian Ocean Hydrographic Commission NSHC – North Sea Hydrographic Commission	3.1 1.3		Submit report and recommendations – normally Annually	RHC Chairs Secretariat	Most Commissions meet annually  Travel cost for SG or Dir to each meeting. An AD also attends several of the RHC meetings – particularly the larger Commissions and those with significant CB requirement		Inability of MS and others, particularly non-IHO MS, to participate in meetings



	RSAHC – ROPME Sea Area Hydrographic Commission SAIHC - Southern Africa and Islands Hydrographic Commission SEPRHC – South East Pacific Hydrographic Commission SWAtHC – South West Atlantic Hydrographic Commission SWPHC – South West Pacific Hydrographic Commission USCHC – USA and Canada Hydrographic Commission							
3.2.2	Organize, prepare for and report meetings of Hydrographic Commission on Antarctica (HCA)	3.2	COMNAP IAATO SCAR IALA	Submit report and recommendations -  Continuous	HCA Chair Observers Secretariat	1 meeting annually  Travel cost for SG or Dir +1 AD (on case by case basis)		Inability of Members and others to participate in meetings
3.2.3	Contribute to improving the framework of IHO response to marine disasters	3		Improve the relevant guidelines for disaster risk reduction.  Continuous	RHC Chairs Secretariat			
3.2.4	Maintain and enhance the underlying database and IHO Publication C-55 – <i>Status of Hydrographic Surveying and Nautical Charting Worldwide</i>	3.1 2.2		Develop a new framework for the input, presentation and assessment of the survey and nautical cartography status in C-55	Secretariat			

**Element 3.3 Capacity Building**

**Objective:** Assess the hydrographic surveying, nautical charting and nautical information status of nations and regions where hydrography is developing.

Provide guidelines for the development of local hydrographic capabilities taking into account the regional context and possibilities of support for shared capabilities.

Identify regional requirements and study the possibilities for capacity building assistance and training from the CB Fund and other sources.

Task	Description	G&T	Notable stakeholder(s) outside the IHO	Notable deliverables / milestones and timing	Lead authority / Participants	Notable specific resources from the IHO budget	Other resources	Significant risk to delivery
3.3.1	Organize, prepare and report annual meetings of the Capacity Building Sub- Committee (CBSC)	3.1 1.3	IMO IALA	Monitor and approve CB Work Programme (CBWP) Annual	CBSC Chair CB Coordinators Secretariat	Travel cost for 1 Dir + 1 AD  Travel cost and per diem for pre-meeting briefing of Chair		
3.3.2	Manage the IHO Capacity Building Fund	3.1 1.3			CBSC Chair Secretariat			
3.3.3	Develop and maintain a Capacity Building Management System	3.1 1.3		Support the implementation of CBWP Continuous	CBSC Chair Secretariat			
3.3.4	Review and maintain the IHO Capacity Building Strategy	3.1 1.3		Up to date CB Strategy Annually	CBSC Chair Secretariat			

Task	Description	G&T	Notable stakeholder(s) outside the IHO	Notable deliverables / milestones and timing	Lead authority / Participants	Notable specific resources from the IHO budget	Other resources	Significant risk to delivery
3.3.5	Develop, monitor and update the Capacity Building Work Programme (CBWP), including: Reviewing and updating CB procedures Monitoring and assessing the progress and success of CB activities and initiatives	3.1 1.3		Develop and propose an annual CBWP to be included in the IHO WP  Annually. Considered in conjunction with task 3.3.1	CBSC Chair Secretariat			
3.3.6	Organize, prepare and report on meetings with other organizations, funding agencies, private sector and academia, including: the Joint IHO/IMO/WMO/IOC/IAE A/I ALA/FIG/IMPA Capacity Building Coordination meeting	3.1 1.3	World Bank UNDP UNEP Donor agencies	Investigate the new opportunities for CB activities  Increase the CB Fund Annually	Secretariat	2 meetings annually  Travel cost for 1 Dir or 1 AD		Budget constraints

Task	Description	G&T	Notable stakeholder(s) outside the IHO	Notable deliverables / milestones and timing	Lead authority / Participants	Notable specific resources from the IHO budget	Other resources	Significant risk to delivery
3.3.7	Organize, prepare and report on a Capacity Building and IBSC Stakeholders' Forum	3.1 1.3	IMO IALA IOC WMO FIG ICA Academy	Obtain lessons learned from CB training activities Review the future of the IHO CB Work Programme and CB Strategy  2021, as part of the Centenary Celebrations	Secretariat CBSC Chair IBSC Chair	No significant cost expected		
3.3.8	Maintain IHO publication M-2 - <i>National Maritime Policies and Hydrographic Services</i>	3.3 2.2		Continuous	Secretariat			
3.3.9	Plan, administer and implement Capacity Building activities, including: Technical and advisory visits, Technical Workshops, Seminars, Short and long courses On the Job Training (ashore / on board)	3.1 1.3		Assess the status of hydrography, cartography and aids to navigation in developing States  Provide the basic technical knowledge and to jointly explore initiatives to achieve a minimum level of response to national, regional and international obligations	CBSC Chair RHC Chairs Secretariat	In accordance with annual CBWP Funded by the CB Fund.		

Task	Description	G&T	Notable stakeholder(s) outside the IHO	Notable deliverables / milestones and timing	Lead authority / Participants	Notable specific resources from the IHO budget	Other resources	Significant risk to delivery
3.3.10	Investigate and Develop Regional Hydrographic /Maritime Projects	3.1 2.1 2.2	IMO IALA IOC UN Agencies World Bank Funding Institutions	Ensure awareness of multilateral or bilateral projects with hydrographic and/or cartographic components, and to provide advice to governments, project managers and funding agencies  Develop and support the Outline/Scope Studies on Regional Projects  Continuous	CBSC Chair RHC Chairs Secretariat			
3.3.11	Develop and maintain an online repository of training material and references	3.1 3.3	Member States and other States RHCs Academia	Ensure all training material and references are available	CBSC Chair Secretariat			

**Element 3.4 Coordination of Global Surveying and Charting Coverage**

**Objective:** Facilitate the achievement of a world-wide quality nautical charting coverage to suit the needs of the mariner in support of safe and efficient navigation through the development of specifications and standards for the production, distribution and updating of cartographic products and supporting publications.

Task	Description	G&T	Notable stakeholder(s) outside the IHO	Notable deliverables / milestones and timing	Lead authority / Participants	Notable specific resources from the IHO budget	Other resources	Significant risk to delivery
3.4.1	Organize, prepare and report annual meetings of the WEND Working Group	1.1	CIRM RENC management	Foster the implementation of the WEND /WENS (to be confirmed) principles, monitor progress and report to IRCC Annually	WEND WG Chair Secretariat	1 meeting annually. Travel cost for 1 Dir+AD or 1 AD		Component of the S-100 Implementation Strategy (to be confirmed)
3.4.2	Maintain liaison with RENCs	1.1	RENC management RENC MS	Facilitate the promotion of RENC cooperation for the benefit of ENC end- users Annual	WEND WG Chair Secretariat	2 meetings annually. Travel cost for 1 Dir or 1 AD		

Task	Description	G&T	Notable stakeholder(s) outside the IHO	Notable deliverables / milestones and timing	Lead authority / Participants	Notable specific resources from the IHO budget	Other resources	Significant risk to delivery
3.4.3	Maintain and coordinate ENC and INT schemes, including coverage, consistency, quality and availability	2.2 3.3		Develop ENC schemes in the regions and coordinate the production and maintenance of ENC  Maintain INT Chart schemes and coordinate the production of INT Chart in the regions, in line with ENC production  Continuous	RHC Chairs  Secretariat			Lack of appropriate surveys or re-surveys in areas where there is no satisfactory coverage.  Overlapping products in the same area.

**Element 3.5 Maritime Safety Information**

**Objective:** Facilitate the efficient provision of Maritime safety Information (MSI) to mariners through coordination and the establishment of relevant standards between agencies.

Improve the coordination of NAVAREAs in liaison with the RHCs and relevant international organizations.

Task	Description	G&T	Notable stakeholder(s) outside the IHO	Notable deliverables / milestones and timing	Lead authority / Participants	Notable specific resources from the IHO budget	Other resources	Significant risk to delivery
3.5.1	Organize, prepare and report annual meetings of the World-Wide Navigational Warning Service Sub-Committee (WWNWS-SC)	1.1	IMO IALA IMSO	Monitor and guide the IHO/IMO World-Wide Navigational Warning Service including NAVAREA and coastal warnings Annual	WWNWS-SC Chair Secretariat	1 meeting annually Travel cost for 1 AD		Lack of engagement of NAVAREA Coordinators or partner organizations to maintain service
3.5.2	Conduct annual meetings of the WWNWS-SC Document Review Working Group	1.1	IMO IALA IMSO WMO	Maintain the IMOWWNWS documents Annual	WWNWS-SC Chair Secretariat	1 meeting annually Per diem for 1 AD		Lack of engagement of NAVAREA Coordinators or partner organizations to maintain service



Task	Description	G&T	Notable stakeholder(s) outside the IHO	Notable deliverables / milestones and timing	Lead authority / Participants	Notable specific resources from the IHO budget	Other resources	Significant risk to delivery
3.5.3	Maintain and extend the following IHO standards, specifications and publications: - relevant IHO Resolutions in M-3 - <i>Resolutions of the IHO</i> ,  - S-53 - <i>Joint IMO/IHO/WMO Manual on Maritime Safety Information</i>	1.2	IMO IMSO WMO	Provide update to WWNWS documentation. Continuous	WWNWS-SC Chair Secretariat			
3.5.4	Liaise with IMO and WMO on the delivery of MSI within the GMDSS		IMO WMO IMSO IALA	Ensure maintenance of service delivery. Continuous	WWNWS-SC Chair Secretariat	1 meeting, 2 days per year within Europe (London/Genève/Monaco)		Lack of engagement of national MSI Coordinators with the relevant NAVAREA Coordinator
3.5.5	Participate and contribute to the IMO work items on the modernization of the GMDSS and the development of the e-navigation implementation plan	1.2	IMO WMO IMSO IALA	Monitor projects to ensure maintenance of service delivery at least at current levels, investigation areas for improvement Continuous	WWNWS-SC Chair Secretariat			Inability of current providers to maintain service due to increased costs in a multi-system environment

Task	Description	G&T	Notable stakeholder(s) outside the IHO	Notable deliverables / milestones and timing	Lead authority / Participants	Notable specific resources from the IHO budget	Other resources	Significant risk to delivery
3.5.6	Improve the delivery and exploitation of MSI to global shipping by taking full advantage of technological developments	1.1	IMO WMO IMSO IALA	Progress development of S-124 PS to align with the development of e-navigation and GMDSS modernization (see element 2.5).  Continuous	WWNWS-SC Chair  Secretariat			

**Element 3.6 Ocean Mapping Programme**

**Objective:** Contribute to global ocean mapping programmes through the IHO/IOC General Bathymetric Chart of the Oceans (GEBCO) Project, the International Bathymetric Chart (IBC) Projects and other related international initiatives.

Improve the availability of shallow water bathymetry for purposes other than nautical charting.

Task	Description	G&T	Notable stakeholder(s) outside the IHO	Notable deliverables / milestones and timing	Lead authority / Participants	Notable specific resources from the IHO budget	Other resources	Significant risk to delivery
3.6.1	Organize, prepare and report annual meetings of the GEBCO Guiding Committee (GGC) and associated bodies including TSCOM, SCRUM, GEBCO Science Day and SCUFN	3.2	IOC	<p>Implementation of the GGC Work Programme</p> <p>Contribute to global ocean mapping programmes</p> <p>Improve the availability of shallow water bathymetry</p> <p>Implement the strategic goals for the next decade. Annual</p>	GGC Chair Secretariat	<p>4 meetings annually</p> <p>Travel cost for 1 Dir + 2 AD</p> <p>Travel cost for 1 AD (for SCUFN)</p>	Travel cost, per diem. and working hours for MS and other representatives to prepare for and attend the meetings	Lack of support from coastal states to progress GEBCO activities
3.6.2	Ensure effective operation of the IHO Data Centre for Digital Bathymetry (DCDB)	3.2		<p>Enhance the DCDB for upload, ingest, discovery and download of bathymetric data and associated information, such as the gazetteer of undersea feature names</p> <p>Continuous</p>	Director, DCDB CSBWG Chair GEBCO GC Secretariat	10k€ annually to support maintenance and development	Operation of the DCDB is funded primarily by US (NOAA)	Inability of sole funder to continue current level of support

Task	Description	G&T	Notable stakeholder(s) outside the IHO	Notable deliverables / milestones and timing	Lead authority / Participants	Notable specific resources from the IHO budget	Other resources	Significant risk to delivery
3.6.3	Encourage the contribution of bathymetric data to the IHO DCDB	3.2	Academia and Industry	GEBCO representatives participate in RHC meetings Continuous	GGC Chair RHC Chairs Secretariat			Lack of MS willingness to provide data
3.6.4	Develop general guidelines on the use and collection of Crowd Sourced Bathymetry (CSB)	2.2 3.2			CSBWG Chair Director, DCDB Secretariat	1 meeting annually. Travel cost for 1 AD	Travel cost, per diem. and working hours for MS and other representatives to prepare for and attend the meetings of the CSBWG	
3.6.5	Support cooperative bathymetric data gathering programmes, including;  the Atlantic Ocean Research Alliance (AORA)	3.2		Contribute to global and regional ocean mapping programmes  Annual	CSBWG Chair Secretariat	2 meetings annually 1 AD	Funded by EU	

Task	Description	G&T	Notable stakeholder(s) outside the IHO	Notable deliverables / milestones and timing	Lead authority / Participants	Notable specific resources from the IHO budget	Other resources	Significant risk to delivery
3.6.6	<p>Maintain IHO bathymetric publications, including:</p> <p>B-4 - <i>Information Concerning Recent Bathymetric Data</i></p> <p>B-6 - <i>Standardization of Undersea Feature Names</i></p> <p>B-8 - <i>Gazetteer of Geographical Names of Undersea Features</i></p> <p>B-9 - <i>GEBCO Digital Atlas</i></p> <p>B-10 - <i>The History of GEBCO</i></p> <p>B-11 - <i>IHO-IOC GEBCO Cook Book</i></p> <p>B-12 – <i>Guidance on Crowd source Bathymetry</i></p>	3.2 3.3	IOC	Maintain publications updated	GGC Chair Secretariat			
3.6.7	<p>Contribute to outreach and education about ocean mapping. Increase understanding of the importance of hydrography and interest in following ocean mapping as a career</p>	3.2	IOC	<p>Development of Roadmap for Outreach and Education Working Group.</p> <p>Development of Education Materials.</p> <p>Printing of GEBCO World Map in MS</p> <p>Continuous</p>	GGC Chair Secretariat		GEBCO Fund - 8,200 Euros	

Task	Description	G&T	Notable stakeholder(s) outside the IHO	Notable deliverables / milestones and timing	Lead authority / Participants	Notable specific resources from the IHO budget	Other resources	Significant risk to delivery
3.6.8	Maintain GEBCO Website	3.2 3.3	BODC	Content of GEBCO web site continually updated with news items; information about meetings and events and information about and links to new products  Continuous	GGC Chair Secretariat		GEBCO Fund - 5000 Euros annually	
3.6.9	Develop short course and course material on compiling digital bathymetric models (DBMs) to be included in GEBCO from a heterogeneous bathymetric source database	3.1 3.2			GGC Chair Secretariat			GEBCO Fund
3.6.10	Update and enhance the GEBCO Gazetteer (B-8) for internet access	3.2 3.3		Continuing enhancement and maintenance to incorporate new names from each SCUFN meeting: Annual	GGC Chair Director, DCDB Secretariat		Contract support funded by GEBCO Fund - 10,000 Euros	

**Element 3.7 Marine Spatial Data Infrastructures**

**Objective:** Monitor developments related to the hydrographic component of Spatial Data Infrastructures, to develop and maintain the relevant IHO publications, and to provide technical advice as appropriate.

Task	Description	G&T	Notable stakeholder(s) outside the IHO	Notable deliverables / milestones and timing	Lead authority / Participants	Notable specific resources from the IHO budget	Other resources	Significant risk to delivery
3.7.1	Organize, prepare and report annual meetings of the Marine Spatial Data Infrastructures Working Group (MSDIWG)	2.1 2.3	OGC SPC Academia Industry UN-GGIM UN-WGMGI	Continuous	MSDIWG Chair Secretariat	1 meeting annually. Travel cost for 1 AD	Travel cost, per diem. and working hours for MS and other representatives to prepare for and attend the meeting	
3.7.2	Maintain the relevant IHO standards, specifications and publications on MSDI, including C-17	2.1 2.3	OGC Academia Industry		MSDIWG Chair Secretariat			
3.7.3	Develop and maintain training syllabi and material for MSDI and associated learning subjects	2.1 3.1	OGC Academia Industry	Course material for standardised MSDI training course	MSDIWG Chair Secretariat			
3.7.4	Meeting of the OGC Marine Domain Working Group	2.1 2.3	OGC Academia Industry	Coordination of the relevant activities	MSDIWG Chair Secretariat			

**Element 3.8 International Standards for Hydrographic Surveyors and Nautical Cartographers**

**Objective:** Establish minimum standards of competence for hydrographic surveyors and nautical cartographers.

Task	Description	G&T	Notable stakeholder(s) outside the IHO	Notable deliverables / milestones and timing	Lead authority / Participants	Notable specific resources from the IHO budget	Other resources	Significant risk to delivery
3.8.1	Organize, prepare and report annual meetings of the International Board on Standards of Competence for Hydrographic Surveyors and Nautical Cartographers (IBSC)	2.2	FIG ICA Academia Industry	Recognition of new submissions and maintenance of guiding tools and references  Continuous	IBSC Chair Secretariat	1 meeting annually. Travel cost for 1 AD	Travel cost, per diem. and working hours for Members and other representatives to prepare for and attend the meeting	Availability of Board members to undertake an increasing intersessional workload  Capacity of Secretariat to provide full support to the Board
3.8.2	Fulfil the functions of the IBSC	2.2	FIG ICA	Provide guidance to training institutions  Continuous	IBSC Chair Secretariat			Availability of Board members to undertake an increasing intersessional workload  Capacity of Secretariat to provide full support to the Board



Task	Description	G&T	Notable stakeholder(s) outside the IHO	Notable deliverables / milestones and timing	Lead authority / Participants	Notable specific resources from the IHO budget	Other resources	Significant risk to delivery
3.8.3	Manage the IBSC Fund		FIG ICA	Management of the IBSC Fund effectively and report to the IHO Secretariat  Continuous	IBSC Chair Secretariat			
3.8.4	Review the IBSC standards and maintain IBSC Publications, including: <i>C-6 - Reference Texts for Training in Hydrography</i> <i>C-47 - Training Courses in Hydrography and Nautical Cartography</i> <i>S-5A and B - Standards of Competence for Hydrographic Surveyors</i> <i>S-8A and B - Standards of Competence for Nautical Cartographers</i>	2.2	FIG ICA Academia Industry	Monitor, control and update of the IBSC Standards in S-5A/B and S-8A/B and Publications  Continuous	IBSC Chair Secretariat	Support to IBSC on review and update of Standards of Competence 10K€ annually		Availability of Board members to undertake an increasing intersessional workload  Capacity of Secretariat to provide full support to the Board

3 YEARS BUDGET 2024-2026

**TABLE 1**  
PROPOSED IHO BUDGET DETAILS FOR 2024-2026  
SUMMARY

**TABLEAU 1**  
PROJET DETAILLE DE BUDGET DE L'OHI POUR 2024-2026  
RECAPITULATIF

Chapters and Items	Approved budget 2023	Proposed budget 2024	Proposed budget 2025	Proposed budget 2026
<i>Chapitres et postes budgétaires</i>	<i>Budget Approuvé</i>	<i>Budget Proposé</i>	<i>Budget Proposé</i>	<i>Budget Proposé</i>
Value of the share - <i>Valeur de la part</i>	4.024,32 €	4.024,32 €	4.024,32 €	4.024,32 €
Number of shares - <i>Nombre de parts</i>	868	868	868	868
Provision for suspended Member States <i>Provision pour Etats membres suspendus</i>	-16	-6	-6	-6
Final number of shares <i>Nombre de parts définitif</i>	852	862	862	862
	<u>(Euros)</u>	<u>(Euros)</u>	<u>(Euros)</u>	<u>(Euros)</u>
Income - <i>Revenus</i>	3.683.721	3.763.964	3.773.964	3.783.964
Net Expenditure - <i>Dépenses nettes</i>	3.682.100	3.761.300	3.770.900	3.779.400
Budget Excess/Deficit - <i>Excédent/Déficit budgétaire</i>	1.621	2.664	3.064	4.564
Effect on capital - <i>Effet sur le capital</i>	1.621	2.664	3.064	4.564
	=====	=====	=====	=====

**TABLE 2**  
**INCOME**

**TABLEAU 2**  
**REVENUS**

Chapters and Items	Proposed budget 2022	Proposed budget 2024	Proposed budget 2025	Proposed budget 2026
<i>Chapitres et postes budgétaires</i>	<i>Budget Approuvé</i>	<i>Budget Proposé</i>	<i>Budget Proposé</i>	<i>Budget Proposé</i>
	(Euros)	(Euros)	(Euros)	(Euros)
CONTRIBUTIONS <i>Contributions</i>	3.428.721	3.468.964	3.468.964	3.468.964
INTEREST ON BANK ACCOUNTS <i>Intérêts sur comptes en banques</i>	35.000	45.000	45.000	45.000
INTERNAL TAX <i>Imposition interne</i>	220.000	250.000	260.000	270.000
	-----	-----	-----	-----
	<b>3.683.721</b>	<b>3.763.964</b>	<b>3.773.964</b>	<b>3.783.964</b>
	=====	=====	=====	=====

**TABLE 3**

**TABLEAU 3**

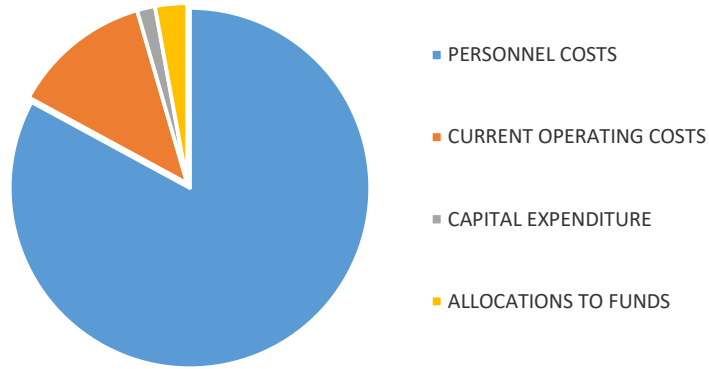
DETAILED EXPENDITURE	Approved budget	Proposed budget	Proposed budget	Proposed budget
Chapters and Items	2023	2024	2025	2026
<i>Chapitres et postes budgétaires</i>	<i>Budget Approuvé</i>	<i>Budget Proposé</i>	<i>Budget Proposé</i>	<i>Budget Proposé</i>
<b><u>Personnel Costs - Dépenses de personnel</u></b>	(Euros)	(Euros)	(Euros)	(Euros)
Salaries - Directing Committee - <i>Salaires - Comité de direction</i>	575.000	600.000	610.000	605.000
- Category A                      - <i>Personnel de catégorie A</i>	660.000	680.000	700.000	705.000
- Translators                    - <i>Personnel de traduction</i>	92.000	96.000	100.000	102.000
- General Services (B & C)   - <i>Services généraux (B &amp; C)</i>	650.000	695.000	720.000	725.000
Overtime - <i>Heures supplémentaires</i>	10.000	10.000	10.000	10.000
<b><u>Costs dependent on Salaries - Coûts liés aux salaires</u></b>				
Annual Bonus - <i>Gratification annuelle</i>	51.000	56.000	56.000	56.000
Payment to Retirement schemes - <i>Cotisations patronales de retraite</i>	420.000	420.000	420.000	420.000
Provision External retirement - <i>Provision Retraite Externe</i>	150.000	150.000	100.000	100.000
Insurances based on wages - <i>Assurances assises sur salaires</i>	16.000	16.000	16.000	16.000
Medical (CIGNA premiums) - <i>Primes médicales versées à CIGNA</i>	325.000	325.000	325.000	325.000
Family Allowances - <i>Allocations familiales</i>	22.000	22.000	22.000	22.000
Education Grants - <i>Allocations pour frais d'études</i>	25.000	25.000	25.000	25.000
<b><u>Costs independent of Salaries - Autres charges indépendantes des salaires</u></b>				
Home Leave - <i>Congés dans les foyers</i>	10.000	10.000	10.000	10.000
Miscellaneous Personnel Expenses - <i>Autres dépenses de personnel</i>	3.000	3.000	3.000	3.000
<b><u>Controllable Personnel costs - Coûts de personnel modulables</u></b>				
Salaries - Temporary staff - <i>Personnel temporaire</i>	5.000	5.000	5.000	5.000
IHO Secretariat Staff training - <i>Formation du personnel</i>	5.000	5.000	5.000	5.000
	-----	-----	-----	-----
<b>TOTAL CHAPTER I - TOTAL CHAPITRE I</b>	<b>3.019.000</b>	<b>3.118.000</b>	<b>3.127.000</b>	<b>3.134.000</b>
	=====	=====	=====	=====

Chapters and Items	Approved budget 2023	Proposed budget 2024	Proposed budget 2025	Proposed budget 2026
<i>Chapitres et postes budgétaires</i>	<i>Budget Approuvé</i>	<i>Budget Proposé</i>	<i>Budget Proposé</i>	<i>Budget Proposé</i>
<b><u>Current Operating Costs - Dépenses de gestion courante</u></b>				
	(Euros)	(Euros)	(Euros)	(Euros)
Maintenance of building - <i>Entretien des locaux</i>	45.000	45.000	45.500	47.000
Multirisk insurance - <i>Assurance multi-risques</i>	4.400	4.600	4.700	4.700
Maintenance of IT equipment - <i>Entretien des équipements</i>	60.000	40.000	40.000	40.000
Office Stationery - <i>Fournitures de bureau</i>	8.000	8.000	8.000	8.000
Postage, telephone, telefax - <i>Courrier, télécommunications</i>	32.000	32.000	32.000	32.000
Local Travel - <i>Déplacements locaux</i>	1.500	1.500	1.500	1.500
Bank Charges - <i>Frais bancaires</i>	6.000	6.000	6.000	6.000
Contract support - <i>Support contractuel</i>	30.000	30.000	30.000	30.000
Administrative support for Council - <i>Support administratif pour le Conseil</i>	15.000	15.000	15.000	15.000
Auditors fees - <i>Honoraires du commissaire aux comptes</i>	10.000	10.000	10.000	10.000
Public Relations - <i>Relations publiques</i>	20.000	20.000	20.000	20.000
Miscellaneous Operating Expenses - <i>Autres charges d'exploitation</i>	1.000	1.000	1.000	1.000
<b><u>Travel costs - Frais de déplacements</u></b>				
Long Distance - <i>Grands déplacements</i>	250.000	250.000	250.000	250.000
<b><u>Publications costs - Frais de publications</u></b>				
I.H. Review - <i>Revue hydrographique internationale</i>	10.000	10.000	10.000	10.000
Other publications - <i>Autres publications</i>	1.000	1.000	1.000	1.000
Provision for bad debts - <i>Provisions pour créances douteuses</i>	0	0	0	
	-----	-----	-----	-----
<b>TOTAL CHAPTER II - TOTAL CHAPITRE II</b>	<b>493.900</b>	<b>474.100</b>	<b>474.700</b>	<b>476.200</b>
	=====	=====	=====	=====

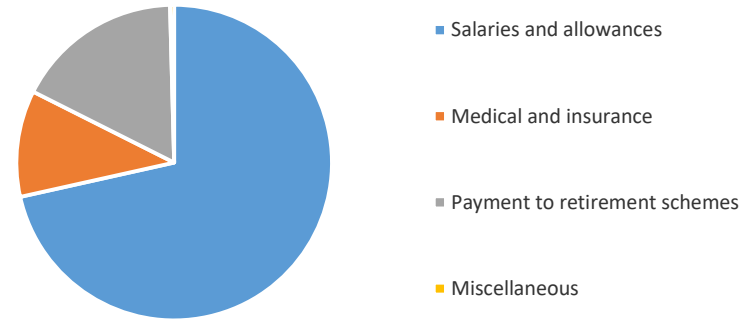
Chapters and Items	Approved budget 2023	Proposed budget 2024	Proposed budget 2025	Proposed budget 2026
<i>Chapitres et postes budgétaires</i>	<i>Budget Approuvé</i>	<i>Budget Proposé</i>	<i>Budget Proposé</i>	<i>Budget Proposé</i>
<b><u>Capital Expenditure - Dépenses d'équipement</u></b>	<u>(Euros)</u>	<u>(Euros)</u>	<u>(Euros)</u>	<u>(Euros)</u>
Purchase of IT equipment - <i>Equipements informatiques - under 762 €</i>	15.000	15.000	15.000	15.000
Furniture & other equipment - <i>Mobilier et autres équipements - under 762 €</i>	5.000	5.000	5.000	5.000
Purchase Publications & Binding - <i>Reliures et publications</i>	1.000	1.000	1.000	1.000
Depreciation of fixed assets - <i>Dépréciation des immobilisations</i>	15.000	15.000	15.000	15.000
<b>TOTAL CHAPTER III - TOTAL CHAPITRE III</b>	<b>36.000</b>	<b>36.000</b>	<b>36.000</b>	<b>36.000</b>
=====	=====	=====	=====	=====
<b>ANNUAL OPERATING COSTS - COÛT OPÉRATIONNEL ANNUEL</b>	<b>3.548.900</b>	<b>3.628.100</b>	<b>3.637.700</b>	<b>3.646.200</b>
=====	=====	=====	=====	=====
<b><u>Asset Allocation - Immobilisations</u></b>	<u>(Euros)</u>	<u>(Euros)</u>	<u>(Euros)</u>	<u>(Euros)</u>
Purchase of IT equipment - <i>Equipements informatiques - over 762 €</i>	20.000	15.000	15.000	15.000
Furniture & other equipment - <i>Mobilier et autres équipements - over 762 €</i>	5.000	10.000	10.000	10.000
	<b>25.000</b>	<b>25.000</b>	<b>25.000</b>	<b>25.000</b>
<b><u>Allocation to Funds - Dotations aux fonds dédiés</u></b>	<u>(Euros)</u>	<u>(Euros)</u>	<u>(Euros)</u>	<u>(Euros)</u>
GEBCO Fund - <i>Fonds pour la GEBCO</i>	8.200	8.200	8.200	8.200
GEBCO SCUFN Gazetter	10.000	10.000	10.000	10.000
Renovation and Enhancement Fund - <i>Fonds de rénovation et d'amélioration</i>	0	0	0	0
Assembly Fund - <i>Fonds pour les assemblées</i>	20.000	20.000	20.000	20.000
Relocation Fund - <i>Fonds pour les déménagements</i>	0	0	0	0
Capacity Building Fund - <i>Fonds pour le renforcement des capacités</i>	65.000	60.000	60.000	60.000
Special Project Fund - <i>Fonds pour les projets spéciaux</i>	5.000	10.000	10.000	10.000
Internal Retirement Fund - <i>Fonds de Retraite Interne</i>	0	0	0	0
<b>TOTAL CHAPTER V - TOTAL CHAPITRE V</b>	<b>108.200</b>	<b>108.200</b>	<b>108.200</b>	<b>108.200</b>
-----	-----	-----	-----	-----
<b>TOTAL EXPENDITURE - DÉPENSE TOTALE</b>	<b>3.682.100</b>	<b>3.761.300</b>	<b>3.770.900</b>	<b>3.779.400</b>
=====	=====	=====	=====	=====

Chapters and Items	Approved budget 2023	Proposed budget 2024	Proposed budget 2025	Proposed budget 2026
<i>Chapitres et postes budgétaires</i>	<i>Budget Approuvé</i>	<i>Budget Proposé</i>	<i>Budget Proposé</i>	<i>Budget Proposé</i>
<b>PERSONNEL COSTS - DEPENSES DE PERSONNEL</b>	(Euros)	(Euros)	(Euros)	(Euros)
Salaries Directing Committee - <i>Salaires Comité de direction</i>	3.019.000	3.118.000	3.127.000	3.134.000
Salaries Other staff - <i>Salaires autres membres du personnel</i>				
Social charges - <i>Charges sociales</i>				
Benefits and Pensions - <i>Prestations de retraite</i>				
Controllable Personnel cost - <i>Coûts de personnel modulables</i>				
<b>CURRENT OPERATING COSTS - DEPENSES DE GESTION COURANTE</b>	493.900	474.100	474.700	476.200
Maintenance, communications - <i>Entretien et communications</i>				
Contract support - <i>Support contractuel</i>				
Travels - <i>Déplacements</i>				
Publications - <i>Publications</i>				
<b>CAPITAL EXPENDITURE - DEPENSES DE CAPITAL</b>	36.000	36.000	36.000	36.000
<b>ASSET ALLOCATION - IMMOBILISATIONS</b>	25.000	25.000	25.000	25.000
<b>ALLOCATIONS TO FUNDS - DOTATIONS AUX FONDS DEDIES</b>				
GEBCO Fund - <i>Fonds pour la GEBCO</i>	8.200	8.200	8.200	8.200
GEBCO SCUFN Gazetter	10.000	10.000	10.000	10.000
Renovation and Enhancement Fund - <i>Fonds de rénovation et d'amélioration</i>				
Assembly Fund - <i>Fonds pour les assemblées</i>	20.000	20.000	20.000	20.000
Relocation Fund - <i>Fonds pour les déménagements</i>	0	0	0	0
Capacity Building Fund - <i>Fonds pour le renforcement des capacités</i>	65.000	60.000	60.000	60.000
Special Projects Fund - <i>Fonds pour les projets spéciaux</i>	5.000	10.000	10.000	10.000
Internal Retirement Fund - <i>Fonds de Retraite Interne</i>	0	0	0	0
<b>NET EXPENDITURE - DÉPENSES NETTES</b>	<b>3.682.100</b>	<b>3.761.300</b>	<b>3.770.900</b>	<b>3.779.400</b>
	=====	=====	=====	=====

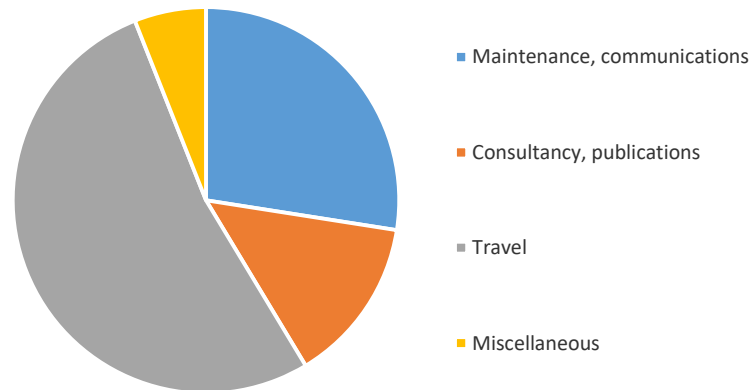
**BUDGET EXPENDITURE**  
(2024 - 2026 : 11 311 600 )



**CHAPTER I PERSONNEL COSTS**  
(2024 - 2026 : 9 379 000)

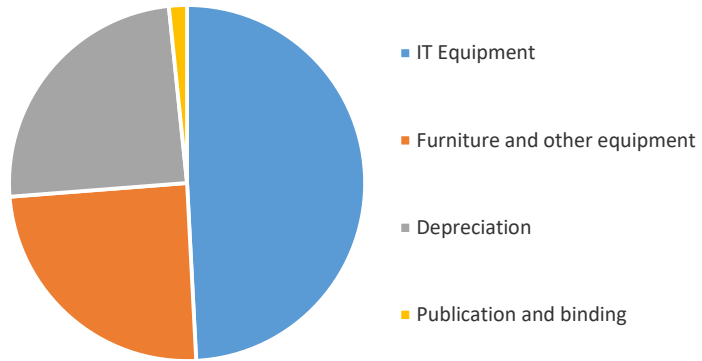


**CHAPTER II CURRENT OPERATING EXPENSES**  
(2024 - 2026 : 1 425 000)

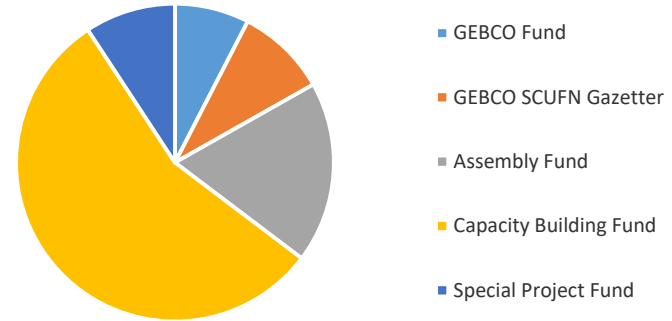




CHAPTER III CAPITAL EXPENDITURE  
(2024 - 2026 : 183 000)



CHAPTER IV ALLOCATION TO FUNDS  
(2024 - 2026 : 324 600)





Proposal n°	Object of the Proposal	Submitted by	Reference
<a href="#">1.5</a>	Revision of M-7 IHO Staff Regulations	Secretary-General	1

**Brazil**

Brazil supports this proposal.

**Canada**

Canada endorses this proposal.

**Germany**

Germany supports this proposal.

**Japan**

Japan supports this proposal.

**Portugal**

Portugal needs a better clarification on this subject in order to have any decision.

**UNITED KINGDOM**

The United Kingdom supports this proposal.

**SWEDEN**

Sweden supports the proposed revision of the M-7 IHO Staff Regulations.

**SECRETARY-GENERAL`S RESPONSE TO MEMBER STATES COMMENTS**

A presentation of the changes proposed to be applied to the M-7 Staff regulations is on the agenda of the meeting of the Finance Committee prior to the Assembly.

**PRO-1.5 Revision of M-7 IHO Staff Regulations**

**Submitted by: Secretariat (Secretary-General)**

- References:**
- M. Staff Regulations Edition 8.0.0 January 2017
  - N. Part 2 of IHO Annual Report 2019
  - O. Part 2 of IHO Annual Report 2021
  - P. FCCL02 – dated 14 October 2022 - revision process of the Staff Regulations Edition 8.0.0 January 2017 IHO Publication M-7

- Annexes:**
- Annex A A3\_2023\_PRO-1.5\_Annex\_A\_M-7\_EN\_Draft\_v9\_RLV:  
Draft Staff Regulations Edition 9.0.0 May 2023 (red line version)  
*Note: This Annex is not included in in the Assembly Proceedings because of its extent but is publicly available in the IHO Digital Archive.*
  - Annex B A3\_2023\_PRO-1.5\_Annex\_B\_M-7\_EN\_Draft\_v9\_CV:  
Draft Staff Regulations Edition 9.0.0 May 2023 (clean version)  
*Note: This Annex is not included in in the Assembly Proceedings because of its extent but is publicly available in the IHO Digital Archive.*

**PROPOSAL**

**Noting the proposal of the Secretary-General and the general support of the Finance Committee, the Assembly is invited:**

- n. to take note of the demand to revise the Staff Regulation to address the changes of layout of the social shield and other working conditions for Secretariat’s Staff Members induced by external factors.
- o. to approve the proposed revision of the IHO Publication M-7 Staff Regulations;
- p. to endorse to set the new Edition 9.0.0 in force by 1 July 2023.

**EXPLANATORY NOTE**

1. The proposed revision of IHO’s Staff Regulations is induced by the rearrangements made for the health insurance and retirement system for the IHO Staff. Based on the experiences made during the COVID pandemic, an element of teleworking is proposed to be introduced into the general working arrangements. The proposed revision contains also some minor editorials.

**INTRODUCTION**

2. As reported in Reference B, the IHO Secretariat’s collective medical insurance provider, GAN Insurance, cancelled the contract as of 31 December 2018. With the clear intention to maintain a lasting health insurance shield, the Secretariat negotiated with different insurance companies of solid reputation on a follow-up contract which guarantees comparable

- conditions to the previous arrangements. These negotiations have been successful and a new contract with the international insurer CIGNA, which became effective in June 2019.
3. With reference to retirement obligations, an unexpected change of similar substance was induced unilaterally by another external contracting partner in 2021 (Reference C refers). In order to meet the retirement obligations placed on the Secretariat by means of the Staff Regulations (Reference A, Article 9.6.1), the IHO had life insurance contracts with a local insurer, NSM/Neuflize, to provide capital to the Secretariat by event of retirement of the locally recruited members of staff. In February 2021, NSM/Neuflize cancelled this contract without pre-warning. The Secretariat has engaged with another insurance company, GAN VIE, to fully externalize the obligations set out by the Staff Regulations. These negotiations have been successful and a new contract with GAN VIE became effective on 1 January 2022.
  4. Another unexpected development for the Secretariat's working regime was triggered by various constraints as a result of the COVID pandemic. In order to comply with the containment measures announced by the Governments of France and the Principality of Monaco to slow the spread of the COVID-19 epidemic, one of the preventive measures to minimize the risk of infection through pragmatic measures was the introduction of teleworking to enable the staff to work from home. After two years of practice this tool has now turned out to be flexible and efficient for most of staff members.

### Analysis/Discussion

5. The organizational rearrangements installed for the health insurance shield and the retirement system do not change the obligations of the IHO as far as it concerns the granted rights for the staff members.
6. The introduction of the permanent option for teleworking establishes a new element of the Secretariat's working regime which is in line with common practice in a modern office working environment. The option for the Staff of the IHO Secretariat to work partly from home aims to facilitate temporal and local flexible working arrangements in the best interests of both the individual Staff Member and the Secretariat as a whole, and it is not limited to a pandemic situation. Its objectives, in particular, are to achieve a better balance between family commitments and professional duties whilst taking special regard of individual conditions and personal circumstances.

### Conclusions & Recommendations

7. The flexible tool to manage operational adaptations in the daily working arrangements of the Secretariat's staff are the Staff Memos as regularly issued by the Directing Committee for internal use in response to the situation at hand. The new elements described under paragraphs 2, 3 and 4 of this submission are currently managed by this means. All three items require an adaptation of the IHO Publication M-7 Staff Regulations. As a consequence, the Secretariat has drafted a revised version of M-7 which focuses on the following adaptations:
  - Main changes:
    - 3.6 Introduction of remote teleworking as a regular option
    - 7.2 Changes proposed to maintain medical benefits
    - 9 Changes proposed to maintain retirement benefits
  - Additional changes:
    - 4.2.3.1 Education grant for international staff
      - Change proposed in support of the management of the annual budget account for education grants.

5.10.4 Exceptional Performance Bonus

Change proposed to have greater flexibility for the amount of the bonus

- Editorials, amendments, updates, clarifications and corrections:
  - 4.1.2 Salary calculations and adjustments b, d, e ← updated
  - 4.2.2.1 Calculation of Annual Bonus ← correction
  - 6.6 Maternity leave ← updated
  - 8.1.3, 8.1.4 Travel Management ← clarification
  - 8.1.5 Travel allowance ← Amendment for late arrivals
  - Annex D Table 1A, Table 2A deletion ← editorial
  - Annex D Table 1 & Table 2 (former 1B and 2B) ← updated

**Justification and Impacts**

8. It has been common practice in the past the Joint Staff Consultative Committee (JSCC) as established in compliance with Chapter 12 of Reference A prior to the submission of a proposed revision of the IHO Staff Regulations for Assembly approval. The JSCC, on behalf of the Members of Staff, has provided comments which have been incorporated in the document.
9. The resulting draft revision of the Staff Regulations was put forward to the Members of the Finance Committee for comments (Reference D). Responses were received from Chile, France and United Kingdom. None of those responses offered additional comments.
10. Two more proposed modifications were applied to the final draft after the communication with the Members of the Finance Committee:
  - 4.2.3.1 Education grant for international staff
    - Change proposed in support of the management of the annual budget account for education grants.
  - 5.10.4 Exceptional Performance Bonus
    - Change proposed to have greater flexibility for the amount of the bonus.
11. The final draft is now submitted as Annex of this Proposal for Assembly approval.
12. The annexed annotated draft shows the changes to the existing Staff Regulations Edition 8 that are being proposed and includes justifying or explanatory comments, as appropriate. A clean version of M-7 Edition 9.0.0 is annexed for convenience.

Proposal n°	Object of the Proposal	Submitted by	Reference
<a href="#">1.6</a>	Polygonal demarcation of global sea areas	Secretary-General	1

**Brazil**

Brazil supports this proposal.

**CANADA**

Canada endorses this proposal.

Canada thanks the Secretary-General and the other members of the S-130 Project Team for their efforts with respect to these challenging tasks thus far and supports the reasoning to postpone much of the work until the S-130 specification Edition 2.0.0 has been adopted.

**GERMANY**

Germany supports this proposal and appreciates the excellent work done so far by Secretary-General and the S-130 Project Team.

**ITALY**

The IHO Council already endorsed the proposal. Italy supports the Secretary General’s recommendation to align the polygonal demarcation of global sea areas with the upcoming new S-130 Product Specification.

**JAPAN**

Japan would like to express our appreciation for the great support and continuous contribution regarding S-130 from the Secretary-General. Japan generally supports this proposal, with a suggestion that the phrase “when” and “are” in articles b and c should be replaced with “after” and “will be” respectively, in order to clarify the meaning to postpone both considerations after the finalization of the S-130 Product Specification and dataset.

**PORTUGAL**

Portugal endorses this proposal.

**NORWAY**

Norway supports this proposal by IHO Secretary-General as a pragmatic and realistic approach to the task given by A-2 on this complex and sensitive issue.

**SWEDEN**

Appreciating the progress made by the S-130 Project Team and noting the timeline for the development of the product specification and authoritative S-130 dataset, Sweden supports the Secretary General's proposal to **not** commence work items A2/PRO 1.9.3 and A2/PRO 1.9.5 before the tasks currently assigned to the S-130PT have been finalized.

**UNITED KINGDOM**

The United Kingdom supports this proposal.

**UNITED STATES OF AMERICA**

The United States supports the proposal on S-130 and feels this data set will provide considerable value to the IHO Member States once complete.

**SECRETARY-GENERAL`S RESPONSE TO MEMBER STATES COMMENTS**

An edited version of the Part of PRO 1.6 including the changes proposed by Japan is attached as Annex 1 to this document.



**PRO-1.5 Revision of M-7 IHO Staff Regulations**

**Submitted by: Secretariat (Secretary-General)**

**References:**

- Q. Staff Regulations Edition 8.0.0 January 2017
- R. Part 2 of IHO Annual Report 2019
- S. Part 2 of IHO Annual Report 2021
- T. FCCL02 – dated 14 October 2022 - revision process of the Staff Regulations Edition 8.0.0 January 2017 IHO Publication M-7

**Annexes:**

- Annex A A3\_2023\_PRO-1.5\_Annex\_A\_M-7\_EN\_Draft\_v9\_RLV:  
Draft Staff Regulations Edition 9.0.0 May 2023 (red line version)  
*Note: This Annex is not included in in the Assembly Proceedings because of its extent but is publicly available in the IHO Digital Archive.*
- Annex B A3\_2023\_PRO-1.5\_Annex\_B\_M-7\_EN\_Draft\_v9\_CV:  
Draft Staff Regulations Edition 9.0.0 May 2023 (clean version)  
*Note: This Annex is not included in in the Assembly Proceedings because of its extent but is publicly available in the IHO Digital Archive.*

**PROPOSAL**

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- q. to take note of the demand to revise the Staff Regulation to address the changes of layout of the social shield and other working conditions for Secretariat’s Staff Members induced by external factors.**
- r. to approve the proposed revision of the IHO Publication M-7 Staff Regulations;**
- s. to endorse to set the new Edition 9.0.0 in force by 1 July 2023.**

**EXPLANATORY NOTE**

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2. As reported in Reference B, the IHO Secretariat’s collective medical insurance provider, GAN Insurance, cancelled the contract as of 31 December 2018. With the clear intention to maintain a lasting health insurance shield, the Secretariat negotiated with different insurance

companies of solid reputation on a follow-up contract which guarantees comparable conditions to the previous arrangements. These negotiations have been successful and a new contract with the international insurer CIGNA, which became effective in June 2019.

3. With reference to retirement obligations, an unexpected change of similar substance was induced unilaterally by another external contracting partner in 2021 (Reference C refers). In order to meet the retirement obligations placed on the Secretariat by means of the Staff Regulations (Reference A, Article 9.6.1), the IHO had life insurance contracts with a local insurer, NSM/Neuflize, to provide capital to the Secretariat by event of retirement of the locally recruited members of staff. In February 2021, NSM/Neuflize cancelled this contract without pre-warning. The Secretariat has engaged with another insurance company, GAN VIE, to fully externalize the obligations set out by the Staff Regulations. These negotiations have been successful and a new contract with GAN VIE became effective on 1 January 2022.
4. Another unexpected development for the Secretariat's working regime was triggered by various constraints as a result of the COVID pandemic. In order to comply with the containment measures announced by the Governments of France and the Principality of Monaco to slow the spread of the COVID-19 epidemic, one of the preventive measures to minimize the risk of infection through pragmatic measures was the introduction of teleworking to enable the staff to work from home. After two years of practice this tool has now turned out to be flexible and efficient for most of staff members.

### **Analysis/Discussion**

5. The organizational rearrangements installed for the health insurance shield and the retirement system do not change the obligations of the IHO as far as it concerns the granted rights for the staff members.
6. The introduction of the permanent option for teleworking establishes a new element of the Secretariat's working regime which is in line with common practice in a modern office working environment. The option for the Staff of the IHO Secretariat to work partly from home aims to facilitate temporal and local flexible working arrangements in the best interests of both the individual Staff Member and the Secretariat as a whole, and it is not limited to a pandemic situation. Its objectives, in particular, are to achieve a better balance between family commitments and professional duties whilst taking special regard of individual conditions and personal circumstances.

### **Conclusions & Recommendations**

7. The flexible tool to manage operational adaptations in the daily working arrangements of the Secretariat's staff are the Staff Memos as regularly issued by the Directing Committee for internal use in response to the situation at hand. The new elements described under paragraphs 2, 3 and 4 of this submission are currently managed by this means. All three items require an adaptation of the IHO Publication M-7 Staff Regulations. As a consequence, the Secretariat has drafted a revised version of M-7 which focuses on the following adaptations:
  - Main changes:
    - 3.7 Introduction of remote teleworking as a regular option
    - 7.3 Changes proposed to maintain medical benefits
    - 9 Changes proposed to maintain retirement benefits
  - Additional changes:
    - 4.2.3.1 Education grant for international staff

Change proposed in support of the management of the annual budget account for education grants.

5.10.4 Exceptional Performance Bonus

Change proposed to have greater flexibility for the amount of the bonus

- Editorials, amendments, updates, clarifications and corrections:

4.1.2 Salary calculations and adjustments b, d, e ← updated

4.2.2.1 Calculation of Annual Bonus ← correction

6.6 Maternity leave ← updated

8.1.3, 8.1.4 Travel Management ← clarification

8.1.5 Travel allowance ← Amendment for late arrivals

Annex D Table 1A, Table 2A deletion ← editorial

Annex D Table 1 & Table 2 (former 1B and 2B) ← updated

### Justification and Impacts

8. It has been common practice in the past the Joint Staff Consultative Committee (JSCC) as established in compliance with Chapter 12 of Reference A prior to the submission of a proposed revision of the IHO Staff Regulations for Assembly approval. The JSCC, on behalf of the Members of Staff, has provided comments which have been incorporated in the document.

9. The resulting draft revision of the Staff Regulations was put forward to the Members of the Finance Committee for comments (Reference D). Responses were received from Chile, France and United Kingdom. None of those responses offered additional comments.

10. Two more proposed modifications were applied to the final draft after the communication with the Members of the Finance Committee:

4.2.3.1 Education grant for international staff

Change proposed in support of the management of the annual budget account for education grants.

5.10.4 Exceptional Performance Bonus

Change proposed to have greater flexibility for the amount of the bonus.

11. The final draft is now submitted as Annex of this Proposal for Assembly approval.

12. The annexed annotated draft shows the changes to the existing Staff Regulations Edition 8 that are being proposed and includes justifying or explanatory comments, as appropriate. A clean version of M-7 Edition 9.0.0 is annexed for convenience.



Proposal n°	Object of the Proposal	Submitted by	Reference
<a href="#">1.7</a>	Deprivation of the IHO member state status from the Russian Federation as its military aggression against Ukraine since 24 February 2022 has caused major threatens to navigation in the Black Sea and the Sea of Azov, in particular, has deprived Ukraine of performing the hydrographic surveying within its area of responsibility and issue and update its navigational charts.	Ukraine	1

**CANADA**

Canada's position regarding the Russian Federation's unlawful aggression against Ukraine, and Canada's ongoing support for Ukraine, have been clearly and publicly stated. While Canada notes and shares many of concerns expressed in PRO 1.7, it does not believe that the IHO Convention contains provision(s) to suspend a Member State from the organization except for the non-payment of contributions. Therefore, at this time, Canada does not support this proposal.

**RUSSIAN FEDERATION**

The Russian Federation rejects all the claims included in Proposal 1.7 by Ukraine and objects to including this Proposal into the agenda of the Assembly as contrary to the spirit, rules and goals of the IHO.

First of all, we would like to bring attention to the fact that according to Article II of the Convention on the IHO and Article 1 of the IHO General Regulations, the organization has a consultative and purely technical nature. Article 1 of the General Regulations unequivocally states that the IHO activities do not include matters involving questions of international politics.

So, the issues included in the Ukrainian proposal are beyond the authority of the IHO. Any discussions at the Assembly connected with Russian-Ukrainian relations will have no ground, and conclusions and decisions on this point will be null and void.

According to Article XX of the Convention on the IHO, IHO is open for accession by any United Nations member state. There's no possibility or procedure in the IHO basic documents for withdrawal of the IHO member status. This means that a state can stop participating in the IHO only on a voluntary basis and implementing its sovereign right for leaving the Convention on the IHO.

Regarding the Ukrainian claims that the Russian Federation is violating the rules of international navigation safety and the UNCLOS in general, it can be said that the Russian Federation fulfils its obligations under the IHO Convention as well as under other respective international treaties.

As far as the claim about restriction of freedom of navigation in the Kerch Strait is concerned, it should be mentioned that during the period from October 1<sup>st</sup> to December 31<sup>st</sup>, 2022, more than 1,200 vessels under different flags crossed the strait. The Russian Federation fulfils all the duties for maintaining safety of navigation in Black and Azov seas, including the duties which Ukraine refused to fulfil.

Again, the Russian Federation objects to putting Proposal 1.7 by Ukraine on the agenda of the Assembly as not corresponding to the spirit, rules and goals of the IHO.

**UNITED KINGDOM**

The United Kingdom fully supports Ukraine in standing against ongoing illegal aggression from Russia and the United Kingdom Government condemns Russia's unprovoked and premeditated invasion of Ukraine. The United Kingdom recognizes that it is through international bodies such as the IHO that countries (including the United Kingdom) should seek to hold Russia accountable for its illegal and unsafe actions and their impact on Ukraine's ability to undertake their duties as a national hydrographic office and the safety of the international mariner.

**UNITED STATES OF AMERICA**

The United States condemns in the strongest possible terms the Russian Federation's unprovoked and illegal war against Ukraine.

We support all efforts to ensure the safety of seafarers, commercial vessels, and the marine environment in the Black Sea and Sea of Azov. It is important to the United States that lawful hydrographic services and activities be facilitated, even in situations involving armed conflict, and we note that they are being blocked or degraded by the unprovoked Russian aggression against Ukraine. The swiftest and surest way to address the negative impact of Russia's aggression on hydrographic services and activities in the region is for the Russian Federation to immediately end its illegal war against Ukraine and withdraw all of its forces from Ukrainian territory, including from its internationally recognized territorial sea.

**SECRETARY-GENERAL'S RESPONSE TO MEMBER STATES COMMENTS**

The IHO Convention is open for accession by any State that is a member of the United Nations (IHO Convention, Article XX). Neither the IHO Convention nor the General Regulations of the IHO do provide a mechanism to suspend a State which has acceded to the IHO Convention from IHO membership for reasons other than non-payment of contributions for two years in sequence.

Concluding PRO 1.7 and related comments by Member States as being political in nature, noting that *the Organization shall have a consultative and technical nature* (Article II of the IHO Convention refers), it is proposed that consideration be given for:

- The Assembly to note PRO 1.7 and associated comments in the *Red Book*, in accordance with Rule 10 (g) of the Rules of Procedures of the IHO Assembly;
- The Assembly to decide *not* to consider PRO 1.7 *as such* under this Assembly Agenda item in accordance with Article V (e) (viii) of the IHO Convention. Instead, consideration should be given, as a precautionary action under this Assembly Agenda item, that the Assembly tasks IRCC, supported by the most concerned RHCs, to conduct a comprehensive technical impact assessment of the regional situation of affected areas on hydrographic matters in relation to safety of navigation for international shipping (production and maintenance of charts, distribution of, and availability of up-to-date ENCs and charts in all other areas, etc.).

**PRO-1.7**      **Deprivation of the IHO member state status from the Russian Federation as its military aggression against Ukraine since 24 February 2022 has caused major threatens to navigation in the Black Sea and the Sea of Azov, in particular, has deprived Ukraine of performing the hydrographic surveying within its area of responsibility and issue and update its navigational charts**

**Submitted by:**    **Ukraine**

**Supported by:**

**References:**     A. Convention on the IHO, Art. II.  
                          B. Rules of Procedure of the IHO Assembly, Rule 22. C.  
                          C. Rules of Procedure of the IHO Assembly, Rule 9.

## **PROPOSAL**

**The Assembly is invited:**

- **to consider the ability to make a decision of deprivation of the IHO Member State status from the Russian Federation as its military aggression against Ukraine since 24 February 2022 has caused major threatens to navigation in the Black Sea and the Sea of Azov, in particular, has deprived Ukraine of performing the hydrographic surveying within its area of responsibility and issue and update its navigational charts.**
- **in case the Assembly deems it possible to make the aforementioned asked decision, to amend Rule 22 of the Rules of Procedure of the IHO Assembly as stated in Annex.**
- **to take any further action as appropriate.**

## **EXPLANATORY NOTE**

### **Background**

1. In February 2014, the Russian Federation unlawfully invaded and occupied the Crimean Peninsula, which has been and is an integral part of Ukraine within its internationally recognized state borders. This conduct is attributed to the Russian Federation and constitutes a serious breach of international law, including the Charter of the United Nations. The Russian Federation's breach of international law entails its international responsibility.
2. The restriction imposed by the Russian Federation on freedom of navigation in the northern part of the Black Sea, in the Sea of Azov and the Kerch Strait, including the maritime areas adjacent to Crimea, have caused the impossibility of Ukraine to fulfill its international obligations as a coastal state within its area of responsibility in the aforementioned sea areas.
3. Consistent with the United Nations General Assembly's call for non-recognition of the Russian Federation's violations of international law in Crimea, Ukraine calls upon all States and international organizations to condemn the Russian Federation's unlawful unilateral actions in the northern part of the Black Sea, the Sea of Azov and the Kerch Strait and to refrain from any action or dealing that might be interpreted as recognizing any alteration of the status of Crimea.
4. Ukraine has informed IHO Member States that, due to the Russian Federation's unlawful actions in the northern part of the Black Sea, the Sea of Azov and the Kerch Strait, Ukraine is precluded from a full-scale exercise of its sovereign rights as a coastal State in the maritime areas adjacent to Crimea and from carrying out its international obligations therein under applicable treaties and conventional instruments, including the provision of security and safety of navigation and regulation maritime traffic.

5. Since early 2014 the State Hydrographic Service of Ukraine, as a national hydrographic service of Ukraine responsible for navigational and hydrographic safety provisions in the Ukrainian maritime waters has been deprived of the possibility to perform timely the hydrographic surveying in a due manner, and so, issue and update the nautical charts of Ukraine for the areas adjacent to the Crimean coast.

6. On 24 February 2022, the Russian Federation launched a full-scale invasion of Ukraine, which represents an act of war, a gross violation of Ukraine's sovereignty and territorial integrity, the UN Charter and the fundamental norms and principles of international law.

7. The attacks of the armed forces of the Russian Federation are targeting Ukrainian cities, conducting ongoing indiscriminate and disproportionate airstrikes, cruise missiles' and MLRS' shellings of critical infrastructure, including maritime ports zones in the Black Sea and the Sea of Azov, airport facilities throughout the country, as well as of civilian objects, taking the death toll on Ukrainian population.

8. These actions of the Russian Federation constitute a clear breach of international humanitarian law and pose a direct threat to maritime safety and security and disrupt international commercial shipping in the Black Sea – the Sea of Azov region. They also have a devastating impact, which will reverberate across continents, limiting the world's supply of food and natural resources, originating from Ukraine, and resulting in the skyrocketing of their prices. The global food security will be jeopardized and geopolitical tensions heightened.

## Analysis and Discussion

9. For many years both the international organizations and the global maritime, and in particular, hydrographic community have failed to recognize the very fact of a direct threat posed by the Russian Federation to international shipping, its safety and security, the navigational and hydrographic safety among others, as well as to Russia's neglect of the basic principles of protection of human life at sea, and the use of the Organization as a cover for its illegal activities. The policy of appeasement of the aggressor state has created its perception of permissiveness and impunity and subsequently led to terrible consequences.

10. Meanwhile, as stated in the Preamble to the Convention on the IHO (as amended), “...*the vision of the International Hydrographic Organization is to be the authoritative worldwide hydrographic body which actively engages all coastal and interested States to advance maritime safety and efficiency and which supports the protection and sustainable use of the marine environment*”, and further, “...*the mission ... is to create a global environment in which States provide adequate and timely hydrographic data, products and services and ensure their widest possible use*”.

11. It is self-evident that those aforementioned malicious and illegal actions of the Russian Federation have been both gravely violating the international maritime law in general and also trampling over to the fullest ever possible extent not only the vision and mission of the IHO, but also – all the objectives of the International Hydrographic Organization, as stated in Article II of the Convention on the IHO (as amended) in particular.

12. Yet, the whole modern system of international security has appeared to be unprepared to tackle comprehensive and interrelated challenges of the 21<sup>st</sup> century. Thus, a solid basis, enabling both the IHO and other international organizations to promptly respond to grave violations of the basic conventions and instruments by their Member States, has to be created. This must also ensure that any possibility is excluded for the aggressor state to enjoy the benefits provided with the membership at IHO or its bodies.

13. Thus, the contradictory and malicious situation, when one among the IHO MemberStates counteracts the efforts of the whole global hydrographic community under the auspice of the respective international organization with its illegal and violating actions, is an



unprecedented challenge, and so, demands the adequate, immediate and efficient enough response action.

**Actions to be taken**

14. The Assembly is invited to consider this proposal and to take any possible action as appropriate.

15. Ceterum censeo Imperium Mali delendam esse.

Annex to PRO 1.7

Proposed amendments to Rule 22 of the Rules of Procedure of the IHO Assembly

**RULES OF PROCEDURE OF THE IHO ASSEMBLY**

Languages

**RULE 22**

The working languages of the Assembly shall be English, French ~~and~~ Spanish ~~and Russian~~ for purposes of simultaneous interpretation of the proceedings. Speeches at the Assembly shall be made in one of these working languages and will be interpreted into the other ~~three~~ two languages.

Proposal n°	Object of the Proposal	Submitted by	Reference
<a href="#">2.1</a>	Adoption of dual fuel concept for S-100	IHO Council	2

**BRAZIL**

Brazil supports this proposal.

**CANADA**

Canada endorses this proposal.

**Finland**

Finland supports the proposal.

**Germany**

Germany supports this proposal.

**ITALY**

As member of the IHO Council, Italy supports the proposal.

**Japan**

Japan generally supports this proposal, with a suggestion to correct misspellings from “Duel Fuel” to “Dual Fuel” in the title and some points in Appendix 1 (Full Report) of Annex A.

**PORTUGAL**

Portugal endorses this proposal.

**SWEDEN**

Sweden supports this proposal.

**UNITED KINGDOM**

The United Kingdom supports this proposal and will continue to test the dual fuel concept through our combined S-100 ECDIS trial with SHOM. Where successes are demonstrated and achieved, or gaps identified in the delivery of the IHO standards, these will be fed back into the IHO process through the appropriate mechanisms.

**UNITED STATES OF AMERICA**

The United States supports the need for consolidated guidance to stakeholders involved in the move to S-100.

**SECRETARY-GENERAL`S RESPONSE TO MEMBER STATES COMMENTS**

The Secretariat thanks Japan for the meticulous perusal. The misspellings were fixed and a corrected version of the affected document was uploaded to the Assembly website.

**PRO-2.1 Adoption of Dual Fuel Concept for S-100 ECDIS executive summary and the full report**

**Submitted by: Council Chair**

**References: A. Decision A2/33: Update on the Dual-Fuel Concept (transition from S-57 to S-101 ENCs)**

**B. 6<sup>th</sup> Meeting of the Council – Summary Report.**

## **PROPOSAL**

**The proposed Dual Fuel Concept for S-100 ECDIS including a prefacing Executive Summary was developed to be included as part of the S-100 Roadmap.**

**Noting the endorsement by the Council, the Assembly is invited:**

**- to approve the Dual Fuel Concept for S-100 ECDIS including the prefacing Executive Summary as presented in Annex A.**

**- to take note of the importance of the fundamental strategic change introduced by the S-100 ECDIS concept with regard to multiple interacting navigational data layers.**

## **EXPLANATORY NOTE**

1. HSSC has been working on the development of a governance document in support of the Dual Fuel Concept for S-100 ECDIS using S-101 ENCs in parallel to S-57 ENCs. In accordance with Council action C5/10 HSSC presented the first version of the Dual Fuel Concept for S-100 ECDIS to the 6<sup>th</sup> Meeting of Council. An Executive Summary and the full report is presented as Annex A. The Council endorsed the Executive Summary and the full report for submission to A-3 for approval by Member States. The Executive Summary will be included as an Annex 4 to the S-100 Roadmap and the full report as an appendix to annex 4.
2. In addition to the Dual Fuel Concept for S-100 ECDIS the Council endorsed the strategic change in S-100 ECDIS with interacting navigational data layers, enabled by the Interoperability Specification S-98. In November 2022 IMO approved the revised IMO ECDIS Performance Standards MSC.530(106), where S-100 is included. The functionality of multiple navigational data layers was included in the Resolution by means of the introduction of the term Electronic Navigational Data Services (ENDS). ENDS means a special-purpose database compiled from nautical chart and nautical publication data, standardized as to content, structure and format, issued for use with ECDIS by or on the authority of a Government, authorized Hydrographic Office or other relevant government institution, and conforming to IHO standards; and, is designed to meet the requirement of marine navigation and the nautical charts and nautical publications carriage requirements in SOLAS regulations V/19 and V/27. The navigational base layer of ENDS is the S-101 Electronic Navigational Chart (ENC).
3. This concept, supported by S-98, enables, with interleaving, suppression and replacement of the ENC content with other official S-100 compliant datasets, a change from the existing S-57 ENC regime where the ENC content is untouchable. The resulting merger of S-100 compliant datasets aims to enrich the presentation of the navigation surface at a locality with finer details such as dense bathymetry through incorporation of S-102 data.

**Roadmap for the S-100 Implementation Decade (2020 – 2030), Annex 4****Dual Fuel Concept for S-100 ECDIS – Executive Summary****Draft Version 1.0 Dated: 1 July, 2022**

The Dual Fuel Concept for S-100 ECDIS is focused on capturing in a single resource the concept, operation and support for transition to S-100 ECDIS, with particular reference to Dual Fuel mode, being the primary mode of transition from existing S-57 based IMO ECDIS operation.

**Aims:**

This document aims to set out within a logical structure a clear rationale for dual-fuel mode during the transition phase, the essential elements it requires from all partners within the data chain, and any gaps still existing within the standards and supporting framework. It has the following aims:

1. Recognise and define each of the stakeholders and end users of the S-100 ECDIS. Capture all the relevant details at a high level and describe the “changes” required across the entire ecosystem.
2. Describe the S-100 ECDIS and the Dual Fuel “concept”,
  - Build the picture for the end user from the multiple data layers and products.
  - Explain how these component parts interact together in the defined stages of navigational processes according to IMO definitions.
3. Detail the IHO’s transitional period.
4. Fill in the detail between the conceptual IMO processes, the defining standards, the producing entities and the supporting stakeholders; so from each users’ perspective, how they contribute to the operation of the system by the user. Produce a summary of the details included in existing IHO standards.
5. Define how primary supporting bodies can support distribution and any likely changes.
6. Define summary information suitable for communication with IHO member state stakeholders and the community defining S-100 ECDIS focused on the IMO Performance Standard

**Findings:**

The primary findings of the first edition of the Dual Fuel Concept for S-100 ECDIS document are:

1. There are currently no substantial technical objections to Dual Fuel mode within S-100 ECDIS. As described below (paragraph 3) some gaps are still noted at the time of writing, but from a data producer and industry perspective there are no compelling technical issues preventing its introduction.
2. Clarification of the rationale for Dual Fuel mode, and its relationship to the ongoing development of migration by IHO member states from S-57 to S-101 assists stakeholder understanding of the transition plan to S-100 ECDIS.
3. A number of gaps were noted, mainly in the areas of:
  - a. A step change in the requirement for supporting resources for the ECDIS community by the IHO reflecting the greater complexity of multiple product specifications.
  - b. Detailed specifications for ECDIS portrayal loading strategy in respect of Dual Fuel mode
  - c. A detailed, overarching model for the entirety of S-100 ECDIS operation incorporating S-100, support for other S-100 product specifications, S-164, S-128, S-98

- interoperability and integrated data production/distribution remains to be defined by the working groups.
- d. Technical, distribution and regulatory clarification of the equivalence between S-57 and S-101 datasets, and between existing nautical publications and S-100 product specifications.
  - e. Guidance for data producers in respect of data production infrastructure, tools and validation.
4. The Dual Fuel Concept document notes the strong dependency on the process at IMO level by various stakeholders in adding S-100 to the existing documentation regime under SOLAS. The entire Dual Fuel and S-100 ECDIS effort is dependent on a successful transition at this level and consequent support for the parties involved in drafting, reviewing and supporting these efforts.

### **The Way Forward:**

The HSSC and its subsidiary working groups (primarily the S100WG) will consider actions in respect of all identified gaps and ensure the ongoing work plan has defined work items where they lie within the scope of the WG's activities. The Dual Fuel Concept for S-100 ECDIS Document is intended as a "living document" which will be regularly updated and revised as actions are tracked to completion. The S-100WG Chair and technical experts will explore options for closing the identified gaps and providing the optimal support and communication to the S-100 community through the working group organisation and activities.





# Dual Fuel Concept for S-100 ECDIS

Edition 1: v011 14<sup>th</sup> November 2022

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<b>Revision History</b>	<b>Date</b>
Created Initial Draft v007	Jonathan Pritchard December 2021
v008 Revised for WG review and presentation	December 2021
V009 Created following review and comments after S-100WG6	February 2022
V010 [First edition 1] Created, comments from stakeholders.	March 2022
V011 image update.	November 2022



## 1. Definitions and Background

### 1.1. Introduction to the Dual Fuel Concept for S-100 ECDIS Document

The Dual Fuel Concept for S-100 ECDIS document was originally conceived with the following aims:

- Recognise and define the stakeholders and end users of the S-100 ECDIS.
- Capture all the relevant details at a high level and describe the “changes” required across the entire ecosystem.
- Describe the S-100 ECDIS and the Dual Fuel “concept”, defining how it builds the picture for the end user from multiple data layers and products. This should also relate how these component parts interact together in the defined stages of navigational processes according to IMO definitions.
- Detail the IHO’s transitional period. Examples would be how data producers cope with co-production of S-57/S-101, how to assess the benefits, costs and risks of production of multiple data products (e.g. S-102) in addition to S-101, how type approval testing is implemented.
- Fill in the detail between the conceptual IMO processes, the defining standards, the producing entities and the supporting stakeholders; so from each users’ perspective, how do they contribute to the operation of the system by the user. Summary of the relevant detail included in existing IHO standards.
- Describe the role of primary supporting bodies (RENCs, RHCs) and how they support distribution including any likely impacts to their processes.
- Define summary information suitable for communication between IHO member state stakeholders and the community defining S-100 ECDIS focused on the IMO Performance Standard.

In essence the Governance document presents a view of S-100 ECDIS and Dual Fuel Mode which can be used as a definitive guide containing just the essential details. The rest of the technical detail is defined by the component standards specified by the IHO, IEC and under revisions to IMO conventions and performance standards.

The Governance Document ultimately represents the views of those who have contributed to it. Contributors have been drawn from across IHO Member states, ECDIS OEMs and S-100 Technical Experts. In addition to major workshops held in September and October 2021, several follow up sessions have been held, all of which resulted in the draft document presented.

This document includes sections which highlight where current (at the time of writing) gaps exist in the IHO standards base and other allied structures, but much of the document is written without drawing attention to these gaps in order to present a complete, holistic picture of S-100 ECDIS and Dual Fuel Mode. The gaps themselves are documented in more detail in section 7 along with current thinking and areas of current development.

It is unavoidable in such a document to assume a certain level of awareness and knowledge of how the international SOLAS navigation regime functions and, at a high level, the function of various bodies in support of it. A glossary is contained in this document in Section 8 to provide clarity on the various acronyms used and their definitions. It is hoped that this glossary also provides sufficient guidance to interpret the various terms which are used.

It should be recognised that the production of the Governance document has been a collective effort by all those willing to give their time and energy into the workshops and subsequent reviews. The author gratefully acknowledges all the input given in pursuit of this document. The output reflects a huge diversity of inputs and the many years of experience and knowledge of those involved.

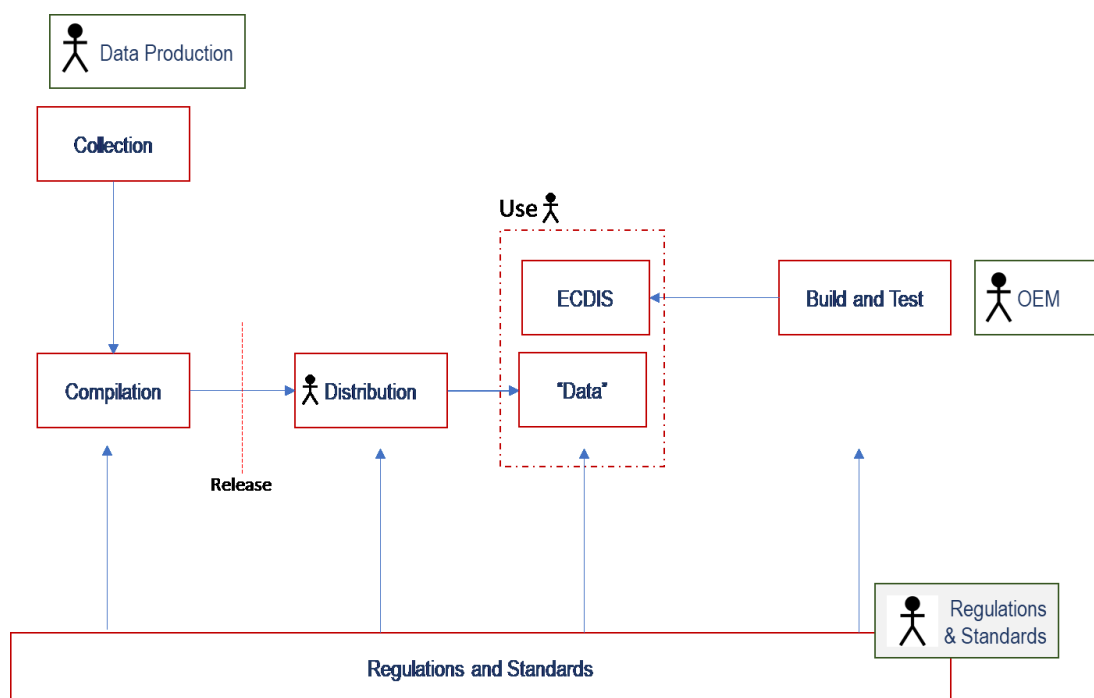
## 1.2. Addressing the needs of the Stakeholder groups

While assembling the Governance Document the stakeholder groups were consulted both individually and within a group context. The groups consulted were:

1. The IHO Member states and representatives of the data producer communities, including representatives of data validation/distribution, tool manufacturers and allied industries.
2. ECDIS developers (“OEMs” in this document) responsible for the construction of hardware/software systems implementing S-100 alongside the current IHO standards in ECDIS. Also included in this group were representatives of the international technical standards groups outside the IHO responsible for ECDIS implementation within the IMO community.
3. Representatives of the IHO technical standards working groups.

The following diagram shows these broad stakeholder groups and their domains within the context of ECDIS “use”, that is, its construction and testing and how data is collected and supplied to it. Notable, of course, is the view of the end user in this list of stakeholders. The topic of consultation with the end user is a far larger subject than the scope of the current Governance Document – many end user requirements are present in current ECDIS and their views are (at least partly) represented by the other stakeholders.

The primary reason for creation of the Governance Document is to provide a central view of how S-100 ECDIS “works” and, in particular that the Dual Fuel mode is possible without engaging in a (unnecessarily large scale) end user consultation.



These broad groupings of stakeholders have different requirements for the Governance Document and the technical standards it references:

1. **Data Producers** require comprehensive descriptions of options and definitive statements of how ECDIS implementation will implement their decisions and actions as they implement Dual Fuel production and S-100 for charts and nautical publications.
2. **Independent Data Validation and Distribution bodies** require comprehensive coverage of the practicalities of how data is to be packaged, transported and (in many cases) imported into implementing systems. Often these parts of the component

standards are the most difficult to form as they span organisational and domain boundaries. Validation is a unique and precise activity in the ECDIS community which relies on solid foundational standards describing the operation of ECDIS and data encoding practices.

3. **ECDIS OEMs and Kernel Manufacturers** require definitive descriptions of how S-100 implementation should be addressed, with assurances that technical implementation is sound, unambiguous and complete. OEMs require comprehensive summaries of the standards regime and where each component part is located/defined.
4. **Regulators and representatives of IHO technical working groups** require confidence that the full spectrum of the international conventions defining the requirements for ECDIS have been addressed without omission, and that technically rigorous and sound approaches exist in all the component standards. Where gaps exist at the time of writing they should be clearly recorded and detailed.

This document attempts to provide content meeting all stakeholder requirements. This is done by providing a mixture of normative specifications which may not exist in component standards alongside descriptions of options, where they exist.

### 1.3. What is an ECDIS?

An Electronic Chart Display and Information System (ECDIS) is a navigation system which is designed, constructed, tested and certified to meet the standards required for primary navigation under the SOLAS convention when combined with official data. The IMO Performance Standard sets out the required functionality of ECDIS, and the technical standards to which it refers.

- |     |   |
|-----|---|
| 1   | SCOPE OF ECDIS  |
| 1.1 | The primary function of the ECDIS is to contribute to safe navigation.  |
| 1.2 | ECDIS with adequate back-up arrangements may be accepted as complying with the up-to-date charts required by regulations V/19 and V/27 of the 1974 SOLAS Convention, as amended.                        |
| 1.3 | ECDIS should be capable of displaying all chart information necessary for safe and efficient navigation originated by, and distributed on the authority of, government authorized hydrographic offices. |
| 1.4 | ECDIS should facilitate simple and reliable updating of the electronic navigational chart.  |

Figure 1: ECDIS Scope IMO MSC.232(82)

An S-100 ECDIS is one which conforms to updated IMO Performance standards which specifically reference S-100. This is the implementation of the IHO’s S-100 framework, realised for primary navigation of SOLAS vessels.

ECDIS have been in existence for many years and are defined by a combination of the type approved hardware and software developed by Original Equipment Manufacturers (“OEMs”) and official chart data, issued by, or on behalf of, authorised Hydrographic Offices. Such data is encoded using the S-57 standard for its content and, largely, the S-63 standard for its packaging, data protection and authentication<sup>1</sup>.

Existing ECDIS are currently machines designed for importing data in S-57 format supported by S-63 and providing a user with a set of machine behaviours which meet the provisions of the IMO Performance Standard.

The broad functional groups are:

- Chart Loading, Unloading.
- Updating, from automated updates and manually.

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<sup>1</sup> In the main body of this document, often existing ECDIS is referred to as “S-57 ECDIS”. The full list of standards implemented by current ECDIS is included for completeness in 6.2.

- Display (Portrayal).
- Feature Interrogation.
- Alarms and Indications, Areas where special conditions exist, isolated dangers and Safety Contour Generation.
- Route Planning and Monitoring.
- "Other" functions - stipulated by the IMO PS.

SOLAS places an obligation on member states to produce and promulgate ENC data to support mandatory carriage of ECDIS. Currently this mandate is fulfilled by the production of S-57 ENC charts.

The addition of S-100 to the IMO PS will allow S-100 data to also satisfy the carriage requirement of ENC. Member states will provide ENC data which is defined as safe by the relevant standards<sup>2</sup>. The addition of S-100 to the IMO PS<sup>3</sup> will also allow S-100 data to satisfy the carriage requirement for nautical publications in electronic form (ENP).

## 2. S-100 and ECDIS - Introduction

S-100 is the IHO's "Universal Hydrographic Data Model", currently at edition 4.0.0 with edition 5.0.0 in advanced stages of development. The S-100 framework defines:

- An encompassing standard for the expression of marine phenomena in multiple, discrete, named "product specifications".
- A set of three encodings (ISO8211, HDF5 and GML) in which datasets can be expressed for ingest to the ECDIS.
- A set of registries located at the IHO string feature concepts, portrayal items, product specifications and normative reference documentation.
- Metadata structures conformant with ISO19115.
- A General Feature Model which describes how the fundamental entities making up S-100 datasets are structured along with their geometry.
- A Feature Catalogue structure which allows the registry entries to be bound, related and transported in a defined, validatable XML format.
- A specification for a portrayal engine, capable of expressing the richness of portrayal required by ECDIS (and other display systems such as ECS).
- An interoperability mechanism for managing harmonized portrayal of multiple product specifications in implementing systems.

An S-100 ECDIS is conformant with the S-100 framework, rather than a discrete, fixed list of individual product specifications. An S-100 ECDIS thus provides a platform on which multiple S-100 products can be used by an end user.

One of the core concepts of S-100 is the idea of the "Universal Hydrographic Data Model" – this fundamental development is that S-100 does not specify, in any of its component parts, actual marine geospatial "data" itself. S-100 provides an all-encompassing ("Universal") set of tools and guidance for the modelling and specification of marine ("hydrographic") phenomena in product specifications ("Data Model"). This concept extends the domain of IHO standards from purely chart-based (S-57 Appendix B.1) to any number of maritime, and marine related domains by the application of a rigorous modelling process, the definition of concepts and their entry into the IHOs geospatial registry and the bindings of those concepts into expressible product specifications in a number of appropriate data formats. Assistance for developers of product

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<sup>2</sup> The IHO standards explicitly referenced by the IMO Performance standard are S-57, S-52, S-64, S-32, S-61 and S-63. This list will grow with the revision proposed for S-100 support and is presented in more detail in the appendix.

<sup>3</sup> Revision of the IMO Performance Standard revision is in progress.



specifications is provided in the IHO standard S-97. Models are generally constructed using a subset of Unified Modelling Language (UML) structures and then translated to instances of an IHO Feature Catalogue, usually alongside an accompanying portrayal catalogue and encoding. The three fundamental elements of the S-100 concept most relevant to development and implementation of S-100 ECDIS development are:

1. The idea of the implementation of a unique S-100 “model”.
2. Multiple product specifications.
3. Machine Readability.

Many of the core concepts are defined under the ISO191XX framework and S-100’s implementation of them is comprehensive. The ISO frameworks are not explored in this Governance Document but they provide a design basis for many of the designs of S-100’s elements, the general feature model, geometry, feature catalogue and the IHO geospatial registry. The aim of S-100 is to provide a standalone framework, however, which can be understood and implemented with the minimum of external references, a crucial point for implementers of ECDIS systems.

### **2.1. Model based design**

S-100 is a model based framework encapsulating a description of a generic model, the S-100 General Feature Model, together with a description of types, attributes and geometry. These are all core ISO concepts which have been realised by S-100. Under S-100, marine phenomena are modelled in product specifications via a descriptive framework based on the UML and the norms laid out in S-100. Such Application Schemas are “instances” of the core S-100 schema. The S-100 ECDIS implementer develops compatibility with the S-100 framework, not its specific instances, the product specifications. The fundamental design principle is that the S-100 ECDIS is “dynamic”, compatible not just with a core set of IHO product specifications, but with the entirety of marine geospatial data expressible by a specific edition of the S-100 model<sup>4</sup>.

### **2.2. Multiple product specifications**

The second of the core concepts of S-100 is that of multiple product specifications. S-100 itself defines no “data content” but leaves it to independent product specifications, defined to be conformant with the S-100 framework. These product specifications define use cases and formats of data which can be ingested, installed and used on the S-100 ECDIS in a seamless and integrated way. S-100 Part 16 (Interoperability Catalogue Model) defines an interoperability mechanism for the harmonised portrayal of multiple product specifications. This interoperability mechanism defines up to four levels of interoperability in progressively increasing sophistication (only the first two levels are for implementation in S-100 ECDIS as documented in S-98). The interoperability mechanisms allow for simple interleaving of portrayal of multiple product specifications and the suppression of features between multiple product specifications to “de-clutter” and harmonise the S-100 ECDIS display.

The impact of multiple product specifications on the S-100 ECDIS is profound. Such product specifications offer data producers the opportunity to deliver far more sophisticated data to end user systems alongside the regulatory minimum Electronic Navigational Charts. The addition of nautical publication data to the ECDIS enables fully digital planning processes and contextual enhancement of existing chart data for the end user. The transition to multiple product specifications will have impacts across the entire data chain from producers to the end user. This Governance Document only presents the defining standards and constraints on this transition for clarity. The areas of S-100 ECDIS most affected in these terms are:

- How data production is impacted, including best practices.
- Interoperability and use of multiple product specifications for route planning and monitoring on the ECDIS.

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<sup>4</sup> See also 7.12

- The impact on regulatory approval and inspection.

### 2.3. Machine Readability

The final core concept of the S-100 framework, and the S-100 ECDIS is that the framework defines a set of fixed-format machine readable files, from which the implementing system's behaviour is derived. This allows the implementing system (the S-100 ECDIS) to be fully dynamic and scalable in respect of several significant categories of its behaviour:

1. Ingested data and metadata content.
2. Data portrayal, including interoperability between multiple datasets of differing product specifications.
3. Alarms/Indications.

The move to a model-driven and machine readable environment for the S-100 ECDIS is a significant one. In contrast to IHO S-57 where the feature/attribute definitions and content were set within the standard itself, S-100 defines a number of standardised forms for expressing certain aspects of the data content and operation of the ECDIS, via machine readable files which conform to the standardised forms. Where S-57 used machine readable files (for example revision control (S-63's PRODUCTS.TXT) and portrayal (the .dai file)) these now form a core part of the framework and have their own defining schemas. In most cases these standardised forms are expressed as XML Schemas, maintained by the IHO.

The following functional areas have their descriptions formalised in S-100 and schemas for machine-readable files defined.

- Feature content, Attribute content, definitions, bindings and textual descriptions
- Portrayal, symbology and colours.
- Conditional Symbology processing.
- Service revision status (the revision status of each dataset (including S-57) in a provider's service, their revision and coverage)<sup>5</sup>.
- Context Parameters and Viewing Group titles.
- Interoperability (defined under S-98), which allows product specifications to interact with each other harmonising the portrayal and function of data. This allows states who wish to issue such enhanced data to end users to have it used as part of the ECDIS' core functionality.

### 2.4. What is an S-100 ECDIS?

The "S-100 ECDIS" concept is in essence:

1. A navigation system compatible with the entirety of the S-100 Framework and able to ingest not only datasets conformant with established S-100 product specifications but also future product specifications which are similarly conformance with the framework.
2. During the transition period a navigation system implementing S-100 will be inherently "Dual Fuel" in nature – it will deal with both S-100 based navigational products as well as legacy S-57 ENC charts presenting a harmonised "side-by-side" chart display system for the end user. The "Dual Fuel" mode only describes how the provision of nautical charts is achieved. Other product specifications can also be used with S-101 while in dual-fuel mode<sup>6</sup>.

<sup>5</sup> See also Development of S-128 7.13

<sup>6</sup> Whether provision of other S-100 product specifications over S-57 data is within ECDIS functionality is yet to be decided. See 7.6

3. The core (IMO) concept of an ECDIS currently remains unchanged as a minimum performance standard (in the IMO context) for the nautical chart part of digital navigation.
4. The current IMO ECDIS may also be able to present nautical publications, as IMO has allowed it, see the related quotations below from MSC.232(82). This discussion is ongoing over the best approach for the revision of IMO documents specifically in relation to Nautical Publications, and the accompanying categorisation of IHO product specifications<sup>7</sup>.

THE MARITIME SAFETY COMMITTEE,

NOTING that the up-to-date charts required by SOLAS regulations V/19 and V/27 can be provided and displayed electronically on board ships by electronic chart display and information systems (ECDIS), and that **the other nautical publications required by regulation V/27 may also be so provided and displayed,**

#### 7 DISPLAY OF **OTHER NAVIGATIONAL INFORMATION**

7.1 Radar information and/or AIS information may be transferred from systems compliant with the relevant standards of the Organization. **Other navigational information may be added to the ECDIS display.** However, it should not degrade the displayed SENC information and it should be clearly distinguishable from the SENC information.

7.2 It should be possible to remove the radar information, AIS information and **other navigational information** by single operator action.

7.3 ECDIS and **added navigational information** should use a common reference system. If this is not the case, an indication should be provided.

5. S-100 ECDIS shall have compatibility with an arbitrary set of S-100 product specifications which conform to the specifications within IHO S-100. These product specifications form a set of interlocking data products which are used to form the interface with the end user.
6. Route planning and monitoring which form the navigational core of the system. The provision of IHO S-101 and S-128, optionally enhanced with S-102, S-104 and S-111 provide an equivalent to the current content of the global S-57 ENC database.
7. S-101 data can then be enhanced with data from (at least) a set of further navigational products, such as:
  - S-122 Marine Protected Areas.
  - S-123 Marine Radio Services.
  - S-124 Navigational Warnings.
  - S-126 Marine Physical Environment.
  - S-127 Marine Traffic Management.
  - S-129 Under Keel Clearance Management.
  - S-131 Marine Harbour Infrastructure.
8. The system can also import, load, display, interrogate, and “use” data from other IHO S-100 compliant product specifications. This is done by loading data and its catalogues which enable and configure the ECDIS’ compatibility with that data.

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<sup>7</sup> See 7.2

9. The user interface and behaviour of the ECDIS is similarly configurable. Configurable elements within the system (i.e. those configurable by machine readable product specifications defined under S-100) include:
  - Feature content, attribute content, definitions, bindings and textual descriptions.
  - Portrayal, symbology and colours.
  - Conditional Symbology processing.
  - Service revision status (the revision status of each piece of data in the system and its individual coverage).
  - ECDIS Interoperability (defined in S-100 and S-98).
10. Manufacturer equipment shall continue to be tested using IEC61174 for type approval certification referring to the appropriate parts of IHO S-64 (S-57 test datasets for ECDIS) and S-164 (the S-100 test dataset suite).

## 2.5. The three types of ECDIS data

Data in the S-100 world can be assigned one of three different categories. A distinction/classification is made between:

1. S-100 product specifications specifically designed for use as navigational charts (in the IMO sense) – S-101 and S-401 currently fit this description. Charts are a mandatory minimum requirement and are always present in some form on the ECDIS.
2. S-100 product specifications designed to enhance specific features which are integral to electronic charts (as defined by IMO) and used for route planning and monitoring. S-102, S-104 and S-111 fit this description. From the IMO/IHO perspective, these product specifications can be seen as enhancements to content which is integral to IMO “Nautical chart” content and are therefore (optional) “extensions” of chart data. These product specifications are likely to be optional for users but may be mandatory depending on individual maritime safety authorities.
3. S-100 product specifications containing data, of which the larger proportion is derived from existing Nautical Publications. Although these product specifications may contain features already included in electronic charts, their content may also be unique to those product specifications and provide (predominantly textual) support to the mariner during planning. Although carriage of nautical publications is mandatory under SOLAS, carriage of IHO conformant nautical publications in digital form is not (currently) and SOLAS only makes passing references to examples for the exact requirement. This may be captured in future revisions to IMO instruments but is currently undefined<sup>8</sup>.

In order for Dual Fuel mode to operate it is important that some notion of “equivalence” is defined between the two “chart” products. IHO does not currently define a class of “chart” – this is needed, as noted by several individual stakeholders, to define “chart” and “nautical publication” and to which category individual product specifications fit into<sup>9</sup>. The backdrop to S-100 ECDIS (and existing ECDIS) is a “chart” and is always present. S-101 clearly is the “chart” (as is S-57 when no S-101 chart is available, and S-401 inland ENC). Other layers on top of the chart are then either directly chart-related or nautical publications.

Mapping of S-1XX products to Nautical Publications is many to many. So, an individual publication can contain data which is in multiple product specifications and different product specifications can contain data in multiple publications. Despite this, a broad classification and mapping can be formed, e.g.

- Tide Tables: S-104.

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<sup>8</sup> See 7.2

<sup>9</sup> See 7.14. A formal categorisation is likely to be in S-98 with products defined in the registry.

- Sailing Directions: S-126 + S-127 + S-131.
- List of Radio Services: S-123.

From an equivalence point of view this mapping should be constructed by IHO HSSC WGs cooperatively and used to define capabilities of ECDIS to satisfy SOLAS compliance in respect of Nautical Publications. IHO will state equivalence of categories of Nautical Publication with collections of one or more S-100 product specifications to inform their equivalence with existing paper publications by issuing authorities<sup>10</sup>. This may require clarification of the current wording in SOLAS.

## 2.6. S-100 ECDIS operation

### 2.6.1. The S-100 ECDIS “Operating Model”

Operation of S-100 ECDIS is the end result of the data chain, from data production, its validation, packaging and distribution to the end user ready for installation. In many cases these stages are extremely complex to describe in detail.



Figure 2: The physical data chain from production, packaging and use

The standards and processes governing the operation of all these elements are all defined in this Governance document. The complete operation of the S-100 ECDIS is not defined in a single place and is, to some degree, down to the implementation of the OEM creating it. The standards defined by IHO, IEC and the IMO Performance Standard MSC 232(82) list all required functionality. Additionally some elements of S-98 Annex C define processes for data ingest and import and areas of functionality which may lie outside S-100 itself.

The supporting ecosystem for the S-100 ECDIS operation is also an important element to be acknowledged. Data validation, packaging and transport prior to ingest in the ECDIS is a large part of the challenge of migration to S-100. Currently, these distribution models are in development. They will rely heavily on the revised S-100 Edition 5.0.0 Part 17 (Metadata) for the hybrid exchange model and Part 15 for data protection and integrity. The conventions and procedures surrounding data distribution are not directly relevant to dual-fuel mode but support its operation. Longer term S-100 may enable API access to ECDIS but the predominant model emerging is predicated on the “Exchange Set” mechanism of aggregating data together and transporting it in its entirety to the ECDIS. S-100 provides a complete description of this exchange set but is neutral on the mechanisms for its transport. Selection of data from the exchange set for portrayal and processing is complex under S-100 and will require extensive guidance and examples<sup>11</sup>.

Together, the IHO standards define an “operating model” for the S-100 ECDIS, which, together with the existing standards for S-57 ECDIS provide all necessary elements for S-100 ECDIS development.

It is important to note that much of the operating model of the S-100 ECDIS is captured in the S-164 test data and scenarios it describes. Whether this sum total of standards and procedures they define for S-100 ECDIS (and Dual Fuel mode) is sufficient for ECDIS manufacture, testing and use remains to be seen. It is highly likely that IHO will have to enhance and clarify some of the component standards during the testing phases, such phases being defined in the IHO strategic plan and workplans of various S-100WG Project Teams. Certainly the S-100 ECDIS

<sup>10</sup> Still to be defined, likely to be in S-128. See 7.13

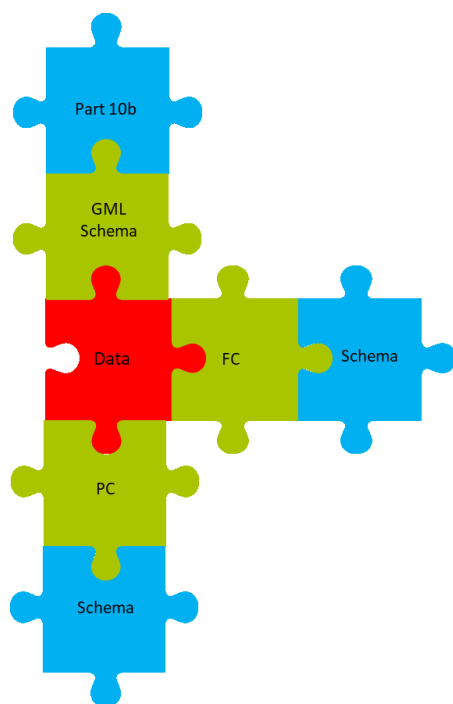
<sup>11</sup> See 7.15

with Dual Fuel mode has many more processes within it, such as for data ingest, installation, system configuration and use than existing S-57 ECDIS. These may require more extensive specification in the component IHO standards. In particular IHO S-98 and its Annex C (being incorporated into S-100 edition 5.0.0) provides a location for much of the ECDIS functionality not directly related to data content.

### 2.6.2. Format Verification on S-100 ECDIS

One important by-product of the extensive use of formal schemas for machine readable files is the ability to validate the syntax and content of data and catalogues imported to the ECDIS, providing a basic level of sanity checking for data and configuration information<sup>12</sup>

Detailed validation of data delivered to end users through the global distribution chain (including RENCs, VARs and direct channels) will continue and, due to the introduction of multiple products, is likely to include cross-product validation (between S-57 and S-101 and between other S-XXX products and S-57/S-101)



S-100 ECDIS machine-readable files are, generally, XML based with a defined syntax encapsulated in schemas (derived from the S-100 provisions).

These schemas enable the ECDIS to read and validate in an unambiguous way the configuration files loaded to it. The Schemas defined by the S-100 Framework (and defined by each edition of S-100) should therefore be considered a component of the S-100 ECDIS<sup>13</sup>.

The diagram illustrates this concept. The interlocking jigsaw pieces represent data, catalogues and schemas where compatibility is required at a format and/or content level. The Red piece represents a dataset instance of a product specification dataset (here encoded using S-100's Part 10b GML encoding).

The Green elements (Feature Catalogue and Portrayal Catalogue) are XML files (defined in the S-100 product specification and released by IHO) which configure the S-100 ECDIS' actions in respect of the dataset. This implements the IHO's "Plug and Play" concept for the S-100 ECDIS, its dynamic approach to feature content, portrayal

and behaviour.

The Blue pieces are schemas defined by IHO S-100 and form part of the OEMs ECDIS implementation. These are not part of the plug and play mechanisms (i.e. there is no intention of making them interchangeable on an ECDIS). Indeed, any updates to such schemas would require bespoke engineering from the OEM implementer – this should be part of communications with implementing OEMs to future proof ECDIS manufacture as much as possible<sup>14</sup>.

Red and Green pieces are delivered to the ECDIS in the S-100 Exchange Set (itself described in S-100 Part 4a), the Blue pieces are used to ensure the delivered data and any catalogues or machine-readable files are well-defined in terms of their syntax. It should also be noted that the

<sup>12</sup> This is NOT the same as data validation as currently defined in IHO S-58 (and under development for various S-100 product specifications. This is validation of the syntax of data presented to the ECDIS and provides a powerful mechanism for establishing its basic correctness.

<sup>13</sup> This implies an S-100 ECDIS will embed the XML Schema files for e.g. feature catalogue, portrayal catalog and CATALOG.XML within its processing systems. Delivery of updates to these schemas is not specified within S-100, nor the effects any such updates might have. Updates to these schemas will be managed by the IHO revision control process – it is likely any updates to such schemas may require changes to S-100 ECDIS processing systems.

<sup>14</sup> See 7.12

following points follow as a direct consequence of the machine readable nature of such files in the S-100 ECDIS.

1. Feature Catalogue and GML Schemas represent the same data structure. GML Schemas may contain restrictions on the GML format data tighter than any imposed in the Feature Catalogue. Their prime purpose though is to allow easy off-the-shelf format validation.
2. Validating Feature Catalogues against data is not always an XML validation as data may have GML, HDF5 or ISO8211 formats. For GML, data syntax may be checked against the GML Schema (and its conformance with the Part 10b components), HDF5 and ISO8211 data require bespoke syntax checks to be carried out on the ECDIS prior to data ingest to the SENC. These are, as yet, unspecified and should be distinguished from detailed data validation such as IHO S-58. A basic sanity check against feature catalogue names, types and multiplicities would seem appropriate on ECDIS prior to import but this is not yet specified, nor part of the ECDIS operating model.
3. Feature and Portrayal Catalogues are constant for a single revision of a product specification. So, in practice most exchange sets will only include datasets, not portrayal/feature catalogues and the validation of such catalogues against the S-100 schemas (Blue pieces) is only required when they are installed or updated.

The requirement to support “updating” of machine-readable files defines a requirement for the S-100 ECDIS to support (at least) two versions of feature and portrayal catalogues (and their use on the ECDIS). This allows for the ECDIS to update catalogues, and receive new editions of datasets as they are released by producers. In all cases, the IHO HSSC and its working groups will coordinate the update and release of all machine readable files, schemas in close cooperation with the S-100 ECDIS stakeholders and user community – this group of stakeholders is likely to be an extension of the current community around the S-57 ECDIS but, as noted by participants, will require fresh approaches to ensure close technical interworking because of the dynamic nature of S-100 ECDIS and the complexity of the S-100 ECDIS.

## 2.7. Regulatory status of data in S-100 ECDIS

IMO will mandate a continued need for all navigation materials (whether Nautical chart or Nautical Publications) to be up-to-date. Currently this functionality is provided by the revision information held in metadata delivered to the ECDIS and service metadata delivered (in the form of the S-63 PRODUCTS.TXT). This allows the ECDIS to update those datasets which have been delivered and check that all installed datasets continue to be up-to-date.

When a user has multiple S-100 datasets installed and is using them for primary navigation, whether for planning or monitoring then carriage compliance states they must all be up-to-date, using the S-100 mechanism for establishing revision status (S-128).

IHO standards contain, within S-98 Annex C, the ECDIS update status reports, for Nautical charts and Nautical publications which record the up-to-date status of all S-100 datasets installed, using exchange set S-128 data.

To avoid potentially conflicting views of the revision status of charts in Dual Fuel mode, the S-128 data also includes service metadata for S-57 charts<sup>15</sup>. Hence the user must keep all S-100 and S-57 datasets up to date in respect of the S-128 delivered alongside any exchange sets to remain carriage compliant.

S-101 and S-57 are sufficient for carriage compliance under SOLAS and form a minimum requirement. States may wish to place additional requirements on vessels and enforce such restrictions using port state control inspections.

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<sup>15</sup> S-128 is currently incomplete. See 7.11

### 3. The Rationale for Dual Fuel

In order to take advantage of the new S-100 framework, a product specification to represent electronic navigational charts (ENCs) has been developed, IHO S-101. This product specification is intended to replace, in time, IHO S-57 Appendix B.1.

In order to transition to the use of S-100 exclusively (in the context of navigational data) on ECDIS used on the bridges of commercial SOLAS vessels, there is a need to go through a period of transition where:

1. Data producers will migrate their existing tools and methodologies to produce:
  - a. S-100 versions of existing S-57 charts (using the S-101 product specification).
  - b. Optionally, other datasets conforming to S-100 product specifications.
2. Distributors will adapt their networks to accommodate S-100 data.
3. OEMs will construct systems capable of using S-100.
4. Users will be educated and informed of the new capabilities.

In order to effect the transition to the use of S-101 electronic charts (and solely in the context of electronic charts rather than the broader considerations introduced by nautical publications) in the most efficient manner a “Dual Fuel mode” of S-100 ECDIS has been proposed. This mode of operation for the S-100 ECDIS will enable the ECDIS to use ENCs in both S-57 and S-101 forms. The operation of the ECDIS in respect of chart data will be split between the two forms of chart data. This split will extend to all areas of ECDIS functionality, including:

1. Data Ingest.
2. All portrayal.
3. ECDIS operations including Alarms/Indications.

This timeline is illustrated in the following diagram:

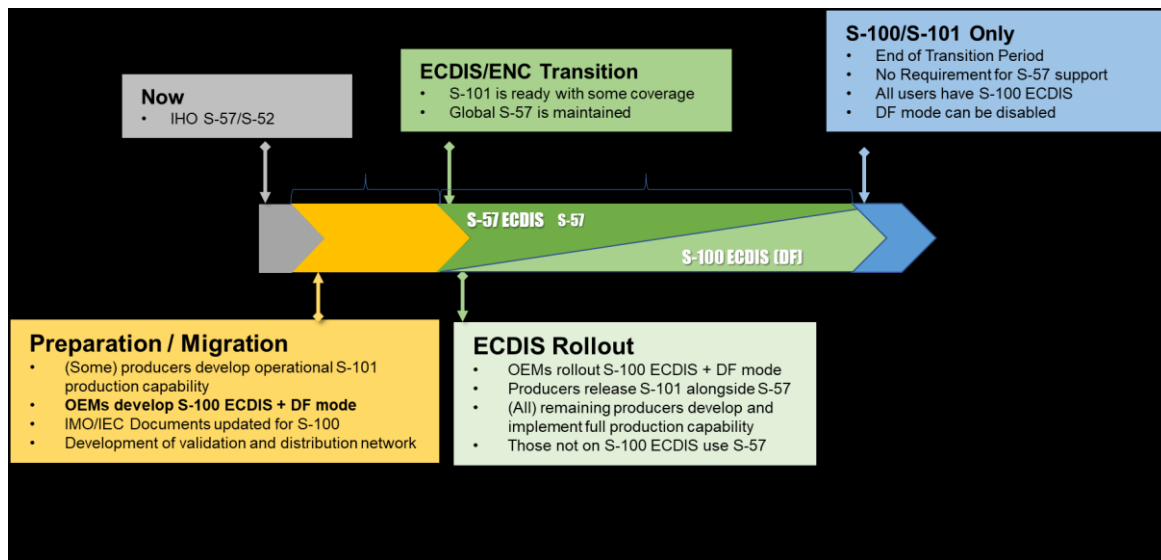


Figure 3: S-100 and S-100 ECDIS Dual Fuel Mode timeline

#### 3.1. The consequences of not introducing Dual Fuel

If a Dual Fuel approach to S-100 transition is not taken then S-100 ECDIS would be “S-100-only” on introduction to the market. This would then mean that either :

1. S-100 ECDIS could not begin rollout until ALL data producers had established 100% co-production of S-57 and S-101 ENCs.



OR

2. A “perfect” conversion mechanism was developed for S-57 ENC to S-101 (or vice versa). This 1-1 conversion could be implemented by distributors or even on the S-100 ECDIS itself enabling safe, forward compatible conversion for the emerging S-100 ECDIS.

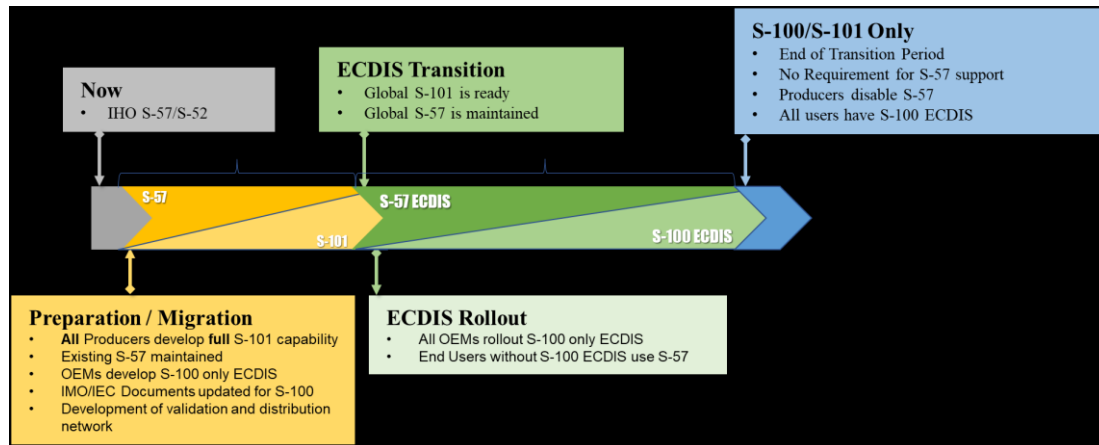


Figure 4: Timeline with No Dual Fuel sf="Single Fuel"

Option 1 entails a substantial delay in rollout of S-100 ECDIS to the end user and (potentially years) of production by hydrographic offices of both S-57 and S-101 whilst awaiting complete transition by all ENC producers.

Option 2, therefore, presents a possible alternative approach. However, the models driving each ENC type differ significantly in their foundations and in the arrangement of feature/attribute bindings between them. Although a number of processes can be automated, no explicit defined

process currently exists which covers the scope of all ENC charts and without ambiguity and which are suitable for co-production for all data producers globally. Additionally, the production of converting incremental updates is (currently) unresolved. More details on this aspect of the Dual Fuel rationale and current thinking on transition for data producers is contained in section 5.3.

So the rationale of Dual Fuel Mode as the means of delivering transition from S-57 to S-101 charts is that<sup>16</sup>:

- Option 2, the challenge of converting ENC charts from the S-57 form to the new S-101 form, is simply not perfect nor complete.
- Option 1, waiting until all data producers have fully transitioned to S-101 entails delays for both data producers and OEMs (as well as end users).

Within the Dual Fuel mode of ECDIS during the transition period, ingest and update should be carried out as harmonised operations and S-100 Part 17 contains an arrangement of S-57 and S-100 exchange sets in a harmonised structure. S-98 Annex C contains any specific guidance required for Dual Fuel operations and S-164 contains test data with representative examples of hybrid exchange sets in this form.

Existing S-52 portrayal and ECDIS behaviour in respect of S-57 charts is unaffected by Dual Fuel mode. Dual Fuel mode is a requirement for both chart types to be supported within an integrated form in S-100 ECDIS for the entirety of the transition period to S-101.

<sup>16</sup> Whether these scenarios, timelines and risks should be mapped in more detail remains an open question. These scenarios present only the essential points and it is not known whether a more comprehensive survey of costs and times has been done elsewhere.

During the transition period, and when acting in Dual Fuel mode the ECDIS continues to be suitable for primary navigation and satisfies the SOLAS carriage requirement. As they transition to S-101 across their source data, existing ENC producers will continue to produce and maintain S-57 data to support those users still using non S-100 ECDIS until all users have fully transitioned to S-100<sup>17</sup>.

**4. Operation of S-100 ECDIS in Dual Fuel Mode**

It is important to note that the Dual Fuel mode of S-100 ECDIS only relates to the operation of the S-100 ECDIS in relation to electronic charts, ENCs, not to its operation in relation to any other S-100 product specification nor the S-100 ECDIS’ potential to meet carriage requirement for nautical publications. The specification, therefore, of how S-100 ECDIS Dual Fuel mode works is purely within those boundaries.

**4.1. The Original Dual Fuel concept**

Dual Fuel Mode was originally proposed in a paper to IMO NCSR7. The justifications for Dual Fuel (expanded on in this document in Section 3) were summarised and the statements below included to provide a broad definition of how the Dual Fuel transition was to take place.

20. In order to maintain ECDIS devices already installed on SOLAS vessels which are technically not ready nor required to be upgraded to S-101 ENC compatibility, and to comply with the applicable IMO regulations pertaining to existing navigation equipment, identical coverage will be provided for S-57 ENCs and S-101 ENCs for a transition period until there is no significant number of legacy systems in the field and all ECDIS in operation have become S-101 compatible. This situation is expected near the end of the decade, but will be continuously monitored to enable a decision to be made by the responsible IMO body.

21. As a consequence, new ECDIS systems to be brought into the market at the time when S-101 ENC coverage starts (2024) will have to be capable to process both transfer standard formats: S-57 ENCs and S-101 ENCs.

22. Safety of navigation will be maintained by cartographic content of both S-57 and S-101 standards. From the user’s perspective, presentation of cartographic and functional features to meet the IMO mandated content in a mixed environment of S-57 ENCs and S-101 ENCs in one ECDIS device will be seamless and presented under the identical presentation regime for charted features and navigational objects.

**Figure 5: IHO Paper to NCSR**

The following clarifications are defined in this Governance Document of the statements made in this paper:

[20]: “identical coverage”	Coverage of S-57 will continue to be provided in addition to the new S-101 form to ensure vessels without S-100 ECDIS are able to navigate safely and ensure carriage compliance. “Identical” coverage does not require identical spatial extent of individual ENCs or equal Compilation Scale/Maximum Display Scale of ENCs, nor does it imply identical feature content <sup>18</sup> . It does, however, imply coverage is at least as safe and appropriate, however.
[20]: timescales	All timescales are provisional and are driven by IMO processes for update of the IMO Performance Standard, associated testing standards and satisfactory publication of all dependent IHO standards.

<sup>17</sup> See also 7.10

<sup>18</sup> The exact requirements for data producer “scheming” (extents and scales) will be partly dependent on the outputs of S-101 developments on loading strategy and ENC conversion. Certainly “spatially equivalent” production is an option (arguably the most simple) but many producers may wish to combine S-101 migration with rescheming and rationalisation of multiple compilation scales. As specifications conclude these requirements will be taken into account. At the time of writing it is not possible to provide any best practice. See also 7.4.

<p>[22]: seamless</p> <p>[22]: identical presentation regime</p>	<p>The presentation regime will not be completely identical. Indeed the presentation of S-101 charts is driven through the portrayal catalogue developed for S-101 data and is therefore subject to change.</p> <p>Development of the S-101 Portrayal Catalogue will take into account the need to maintain a portrayal which is sympathetic to the existing portrayal, and which minimises confusion caused to the end user by modification of existing portrayal and introduction of new portrayal.</p> <p>However long-standing improvements to existing portrayal will be implemented in the first release(s) of the S-101 portrayal catalogue and so some differences will exist.</p> <p>All changes to portrayal of S-101 data will be driven by IHO HSSC Working Groups and the need to thoroughly test and account for training and education in the end user community will be an essential part of the update process.</p>
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Unstated in the original paper is the operation of the ECDIS in respect of the IMO Performance Standard. This can be viewed in the same way: the original principle was that S-100 ECDIS is “at least as safe as” the existing S-57 based ECDIS.

In essence, the only differences to alarm/indication and anti-grounding under the IMO sections (MSC232.(82)11.4.3 and 11.4.6) are either

1. Those conditions which have been withdrawn because of remodeling of S-101 data and which are captured in the S-101 DCEG.
2. Improvements due to User selected safety contour and (optionally) WLA processing, as specified in S-98 Annex C.

In summary.

- [1] Every alarm/indication generated by S-101 data on an S-100 ECDIS should also generate an alarm/indication on an S-57 ECDIS using the corresponding S-57 “version” of the data.
- [2] S-57 data (under Dual Fuel mode) may generate more alarms/indications than the S-101 version of the data. These “extra” alarms generated by S-57 data are those which the S-101 data modelling has concluded as “not required” under the S-100 regime.
- [3] Additionally, the Water Level Adjustment feature of S-100 ECDIS will alter the placement of safety contour elements and anti-grounding behaviour in areas where S-102 (and S-104) data coincide with ENC chart areas. The User selected safety contour and Water Level Adjustment processes drafted in S-98 Annex C will result in the suppression of the S-101 ENC Depth Areas, Dredged Areas and Depth Contours (in the area of overlap between S-101 and S-102 (and S-104 for full Water Level Adjustment). So, alarms/indications for depth-related features will be significantly improved, and therefore different to those generated by the S-57 data alone.

Alarm/indication behaviour will always be predicated on the principle that the S-100 ECDIS is “no less safe” than an S-57 ECDIS. Similar to the portrayal regime, though, this does not preclude differences between the two modes constituting Dual Fuel operations. Expanding this principle (and bearing in mind the ENC conversion observations made in section 5.3)

In all cases, however the S-101 chart is “at least as safe” as the corresponding S-57 chart. This is because all alarms/indications generated by the S-57 chart are either reproduced in the S-101

chart [1], dropped because they do not represent IMO specified real-world conditions for an alarm/indication [2] or improved upon [3].

**4.2. The mechanisms of Dual Fuel**

Dual Fuel Mode is the operation of the S-100 ECDIS under both the existing S-57 regime and also using the OEM’s implemented support for the S-100 framework. As data producers transition production to full S-101 coverage, existing source databases (the content of which drive current production of operational ENC data) will be migrated to support fully the production of ENCs implementing the data model of S-101<sup>19</sup>.

As cells are completed and ready data producers will release, progressively:

1. New S-101 versions of ENC coverage for S-100 ECDIS.
2. Fully maintained S-57 “versions” of ENC coverage for users of ECDIS which are only capable of S-57 ingest or where S-101 versions are not yet available.

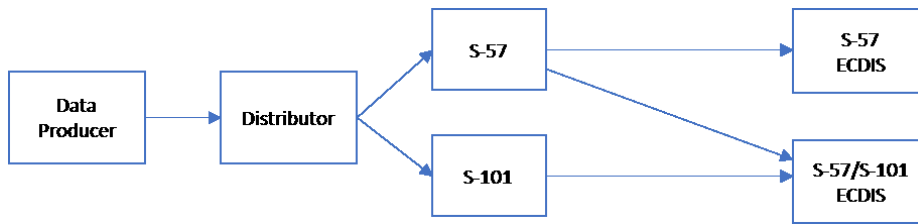


Figure 6: Example distribution of data to S-57 ECDIS and S-100/S-57 ECDIS (DF Mode)

These cells must all be updated according to SOLAS requirements. There are currently a number of distribution models globally which deal with the transport of data from aggregators or producers to the ECDIS itself. Some of these models are “selective” where only data specific to a customer arrives at the ECDIS, and some are “complete”, where all data within a service is packaged and the ECDIS selects only the products required (and, usually, licenced/purchased as part of a subscription) for installation to the SENC. The selective model is far more complex in nature and evolved over a number of years as the desire for tailoring of offerings and the optimisation of online capacity on vessels increased the value of only accessing selected products. Extending such selective models to S-100 ECDIS will add another level of complexity to the distribution process. The basic equivalence between S-57 and S-101 ENCs will give selective access for chart data a firm foundation, even if those equivalents have different scales and/or geographic coverage<sup>20</sup>.

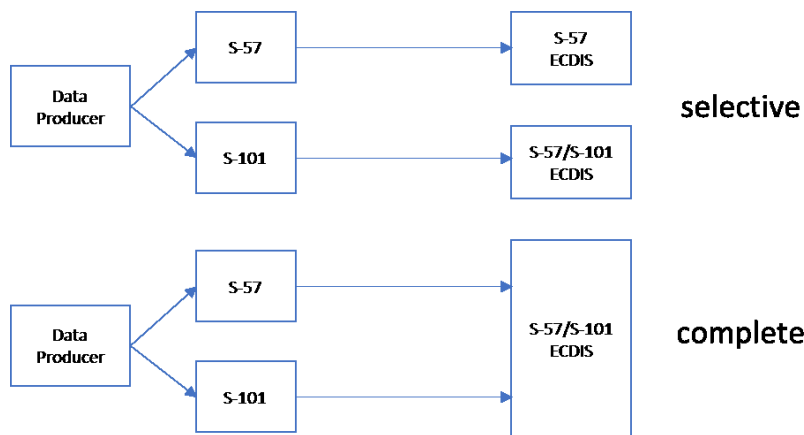


Figure 7: Complete Distribution vs Selective Distribution

<sup>19</sup> Noting that ENC coproduction strategies are still under development. See 7.4

<sup>20</sup> See 7.13 particularly the clarification of equivalent versions of ENCs.

The S-100 ECDIS is therefore likely to be presented with a situation where both S-57 and S-101 “versions<sup>21</sup>” of a producer dataset are able to be selected and installed. In this situation, S-98 defines a presumption of the installation and use of the S-101 “version” of the dataset in preference to the S-57 version. There is no requirement for only the S-101 version to be installed/used and it has been proposed by some OEMs that an “S-57 only model” may be useful for some users in some areas where S-101 coverage is sparse. Distribution models will almost certainly evolve where only a single “version” of a cell is delivered to the ECDIS depending on its model/version and ability to ingest S-101 data. This cannot be guaranteed, though, and a formal mechanism for identifying equivalent cells and resolving such overlaps is therefore necessary.

This is in contrast to the existing model of S-57 ECDIS where only a single “version” of the ENC is ever delivered (along with its updates). The S-57 ECDIS then imports all data it is licenced for and installs it in the SENC, summarised in the following table.

	S-57	S-100 ECDIS in Dual Fuel Mode
<b>Data Packaging</b>	Anything (S-57/S-63)	Anything (Hybrid Exchange Set, Part 17 Metadata defines S-57/S-100 combined contents)
<b>Data Ingest</b>	Everything (licenced, S-63)	Must install at least S-101 version if available, may install both if “S-57 mode” is required.
<b>Selection from SENC</b>	All Installed data	Largest Scale with Preference for S-101 where scales are equal.
<b>Use</b>	S-52/OEM	Portrayal

S-57 ENCs continue to be valid and meet carriage requirements even when S-101 versions exist. The ECDIS is only required to use one version of the definitive ENC for a given region and scale and not split or integrate two versions together – where there is any ambiguity the user is consulted and chooses which to use (the methodology in existing ECDIS for dealing with overlaps within the same usage band). Both S-57 and S-101 ENCs will continue to satisfy carriage compliance and there are no issues for the end user for inspection purposes. Additionally, as both S-57 and S-101 remain suitable for carriage, all data (when installed in the SENC) must be kept up-to-date in line with SOLAS.

The Part 4a Metadata of S-100 Edition 5.0.0 (onwards) contains a detailed specification for combined exchange sets containing S-57 and S-100 product specification data alongside catalogues including optional encryption and authentication mechanisms. These are illustrated in the following diagram.

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<sup>21</sup> This “version” mechanism is not defined in the standards yet. See

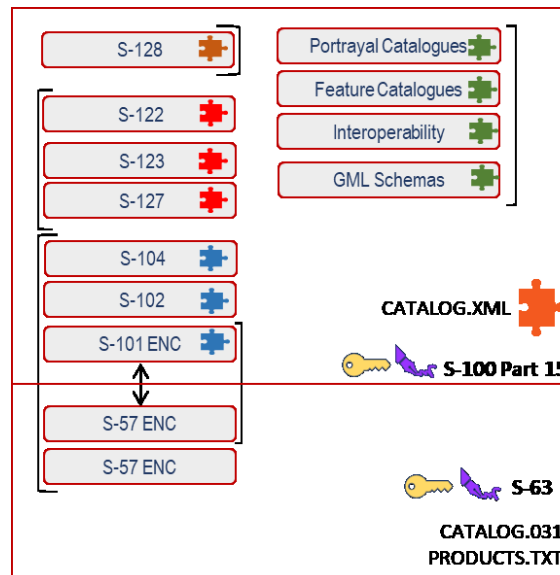


Figure 8: The S-100 hybrid exchange set

The diagram shows a number of S-100 datasets conforming to individual product specifications (with individual colourings for groups of product specifications and metadata), bundled with relevant feature and portrayal catalogues. S-100 Part 15 permits for any encrypted data and digital signatures for all elements are also included. The S-100 elements are alongside existing S-57 folder structures for exchange sets and the existing S-63 data protection and authentication mechanisms.

Once installed in the S-100 ECDIS, SENC datasets for Dual Fuel mode are selected for use in ECDIS portrayal and operations. The largest scale of data in the SENC continues to be used where necessary for alerts/indications under MSC/232 (82)<sup>22</sup>. S-98 Annex C defines in more detail any specific operations relating to Dual Fuel presentation including how portrayal overlaps are resolved. This is an ongoing development<sup>23</sup>, indeed S-98 Annex C provides a good repository for crucial details required by the OEM for detailed implementation over and above what is in the detailed standards.

The OEM implements the existing S-57 regime for ECDIS usage alongside S-100 (the standards defining these are included in section 6.1, this extends to all existing content in S-57, S-52 and subject to the testing regimes defined in S-64. In terms of the actual implementation of Dual Fuel, few implementation barriers still exist.

Many ECDIS have had harmonised portrayal of raster and unofficial vector along with overlays such as AML alongside official ENC for many years. The S-101/S-57 Dual Fuel adds a number of complexities to these early implementations as it “substitutes” one official product for another (existing raster and unofficial vector mechanisms are all designed to supplement official products with unofficial ones). The dual-fuel mode does represent a brand new concept, therefore, even though it references these older technologies. The difficulty of its implementation should not be underestimated. Key to this “substitution” is development of a combined loading strategy for both chart products, the identification of “chart” products (as opposed to other S-100 product specifications) and an equivalence relation between the two different types. From these firm foundations a Dual Fuel mode can be implemented, without them it is difficult to see how it can be developed.

Establishing the loading strategy for S-101 ENCs will improve the definition of how Dual Fuel mode behaves for the user and also deliver the remaining guidance required for data producers to understand how their ENCs (in both forms) will be used by S-100 ECDIS.

<sup>22</sup> Scale equivalence between S-101 and S-57 is not defined yet See 7.2

<sup>23</sup> See 7.3

No current process for phasing out S-57 ECDIS nor S-57 ENC's has yet been planned in detail. As S-101 coverage grows and becomes dominant a more detailed phasing out will be planned, alongside any required clarifications in IMO resolutions or IEC documentation<sup>24</sup>.

## 5. Support by the IHO community

### 5.1. OEM implementation of S-100

The OEM is responsible for implementation of S-100 within the ECDIS. Here, the term “OEM” is used as to refer to the entity which “manufactures” the ECDIS itself. It should be noted this also includes the community of ECDIS “kernel” manufacturers who, in many cases, take on a substantial amount of the implementation of the core functionality relating to implementation of IHO standards. So, ECDIS implementation can refer to implementation of IHO standards by ECDIS manufacturers, both those using 3<sup>rd</sup> party kernels and those who implement themselves. Support to the OEM community must also take into account support to the kernel community even though they are not ultimately responsible for ECDIS creation.

Contrary to existing S-57, OEM implementation is expected to manage not only the initial IHO product specifications for electronic charts and closely allied datasets, but also products conforming to numerous specifications currently under development.

It is impossible to predict the detail of future product specifications for S-100 ECDIS, but the overall scope shall be defined as that which is necessary to satisfy discharge of international obligations under the SOLAS convention. The authority to define what constitutes the content of such obligations are the IHO ECDIS standards, and IHO will maintain a set of normative standards and allied machine readable catalogues which describe the component product specifications.

An essential component of the IHO's support to the S-100 community (specifically OEMs and kernel manufacturers) is the provision of comprehensive test datasets (under S-164) which exercise all parts of S-100 required for ECDIS implementation and which express any significant “edge cases”. The test datasets must implement not just ECDIS data but exercise the ECDIS functionality required for its update and configuration in respect of S-100's machine readable files.

The OEM must, therefore, implement all parts of S-100 described by the S-164 test datasets. All other elements of S-100 not included in the test datasets but which are required shall be highlighted by the IHO<sup>25</sup>. All test datasets will be referenced to the versions of the product specifications against which they are valid. When product specifications or their component catalogues are updated, test datasets will be revised and published (see 5.2)

The introduction of S-100 to the ECDIS presupposes an extremely close working and technical relationship between the IHO and the ECDIS OEM community. How this is to be formulated and maintained is ongoing, see 7.6 but is likely to require more resources given the large increase in scope of S-100 implementation (for multiple products) and the requirements of Dual Fuel mode.

### 5.2. Revisions of IHO standards and product specifications

As stated in the previous section, the IHO will maintain the definitive list of current and historical revisions to all IHO standards and product specifications required for S-100 ECDIS. IHO will maintain revision processes for all component standards relating to S-100 ECDIS (and will maintain existing S-57 standards to support existing ENC's during the transition period).

IHO will also maintain revision processes for all component machine readable files relevant to S-100 ECDIS construction and testing. These are:

- 1) Feature Catalogues.
- 2) Portrayal Catalogues.

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<sup>24</sup> See 7.10

<sup>25</sup> Still to be defined. See 7.7

- 3) Interoperability Catalogues.
- 4) S-100 Schemas for:
  - a) Exchange Catalogue.
  - b) Data Protection Permits and Signatures.

IHO will maintain a definitive, open and accessible repository of all machine readable files. One of the core aims of S-100 ECDIS is the provision of a system for its dynamic update by the end user. The S-100 ECDIS therefore, must be capable of supporting multiple revisions of individual product specifications and the machine readable files which control their portrayal and ECDIS behaviour.

As updating is required functionality under IMO, functionality to support a minimum of two versions is mandatory for all product specifications with no maximum currently defined<sup>26</sup>. S-100 ECDIS must provide, within its core functionality, the ability to import new revisions of machine readable files (feature catalogue, portrayal catalogue and interoperability catalogues) relating to the product specifications, and then ingest data conforming to the new versions alongside the previous version(s). No data migration or update functionality in respect to different versions is required within the S-100 ECDIS. Such update processes are specified in S-98 with specific examples in S-164 test datasets including trapping of errors and incompatibilities. Rollout processes for changing of individual feature catalogue and/or portrayal catalogue versions have yet not been mapped out yet. A more detailed view of the ECDIS operating model<sup>27</sup> would show how data producers are impacted from (potentially) multiple versions of data specifications and their rollout to end users.

The IHO has the authority to set standards in relation to data content and portrayal and this extends to the revision control of machine readable files in relation to ECDIS and their ability to control portrayal and ECDIS behaviour. It is for the IHO (at a level to be defined) to develop, test, release and approve and distribute all machine readable files relating to ECDIS to the ECDIS community.

IHO, together with representatives from stakeholder groups and broader standards bodies will ensure coherence of portrayal and behaviour on ECDIS, particularly during the transition period. As yet no formal set of procedures exist, other than IHO revision processes. In particular, no industry/IMO liaison “approval” process or criteria currently exists. The initial release of IHO S-101 and its feature/portrayal catalogues will require communication with end users (and the broader ECDIS community) describing the differences it contains. Portrayal and alarm/indication behaviour will obviously require precise definition and potentially resource implications could be better managed if specific criteria can bound the extent of portrayal changes between S-57 and S-101.

As stated in Section 4.1 it is accepted that the presentation regime of the S-101 component of Dual Fuel ECDIS will not be “identical” but will contain a number of differences. This is obviously a crucial point in relation to the introduction of S-100 ECDIS and requires broad considerations including user education, risk assessments and sustained, comprehensive testing. As stated here IHO remains the authority for the eventual rollout and coherence of content which will be used during the transition period through the activities of the responsible working groups<sup>28</sup>.

IHO will also maintain S-100 itself. There is no requirement for ECDIS to maintain multiple versions of S-100 although this is not defined anywhere currently. How minor changes or clarifications to S-100 schemas (e.g. Feature Catalogue or Portrayal Catalogue schemas) are achieved is similarly undefined as yet. The initial version of S-100 for S-100 ECDIS will be edition 5.0.0 and all component product specifications will require publication current with edition 5.0.0 for inclusion in S-100 functionality<sup>29</sup>. Part of the definition of S-100 ECDIS at the outset should

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<sup>26</sup> The exact number may remain undefined but S-164 will contain a representative testing sample.

<sup>27</sup> See 7.15

<sup>28</sup> See 7.11 and 7.8

<sup>29</sup> See 7.11



be a vision of how/whether versions of S-100 itself are expected to develop and how this is to be accomplished with the ECDIS OEMs. This also has impacts on data producers as any changes to S-100 could lead to a situation where data producers would need to provide multiple versions of products.

### 5.3. Data Producer impacts and options for co-production

The actions of data producers will determine the use of ECDIS Dual Fuel mode as data producers determine coverage and scheming of data for all products within a defined region (under the WEND100 principles S-100 and its product specifications are brought under international conventions and guidelines).

The IHO S-101PT and ENCWG established a sub working group to examine in detail conversion aspects of ENC's between S-57 and S-101.

This group was tasked to only look at data conversion between S-57 and S-101 in relation to data producers' initial migration to support S-101 production. The group does not look in detail at ongoing production aspects such as updates or co-production of ENC's to support Dual Fuel Operations. This is a key observation as it limits the impact the group's outputs will have on the potential of automated conversion to support ongoing production.

However, the group's activities are relevant to the content of the S-100 ECDIS and Dual Fuel Governance Document as it contributes to the understanding of how the S-101 ENC differs in style and behaviour to the S-57 ENC. Although the group is not finished with its primary task (the production of an IHO guidance document for initial conversion from S-57 to S-101) the following summary points can be made:

- The conversion of data in an S-57 form (in conformance with S-57 Appendix B1, encoded as per the Use of the Object Catalogue and valid according to IHO S-58) to an S-101 equivalent (content defined by the current edition of the S-101 Feature Catalogue and conformant with the S-101 Data Classification and Encoding Guide) is not a simple, complete 1-1 mapping.
- Despite the lack of a complete mapping, much conversion is straightforward and can be achieved automatically without ambiguity. No firm number exists but it is though approximately 80% of existing ENC content can be converted automatically.
- It should be recognised that S-101 represents a much more restricted set of feature/attribute bindings than S-57. A large number of S-57 object/attribute bindings are not valid in the S-101 feature catalogue as a result of a long process of review and update by the relevant IHO working groups.
- S-101 introduces new features, attributes and an enhanced set of named relationships, some of which exist in different forms in the current S-57 and some of which are new to the ENC domain.
- It is highly likely, therefore, that data producers will require a period of initial review of existing data to ensure that the S-101 versions of their ENC's adequately present data to their internal standards and guidance. This should be a process which is only carried out once and may be partly automated and guided by others (e.g. RENCs etc...).
- Conversion tools are at varying stages of production and are likely to offer varying degrees of customisation to the user which will allow tailoring of the conversion process to the individual data producers.
- It is likely that the conversion process will be specific to individual data producers and, while a base process will account for a large proportion of ENC content, most data producers will require some degree of tailoring specific to their needs, policies and

existing data encodings. This does not preclude an automated solution but acknowledges the likelihood of a tailored process for many producers.

- A number of mappings from S-57 to S-101 may require data producer attention post-conversion. These are noted in the guidance document produced by the working group. Some could be significant, depending on individual producers. Some items may be addressed by one-time configuration of conversion tools, if supported. Much work remains to be done to support data producers with validation tools which will assert conformance with the relevant IHO standards.
- Conversion tool producers, like ECDIS OEMs have a strong requirement for representative, comprehensive test datasets to support development.

The conversion group has not specifically considered automated conversion, nor any issues relating to ongoing co-production of S-57 and S-101 to support Dual Fuel operation or legacy S-57 ECDIS although future projects building on this initial guidance document will look at this area.

In terms of ongoing data production two broad categories of operating model have emerged (with a number of sub-variants).

1. Conversion. In this model, a data producer produces either S-57 or S-101 data exclusively. A post-extraction automated process (possibly combined with manual inputs) converts data into one or other form. So, a data producer produces S-57 and converts to S-101 to support Dual Fuel or produces S-101 and backwards converts data to S-57.
2. Co-production. In this model a production system uses a superset model (effectively aggregating the S-57 UOC and the S-101 feature catalogue/DCEG) to extract both S-57 and S-101 data from a single production system.

Example conversion models are shown in the following diagram<sup>30</sup>. The diagrams show a data producer at the top producing data for use by S-57 or S-101 ECDIS users (the figures at the bottom).

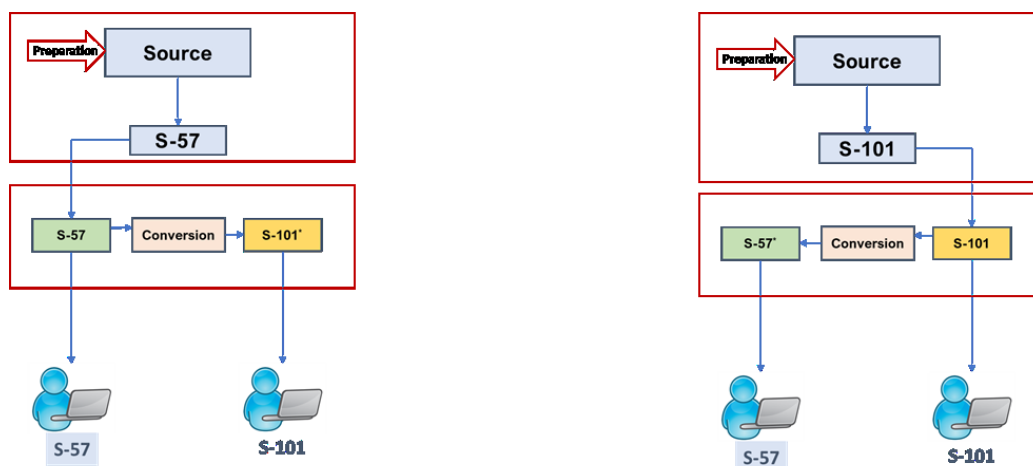


Figure 9: Co-production by Conversion

<sup>30</sup> The model left out is one where the data producer simply sets up parallel production facilities, producing base and incremental updates from separate systems (fed with the same information). This is undoubtedly an option but for many data producers would result in a significant overhead of maintenance and migration long term during the transition period and is therefore untenable.

In the conversion model, ongoing daily/weekly ENC production is carried out and either S-57 or S-101 data is output, including updates. In this model the other form (S-57 for an S-101 production system or S-101 for an S-57 production system) required is acquired by use of a conversion tool with a (probably) producer-specific set of transformation parameters, including replication of updates. This allows the data producer to produce both ENC types with the advantage of only directly maintaining one type.

A co-production model is illustrated in the diagram below, in this scenario a combined model directly produces both S-57 and S-101 and their incremental updates.

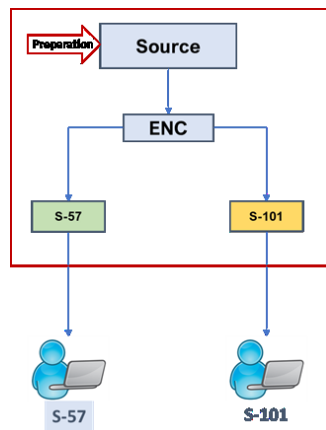


Figure 10: Co-production by a combined model

In terms of ENC Scheming and scales there are no mandatory constraints on chart production and coverage and producers may choose S-57 Compilation Scale and S-101 Maximum Display Scale as they see fit. The overall requirement of adequate coverage for all types of ECDIS will dictate the answers to many of these questions and if an “equivalence” is established to aid the ECDIS in chart selection in Dual Fuel mode this is likely to provide more freedoms between S-57 and S-101 versions of chart schemes. This work is ongoing with the initial conversion guidance in progress in the IHO sub-working group and an IHO R&D Lab project proposed for its testing<sup>31</sup>. Much of the detail of S-101 and its production alongside S-57 is clear with the S-101 data model well advanced.

As noted in the next subsection the co-production of ENC does raise questions of validation between ENCs (in addition to the requirement for validation of S-101 to the same rigour as IHO S-58). This would be more acute in a “conversion” production environment as the producer is dis-associated from one of the end products and has no means to directly encode its features/attributes – ensuring coherence for the end user would be crucial in such a scenario and would likely require cross-product validation.

#### 5.4. Data Producer impacts from other product specifications

As stated earlier in this document the product of “other” product specifications is not the main focus of this Governance Document as its main emphasis is use of both S-57 and S-101 ENC in Dual Fuel mode on the S-100 ECDIS. If a data producer wishes to produce S-100 products other than S-101 ENC then the same considerations as S-101 exist.

<sup>31</sup> See 7.4

- 1) Liability. If a data producer wishes to provide data for use in primary navigation on SOLAS vessels, which will be integrated into the ECDIS SENC and portrayed using harmonised S-98 mechanisms then it inevitably will attract liability in the same way as production/issuing of ENC charts does. Such risk assessments should be carried out by individual data producers. The WEND100 principles should be referred to here as well.
- 2) Up-to-datedness. As with S-101 and S-57 ENCs data must be kept up to date by the end user on the S-100 ECDIS and there is a corresponding responsibility on the data producer to keep data up to date and available for distribution to the end user.
- 3) Validation. Correctness of form (syntax, format, types) is essential always in any data and detailed validation (as defined by IHO S-58 for ENCs) will evolve for all product specifications.

Validation will likely extend across different products to ensure they integrate on the S-100 ECDIS as expected and, if different product specifications represent the same features that their semantic and geographic representations do not conflict. These inter-product validation tests are currently undefined<sup>32</sup>.

The current model for S-100 ECDIS operation allows any S-100 product specification to overlay any chart product. This does not restrict in any way the producer of overlay products in relation to the ENC type they may be installed with. If the OEM provides compatibility this would also allow (by not explicitly prohibiting in the standards) S-1XX product specifications to overlay S-57 data. This has provoked much discussion in the preparation of the Governance Document and has obvious relevance to WEND100 principles. The enhanced Part 15 of S-100 could potentially allow a technical means for enforcing WEND100 principles. During testing of S-98 1.0.0 such enhancements could be drafted in addition to the evolving conventions and agreements which underpin data production for the future<sup>33</sup>.

## 6. Annex: Component Standards and support

### 6.1. Component IHO Standards for ECDIS

### 6.2. S-100 and S-57 Standards comparison

This informative subsection tabulates the broad equivalence of the different components of the existing S-57 regime with standards defined for use in implementation of S-100 ECDIS.

S-57 ECDIS definitions	S-100 Definitions
S-57 Main Document Geometry Feature Structure	S-100 Part 7 Part 3 Part 4a
S-57 Appendix B1 (ENC Product Specification)	S-101 product specification S-101 Feature Catalogue S-101 Portrayal Catalogue [Some features also relocated to Other product specifications]
S-57 Objects and Attributes (and bindings)	Registry (Hydro) encapsulated in Feature Catalogue(s).
CATALOG.031	Part 4a CATALOG.XML and Schema

<sup>32</sup> See 7.16

<sup>33</sup> See 7.6

S-52 . dai file	Portrayal Catalogue
S-52 CSP	Part 9 and Portrayal Catalogue
S-52 ECDIS elements	S-98 Annex C
S-63 and Data Protection Scheme	S-100 Part 15 S-98 SSE Codes S-98 ECDIS Update Status Report IHO Processes for data protection scheme S-128 (Update Status reports)
S-64	S-164 (under development)
S-58	S-158 (under development)
S-62	IHO registry
S-57 Use of the Object Catalogue	DCEG S-101 S-101 Feature Catalogue

### 6.3. S-100 standards

The following table specifies where elements of the S-100 ECDIS functionality is to be located in the S-100 standards and IHO community. Where elements are machine-readable a note describing their defining schema/format is given.

Functionality	Clarifying remarks	Standard/Section/Schema
Data content structure	All product specifications	Feature Catalogue XML Schema
Data Content	GML Encodings	Product specification GML Schema, Part 10b Schemas.
Portrayal Catalogue		Portrayal Catalogue XML Schema
CATALOG.XML	Data ingest	S-100 Catalogue Schema
Interoperability		Interoperability Catalogue Schema
ENC Data Content	ISO 8211	
Exchange Set	File Structure	Part 17 metadata
Revision information	For data services, includes data not contained in CATALOG.XML	S-128 (GML)
Data Loading		S-98
HDF5		S-100 Part 10c
GML		S-100 Part 10b Individual product specification GML Schemas
ISO8211		S-100 Part 10a
Feature Geometry		S-100 Part 7 (levels of topology)
Data content and structure		S-100 General Feature Model
Data Portrayal		S-100 Part 9 (portrayal of features) S-98 Annex C (supplemental portrayal) S-98 (interoperability between product specifications)
Data Security/Integrity and Ingest processes		S-100 Part 15 (Data Security and Integrity) S-98 Annex C (SSE codes and processes for data and catalogue ingest) IHO Data Protection Scheme
Exchange set structure		S-100 Part 17 Exchange Set metadata and structure.  CATALOG.XML (XML Schema)

A description of each of the functional areas of ECDIS operation are detailed below along with the normative standards which define them.

### **Data Production**

1. IHO S-100 GFM Part 3, General Structure of all data. This references other parts of S-100, notably Part 1.
2. S-97 Guidelines for product specification developers.
3. S-100 Part 5 – Feature Catalogues, guided by product specification DCEG documentation which mirror the content of the IHO geospatial registry (Part Y). These encapsulate the S-100 GFM, geometry and metadata (Part 4a). Portrayal Catalogues also are highly relevant to enable producers to understand how end users will experience their data.
4. One or more of the S-100 encodings, ISO8211 (Part 10a), GML (Part 10b), HDF5 (Part 10c). These may also use supplementary files in a number of formats enumerated in Part 17 Metadata.
5. Metadata (Part 4).

### **Packaging**

1. S-100 Part 15 for the digital signature and optional encryption of data. This uses the AES encryption algorithm, DSA digital signature algorithm and ZIP for compression of exchange set entities.
2. Use of the IHO Data Protection Scheme for authentication of data and packaging of contents.
3. Part 17 Metadata for description of metadata content and packaging of data, together with S-57 elements in “hybrid” exchange sets.

### **Distribution**

1. No formal methodologies for distribution of data to ECDIS are currently in operation (for Dual Fuel operation). S-100 also contains a non-normative part 14 which details the exchange of data via API. This is likely to be revised and expanded and other (external) frameworks such as SECOM may enable API access to ECDIS for S-100 data. AIS Application Specific Messages are also included in this category of data which some product specifications may implement.
2. S-100 Part 15 is used to reconcile data when delivered to the end user, by reference to the scheme administrator certificate installed independently on the ECDIS.

### **Data Ingest on ECDIS**

1. Ingest of Catalogues require the individual S-100 part in which they are defined, Part 17, Part 9 and Part 16.
2. Basic syntax checking of catalogues and versions can be done by XML conformance to the schemas defined by S-100.
3. S-98 Annex C deals with some aspects of the data management and ingest, flow diagrams for decryption and authentication of digital signatures prior to ingest.
4. ECDIS implementation of Part 17 metadata, Part 15 and its implementation of the GFM, metadata, geometry and data encodings will ensure ingest of data to the ECDIS.

### **Use**

1. Implementation of product specifications’ portrayal catalogue - Portrayal – S-100 Part 9.
2. Aspects of portrayal not directly connected to portrayal of data – S-98 Annex C.
3. Interoperability of product specifications – S-98 Annex C.

4. Loading Strategy and Portrayal/Use of data in Dual Fuel mode – S-98 Annex C.
5. ECDIS Update Status Reports – S-98 Annex C, Appendix B.
6. User Selected Safety Contour and Water Level Adjustment – S-98 Annex C, Appendix C.

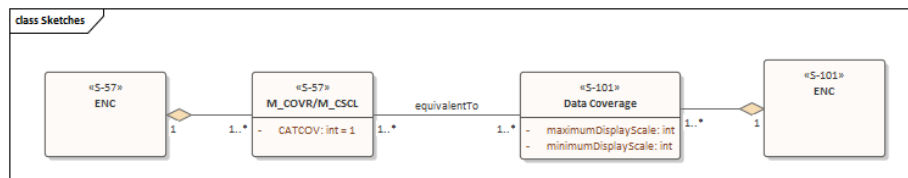
## 7. Annex 2: Summary of identified gaps

This section lists gaps in the current S-100 support, whether within the established standards base or conceptual gaps which require attention to complete the implementation of S-100 and Dual Fuel mode on the ECDIS. Where possible, approaches to filling such gaps has been suggested. All gaps listed in this section have been discussed in the workshops defining the Governance Document. The consequences of not addressing these gaps will be ambiguity in S-100 ECDIS definition leading to possibly erroneous or unintended functionality on S-100 ECDIS. There is a consequent impact on the S-100 ECDIS user experience with the possibility of ECDIS anomalies arising.

### 7.1. Dataset Equivalents.

No comprehensive and complete versioning mechanism currently exists between S-57 and S-101 Charts. This is a complex area because of the structural differences in coverage between S-57 and S-101, and the way coverage is implemented by the ECDIS loading strategy. It is an issue which may require thorough discussion to establish the optimal way forward. During the transition period all producing authorities will be releasing ENC's in both S-57 and S-101 forms. There will, hence, be  $\geq 2$  "versions" of each ENC dataset for any area. Although this relationship is not 1-1 and equivalence undoubtedly exists and there is nowhere in the S-100 hybrid exchange set mechanism to define it.

Moreover, for maximum flexibility for data producers the equivalence is between S-57 M\_COVR/M\_CSCL features and S-101 DataCoverage features with a many to many relationship.



This lack of equivalence currently defines an area of ambiguity when a hybrid exchange set contains S-57 and S-101 which overlap and may be close in scale. A "versioning" mechanism which defines such a many-to-many relationship between the components of S-101 cells and S-57 cells would remove this ambiguity and enable ECDIS to make clear choices about which data to install (or which data to select from the SENC for its operations). It would also give the data producer more choices of scale and scheming when migrating ENC data holdings from S-57 to S-101.

Such a change necessarily involves referring to both S-57 and S-101 so probably does not belong in any of the S-100 component standards. If a lower level of granularity is settled on (at a cell level rather than a coverage feature level) then the solution is a lot simpler and could be defined either in S-98 or the S-128 product specification both of which are in development. The impacts for data producers on scheming can then be defined accordingly.

A recent meeting of the data loading subgroup has concluded that all coverage features are to be loaded and simultaneously as a single entity. This establishes the "dataset" as the granular element of equivalence and, if agreed, will substantially simplify the task of specifying equivalence between cells.

## 7.2. Revision of applicable IMO Documentation

The IMO PS requires updating to include S-100 as the foundation for ECDIS operation. This has been instigated and the IHO component standards to be referenced are now at version 1.0.0 or later. S-100 Edition 5.0.0 will be the baseline for compatibility with S-100 ECDIS. In particular the equivalence of the S-100 ECDIS for Nautical Publications is not explicit and will also need to be more properly defined as the IMO PS is revised. Following this revision, the relevant testing standards require revision. This is a large undertaking and will also need to ensure that testing for the existing S-57 regime can remain in place (should updates be required).

## 7.3. Loading Strategy

“Loading Strategy” – the mechanism by which individual datasets are selected for portrayal and rendered on screen using the S-100 Part 9 portrayal engine, is still the subject of intense discussion. This is closely related to **Error! Reference source not found.** and its conclusion will provide a normative method for equating scales between datasets and/or selecting datasets for portrayal from those installed in the ECDIS. Defining a consistent loading strategy for the S-100 ECDIS will also implicitly define whether S-101 or S-57 “versions” of a cell are made available to the end user and whether different datasets are presented “overlaid” or “side by side”. This discussion is ongoing and will result in a definition of loading strategy for the S-101 product specification with likely consequences for S-98 edition 2.0.0.

## 7.4. ENC Co-production Strategies

The S-57 to S-101 conversion subgroup, set up jointly between the ENCWG and S-101PT is preparing a document recommending guidance for initial conversion of ENC holdings to forms capable of producing S-101 ENCs. There are also many other research activities in operation globally.

There is currently nowhere in scope of IHO working groups an investigation on the optimum method of producing S-57 and S-101 cells on an ongoing basis for data producers and no automated methods for conversion of S-57 incremental updates. This may be addressed in part by the IHO R&D Lab project proposal which will look at the issue in conjunction with a test phase of the conversion guidance document.

## 7.5. Scope of implementation for OEMs

There is currently no guidance for OEMs with regard to which parts of S-100 require implementation for S-100 ECDIS. Certainly, all clauses required for S-101 and the other initial S-100 product specifications would be required. Conversely, it is also difficult to define which areas of S-100 are definitely NOT required for S-100 ECDIS implementation.

The current approach from the S-100 WG is to demonstrate by example what is required by the creation of extensive and comprehensive test data under IHO S-164. This approach requires consultation with the OEM community and could be enhanced with clarifications on particular areas if required. It does pose challenges though, especially for early adopters who are without representative test data nor a detailed description of scope.

## 7.6. S-100 product specification overlays on ENC

Discussions around S-100 ECDIS have touched on the topic of whether S-100 products other than ENCs (those in categories (2) and (3) defined in section 2.5) overlay just S-100 ENCs or whether they can also overlay or interoperate with S-57 ENCs as well. This is a topic of specific interest in relation to S-102/S-57 but also has been discussed in relation to other S-1XX products. Additionally, whether WEND100 principles should be “enforced” on the S-100 ECDIS through Part 15 implementations expressed in S-98 Annex C should be discussed within the IHO community as the technical possibility exists. At an early stage of ECDIS development it is possible to make such constraints but once ECDIS is developed it will be unlikely to change.

Such requirements have never existed on S-57 ECDIS because no concept of overlays being used for SOLAS navigation existed. This requires further discussion and an approach defined in (most likely) S-98 with OEMs being given definitive guidance either way.



### 7.7. Support to the external communities (including test data provision)

One of the items which has become clear from the workshops driving the creation of the Governance Document is the scope and complexity required between the IHO and the implementers of S-100 ECDIS. The complexity of the S-100 ecosystem is considerably greater than that surrounding S-57 and all parties/stakeholders will require support to ensure coherence of produced data with ECDIS implementations is maintained. In order to best support OEMs, testers, data producers, regulators and other implementers of S-100, an, open access, scalable infrastructure will be required long term.

A known gap is certainly test data within S-164, which tests the entirety of the S-100 framework as well as test data to test validation specifications. This isn't technically a "gap" as what needs to be done is well known in the community but it is currently a large deficiency which risks the planned implementation timescales and holds up progress by implementers and testbed developers. It is therefore included here as its production is likely to lead to further requirements and change within S-100 and its component product specifications destined for S-100 ECDIS.

### 7.8. Impacts of Enhanced ECDIS functionality

Features introduced in the S-98 Annex C v1.0.0 include "User Selected Safety Contour" and "Water Level Adjustment". This is an OEM-specific portrayal and Alert/Indication implementation which provides algorithms for a tight integration between S-101 and either/both S-102 and S-104. Implementation is similar to functionality required by interoperability levels 3 and 4 (which are explicitly excluded for ECDIS implementation) but is, for the purposes of S-100 ECDIS, implemented as a bespoke OEM extension to the required S-100 model implementation.

These features are likely to be accompanied by a number of impacts on data producers. The implementation of such features is a major step forward for ECDIS functionality and those data producers who choose to distribute dense bathymetry and water level data to end users are likely to need to evaluate such impacts. These include:

1. The Liability acquired concerning use of S-102 and S-104 for navigation decisions.
2. Cross product validation.
3. Up to datedness issues – the user must keep the S-102 / S-104 up-to-date in the same way as the S-101 data.
4. Extents and coverage decisions to maximise use and ensure coherent portrayal of data for the end user.

None of these are insurmountable problems but they represent a new category of consideration with attendant governance issues for any implementing data producer in the S-100 era. Feedback from user testing will be required to ensure the concept is well understood by the mariner.

### 7.9. How many revisions of product specifications are required to be supported by OEMs?

Section 5.2 details the requirement for S-100 ECDIS to support multiple versions of IHO product specifications but little in the way of tangible requirements or implementation details currently exist for this important aspect of the dynamic S-100 ECDIS. Clearly at least two versions are required to be supported by the ECDIS to enable the most basic of updates by the end user and data migration by data producers but the exact number (per product specification) and process for their introduction/migration has yet to be defined.

This is closely linked to the comments made in 2.6.1, the S-100 ECDIS "operating model" and suggests that a more complete picture of how the ECDIS operates should be established (as a summary of the processes defined in S-98, S-164 and the IMO PS) and maintained. Certainly the S-98 Annex C v1.0.0 contains some of this information and comprehensive test datasets will contribute to better understanding but some detailed modelling of scenarios (similar to that proposed in 7.12) would support OEM implementation better at this crucial stage of development.

### 7.10. Phasing out S-57

No formal description, timescale or sequence of events has yet been put forward for how S-57 is actually phased out at the end of the transition period. There are likely to be a substantial number of external dependencies to this process. The timescales are, of course, unknown, as yet and likely to be some time in the future. If more revisions are likely to be required, e.g. subsequent changes to either SOLAS or the IMO PS for ECDIS then this should be noted for future reference.

### 7.11. Impact of Changes to ENC on the end user

Initial rollout of S-101 ENCs is likely to release a number of changes in portrayal and, via remodeling, alerts/indications. There is no defined process to establish whether such changes should be included or not and for their impacts to be communicated to end users and data producers. Some initial steps have been taken in this area and, although IHO ultimately has the authority to make such changes, through promulgation of new feature and portrayal catalogues, no bounding set of guidance currently exists to arbitrate these decisions. This should be addressed as it could potentially reduce the amount of effort/resource necessary to meet planned timescales for S-100 ECDIS implementation.

### 7.12. How to update S-100 itself

Procedures for updates of S-100 will require development, ideally before mainstream implementation of S-100 is commenced by the OEM community. Procedures for update of S-57 and other component standards already exist within the IHO community but S-100 is such a far-reaching standard with its elements embedded in the S-100 ECDIS that greater support is likely to be required, greater consultation and testing required and the attendant update of component product specifications likely to need attention from the working groups concerned. Modelling such scenarios (along with end of life for S-57) should be done prior to more work on ECDIS implementation taking place so that OEMs can be aware of how such migration is likely to take place.

### 7.13. S-128 development

The S-128 data model is still at an early stage of development with v1.0.0 to be approved by NIPWG. S-128 has been identified as crucial for reliable exchange of S-100 exchange catalogues between service providers and end users for two main purposes:

1. The specification of revision information for a user's service which determines the content of the revised Update Status reports on the ECDIS (contained in S-63 and S-98 Annex C).
2. Mapping of equivalent "versions" of ENCs, should such equivalence be established as part of the conclusion of the loading strategy discussions currently underway.

S-128, ultimately, fulfils the goal of "service metadata" for S-100 ECDIS and each service provider will need to develop compatibility with it in order to present a full service to end users and to satisfy requirements for ECDIS update status reports to satisfy inspection regimes. Lack of a mature S-128 product specification will impact the ability of ECDIS to fulfill SOLAS compliance in respect of tracking update status and management of updates and equivalents under Dual Fuel mode.

### 7.14. Categorisation of product specifications

In section 2.5 a categorisation of individual product specifications has been proposed. In order to clarify within IHO standards, and for external users there is a need to clarify which of the three categories proposed each IHO product specification falls within. Additionally, in order to provide clarity through IMO requirements, a mapping of IHO project specifications to nautical publications is required. This is not necessarily 1-1 but should state which IHO product specifications map to which category of SOLAS nautical publications so that a firm equivalence can be established between paper and digital products. IHO is able to make such a mapping. This may also require clarity at IMO level to make it clear to end users and inspectors. There is a clear rationale behind the use of ECDIS to satisfy carriage requirements for nautical publications.

### 7.15. The S-100 ECDIS Operating Model

A complete operating model for S-100 ECDIS is not completely defined. Gaps exist in how the ECDIS is defined at a detailed level in some areas (e.g. dual fuel operations), and at a high level in others (loading, revision, syntax/schema checking/validation).

Some of these gaps will be addressed by S-164 test data illustrating test cases and IEC61174 will define exact test scenarios for some parts of the ECDIS functionality. S-98 Annex C version 1.0.0 contains a definitive list of ECDIS error codes (SSE) inherited from IHO S-63 which define some parts of how the ECDIS is to operate but this is likely to require update and clarification as S-98 is tested.

Data Producer impacts stemming from ECDIS operation should be maintained for IHO stakeholders to assess impacts of proposed changes (and how migration to new versions of product specifications can be achieved).

### 7.16. Inter-product validation concept or tests are not developed.

Currently no tests exist to validate whether datasets intended for integrated use on S-100 ECDIS are compatible with each other. In addition no process for their development across different IHO project teams exist. Such tests are a natural consequence of S-100's multiple product specification approach and should be a part of the detailed implementation roadmap towards an integrated operating model under S-100.

## 8. Glossary of Terms.

Acronym	Definition
S-100	Universal Hydrographic Data Model
ECDIS	Electronic Chart Display and Information System
IHO	International Hydrographic Organization
OEM	Original Equipment Manufacturer
IMO	International Maritime Organization
ENC	Electronic Navigational Chart
RENC	Regional ENC Coordination Centre
RHC	Regional Hydrographic Commissions
IEC	International Electrotechnical Commission
SOLAS	Safety of Life at Sea Regulations
IMO PS	IMO Performance Standard
ENP	Electronic Nautical Publications
ISO 8211	ISO/IEC 8211:1994 Information technology — Specification for a data descriptive file for information interchange
HDF5	Hierarchical Data Format
GML	Geography Markup Language
ISO 19115	Geographic information — Metadata — Part 1: Fundamentals
XML	Extensible Markup Language
UML	Unified Modelling Language
ISO	International Organization for Standardization
ISO191XX	ISO Series of Geographic Information Standards
IEHG	Inland ENC Harmonization Group
IHO HSSC WGs	International Hydrographic Organization Hydrographic Services and Standards Committee Working Groups
VARs	Value Added Resellers

FC	Feature Catalogue
PC	Portrayal Catalogue
SENC	System Electronic Navigation Chart
DF mode	Dual Fuel mode
IMO NCSR	International Maritime Organization Sub Committee on Navigation Communications and Search and Rescue
DCEG	IHO Data Classification and Encoding Guide
WLA	Water Level Adjustment
AML	Additonal Military Layers
WEND	IHO Worldwide ENC Database
IHO S-101PT	IHO S-101 Project Team
IHO ENCWG	IHO ENC Working Group
S-57 UOC	IHO S-57 Use of Object Catalogue
IHO R&D Lab	IHO-Singapore Innovation & Technology Laboratory
S-52 CSP	Conditional Symbology Procedure
S-98/S-63 SSE Codes	Standardised Service Error Codes
GFM	General Feature Model
AES Encryption	Advanced Encryption Standard
DSA	Digital Signature Algorithm
API	Application Programming Interface
SECOM	Secure Electronic Communications (IMO eNavigation group)
AIS	Automatic Identification System
S-100 WG	IHO S-100 Working Group

Standards	Definition
S-52	IHO Specifications for Chart Content and Display Aspects of ECDIS
S-57	IHO Transfer Standard for Digital Hydrographic Data
S-32	IHO Hydrographic Dictionary
S-61	IHO Product Specification for Raster Navigational Charts
S-63	IHO Data Protection Scheme
S-64	IHO Test Data Sets for ECDIS
S-97	IHO Guidelines for Creating S-100 Product Specifications
S-98	IHO Data Product Interoperability in S-100 Navigation Systems
S-100	IHO Universal Hydrographic Data Model
S-101	IHO ENC Product Specification
S-102	IHO Bathymetric Surface Product Specifications
S-104	IHO Water Level Information for Surface Navigation
S-111	IHO Surface Currents
S-122	IHO Marine Protected Areas
S-123	IHO Marine Radio Services
S-124	IHO Navigational Warnings
S-126	IHO Marine Physical Environment
S-127	IHO Marine Traffic Management

S-128	IHO Catalogue of Nautical Products
S-129	IHO Under Keel Clearance Management
S-131	IHO Marine Harbour Infrastructure
S-164	IHO Test Data Sets for S-100 ECDIS
S-401	IEHG Inland ENC

<b>Terminology</b>	
Dual Fuel	Use of S-57 and S-101 ENCs together on an ECDIS
IMO Performance Standard	IMO MSC 232.(82): defines required functionality of ECDIS to conform to SOLAS convention.
MSC.232(82)	IMO Resolution 'Adoption of the Revised Performance Standards for Electronic Chart Display and Information Systems (ECDIS)'
IEC 61174:2015	Maritime navigation and radiocommunication equipments and systems - Electronic chart display and information system (ECDIS) - Operational and performance requirements, methods of testing and required test results
IHO Product Specification	An S-100 based Product Specification defines a data product, and usually includes additional resources such as a machine readable Feature Catalogue and Portrayal Catalogue, a data Encoding Guide and at least one data encoding format
Nautical Publications	Publications for use in safe navigation of ships, boats and similar products
Nautical Chart or chart	“a special-purpose map or book, or a specially compiled database from which such a map or book is derived, that is issued officially by or on the authority of a Government, authorized Hydrographic Office or other relevant government institution and is designed to meet the requirements of marine navigation” [SOLAS Ch5 Reg2]
Plug and Play concept	The ability to add new functionality without requiring system update
CATALOG.XML	An XML catalog is an XML document that assigns locations to a file
Feature Catalogue	Structure and Content of an IHO product specification. Usually drawn from entries in the IHO geospatial registry.
Portrayal Catalogue	Instructions for portrayal of S-100 product specifications, conformant with S-100 Part 9.
PRODUCTS.TXT	S-63 service revision file.
WEND100 Principles	IHO principles ensuring a world-wide consistent level of high-quality, updated official nautical and hydrographic S-100 based products is available and support SOLAS and other IMO requirements



Proposal n°	Object of the Proposal	Submitted by	Reference
<a href="#">2.2</a>	Establishment of an S-100 Infra Center to support the implementation of S-100	Republic of Korea	2

**Brazil**

Brazil supports this proposal.

**CANADA**

Canada supports the general idea of the proposal, and thanks the Republic of Korea for taking this initiative. It is recognized that the IHO has a responsibility to provide support to all Member States so that no one is left behind in the migration to S-100.

However, it is suggested that HSSC the review this proposal further, perhaps via a project team, to solidify the scope of its work and the standard operating procedures of such a Center.

For example, is the purpose of this proposal to provide more support and structure to the IHO Geospatial Information Registry and help ensure its long-term sustainability? How will the work of the Center relate to, or intersect with existing bodies such as the S-100 Working Group and the IHO-Singapore Innovation and Technology Laboratory?

This additional information and detail would help inform Council (C7) as to the utility of the Center in terms of how it would support the S-100 framework and how it would operate on an ongoing basis.

**FRANCE**

France recognizes the need for a permanent, sustainable and operational structure to support the implementation and maintenance of the S-100 standard in the long term and therefore approves the establishment of a project team under the HSSC to define its precise objectives and organization. As the geospatial information register is held by the IHO and managed by the Secretariat, the project team should closely involve the Secretariat.

**ITALY**

In order to leave no one behind, Italy supports the creation of any structure able to develop the capacity and capability of Member States to make the S-100 framework operational.

**JAPAN**

Japan understands the significance of an S-100 Infra Center and generally supports this proposal. However, we believe that establishment and running costs of the center should not strain the IHO's budget and/or contribution shares of each Member State, as IHO faces to some budgetary challenges such as the small amount of the IHO capacity building fund.

**PORTUGAL**

Portugal needs a better clarification on this subject in order to have any decision.

**SWEDEN**

Sweden recognizes the need to establish a stable structure for a sustainable management of the framework for S-100. Therefore, Sweden supports the proposal from the Republic of Korea to form a project team under HSSC with the aim to propose a robust organizational structure.

Sweden proposes that HSSC, based on the outcome of the project team, should propose how such an organization can be established by the Council. Subsequently it should be the Council that reports to the IHO Assembly 4 for a possible approval by IHO Member States.

**UNITED KINGDOM**

The United Kingdom thanks the Republic of Korea for this proposal. The United Kingdom would wish to better understand the purpose of this facility, the outcomes it seeks to realize, the funding model and the Member States governance of it. The United Kingdom is not able to support this proposal currently and would recommend that the IHO Secretariat retains responsibility for S-100 development at this very important moment in implementation.

**UNITED STATES OF AMERICA**

The United States supports the need to consider how the IHO S-100 infrastructure will be run and maintained.

**SECRETARY-GENERAL`S RESPONSE TO MEMBER STATES COMMENTS**

The Secretariat thanks the Republic of Korea for this proposal, but recommends that a more detailed governance model is provided (investments, operational costs, staffing, in kind-contribution) to assess the possible impact on the IHO Budget 2024-2026 and the organizational effects for the working groups under supervision of HSSC and IRCC.



**PRO-2.2 Establishment of an S-100 Infra Center to support the implementation of S-100**

**Submitted by: Republic of Korea**

**References:**

- A. Decisions No. 32 to 36 of C-6: Roadmap for the S-100 Implementation Decade (2020 – 2030)
- B. HSSC14-10B INF Establishment of an S-100 Infra Center for supporting the implementation of S-100

With the main transition period from S-57 ENC's and nautical publications to S-100 Universal Hydrographic Data Model only a few years away, we need to run the elements that are fundamental for maintaining S-100 standards at a stable level for the successful implementation of the IHO S-100 Roadmap. This paper proposes the need to establish an S-100 Infra Center (tentative name) that is required to support the framework for S-100 implementation mainly the maintenance of the S-100 GI Registry and its associated components; and the consequently expected outcome and the specifics of its establishment.

**PROPOSAL**

**The Assembly is invited**

- a) **to recognize the need to establish the S-100 Infra Center and approve the foundation of a new Project Team under HSSC with a three-year work plan including the establishment of the S-100 Infra Center to prepare for the actual implementation period with consideration of the possible location of the Center.**
- b) **to request the HSSC to propose to the Council how a S-100 Infra Center could support the S-100 framework.**
- c) **the potential Project Team to report to the 4th IHO Assembly the progress of its three-year operation including the establishment of the S-100 Infra Center.**

**EXPLANATORY NOTE**

1. IMO MSC106 approved S-100 ECDIS performance standard drafted by the IHO and other related stakeholders on 11 November 2022. S-100 ECDIS will be legal to use after 1 January 2026 and from 1 January 2029. The new systems must comply with the IMO Resolution on ECDIS Performance Standards. (MSC.530(106))
2. IHO has commitments towards the IMO and other stakeholders to achieve operational status on the prioritized S-100 product specifications and substantial coverage of S-101 and related products by 2026.
3. Due to the nature of S-100 standards, when developing them, some tasks need to be commonly and continuously performed by producers and Member States – namely managing and improving catalogues, managing test datasets, and running a testbed – and they need to be appropriately supported by the IHO Secretariat.
4. Changes to S-100 standards vary – New Editions, revisions, and clarifications – and whenever there is a change to a standard, all the annexes (e.g. data model (application schema), feature catalogue, portrayal catalogue, DCEG, GML schema, test datasets)

need to be changed at the same time, so the workload of maintaining S-100 standards is significant, compared to a single standard S-57 ENC.

5. One of the backbone tools for developing and maintaining S-100 standards is the S-100 Geospatial Information (GI) Registry, run with the support of the Republic of Korea. However, according to a HSSC ISO 9001 Cell risk analysis, the Registry might be vulnerable in terms of sustainable operation. Thus it proposed to establish a Project Team under the HSSC/S-100 Working Group or improve the Arrangement between IHO-KHOA on Technical Cooperation.
6. In order to support the successful transition to S-100 by IHO and its Member States according to the S-100 Roadmap, a permanent S-100 Infra Center is proposed to be established to be able to provide technical support, such as the sustainable operation of the GI Registry system, managing and improving S-100 infra tools, managing S-164 test datasets, supporting documents updates including FC, PC and etc. as per changes to 13 types of S-10X products (New Editions, revisions, clarifications), running a testbed and supporting Member States.

## **OBJECTIVE AND SCOPE**

S-100 Infra Center (tentative name)

### Objectives:

The S-100 Infra Center supports IHO Member States and related stakeholders to transition to the S-100 world stably by managing critical framework of S-100 implementation and guides how S-100 is applied to the future industry of hydrography. Furthermore, the Infra Center supports the IHO community to collect the series of S-100 products and services in cooperation with other domains such as IALA as Aids to Navigation, WMO as weather information, and IEC as route monitoring to build an S-100 as a whole.

### Scope:

- a) Maintain the IHO GI Registry system according to S-100, and provide technical assistance in prompt and efficient manner.
- b) Maintain S-100 Infra Tools and provide trainings and/or technical support for IHO committees and/or participants engaged in the development of S-100 standards.
- c) Support the production and update of S-100 Catalogues (Feature Catalogue, Portrayal Catalogue) and Schema in line with S-100 and its product specifications.
- d) Support the production and maintenance of S-164 test datasets and manage them.

## **STRUCTURE AND COMPOSITION**

7. To provide leadership and set the direction for the S-100 Infra Center, it will be managed by a General Manager (GM) and a Technical Advisory Board (TAB). The TAB will be composed of an IHO Technical Director, Chair of the Hydrographic Services and Standards Committee (HSSC), Chair of S-100WG, and one representative with administrative and technical expertise nominated by the host country, among who is to be appointed as the chair of the TAB. The host country recommends candidates for the GM position to the TAB and TAB approves. Further details for its procedure needs to be discussed at TAB
8. The TAB will endorse a plan for updating and maintaining the S-100 infrastructure system and prioritize technical support for the components of S-10X product specifications. The General Manager maintains an annual work plan of the S-100 Infra Center based on mutual consent with the TAB.

9. The Chair of the TAB assisted by the General Manager reports to the IHO HSSC annually on the work plan, activities, and outcomes, and conducts proposed work with feedback from the HSSC.

### **Key Outcomes**

10. Support the successful performance of the IHO S-100 Implementation Roadmap by supporting the stable operation of the IHO GI Registry and updating the tools for developing S-100 in a timely manner.
11. Support Member States to work efficiently and minimize repeated tasks among different parties through the revision of the components of IHO S-100 product specifications (FC/PC/DCEG/Schema/etc.) and the production and systematic management of S-164 test datasets.
12. Support potential topics in hydrography such as MASS, AI technology and digital twin whose values can be foreseen based on S-101 ENC and related S-100 products.

### **Location Requirements**

S-100 Infra Center could be located in:

13. A Member State which is able to support a minimum of three permanent staff to maintain the IHO GI Registry, equipped with an IT infrastructure capable of remote operation of the GI Registry, management of standards and related documents, and testbed management.
14. A Member State which has a stable network and hardware IT infrastructure also has experience in operating the IHO system
15. A Member State which is able to work close not only with the IHO but also with other potential partners on S-100 development implementation, such as IMO, IALA, and WMO.

### **ACTIONS REQUIRED OF THE ASSEMBLY:**

The Assembly is invited

- a) to recognize the need to establish the S-100 Infra Center and approve the foundation of a new Project Team under HSSC with a three-year work plan including the establishment of the S-100 Infra Center to prepare for the actual implementation period with consideration of the possible location of the Center.
- b) to request the HSSC to propose to the Council how a S-100 Infra Center could support the S-100 framework.
- c) the potential Project Team to report to the 4th IHO Assembly the progress of its three-year operation including the establishment of the S-100 Infra Center.



Proposal n°	Object of the Proposal	Submitted by	Reference
<a href="#">2.3</a>	Future of Digital Charting	United Kingdom	2

**CANADA**

Canada thanks the United Kingdom for bringing forward and endorses this proposal. Canada welcomes this discussion regarding this significant and important segment of electronic chart users and the manufacturers of electronic chart systems (ECSs). This is a segment that has been largely ignored with respect to standardization. However, there is also great opportunity in the sub-ECDIS market as the users and manufacturers tend to be more willing to test out and adopt new products and services. This group will be important partners in the uptake of S-100.

**FRANCE**

The recent reflections on the future of the paper chart and the need to find digital alternatives would benefit from being addressed in a coordinated way between Member States and by measuring the impacts of the orientations decided. However, the high priority that must be given in the coming years to advancing the implementation of the S-100 makes it difficult to address this issue in the short term.

**JAPAN**

Japan supports this proposal.

**PORTUGAL**

Portugal needs a better clarification on this subject in order to have any decision.

**SWEDEN**

S-57 data has been used by the sub-ECDIS market ever since S-57 data became available more than 20 years ago. Nothing will prevent the usage of S-57, S-101 and other S-100 layers by the future sub-ECDIS market. Sweden does not see a need for new supplementary IHO standards, since the existing and new S-100 product specifications will be useful also for the sub-ECDIS market. Considering that IHO in general and HSSC in particular needs to focus on the S-100 implementation Sweden would prefer to wait using resources on a digital alternative solution to paper charts until after 2026 when most of the first priority S-100 products have matured to a first operational edition. A possible way to go forward would be to propose to the IMO that the ECDIS carriage requirements should also include smaller ships, e.g. all ships from 300 gross tonnage similar to carriage requirements for AIS. Such a proposal should preferably come from IMO MS and not from IHO.

**NORWAY**

Norway recognizes the need to address the topic raised by this proposal, how to provide updated digital navigation services to non-ECDIS carriage requirement vessels as we are addressing this with our national maritime authority. On a global scale, a large percentage the ships sailing anywhere in the world, do not require to carry ECDIS. However, if we look at international shipping, this percentage drops significantly. At IHO we need to prioritize standardization (and optimization) of current and future navigation data services for (international) ships that by IMO regulation need to meet the relevant equipment requirements in addition to ensuring interoperability with other marine data sets in order to ensure the widest possible use of hydrographic data. Norway believes that the topic of whether or not non-ECDIS carriage requirement vessels should be subjected to international standards is bigger than to be addressed by a sub-ECDIS project team or working group and should first be addressed by HSSC or Council. Potentially, this topic can be sufficiently addressed on a national level, by primary charting authorities and / or by industry in cooperation with national authorities, as well as being an agenda topic for the various RHC's. With the current commitment of the IHO to the S-100 implementation roadmap and the scarcity of available resources, we all need to be careful of how we wish to prioritize.

**PRO- 2.3            The future of digital charting**

**Submitted by:    United Kingdom**

Supported by:    New Zealand, Australia, Spain

**PROPOSAL**

**The Assembly is invited:**

- to approve the request for the IHO to consider development of supplementary standards to support digital navigation for the sub-ECDIS community.
- to approve the request to task the HSSC to setup a sub-ECDIS Project Team or Working Group to validate the requirement for international standards related to data format, display, encryption, and licencing for those vessels below the mandated ECDIS requirements.
- to approve the request to inform the IMO of the establishment of the sub-ECDIS Project Team or Working Group highlighting the global trend to digital navigation, and if necessary, request the IMO to consider an update to the relevant resolutions.

**EXPLANATORY NOTE**

4.        The mission of the IHO is to create a global environment in which Member States provide adequate and timely hydrographic data, products, and services to ensure the widest possible use.

5.        The IHO Vision is to be the authoritative worldwide hydrographic body which actively engages all coastal and interested States to advance maritime safety and efficiency and which supports the protection and sustainable use of the marine environment.

6.        Every aspect of modern life is now driven by technology. Mariners use global navigation satellite services combined with electronic navigational charts (ENCs) and inertial navigation systems to determine where they are, in near real-time, to centimetric accuracy.

7.        Shipping is steering rapidly towards a future underpinned by digital innovations, enhanced connectivity at sea and optimised data solutions, all of which are bringing about the next generation of navigation.

8.        Development of digital chart production will allow increased focus on advanced digital services that meet the needs of today's seafarers.

9.        Importantly, the past few years have seen a decline in demand for paper charts, driven partly by the SOLAS-mandated transition to ECDIS and by the growing benefits of digital products and services.

10.      As we look to the future, the core purpose remains the safety of shipping activities and delivering the best possible navigation solutions for all users. This is becoming widely recognised that vessels with a single ECDIS or no ECDIS use unregulated electronic products and services for navigation. This growing trend should be of concern to us all and with the development of the new S-100 standards and mobile technology we are now in a position to offer accessible official digital solutions that will increase the safety of navigation for those below the ECDIS mandated sector.

11. Decarbonisation and digitalisation have been dominating the shipping industry in recent years and will continue to dominate in the future: shipping companies seek to reduce emissions and improve operational efficiency through investing in technological tools to forensically monitor their fleet.
12. Shipping companies seek to achieve this through optimisation in the short- and medium-term and using alternative fuels in the long-term. Examples where optimisation will benefit the customer/end user: better voyage planning and execution, post voyage review, reviewing vessel and fleet performance and negotiate better charter party terms.
13. This is very much true for the mandated ECDIS users; however, all Hydrographic Offices recognise this is only a small percentage of the total maritime users.
14. With the transition to S-100 Hydrographic Offices will need to produce many more digital data sets to fully support all the advantages of an S-100 ECDIS. With this increased workload, continuing to support the production of paper charts in a period where they are declining could become an unnecessary distraction.
15. During discussions at the IHO Council 6, several nations expressed concerns over leaving users of paper charts behind, especially those commercial vessel types with either a single ECDIS or no ECDIS who travel internationally.
16. To maximise the use of S-100 data beyond ECDIS the IHO need to ensure that their current standards can be used by all digital devices which will result in increased safety margins and operational optimisation available to all maritime users regardless of vessel size or type.



Proposal n°	Object of the Proposal	Submitted by	Reference
<a href="#">3.1</a>	Amendments to General Regulations, Art. 8.e – Membership of the HCA	IHO Council	3

<b>BRAZIL</b>
Brazil supports this proposal.

<b>CANADA</b>
Canada endorses this proposal.

<b>Finland</b>
Finland supports the proposal.

<b>Germany</b>
Germany supports this proposal.

<b>ITALY</b>
As member of the HCA and the IHO Council, Italy supports the proposal.

<b>JAPAN</b>
Japan supports the proposal.

<b>PORTUGAL</b>
Portugal needs a better clarification on this subject in order to have any decision.

**SWEDEN**

Sweden supports the revision of Article 8(e) of the General Regulations of the IHO.

**UNITED KINGDOM**

The United Kingdom supports this proposal.

**UNITED STATES OF AMERICA**

The United States supports this change and congratulates the HCA for the advancement of the IHO Goal 2 in ways that are open and inclusive of all marine geospatial data holders within the region.

**PRO-3.1 Revision of Clause (e) of Article 8 of the General Regulations of the IHO – Hydrographic Commission on Antarctica (HCA).**

**Submitted by: Council (Secretary-General, as Council Secretary and HCA Chair)**

- References:**
- A. General Regulations of the IHO.
  - B. A-2 PRO 1.1 (paragraph 4) and Decision A2/02 – *Amendments to the General Regulations proposed by Member States, the Council or the Secretary-General.*
  - C. 6<sup>th</sup> Meeting of the Council – Summary Report.

**PROPOSAL**

**Noting the endorsement of this proposal made by the Hydrographic Commission of Antarctica (HCA) by the Council,**

**Noting the Council’s resulting proposal for amendment of the General Regulations of the IHO, the Assembly is invited:**

- to approve the proposed revision of clause (e) of Article 8 of the General Regulations of the IHO;
- to note the possibility now offered to all IHO Member States by the revised HCA Statutes, to become more engaged in HCA activities.

**EXPLANATORY NOTE**

17. In 2020, IHO Member States approved new amendments to IHO Resolution 2/1997 – *Establishment of Regional Hydrographic Commissions (RHC)*.
18. In 2021, the HCA revised its Statutes to ensure a better alignment with the Antarctic Treaty System (ATS), the IHO Resolution 2/1997 as amended; and the IHO Strategic Plan goals and objectives. The revised Statutes of the HCA came into force on May 2022.
19. The IHO Strategic Plan has recognized the broader user community of the data, products and services beyond IHO’s traditional Safety of Navigation customers. The current wording of Art. 8.e of the General Regulations of the IHO, limits full HCA Member status to nations who “...contribute to the IHO INT Chart coverage of Region M” specifically. With the changing data and user environment, and the shift from paper to digital services, including ENCs and other future S-xxx products, this limitation should be modified to allow participation by IHO Member States more broadly.
20. The change proposal to Art. 8.e of the General Regulations of the IHO as provided in Annex, was endorsed at the last Council meeting (Reference C, Decision C6/65) and is now submitted at the 3<sup>rd</sup> Session of the Assembly to IHO Member States for their approval.
21. It is reminded that the Council is entitled to propose amendments to the General Regulations of the IHO for Member States’ approval (Reference B).
22. The Assembly is also invited to note that IHO Member States – event those having no specific charting or S-100 services production responsibilities in Region M - are welcome to contribute more actively in HCA activities.

**Proposed amendments to clause (e) of Article 8 of the General Regulations of the IHO**

*Version in force*

Art. 8 (e): “Full membership is reserved for Member States within the region. In the unique case of the Antarctic region, membership of the Hydrographic Commission on Antarctica (HCA) is reserved for Member States whose governments have acceded to the Antarctic Treaty and contribute resources and/or data to IHO INT Chart coverage of Region M.”

*Proposed version*

Art. 8 (e): “Full membership is reserved for Member States within the region. In the unique case of the Antarctic region, membership of the Hydrographic Commission on Antarctica (HCA) is reserved for Member States whose governments have acceded to the Antarctic Treaty and contribute resources **to the provision of hydrographic data, products and services supporting marine safety of navigation within, and/or the wider marine geospatial information of the Antarctic region.**”

Proposal n°	Object of the Proposal	Submitted by	Reference
<a href="#">3.2</a>	Revised Capacity Building Strategy	IHO Council	3

<b>BRAZIL</b>
Brazil supports this proposal.

<b>CANADA</b>
Canada endorses this proposal.

<b>Finland</b>
Finland supports the proposal.

<b>Germany</b>
Germany supports the revised Capacity Building Strategy.

<b>ITALY</b>
As member of the IHO Council, Italy supports the proposal.

<b>JAPAN</b>
Japan supports the proposal.

<b>PORTUGAL</b>
Portugal endorses this proposal.

**SWEDEN**

Sweden supports the Revised Capacity Building Strategy.

**UNITED KINGDOM**

The United Kingdom approves the capacity building strategy.

**PRO-3.2 Revised Capacity Building Strategy**

**Submitted by: COUNCIL CHAIR**

- References:**
- A. IHO Strategic Plan 2021-2026
  - B. Action IRCC 12/7
  - C. Decision IRCC 14/16
  - D. Decision and Action IHO Council C6/25

**PROPOSAL**

**Noting the endorsement by IRCC and Council, the Assembly is invited:**

- a. To approve and adopt the attached Revised Capacity Building Strategy.**

**EXPLANATORY NOTE**

1. At its second Session, the Assembly approved the revised IHO Strategic Plan 2021-2026 (Reference A / Decision A2/19). In order to evolve the hydrographic support for safety and efficiency of maritime navigation, the IHO Strategic Plan 2021-2026 encourages the use of capacity building and training to develop and increase the ability of IHO Member States to undertake hydrographic surveys and produce hydrographic datasets based on for distribution.
2. In recognition of the on-going transformation in navigation, such as e-navigation, autonomous shipping, reduction of emissions, leading to a profound evolution of hydrographic services, the Inter-Regional Coordination Committee, at its twelfth meeting in 2020, tasked the Capacity Building Sub Committee to revise the Capacity Building Strategy Ed. 2014, in order to be aligned with the IHO Strategic Plan 2021-2026 (Reference B).
3. At its nineteenth inter-sessional meeting, the Capacity Building Sub Committee (CBSC) established an *ad hoc* Project Team to revise the Capacity Building Strategy Ed. 2014 and align it to the IHO Strategic Plan 2021-2026.
4. The Inter-Regional Coordination Committee approved the revised Capacity Building Strategy Ed. 2022 at Annex A presented by the CBSC at its fourteen meeting in 2022, and invited the Council to endorse and forward it to the 3<sup>rd</sup> Session of the IHO Assembly for adoption (Reference C).
5. The 6<sup>th</sup> Council endorsed the proposed revised Capacity Building Strategy Ed. 2022 in Annex A for subsequent submission to the 3<sup>rd</sup> Session of the IHO Assembly for approval and adoption (Reference D).
6. The purpose of the proposed revision of the Capacity Building Strategy was to refine the context and the processes that will lead to improving global hydrographic capability,

capacity, training, science, data management, and techniques. As the IHO Strategic Plan 2021-2026 sets out goals and targets for all work programs of the organization, a number of these goals and targets relate directly or indirectly to capacity building. The Capacity Building Sub-Committee (CBSC), under the direction of the Inter-Regional Coordination Committee (IRCC), is responsible for contributing to the achievement of these goals and the meeting of these targets. Therefore, the Capacity Building Strategy must be executed within the context of the IHO Strategic Plan.

7. The proposed revised Capacity Building Strategy Ed. 2022 and its implementation is in line with the following principles:
  - a. Individual national needs for infrastructure, together with a nation's capacity for infrastructure development;
  - b. Skill and technology transfers must result in solutions which are appropriate and sustainable;
  - c. Wherever possible, capacity building projects should be coordinated regionally and be supported through regional cooperation;
  - d. The national administration of a State with developing hydrographic services must embrace and support the concept of capacity building as being in its national interest;
  - e. 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.
  
8. The revised Capacity Building Strategy identifies a general alignment with the Goals and Targets of the IHO Strategic Plan 2021-2026 plan. It includes statements on mission and vision, a revision and development of the M2 Phases of capability, with the inclusion of a new Phase 0 for Hydrographic Governance, addressed to those Countries do not have a National Authority and/or National Hydrographic Coordinating Committee. Finally, in addition to the existing four step process of Capacity Building (Awareness, Assessment, Analysis, Action), it is recommended to undertake the measurement of effectiveness of Capacity Building assistance through continued monitoring and evaluation.



# INTERNATIONAL HYDROGRAPHIC ORGANIZATION



## IHO Capacity Building Strategy

Edition 2022



Document History

Date	Version	Source	Comments
2021-03-29	0.0	D. Brunt	Initial draft of update to the 2014 version of the CB Strategic Plan
2021-04-06	0.1	CB Strategy Project Team	Incorporation of comments received from PT.
2021-04-07	0.2	CB Strategy Project Team	Incorporation of comments received during the PT meeting.
2021-04-20	0.3	CB Strategy Project Team	Incorporation of comments received after PT meeting



**Preamble**

**Considering** the International Hydrographic Organization (IHO) publication M-2, *The Need for National Hydrographic Services*;

**Considering** paragraph 4 of the Terms of Reference section of the IHO *Inter-Regional Coordination Committee (IRCC) Terms of Reference and Rules of Procedure*; and,

**Considering** paragraph 1 of the Terms of Reference section of the IHO Capacity Building Sub- Committee (CBSC) Terms of Reference and Rules of Procedure;

**Considering** the goals and targets of the IHO Strategic Plan as adopted by the 2<sup>nd</sup> Assembly of the IHO; The CBSC has developed the following Capacity Building Strategy:

## Article 1 - INTRODUCTION

### The IHO and Capacity Building

1. Capacity building is a vital component of the efforts of intergovernmental technical organizations to support the development goals of the United Nations (UN). The IHO is committed to matching its efforts to those of the International Maritime Organization (IMO), the Intergovernmental Oceanographic Commission (IOC), the International Association of Marine Aids to Navigation and Lighthouse Authorities (IALA), the International Federation of Surveyors (FIG) and other organizations working in allied fields.
2. In the IHO, capacity building is defined 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.
3. The 2nd Session of the IHO Assembly approved a new IHO Strategic Plan. The Capacity Building Sub- Committee subsequently stood up a Capacity Building Strategy Project Team (CBSPT) to revise the Capacity Building Strategy (CBS) to ensure that this strategy is consistent with the IHO Strategic Plan.

## Article 2 – CONTEXT

### Purpose

4. The purpose of the Capacity Building Strategy is to define the context and the processes that will lead to improving global hydrographic capability, capacity, training, science, data management, and techniques.

### Vision

5. The vision of the IHO is that its capacity building approach is established and recognized as an effective, reliable and successful programme for achieving the desired level of maturity for a state's hydrographic services.

### Mission

6. The mission of the IHO is to optimally provide all coastal states with the opportunity to develop the capability to establish and maintain the hydrographic products and services required to ensure safe navigation and the sustainable management of marine resources in their waters.

IHO Strategic Plan

7. The IHO Strategic Plan sets out goals and targets for all work programmes of the organization. Some of these goals and targets relate directly or indirectly to capacity building. The Capacity Building Sub- Committee (CBSC) under the direction of the Inter-Regional Coordination Committee (IRCC), will be responsible for contributing to the achievement of these goals and the meeting of these targets. Therefore, the Capacity Building Strategy must be executed within the context of the IHO Strategic Plan.

Table 1.

IHO Strategic Plan Goals, Targets, and Strategic Performance Indicators relating to Capacity Building.

<b>Targets</b>	<b>Strategic Performance Indicator (SPI)-measurement for success</b>	<b>Proposed Lead</b>
<b>Goal 1: Evolving the hydrographic support for safety and efficiency of maritime navigation, undergoing profound transformation</b>		
1.3 Use capacity building and training to develop and increase the ability of Member States to support safety and efficiency of maritime navigation.	1.3.1 Ability and capability of Member States to meet the requirements and delivery phases of the S100 implementation plan (2026: 50%).	IRCC
<b>Goal 2: Increasing the use of hydrographic data for the benefit of society</b>		
2.2 Promote new tools and methods to accelerate and increase coverage, consistency, quality of surveys in poorly surveyed areas.	2.2.1 Percentage of adequately surveyed area per coastal state.	IRCC
2.3 Apply UN shared guiding principles for geospatial information management in order to ensure interoperability and extended use of hydrographic data in combination with other marine- related data.	2.3.1 Number of HOs reporting success applying the principles in their national contexts (2026: 70%).	IRCC

<b>Goal 3: Participating actively in international initiatives related to the knowledge and the sustainable use of the Ocean</b>		
3.1 Collaborate with other bodies who deliver capacity building and training to improve effectiveness of capacity building activities and programmes	3.1.1 Percentage of Coastal States that are capable to provide maritime safety information (MSI) according to the joint IMO/IHO/WMO manual on MSI (2026 90%).	IRCC

United Nations Sustainable Development Goals

8. The United Nations (UN) Sustainable Development Goals (SDG) aspire to address some of the world’s most pressing problems through humane and scientific approaches where knowledge is collected and shared on an equitable basis.
9. For SDG 5: Gender Equity, the IHO Capacity Building Strategy must ensure that all sponsored projects and opportunities are free from gender biases. IHO should activity promote gender equity among Member States, within the Secretariat, and in the governance of the IHO (e.g. committees, working groups, etc.).
10. Very much related to IHO Strategic Goal 2, the IHO must consider how its capacity building efforts are contributing to achieving SDG 14: Life Below Water, which is to conserve and sustainably use the oceans, seas, and marine resources.

Technology

11. Technology continues to develop rapidly in all fields, including hydrography. The IHO must be cognizant of the speed of these changes and be agile enough adjust to the challenges and take advantage of the opportunities that are present in the capacity building environment. The opportunities include the deployment of e-learning, augmented reality, and other learning and teaching techniques to reach larger and more diverse audiences.
12. Challenges include the need for rapid curriculum updating to keep up with technology changes to ensure that the skills taught by programmes today will be relevant in the future. Specifically, hydrographic personnel must be well equipped to work in the realm of S-100, to use of sensors new to hydrographic applications (e.g. satellite derived bathymetry), to capitalizing on citizen science (e.g. crowd-sourced bathymetry), and to work with autonomous survey platforms.

Principles

13. The strategy and its implementation will be consistent with the following principles:
  - a. Individual national needs for infrastructure, together with a nation’s capacity for infrastructure development, should be assessed firmly against the 3 phases of development as defined in M-2 and shown in Figure 1.
  - b. Skill and technology transfers must result in solutions which are appropriate and sustainable.
  - c. Wherever possible, capacity building projects should be coordinated regionally and be supported through regional cooperation.



- d. The national administration of a State with developing hydrographic services must embrace and support the concept of capacity building as being in its national interest. e. 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.
- e. Funding of Non MS is generally limited to technical visits and Phase 1 projects (this will include an overall assessment of the status of hydrography and information of relevant authorities). Exceptions to this have to be reflected against the resources provided, the expected output and the situation in the country.
- f. Funding of equipment shall be limited to those cases, where it is embedded into a comprehensive programme (see Article 3 - PROCESS) requesting such equipment to remain in- country to complete the project, and insuring a sustainable effect and ongoing support. Whenever possible, external funds should be included, taking into account the relatively high costs of equipment and assuring a reasonable cost-benefit-ratio for the improvement of the hydrographic capacity;
- g. Comprehensive programmes (see Chapter 5) may be supported by start-up funds to allow participation in, or preparation of, externally funded projects, especially when substantial additional funds can be expected;
- h. The use of consultants will be permitted if this supports the vision and the objectives of this strategy; and,
- i. CB funds may be allocated for administrative purposes (the amount/percentage to be agreed by the CBSC).

**PHASES OF DEVELOPMENT OF HYDROGRAPHIC SURVEYING AND NAUTICAL CHARTING CAPABILITY**

Phases of Development	National Activity
<p><b>Phase 0</b></p> <p>Unaware of its national obligations</p>	<ul style="list-style-type: none"> <li>• The country does not have a National Authority (NA) and/or National Hydrographic Coordinating Committee (NHCC)</li> <li>• Need to raise maritime awareness</li> <li>• Need to create infrastructure to collect and circulate maritime safety information</li> <li>• Need to strengthen links with NAVAREA Coordinator to enable the promulgation of safety information</li> <li>• Form National Authority (NA) and/or National Hydrographic Coordinating Committee (NHCC)</li> </ul>
<p><b>Phase 1</b></p> <p>Aware of its national obligations but need to improve their processes. Collection and circulation of nautical information, necessary to maintain existing charts and publications up to date</p>	<ul style="list-style-type: none"> <li>• Create/improve current infrastructure to collect and circulate information</li> <li>• Strengthen links with charting authority to enable updating of charts and publications</li> <li>• Minimal training needed</li> <li>• Strengthen links with NAVAREA Coordinator to enable the promulgation of safety information</li> <li>• Keep a National Structure to prevention or mitigation of consequences of marine disasters or climate change</li> </ul>
<p><b>Phase 2</b></p> <p>Creation of a surveying capability to conduct:</p> <ul style="list-style-type: none"> <li>• Coastal projects</li> <li>• Offshore Projects</li> </ul>	<ul style="list-style-type: none"> <li>• Establish capacity to enable surveys of ports and their approaches</li> <li>• Maintain adequate aids to navigation</li> <li>• Build capacity to enable surveys in support of coastal and offshore areas</li> <li>• Build capacity to set up hydrographic databases to support the work of the NA/NHCC</li> <li>• Provide basic geospatial data via MSDI</li> <li>• Requires funding for training, advising &amp; equipment or contract survey</li> </ul>
<p><b>Phase 3</b></p> <p>Produce paper charts, ENC and publications independently</p>	<ul style="list-style-type: none"> <li>• The need shall be thoroughly assessed. Requires investment for production, distribution and updating</li> <li>• Alternatively, bi-lateral agreements for charting can provide easier solutions in production and distribution (of ENC through RENCs) and rewards.</li> <li>• Further development of MSDI</li> </ul>

**Figure 1**

Objectives

14. The willingness of the IHO to assist capacity building has been expressed in terms of short and long term objectives, providing a clear signal of the desired effect which the Organization is seeking. These objectives also constitute guidance for the work of the CBSC in implementing this strategy.
15. Long Term Objectives:
  - a. To enable all states which have navigable waters to achieve Phase 1 of development (i.e. timely collection and promulgation of hydrographic information for their national waters), and to develop a national plan to put in place appropriate elements of Phases 2 and 3 or alternative cooperative regional or bilateral arrangements.
  - b. In conjunction with the IMO's Technical Cooperation Committee and IALA's World Wide Academy a series of 'country profiles' will be developed to accurately measure the state of hydrography in every coastal state.
16. Short/Medium Term Objectives:
  - a. To implement a programme of events to raise awareness of the importance of hydrography at all relevant levels, including the use of hydrographic data for the benefit of society (see Goal 2 of the IHO Strategic Plan)
  - b. To establish a GIS-based electronic version of C-55 presenting an accurate picture of the status of hydrographic services world-wide, as available to mariners.
  - c. To enable the IHO to present clear priorities for capacity building action to the UN and subordinate technical organizations and funding agencies, and to national governments.
  - d. To enable Regional Hydrographic Commissions (RHCs) to establish a suite of capacity building initiatives and a prioritization process for regional cooperative efforts.
  - e. To enable RHCs, where significant progress is required, to develop a holistic approach to capacity building, designed to deliver wide ranging assistance with sustainable outcomes. This would include training, technical cooperation, organizational and structural advice which may be part of a donor programme.
  - f. To implement appropriate management of an IHO Capacity Building Fund.
  - g. To produce and maintain an auditable IHO Capacity Building Management Plan.
  - h. To support e-learning activities, considering the importance of practical exercises (or face-to- face) aspects required by the nature of hydrography.

**Article 3 – PROCESS**

The four (4) steps in the process

17. The CB Procedures approved by the CBSC contain the detailed information necessary to plan and execute the CB Projects, and are published in the IHO website (<https://iho.int/en/miscellaneous-2>)
18. The IHO CBSC recognizes that the first step must be the raising of awareness of the significance and impact of hydrography on maritime safety, at the highest political levels in each country, and in the UN and subordinate technical organizations, regional maritime associations and funding agencies. Without this, adequate resources will not be secured and sustained for the implementation of the strategy. Assessment is underway on a permanent basis through the revision and update of C-55 and through technical visits. The subsequent steps of analysis, including prioritization and identification of actions, and then the management and implementation of appropriate actions, require more detailed development within this policy paper and are itemized below. The degree of engagement required from each contributor to the process is suggested in Table 1.

**Table 1: Degree of engagement (X = Low, XX = Medium-low, XXX = Medium-high, XXXX = High)**

	IHO	CBSC	RHC	Country
<b>Awareness</b>	XXX	XXXX	XX	X
<b>Assessment</b>	X	XXX	XXXX	XX
<b>Analysis</b>	XXXX	XXX	XX	X
<b>Action</b>	X	XX	XXX	XXXX

19. The process will require development of the following elements:
- a. Intensification of efforts to raise awareness of hydrography and to provide reference documents on the minimum requirements for national hydrographic services in accordance with SOLAS Chapter V Regulation 9.
  - b. Implementation and management of a CB fund.
  - c. Completion of the revision of the C-55 database to identify key deficiencies.
  - d. Development of assessment criteria to determine appropriate and sustainable national capacity.
  - e. Implementation of effective RHC processes for analysis and prioritization of capacity building needs within the region.
  - f. Definition of an Action Plan to address selected goals within specific timescales, and to identify and manage funding.
20. In some RHCs, it may be appropriate to consider a comprehensive, multi-year, programme of work, including multiple projects. This may include precise assessment of the first priority requirements, definition of the target capacity, identification of complementary funding, installation and coaching of an organization, training, delivery of some equipment etc. These actions should be conducted in a strongly integrated way, in order for each project to contribute as a part of a holistic programme. A rigorous project methodology should be applied, to ensure successful implementation in terms of scope/budget/timeframe and monitoring/reporting to ensure the expected benefits are realized.
21. RHCs may also consider the adoption of a CB maturity model where the aspirations of nations can be assessed against each of the 3 CB Phases of development as defined in M-2 and shown in Figure 1. Such a model would identify the appropriate training/assistance/funding required to provide a clear pathway and action plan for a nation to achieve each CB Phase in a sustainable and enduring manner. The model may be used by RHCs to monitor and record a nation’s progress towards the creation of a national hydrographic service. This information could become part of a comprehensive country profile as mentioned in Chapter 4.1. The successive steps in the process are outlined in the paragraphs which follow. The CB Procedures approved by the CBSC contain the detailed information necessary to plan and execute the CB Projects, and are published in the IHO website ([www.iho.int](http://www.iho.int) > Capacity Building).

Raising Awareness

22. The IHO Secretariat should continue the campaign for the establishment of the hydrographic services required to meet obligations under UNCLOS and SOLAS. The high profile which the IHO Secretariat has sustained in the UNICPOLOS process, and within the IMO, should assist the CBSC to implement specific actions to target subordinate international and regional agencies. Very significant progress has been made in IMO, and the imminent inclusion of the C-55 database in the IMO Member State Audit Scheme (VIMSAS) will provide effective leverage to commit governments to resource the arrangements required under SOLAS V Regulations 4 and 9.

23. The Marine Spatial Data Infrastructure (MSDI) provides a framework for the provision of hydrographic information beyond the traditional field of surface navigation. The IHO/CBSC should contribute to raising the consciousness among the HO's of the importance of hydrographic data in order to drive "The Blue Economy" and all it signifies, in terms of economic and socio-economic development.
24. The CBSC should continue to explore the best means of raising awareness of the importance of hydrography to the funding agencies. The urgency of this task is underlined by increasing evidence of international and regional investment in hydrographic equipment for either marine scientific research or protection of the marine environment, without adequate awareness of measurement criteria for data to support safe navigation.
25. Raising awareness may be efficiently supported by a risk assessment process, based on the status of hydrographic knowledge, the main characteristics of maritime activities, including shipping, and of their evolution, and an impact study of the consequences of insufficient hydrographic knowledge or services.
26. M-2 is available, free of charge, together with a general IHO Information Brochure and IHO PowerPoint presentation, on the IHO website ([www.iho.int](http://www.iho.int)). These are important tools for meetings at ministry level during technical advisory visits, and are continuously updated.

#### Assessment and Analysis of Needs

27. A further developed C-55 as a "country profile" will play an even more important role in Capacity Building.
28. The C-55 data-base on the IHO website contains tables of MSI, survey and charting information for each coastal state or state with hydrographically significant waters. The standard formats for the agendas of the IHO RHCs, and for the National Reports presented to them, provide for the regular review of this information and for the discussion of capacity building initiatives to improve the situation in each country. The main deficiencies in complying with SOLAS V Regulation 4 and 9 in many coastal states are as follows:
  - a. No effective organization for the promulgation of information of importance to safe navigation and the protection of the maritime environment, either as navigational warnings or as inputs to NAVAREA Coordinators and those hydrographic offices with responsibility for charting;
  - b. Outstanding actions to implement the GMDSS;
  - c. No capacity to plan and implement a prioritized survey programme, including a resurvey component;
  - d. Failure to apply IHO S-44 criteria in Marine Scientific Research and offshore industrial surveys;
  - e. The lack of measures to ensure scientific & commercial survey data being incorporated in national bathymetric database;
  - f. Lack of chart information on datum transfer parameters for GPS navigation; and,
  - g. Lack of INT paper charts and ENC to support international navigation, especially in dangerous and VTS areas.

#### Technical Visits

29. Technical visits provide a powerful means of working with local administrators and experts to determine the arrangements for delivering SOLAS V obligations which are appropriate and sustainable for their country. Follow up visits may be required to support the recipient of the technical visit to implement the recommendations to establish hydrographic services.

Risk Assessment

30. A risk assessment provides a robust basis for prioritising a national/regional charting programme. The risk analysis methodology is evidence-based and objective against set criteria. It includes AIS traffic analysis and an economic assessment. The main output is a risk heat map which allows governments, charting authorities and other interested parties to come to a conclusion about the nature and scope of charting improvements and related maritime safety initiatives. A GIS is used for the analysis and to display the results. This allows complex data to be easily accessed and understood by key stakeholders to aid decision making and presents a compelling case for action.

Mechanisms for Action

31. The following mechanisms are available for capacity building action:
- a. Contact with decision-makers and advice to national experts:
    - i. IHO input to projects championed by IMO and other organizations;
    - ii. IHO advisory visits;
    - iii. RHC Visit Teams;
    - iv. Technical Workshops.
  - b. Technical assistance. IHO and RHC assistance in coordination of regional survey, charting and MSI projects, including advice on liaison with funding agencies and with industry.
  - c. Bilateral assistance by other IHO MS, by MOU, or on contract or aid-funded basis:
    - v. provision of SOLAS-compliant hydrographic services by other MS through legal administrative arrangement;
    - vi. loan of skilled staff;
    - vii. training, including options in region;
    - viii. output-based project assistance, with out-sourcing fully evaluated and exploited; appropriate and sustainable skill and technology transfer, including advice on organization and planning as well as support for practicing hydrography.
32. Specific regional comprehensive programmes, as mentioned in Chapter 5, may be prepared by a study, possibly outsourced, on the feasibility of building a generic multi-year CB programme, taking into account sustainable expected progress, funding sources and their availability, possible synergies with complementary international cooperation programmes, languages issues and the level of commitment of concerned nations.

**Article 4 – MANAGEMENT**

Management of Capacity Building Action

33. The CBSC has established an IHO Capacity Building Fund (CB Fund). All transactions are transparent. Any donor may pledge funding for a particular purpose or project if desired.
34. The disbursement of the IHO CB Fund is controlled by using a coasted Management Plan to derive annual Work Programmes. It enables the CBSC to assess and prioritise proposals submitted through the RHCs, and to approve appropriate responses for which costs and benefits have been balanced. Further details are given in the relevant Procedures.

Training methodologies and cooperation

35. Training is a very important part of the IHO CB. The methodologies and the means of cooperation with training facilities play an important role in the success of funded trainings. The following list encompasses the main rules and fields of work for the capacity building efforts of the IHO:
- a. Maritime Safety Information (MSI) will be given priority in order to achieve the first long term objective of this Strategy, based on a multi-year MSI CB Plan to be developed jointly by the CBSC and World-wide Navigational Warning Service Sub-Committee (WWNWS);
  - b. CAT A and B – Depending on funding, consideration will be given to using IHO funds for CAT A and B survey training and CAT B cartography training for candidates from MS only.
  - c. Training for the trainer (TFT), to improve the availability of trainers within a region or country.
  - d. Standardization of trainings beyond CAT A and B where feasible, providing a structure of training possibilities for certain topics.
  - e. MSDI training – MSDI Courses will be developed to cater for the different requirements of the various phases of Hydrographic development.
  - f. Ensuring that syllabi of trainings are widely available, preferably in different languages.
  - g. Investigation of the practical benefit and a possible implementation of blended and e- learning.

Cooperation with Stakeholders

36. The CBSC works closely together with stakeholders, such as Nations, international and regional organizations and Non-Governmental Organizations (NGOs) to find a broad basis for the cooperation for the benefit of the IHO CB Strategy.





Proposal n°	Object of the Proposal	Submitted by	Reference
<a href="#">3.3</a>	Recognition of the Southern Ocean	HCA Chair	3

**ARGENTINA**

Argentina considers that there are no technical grounds to support a separate reference for the area referred as “Southern Ocean”, which corresponds to the southern zones of the Indian, South Atlantic and South Pacific Oceans.

Furthermore, and considering the technical and consultative character of the International Hydrographic Organization, the present resolution not only lacks political implications but also juridical.

A letter describing Argentina’s further views on this issue is attached as Annex 2 of this document.

**BRAZIL**

Brazil supports the proposal.

**CHILE**

Chile recognizes the existence of the Southern Ocean and its limits by the following statement:

“The northern limit of the Southern Ocean is the parallel 60° S and its southern limit is the Antarctic coastline, included the Antarctic Peninsula”.

Therefore, CHILE supports the Proposal 3.3 submitted by the Secretary-General, as HCA Chair.

**GERMANY**

Germany supports this proposal.

**ITALY**

As member of HCA, Italy supports the proposal.

**NORWAY**

Norway supports this proposal in order to rectify an omission that has lasted 70 years and to once more become aligned with geographers and the scientific community in their well-established use of the denominator "Southern Ocean".

**PORTUGAL**

Portugal endorses this proposal.

**UNITED KINGDOM**

The United Kingdom support this proposal.

**UNITED STATES OF AMERICA**

The United States supports the proposal and concurs with the proposed limits of the Southern Ocean for use by the IHO. This recognition is without prejudice to the term “Southern Ocean” as other international or regional bodies with appropriate competence may define for their specific purposes.

**SECRETARY-GENERAL`S RESPONSE TO MEMBER STATES COMMENTS**

The Secretary-General in his capacity as HCA chair confirms that all regular business procedures within HCA were followed and applied to this item as for the others, with full fairness and transparency. The Secretariat stands ready to include the reservations (except those that could be procedural in nature) that any Member State wishes to add in the Appendix of the proposed Resolution.

**PRO-3.3 Recognition of the Southern Ocean**

**Submitted by:** Secretary-General, as HCA Chair

- References:**
- A. Publication S-23, Ed. 3, 1953.
  - B. HCA-18 Summary Report.

**PROPOSAL**

**Noting the decision made at the 2<sup>nd</sup> Assembly of the IHO on the Status of S-23, Ed.3, 1953 (Reference A and Decision A2/24),**

**Noting the decision made by the IHO Hydrographic Commission of Antarctica (HCA) at their 18<sup>th</sup> meeting in May 2022 (Reference B, Decision HCA18/45 refers),**

**Noting the progress made in the development of the IHO S-130 Product Specification - *Polygonal Demarcations of Global Sea Areas*,**

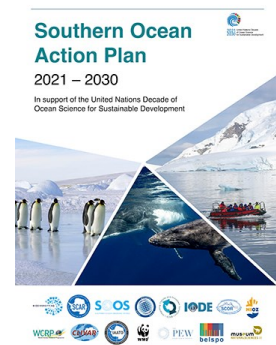
**The Assembly is invited:**

- **to approve the proposed IHO Resolution provided in Annex A on the recognition of the *Southern Ocean* and the consequences on the limits of some global sea areas.**

**EXPLANATORY NOTE**

1. In 2021, the HCA Chair informed the participants of the 17<sup>th</sup> meeting of the HCA on the publication of an article<sup>34</sup> in National Geographic, quoting the IHO, and recognizing the *Southern Ocean* as the 5<sup>th</sup> ocean. Following this publication, the IHO Secretariat received a significant number of requests for explanations on how this name had been discussed in the course of the historic reviewing of S-23.
2. The Secretary-General of the IHO, also HCA Chair, took this opportunity to remind that although this name to designate the southern waters of this hemisphere was included in the 2<sup>nd</sup> edition of the IHO Publication S-23 on the Limits of Oceans and Seas published in 1937, the majority of opinions from Member States received after this were not in favour to this inclusion. In short: the "*Southern Ocean*" became an official ocean in 1937, but lost its official status in 1953.
3. Following the 2<sup>nd</sup> Session of the Assembly, decision was made to establish a Project Team (S-130 PT) in charge of the development of a Product Specification for Polygonal Demarcations of Global Sea Areas and the subsequent recommendations for the production of a Dataset. This S-130 PT is currently defining a dataset model using a system of unique numerical identifiers only. When the production of the corresponding dataset is envisaged, there will be for sure a need to decide whether the limits of the *Southern Ocean* exist.
4. At their 18<sup>th</sup> meeting in May 2022, the HCA (HCA-18) was updated on the publication of the version 2.0 of the International Bathymetric Chart of the *Southern Ocean* bathymetric grid (IBCSO).

The HCA was also briefed by the SCAR representative on their *Southern Ocean* Action Plan in support of the UN Ocean Decade.



<sup>34</sup> <https://www.nationalgeographic.com/environment/article/theres-a-new-ocean-now-can-you-name-all-five-southern-ocean>

5. For the reasons given above, noting the well-established use of the denominator Southern Ocean by geographers and the scientific community, and in order to solve this long lasting issue, HCA Members finally agreed at HCA-18 to submit a proposal for a new IHO Resolution at the 3<sup>rd</sup> Session of the Assembly for approval of IHO Member States, simply focused on the recognition of the existence of the Southern Ocean.
6. Since HCA-18, the proposal in attachment was circulated twice for inputs and comments to HCA Members. The consolidated proposed Resolution taking HCA Members<sup>35</sup> views, comments and reservations is provided in Annex A.

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<sup>35</sup> Argentina, Australia, Brazil, Chile, Ecuador, France, Germany, Japan, Spain, UK and the United States of America.

**Proposed new IHO Resolution**

<b>RECOGNITION OF THE SOUTHERN OCEAN AND CONSEQUENCES ON THE LIMITS OF SOME GLOBAL SEA AREAS</b>	02/2023	A-3	
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Taking note of the acknowledged long lasting existence of IBCSO3 - International Bathymetric Chart of the Southern Ocean as a regional mapping project recognized and supported by GEBCO and the dominant use of the denominator Southern Ocean by the international scientific community and media, the IHO recognizes the Southern Ocean as the global sea area surrounding the continent of Antarctica.

Noting the established northern limit of the IHO INTernational Charting Region M4 , it is considered that the northern geographic limit of the Southern Ocean is defined by the parallel of Latitude 60°S.

As a consequence, the southern geographic limits of the Atlantic, Indian, and Pacific Oceans are identical with the northern geographic limit of the Southern Ocean. This joint geographic limit supersedes those mentioned in Publication S-235 , Ed. 3, 1953 for the areas concerned.

Since these limits have neither political nor oceanographic or, more generally, environmental significance whatsoever, Hydrographic Offices may continue to adopt their own limits as long as these limits remain technically consistent with the data model of the polygonal demarcation of global sea areas (IHO S-130). Current national reservations and/or comments on the limits of the Atlantic, Indian, Pacific, and Southern Oceans are provided in Appendix 1.--

**General information, national positions and reservations  
on the limits of the *Atlantic, Indian, Pacific, and Southern Oceans***

**General Information**

It is acknowledged that the Commission for the Conservation of Antarctic Marine Living Resources (CCAMLR) defines, in Art. 4 of its Convention, the limits of the Antarctic Convergence. Despite the seasonal and annual changes of its latitude, this major oceanographic feature creates a distinct biological boundary beyond the parallel of 60°S, applicable to the description of the Antarctica marine ecosystem (<https://gis.ccamlr.org/>).

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**Argentina**

Argentina considers that there are no technical grounds to support a separate reference for the area referred as “Southern Ocean”, which corresponds to the southern zones of the Indian, South Atlantic and South Pacific Oceans.

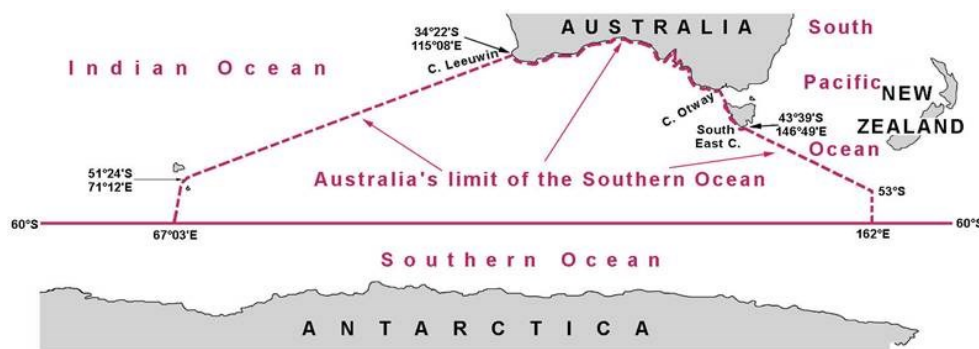
Furthermore, considering the technical and consultative character of the International Hydrographic Organization, the present resolution is not intended to provide a legal advice on which any individual, Member State of the IHO or any entity may rely upon for political or legal purposes, and should not be considered as such. This resolution is offered without prejudice to or limitation of the views of the IHO or any IHO Member State regarding any subject or matter.

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**Australia**

Australia’s position on the limits of the *Southern Ocean* and the southern limit of the *South Pacific Ocean* [and *Tasman Sea*] and *Indian Ocean* in accordance with the [national] ICSM<sup>36</sup> Resolution ROO/11/06 - Limits of Oceans and Seas and Offshore Undersea Features [April 2001].

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**Chile**

Chile recognizes the existence of the Southern Ocean and its limits as follows: *The northern limit of the Southern Ocean is the parallel 60° S and its southern limit is the Antarctic coastline, included the Antarctic Peninsula.*

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**Ecuador**

Ecuador recognizes the use of the parallel 60°S as the northern limit of the Southern Ocean.

<sup>36</sup> Interdepartmental Committee of Surveying and Mapping [ICSM]

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**United Kingdom**

With this Resolution in force, the UK confirms that the comment from the S-23, edition 3, 1953 “*The UK uses the parallel of Latitude 55°S as the Northern limit of the Southern Ocean [and therefore the Southern limit of the Atlantic, Indian, and Pacific Oceans]*” does not apply anymore.

**United States of America**

United States of America The United States supports the resolution and concurs with the proposed limits of the Southern Ocean for use by the IHO. This recognition is without prejudice to the term “Southern Ocean” as other international or regional bodies with appropriate competence may define for their specific purposes





Proposal n°	Object of the Proposal	Submitted by	Reference
<a href="#">3.4</a>	Access to Software, Hardware and Training Courses	Islamic Republic of Iran	3

**ITALY**

Addressing the challenge for all the hydrographic community to embrace the S-100 framework, Italy supports any proposal to develop common efforts toward the S-100 implementation. The RENCs can play an active role in this direction.

**PORTUGAL**

Portugal needs a better clarification on this subject in order to have any decision.

**SECRETARY-GENERAL`S RESPONSE TO MEMBER STATES COMMENTS**

In preparation of the considerations to be made under the respective Assembly Agenda item, Member States are invited to take note of the Article II of the IHO Convention and IHO Resolution 2/1972 addressing the scope of this Proposal.

**PRO-3.4 Access to software, hardware and training courses**

**Submitted by:** Islamic Republic of Iran

**References:** IHO Convention, IHO Strategic Plan,  
6<sup>th</sup> Council Meeting – Summary Report

**PROPOSAL**

**The Assembly is invited:**

**to consider a suggestion that in order to enhance global safety of navigation, Member States should have access to specialized related software and hardware, together with practical and professional training courses, aiming to improve hydrographic operations, as well as nautical charts.**

**EXPLANATORY NOTE**

The Persian Gulf is one of the most strategic waterways in the world, due to its importance in world oil transportation, and therefore its blockage, even temporarily, would lead to substantial disruption in energy markets. The waters in the Persian Gulf are relatively shallow, and deep-draught vessels may have to navigate for a considerable distance with little water beneath their keels. Moreover, in order to provide better quality services for safety of navigation and human life at sea, as well as the protection of the environment in this region, it is crucial that SOLAS contracting states undertake hydrographic surveys as required. Thus, they can arrange for the compilation and publication of hydrographic data, the dissemination and keeping up-to-date of all nautical information necessary to enhance safety of navigation.

To fulfil the goals of IHO Convention, Strategic Plan and C6 Summary Report, it is essential for all Member States to implement S-100 standards series from the designated date (01 January 2026), which will be impossible without making optimum use of specialized related software, hardware and training courses.

Proposal n°	Object of the Proposal	Submitted by	Reference
<a href="#">3.5</a>	Establishment of a task force to explore the potential merits, structures, and options for alternative fund generation to support capacity building and other IHO initiatives	United States of America, Canada, Norway, United Kingdom and Australia	3

**Brazil**

Brazil supports this proposal.

**CANADA**

Canada thanks the United States for this initiative to investigate approaches to create sustainable funding mechanisms to complement the current IHO models and operations and endorses this proposal. The IHO has done an admirable job delivering capacity building given the funding pressures and parameters of the program. Unfortunately, as the proposal points out, the IHO has been unable to keep up with all the demands for capacity building. Canada believes that it is in the best interest of those asking for capacity building and the IHO to examine new options.

**FRANCE**

France supports the creation of a Working Group dedicated to the search of alternative funding for the capacity building policy or other IHO initiatives and wishes to become a member. The themes mentioned, namely capacity building and GEBCO, are managed by the Inter-Regional Coordination Committee (IRCC) within the IHO, as are the regional initiatives that could benefit from this search of funding. France therefore proposes to place this Working Group under the direct supervision of the IRCC and not the IHO Council, with the IRCC being responsible for keeping the Council informed of the Group's progress.

**PORTUGAL**

Portugal needs a better clarification on this subject in order to have any decision.

**SWEDEN**

Sweden supports the proposal for a Capacity Building Task force.

**UNITED KINGDOM**

The United Kingdom support this proposal.

**SECRETARY-GENERAL`S RESPONSE TO MEMBER STATES COMMENTS**

Noting the priorities and difficulties faced by a number of existing sub-committees, project teams and working groups (lack of office bearers, active membership, meeting costs...), the Secretariat proposes the consideration of an ad hoc Project Team – a well-established format with a short mandate, TORs, etc. – within the existing framework of committees and working groups.

**PRO- 3.5 Establishment of a task force to explore the potential merits, structures, and options for alternate fund generation to support capacity building and other IHO initiatives**

**Submitted by:** United States of America, Canada, Norway, United Kingdom, Australia

**PROPOSAL**

**Considering the discussion below the Assembly is invited:**

- a. To recognize the important global maritime issues facing the hydrographic community worldwide.<sup>37</sup> Addressing these issues will require expanded global hydrographic capacity for data collection to underscore effective decision making at geographic scales from local communities to national, regional and beyond;**
- b. To approve the proposal to establish a task force comprised of interested Member State volunteers, industry partners, philanthropic partners, and representative(s) of IHO Secretariat to explore the possible establishment of reliable alternative funding streams or resources to support IHO activities including capacity building and GEBCO;**
- c. Authorize Council to review progress reports from the task force at least annually at Council meetings, review recommendations, discuss and explore options, and provide guidance to the task force in preparation to a report out to Assembly-4 (A4), as Council deems appropriate; and**
- d. Provide any amplifying guidance deemed warranted, if any, on the proposal.**

**EXPLANATORY NOTE**

1. The ability of coastal nations to deliver national capabilities for the provision of hydrographic services is not keeping up with the renewed focus on the ocean and requirements for data to address global maritime challenges.
2. The IHO's Strategic Plan states that capacity building and training should aim to assist Member States with meeting the requirements and delivery phases of the S100 Implementation Plan. Further, Strategic Goals 2 and 3 call for the increase in availability, quality and coverage of hydrographic data.
3. However, IHO Member State and coastal state applications for funding to the Capacity Building Sub-Committee (CBSC) far exceed the amount available in the IHO capacity building fund resulting in a relatively small number of projects being accepted each year and leaving a long queue of unfunded projects. Similarly, the cost to execute the work plans of an expanded GEBCO, with two new subcommittees established in recent years, far exceeds the funds that are available, meaning important work cannot advance. This has been recognized as a long-standing, persistent situation that the current funding model has not been able to address. Further, this situation limits the ability of the IHO to achieve the goals of its Strategic Plan and to meet the challenge of "leaving no country behind."
4. Adding new member states to solve the budgetary problem is finite and cannot provide the level of funding required. This approach is further undermined as prospective new members will generally be countries requiring the most assistance with regards to building hydrographic capacity. The prospect of incrementally raising membership dues to

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<sup>37</sup> For illustrative purposes only, "Based on research among senior leaders around the world, the Global Maritime Issues Monitor 2022 explores the impact, likelihood and preparedness of 18 global issues potentially affecting the maritime industry in the coming decade." Please see <https://www.maritimeissues.org/>

significantly increase funds available to the IHO for additional capacity development and GEBCO support is also unlikely.

5. Keeping these realities in mind, it is proposed that an inter-Assembly task force be established to explore options for building a sustainable ancillary funding mechanism for the IHO that is separate and independent from the current membership due model which will significantly improve the organization's ability to support programmatic work such as capacity development and GEBCO into the future. The working group should consider a number of options for extending funding opportunities, without impacting the current IHO funding model or operations, that may include working with established IHO partners like the RENCs, establishing parallel structures like a foundation, bureaucratic adjustments to the IHO and other options.

## **PROPOSED TASK FORCE STRUCTURE**

6. The task force should be kept small but should include senior level participants that ideally bring together hydrographic, intergovernmental, business, and development finance experience. The members will be selected by the IHO Council (preferably prior to C7), will be chaired by a Member State, and should include two additional Member State representatives, relevant IHO Secretariat Staff including a member of the Directing Committee, and the Council Chair. The task force may also include representation from the private sector, RENCs, and philanthropic sector. The task force will report to the IHO Council annually and the IHO Council will manage the task force under Authority of Assembly-3, if so approved at Assembly-3.
7. The proposal authors provide this initial timeline for consideration, leading to a report at Assembly-4
  - Establish Task Force membership and prepare Terms of Reference
  - Conduct a workshop to gather new ideas and develop possible solutions
  - C7 – Present results of the workshop to Council-7
  - Hold WG meeting to agree on a path forward
  - Conduct gap analysis, legal evaluation, governance assessment, and evaluation of potential tax implications, etc.
  - C8 – Present proposed path forward to Council-8
  - Hold WG meeting to confirm plan for presentation to A4
  - Present recommendations for A4 endorsement

# **WORK PROGRAMME UPDATE**





**REPORT OF THE IHO COUNCIL**  
(Version 2.1, dated 3 April 2023)

**Chair:** Dr. Geneviève BÉCHARD Canada  
**Vice-Chair:** THAI LOW Ying-Huang Singapore

**Membership** (*IHO Member States having a seat at the Council 2020 - 2022*):

Argentina, Australia, Brazil, Canada, China, Cyprus, Finland, France, Germany, Greece, India, Indonesia, Iran (Islamic Republic of), Italy, Japan, Korea (Rep. of), Malta, Netherlands, Norway, Oman, Peru, Portugal, Russian Federation, Singapore, South Africa, Spain, Sweden, Thailand, United Kingdom, United States of America.

**Meetings:**

4 <sup>th</sup> meeting (C-4)	video teleconference	19 November 2020
5 <sup>th</sup> meeting (C-5)	hybrid virtual/in person, Monaco	19 – 21 October 2021
6 <sup>th</sup> meeting (C-6)	IHO Secretariat, Monaco	18 – 20 October 2022

**Foreword from the Chair**

1. It is my honor to report to Assembly 3 (A-3) on the activities of the second triennium of the International Hydrographic Organization (IHO) Council. This report is in accordance with Article VI (g) of the Convention of the IHO which identifies a 'Report to the Assembly at each ordinary session on the work of the Organization', as one of the functions of Council.
2. For more than two years the activities of this Council were cast against the backdrop of the Covid-19 pandemic. The 2<sup>nd</sup> IHO Assembly and the 4<sup>th</sup> meeting of the IHO Council, which launched this triennium, were virtual and abbreviated. During this period we had to learn to work differently and this will continue to influence how we work for years to come. In one way we became closer as we learned to work virtually. As VTCs became more commonplace IHO bodies benefitted from supplementary meetings that could be easily arranged and executed. In another way, however, it became clear that we are most productive to address strategic issues when we are working together and in-person. This was evident when the 5<sup>th</sup> meeting was in hybrid virtual/in-person format, we were finally able to meet in person for the 6<sup>th</sup> meeting of the IHO Council.
3. The main reference for Council activities in the inter-assembly period have been the A-2 Decisions allocated to the Council. Despite the covid pandemic, Council has made significant progress on the items it was tasked by Assembly. Two key objectives I would like to highlight are 1) "the effective implementation of the revised Strategic Plan" and 2) the launch of the decade of implementation of delivery of S-100 services.
4. During the course of its business the Council produced a number of decisions leading to concrete directions for action by the Secretariat, HSSC and IRCC. Further details of the work of the subordinate bodies and the Secretariat will be presented by the Secretary-General and the Committee chairs in the course of the Assembly's Agenda. The detailed review of the Work Programme items addressed at C-6 resulted in several proposals, which are now brought forward to the Assembly for consideration and subsequent approval by means of this and the respective Secretary-General's, HSSC Chair and IRCC Chair presentations.
5. The reports you will read and hear at A-3 will all highlight the rapid changes taking place in the IHO domain. The pace of these changes will challenge the Organization and the Member States themselves. I am confident, however, that together and with a focus of our energies, these challenges can be met and overcome.

## Outcome of the Decisions and Tasks from A-2 allocated to the Council

Outcome of Decisions and Tasks from A-2 allocated to, or monitored by the Council			
D A2/7	Amendments to IHO Resolution 1/2020 – Gender-Inclusive Language	Submitted to A-3 for Approval	A-3 PRO 1.3
D A2/8	Update on the Joint IHO-Singapore Laboratory – Proposals from the Council to the Governing Board	Permanent	HSSC Report
D A2/2 & D A2/9	Amendments to General Regulations, Art. 8.e – Membership of the HCA	Submitted to A-3 for Approval	A-3 PRO 3.1
D A2/12	Application of ISO 9001 Principles	In progress	HSSC Report IRCC Report
D A2/14	Way forward on the definition of hydrographic interest	On hold	CC Report
D A2/20	Appropriateness and applicability of the new Strategic Performance Indicators	In progress	CC Report HSSC Report IRCC Report A-3 PRO 1.2
D A2/25	Update on the implementation of A2/PRO1.9 on the future of S-23	In progress	SG update on S-130PT A-3 PRO 1.6
D A2/27 & D A2/28	Future of the paper chart	In progress	CC Report HSSC Report
D A2/30 & D A2/31	Roadmap for the S-100 Implementation Decade	Permanent	CC Report, HSSC Report, IRCC Report
D A2/32	New IHO Resolution relevant for the S-100 Implementation	Completed	HSSC Report A-3 PRO 1.1
D A2/33	Dual-Fuel Concept to enable the transition from S-57 to S-101 ENCs	In progress	HSSC Report A-3 PRO 2.1
D A2/35, D A2/36 & D A2/39	Update on the Empowering Women in Hydrography, a work item of the CBSC Work Programme	In progress	CC Report IRCC Report
D A2/42	Update on the establishment of a IHO e-Learning Center	In progress	CC Report IRCC Report

## Overview of Council Proposals to A-3 derived from tasks allocated to the Council since A-2

Pro Number	Object of the Proposal	Reference to A-2 Decision
A-3 PRO 1.1	New IHO Resolution on S-100 Implementation	D A2/32
A-3 PRO 1.2	Implementation and review of the Strategic Plan	D A2/20
A-3 PRO 1.3	Amendments to IHO Resolution 1/2020 –Gender-Inclusive Language	D A2/7
A-3 PRO 1.4	3-year Work Programme and Budget 2024-2026	
A-3 PRO 2.1	Dual-Fuel Concept for S-100 ECDIS	D A2/33
A-3 PRO 3.1	Amendments to General Regulations, Art. 8.e – Membership of the HCA	D A2/9
A-3 PRO 3.2	Revised Capacity Building Strategy	

### S-100 Roadmap & Implementation Strategy A-3 PRO 1.1, A-3 PRO 1.2 & A-3 PRO 2.1

6. The Council endorsed the HSSC proposal for an overarching IHO Resolution on S-100, embracing concepts and pathways depicted in the Roadmap for the S-100 Implementation Decade (2020 – 2030) and with reference to the IMO Resolution on Performance Standards for ECDIS and the in force dates agreed upon. The proposed new IHO Resolution addresses the collaboration with IMO and other liaising Organizations, timelines for the implementation of the S-100 framework by application of the WEND-100 Principles and the Dual Fuel Concept for S-100 ECDIS. Given the IMO decisions, it is critical that IHO MS understand that adequate S-101 ENC coverage and appropriate complementary S-100 data/products services are expected when S-100 ECDIS becomes operational in 2026.
7. The S-100 Implementation Roadmap was amended by two new elements: An appendix to Annex 3 which will be the 'Guidelines on the Implementation of the WEND-100 Principles ver 1.0; and, The Dual Fuel Concept for S-100 ECDIS Executive Summary document which will be added as Annex 4 (the full report will be an appendix to Annex 4), upon Assembly approval. The latter document is focused on capturing in a single resource the concept, operation and support for transition to S-100 ECDIS, with particular reference to Dual Fuel mode, being the primary mode of transition from existing S-57 based IMO ECDIS operation. Its application delivers a clear rationale for dual-fuel mode during the transition phase, the essential elements it requires from all partners within the data chain, and any gaps still existing within the standards and supporting framework. In addition to the Dual Fuel Concept for S-100 ECDIS other activities are in force within HSSC, the IHO-Singapore Technology Lab and the RENCs to support the transition from S-57 to S-101 ENCs. HSSC has also, in accordance with A-2/33, developed a synoptic diagram on various options for HOs for parallel production of S-101 and S-57 ENCs. The synoptic diagram is included in Annex 2 to the S-100 Implementation Roadmap.
8. The Council endorsed the strategic change in S-100 ECDIS with the term Electronic Navigational Data Services (ENDS) being used to describe the multiple interacting navigational data layers which can be employed by an S-100 ECDIS. The integration of these layers on the ECDIS is enabled by the Interoperability Specification S-98. The S-101 ENC remains the navigational base layer.

**Implementation and review of the Strategic Plan (IHO Resolution 12/2002 as amended)****A-3 PRO 1.2**

9. Significant progress was made towards the 2020-2026 goals of the Strategic Plan. In order to measure success, a set of Strategic Performance Indicators was developed and applied to the respective work programme items associated to targets. This was greatly aided by two IRCC-led workshops during which experiences on the application of the Strategic Performance Indicators were shared and practical approaches to improving them were discussed. Work is ongoing since further refinements of the Strategic Performance Indicators are required. Many Regional Hydrographic Commission (RHCs) have done a gap analysis exercise, developed by the South-West Pacific Hydrographic Commission (SWPHC), to measure the difference between the targets of the Strategic Plan and the current situation. Periodically repeating this exercise will allow RHCs to track progress towards the targets.
10. The current Strategic Plan, designed for the rolling period 2021 – 2026, shall be reviewed at each ordinary session of the Assembly. The Council, tasked to provide input for this review, recommends to continue with the Strategic Plan in place for 2021–2026 with a priority and a selected focus on Goal 1, given the S-100 Implementation Roadmap and decisions taken within IMO on S-100 ECDIS. Noting the implementation of the Strategic Performance Indicators is in progress for all three Work Programmes, the Council proposes to continue to measure the effectiveness and the efficiency of the implementation of the three Work Programmes by means of the Strategic Performance Indicators as endorsed by the Council. Subsequently, it aims to deliver a comprehensive assessment of the efficiency of IHO activities in support of the drafting process of the Strategic Plan 2027 – 2032, The Council proposes to be tasked with the development of the next Strategic Plan to be put in place for 2027 – 2032 in compliance with the Planning Cycle.
11. The Council Chair, in liaison with Secretary-General (WP1), HSSC Chair (WP2), and IRCC Chair (WP3) will report on the Status Report on Performance Monitoring available as Annex B to the IHO Annual Report (Publication P-7) at A-3, on the basis of the IHO Annual Report 2022.
12. The Council noted the decisions of IMO with respect to revisions of the ECDIS Guidance for Good Practice and the ECDIS Performance Standard (IHO CL 31/2022 refers) and took note of the associated IHO commitments made towards the IMO and the IEC in particular. Of particular note is the intended timeline for S-100 ECDIS. Rapidly growing S-101 ENC coverage and appropriate complementary S-100 data/products services is now expected when S-100 ECDIS becomes operational. In order to meet these expectations, it is now of strategic importance to facilitate IHO Member States and wider stakeholders to actively support the development of S-101 and other S-1xx Product Specifications. As a consequence it is proposed that the implementation of Work Programme 2024 – 2026 should focus on activities in support of Goal 1 and its targets.
13. An important means for the creation and maintenance of S-100 derivative services is a matured MSDI infrastructure. The Strategic Plan addresses this under Goal 2 / Target 2.1 to “Build a portal to support and promote regional and international cooperation in marine spatial data infrastructures (MSDI)”. The anticipated solution so far was to build up a dedicated IHO web page which serves as a gateway to the respective national MSDI infrastructure of Member States. This concept has turned out to be impractical as it is not possible for the Secretariat to ensure that all the content in all the national MSDIs is current and up-to-date. Instead of referencing individual national MSDIs, it is proposed to focus on global thematic layers of information which are genuine to the IHO scope such as those which are already provided under IHO online catalogues.

**Amendments to IHO Resolution 1/2020 –Gender-Inclusive Language****A-3 PRO 1.3**

14. A-2 tasked the Secretary-General to conduct a comprehensive review of the IHO Basic Documents and Resolutions with respect to the use of gender-inclusive language. He

was further directed to adopt the UN Guidelines on Gender-inclusive Language, to provide draft revisions of IHO Publications M-1 and M-3, and to monitor the IHO's progress towards the implementation of these Guidelines to all IHO documentation and communications. Based on the Secretary-General's report on the subject to C-5 (Reference B refers), the Council agreed that to the greatest extent possible, the updating of gender references in existing IHO documents will take place in conjunction with other edits and revisions which have been received as proposals from IHO bodies. That is, there will be no systematic updating of all IHO documents for the single purpose of addressing gender language issues. The Council also agreed that guiding principles on gender-inclusive language, once approved, will apply to all new IHO documents and communications. An amendment to IHO Resolution 1/2020 Gender-inclusive language has been proposed. This will be applied as part of the regular drafting and revision process.

#### **Amendments to General Regulations, Art. 8.e – Membership of the HCA A-3 PRO 3.1**

15. In 2020, IHO Member States approved new amendments to IHO Resolution 2/1997 – Establishment of Regional Hydrographic Commissions (RHC). The HCA subsequently revised its Statutes to ensure a better alignment with the Antarctic Treaty System (ATS), the IHO Resolution 2/1997 as amended; and the IHO Strategic Plan goals and objectives. The IHO Strategic Plan has recognized the broader user community of the data, products and services beyond IHO's traditional Safety of Navigation customers. The current wording of Art. 8.e of the General Regulations of the IHO, limits full HCA Member status to nations who "...contribute to the IHO INT Chart coverage of Region M" specifically. With the changing data and user environment, and the shift from paper to digital services, including ENCs and other future S-xxx products, the Council proposes that this limitation should be modified to allow HCA participation by IHO Member States more broadly.

#### **Revised Capacity Building Strategy A-3 PRO 3.2**

16. Capacity Building in hydrography is a core strategic issue within the IHO. The Capacity Building Subcommittee was tasked by the IRCC to revise the Capacity Building Strategy to better align it with the IHO Strategic Plan. Part of the revision was an expansion of the categorization of phases of development by including a phase 0 on hydrographic governance, and to add a fifth step to the process on awareness; assessment; analysis; and action to address Measures of Effectiveness (MoE). The deliberations of the Council have also raised the importance of considering the transition to S-100 knowledge and applicability in the capacity building efforts.
17. Related, the IHO Assembly is invited by Council to take note of the recent stagnation in internal IHO capacity building funding and welcomes its suggestions for approaches that could reaffirm and strengthen the IHO commitment to capacity building through increased and/or more stable funding.

#### **3-year Work Programme and Budget 2024-2026 A-3 PRO 1.4**

18. The Council endorsed the proposed 3-year Work Programme and Budget provided by the Secretary-General and submits it now for Assembly Approval. The Council endorsed the recommendation by HSSC by which Goal 1 and its Targets in the IHO Strategic Plan should have the highest priority in the conduct of the 2024 – 2026 Work Programme.
19. The Council unanimously supported the recommendation made by the Secretary-General to request A-3 renew Council's entitlement (see Decision A2/50), to have the option to impose up to a 3% increase of the Member States contribution share between 2024 and 2026, subject to the Council's annual budget review, with 2024 being the earliest this could be considered.

#### **Future of the Paper Nautical Chart (Decision A2/27&28)**

20. The Council noted the recommendations made by HSSC on the automated production of paper charts and confirmed its support for the work plan item to develop guidelines and a baseline symbology for the automated production of paper charts, which will meet

S-438 chart minimum content requirements, from S-101 ENC data. As part of this discussion, the Council endorsed the offer of the US (supported by AU, DE, DK, KR, and NZ) to document use cases and develop associated guidelines, as well as identify challenges with S-4, to achieve automated production of derived paper charts from ENC content databases and submit them to the HSSC/NCWG for their consideration under their respective Work Programme item.

#### **Way forward for the definition of hydrographic interest (Decision A2/14)**

21. The Council at C-4 invited parties interested in the development of a revised definition of hydrographic interest, to consider IHC17 outcome, A-2 PRO1.4 and A-2 PRO 1.5, and return to C-5 or C-6 with a single consolidated proposal for possible consideration at A-3. After informal discussions between the interested Members, it has been agreed that more work was needed on a possible revision of the definition of hydrographic interest, if possible with the participation of more countries. Since the present Council was dissolved at the end of C-6, the agenda item was closed with the suggestion that it be taken up again by the next Council at some point in the future, when more detailed solutions have been developed. The Council therefore recommends that this topic is put on hold until interested parties work out a mature proposal for a revised definition.

#### **IHO e-Learning Centre**

22. With significant support from the Korea Hydrographic and Oceanographic Agency (KHOA) the IHO e-learning Centre has been established. KHOA has stood up and hosts an e-learning portal. With the assistance of the e-learning Project Team (ELPT), there is continued development in the functionality and the content of the portal. Membership in the PT includes representatives from regional hydrographic commissions, Member States, the IBSC, the IHO Secretariat, and the Republic of Korea. Council appealed for Member States in possession of suitable e-learning material to share it through the centre. The Council continues to monitor the progress made by IRCC to establish an IHO e-Learning Centre based on A-2 PRO 3.3, A2/42, and the related recommendations of IRCC/CSBC (C6/27).

#### **IHO Empowering Women in Hydrography Project**

23. The IHO applied for, and received 3-year funding for an Empowering Women in Hydrography (EWH) project under Fisheries and Oceans Canada's Ecosystems and Oceans Science Contribution Framework. The goal of the project is to initiate, organize and track a series of activities and initiatives which will enable more women to participate equitably in the field of hydrography and to assume more leadership roles within the hydrographic community.
24. In addition to the IHO's Project Team and Canada's seed funding, the project has attracted monetary and in-kind contributions from other sources. Member States are encouraged to consider participating in the project either by supporting staff participation in the activities or through other means of contributions. Further details on the EWH project, including project activities and initiatives around the world, can be found on the Empowering Women in Hydrography web page by clicking [here](#).
25. The Council will continue to monitor the progress made by IRCC/CBSC on this project.

#### **Recommendations and call for directions**

26. The Council recommends the Assembly
- a) adopt the listed seven proposals after their separate detailed presentation under the respective Work Programme reports, namely:
- New IHO Resolution on S-100 Implementation

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<sup>38</sup> S-4 is already a standard for « minimum » chart content.

- Implementation and review of the Strategic Plan
  - Amendments to IHO Resolution 1/2020 –Gender-Inclusive Language
  - 3-year Work Programme and Budget 2024-2026
  - Dual-Fuel Concept for S-100 ECDIS
  - Amendments to General Regulations, Art. 8.e – Membership of the HCA
  - Revised Capacity Building Strategy
- b) adopt the implementation of S-100 Roadmap as a main theme and a priority within the IHO Strategic Plan until Assembly 4 (A-4);
- c) take note of the HSSC directions supported by the Council as related to the future of nautical paper charts;
- d) consider the Council Chair recommendations on the way forward for the definition of hydrographic interest;
- e) and seeks Assembly input, guidance and directions for the forthcoming Council period as Assembly deems appropriate.

### Conclusion

27. As we look ahead to the next Council and the period of 2023-2026, here are some items for consideration:
- i. the IHO needs to make the transition to S100, and in particular from S57 to S101 a priority for 2023-2026;
  - ii With 2026 around the corner, we need to prepare for and communicate the world-wide picture of dual fuel ENC provision.
  - iii As a community, we need to ensure no Member State is left behind.
  - iv. Capacity Building remains a priority and a mixture of existing and new tools and approaches are available to support the transition of our community to S100 services. Insufficient funding for Capacity Building remains a concern and we will need to be creative.
  - v. The future of the paper chart will continue to be a topic of interest.
  - vi. The deliberations of C-6 started us on a path to explore collaboration with our colleagues in oceanography on the delivery of S100 services and to start thinking of how hydrography can underpin the digital twin of the ocean to support a wide range of users.
28. In closing I am proud of the accomplishments this Council, which were achieved during extraordinary times, and I am equally proud of the cordial and collaborative manner in which this Council conducted itself. As has now been the tradition for 6 years, both Council Members as well as other IHO Member States attending as Council as Observers have together contributed positively to our work. This atmosphere, established during the first triennium, carried us through as we changed how we needed to work at a time of change. That said, the function of the Council is not possible without the active participation of Member States and the support of the IHO Secretariat and many others. In particular I would like to express my appreciation to our Secretary-General, Dr Mathias Jonas, Directors Abri Kampfer and Luigi Sinapi, Thomas Dehling c/IRCC, Magnus Wallhagen c/HSSC, and finally, to Assistant Director Yves Guillam who has been the glue to hold the whole operation of the Council together.

**Annex 1** Summary Report Council-1 (C-4) (Proceedings Volume 2)

**Annex 2** Summary Report Council-2 (C-5) (Proceedings Volume 2)

**Annex 3** Summary Report Council-3 (C-6) (Proceedings Volume 2)







# **REPORTS ON THE WORK OF THE IHO FOR THE PERIOD**

**2021 - 2023**

## **WORK PROGRAMME I**

**Corporate Affairs**



**WORK PROGRAMME 1****CORPORATE AFFAIRS**

Programme 1 covers the provision of the services provided by the Secretariat of the IHO and, through the Secretary-General and the Directors, the management and fostering of relations with intergovernmental and other international organizations. Work Programme 1 is directed primarily by the Secretary-General. It is integral to the achievement of all the Strategic Directions; some directly, others indirectly.

- Element 1.1 Co-operation with International Organizations and participation in relevant meetings
- Element 1.2 Information Management
- Element 1.3 Public Relations and Outreach
- Element 1.4 Work Programme & Budget, Strategic Plan and Performance Monitoring
- Element 1.5 Secretariat Services
- Element 1.6 IHO Council and Assembly



## **Element 1.1 Co-operation with International Organizations and participation in relevant meetings**

### **Introduction**

1. This element covers liaison and cooperation between the IHO and other international organizations – particularly those with which the IHO has a formal relationship or agreement, such as sister intergovernmental organizations and other international organizations with interests in hydrography and marine geospatial information and services. A full list of visits and details of participation in meetings has been provided in the monthly brief meeting reports and the Annual Report of the IHO. The IHO was represented in most cases by Secretary-General, a Director or an Assistant Director. In several cases, representatives from Member States also participated in the same meetings representing their own countries in support of IHO themes.
2. Notable highlights resulting from cooperation with relevant organizations during the period of this report are described hereinafter. All activities presented here should be understood in the context of the limiting constraints in all international collaborative activities induced by the COVID pandemic.

### **Maintain relationships with the Government of Monaco and the diplomatic corps accredited in Monaco**

3. Communications with the Government of Monaco, in particular the Department of External Relations and Cooperation, was regular and productive throughout the reporting period. Thanks to the established collaboration procedures the accession of five new Member States was successfully managed during the reporting period, namely Lebanon, Kenya, Iraq, Angola and Albania. The Democratic Republic of Congo and Republic of Vanuatu were reinstated as full members.
4. After twenty-five years presence of the Secretariat at the quai Antoine 1er, the Government of Monaco has generously sponsored a full refurbishment of the Secretariat's lower entrance and the lobby. The new interior design presents a fresh and modern ambience and complies with the colours of IHO's corporate design.
5. The highlight of this inter-Assembly period was undoubtedly the peak event of the celebrations of the 100<sup>th</sup> anniversary of the creation of the IHO on the 21<sup>st</sup> of June 2021. The Secretariat gained excellent support from all affected bodies of the local government for the smooth conduct of all those activities.
6. Her Excellency Madame Isabelle Picco, Permanent Representative of the Government of Monaco to the United Nations provided particularly good support in assisting the Secretary-General during his attendance at meetings in the UN Headquarters.

### **Maintain relationship with the Antarctic Treaty Consultative Meeting (ATCM)**

7. The IHO is an invited expert to the Antarctic Treaty Consultative Meeting (ATCM) which is a permanent diplomatic meeting that meets annually to consider measures, decisions, and resolutions to give effect to the principles of the Antarctic Treaty and the Environment Protocol and to provide regulations and guidelines for the management of the Antarctic Treaty area. The IHO was represented at all meetings during the reporting period.
8. In 2019 the ATCM updated its resolution on Hydrographic Mapping of Antarctic Waters. The Resolution provided a clear message to give priority to reviewing existing bathymetric data holdings and collecting new bathymetric data in the Antarctic region by encouraging their national programme vessels and other vessels including non-governmental vessels, as appropriate, to:
  - Review existing bathymetric data holdings for inclusion, either directly or through their national hydrographic office, in the IHO DCDB
  - Undertake hydrographic and bathymetric data collection on all their Antarctic voyages, as practicable.

- Utilize IHO guidelines where appropriate, including the IHO *Publication B-12 – Crowdsourced Bathymetry Guidance Document*.
  - Share all data collected with the IHO Data Center for Digital Bathymetry, either directly or through their national hydrographic office.
9. The resolution also encourages cooperation between national research institutions and mapping institutions/authorities on hydrographic surveying and charting in the Antarctic region, to ensure the use of basic hydrographic survey guidelines, in order to secure the highest value of collected data for the widest possible (re)use and to recommend Parties to endeavor to find additional resources for improving hydrographic surveying and charting in the Antarctic region. Since this fully meets the intention of the Hydrographic Commission of Antarctica this body strives to meet back-to-back with ATCM Conferences as undertaken in Berlin in May 2022 to reestablish some traditional partnership links paused because of the COVID constraints.

#### **Maintain relationship with the Comité International Radio Maritime (CIRM)**

10. A CIRM Workshop on S-100 and the future of ECDIS was held online on in April 2021. Sixty-nine individuals participated in the Workshop, comprising CIRM and IHO members and representatives from external organizations having an active interest in the implementation of S-100. The purpose of the Workshop was to bring CIRM members and external stakeholders together in order to discuss all technical aspects related to the introduction of support for S-100 in ECDIS, and the objective was to identify and shed light on some of the associated unknowns. Four individual discussion sessions were held, each moderated by a subject matter expert from the IHO's standards development community. Every session featured wide-ranging discussion, with considerable interaction between the speakers and general participants, and between CIRM members and non-members, covering all aspects of the implementation of S-100 including:
- the timescales associated with S-101 ENC coverage and their use in ECDIS;
  - the nature and scope of changes to standards including MSC.232(82) and IEC 61174;
  - dynamic adjustment of chart data using non-ENC S-100 based product specifications;
  - the potential impact of S-100 on user training, ECDIS hardware and data usage;
  - the definition of SENC & the role of SENC Delivery in S-100 ECDIS;
  - the capabilities of the "dual-fuel" concept for S-100 ECDIS; and
  - the possibility of encountering S-101 "anomalies."
11. CIRM was represented in the IHO drafting group that produced the draft amendments to the ECDIS Performance Standards (MSC232(82)) and joined the IHO as a co-sponsor in the submission to IMO in June 2022.

#### **Maintain relationship with European Union Initiatives (such as INSPIRE and EMODnet)**

12. On 6 May 2022, the European Commission and the International Hydrographic Organization (IHO) celebrated the tenth Anniversary of the Memorandum of Understanding between the two Organizations at the headquarters of the European Union's DG Mare. The event was attended by the European Commissioner for environment, oceans and fisheries - Mr Virginijus Sinkevičius and representatives of the Directorates General of the European Union, whilst for the IHO, Director Luigi Sinapi and representatives of twelve European Hydrographic Offices were present. Participants underlined the results achieved in 10 years of fruitful cooperation between the two Organizations, thanks to the commitment of the European Hydrographic Offices and the IHO-EU Network Working Group, as well as the impact of the EU initiatives in the field of Hydrography. The IENWG which was initiated for the implementation of the MoU,

identifies EU activities and processes on matters of interest to Hydrographic Offices (HOs).

13. Relations with the EU progressed well during the reporting period, in particular through the development of the Coastal Mapping Project in relation with the bathymetry portal of the European Marine Observation and Data Network (EMODnet) which has become the principal source of bathymetric data of European sea basins incorporated into the global GEBCO grid.
14. Another positive example for collaboration was on the One Ocean Summit under French EU Council Presidency in February 2022. The Secretary-General was participating in the panel discussion: Critical Ocean Knowledge Needs for Sustainable Ocean Management.

#### **Maintain relationship with the International Association of Marine Aids to Navigation and Lighthouse Authorities (IALA)**

15. The IALA has started the process to become an Intergovernmental Organization similar to the IHO, and - while waiting for the minimum number of ratifications by states to be reached - has decisively intensified its collaboration with the IHO, through two main directions: Capacity Building and the development of S-2xx products based on IHO's S-100 Universal Hydrographic Data Model under its own stewardship.
16. IALA is pursuing the development of S-2xx products related to Aids to Navigation (AtoN), Vessel Traffic Services (VTS), Positioning Systems, Communication Systems, AIS, ASM and VDES. A mention deserves the S-201, which represents the standardized method of exchanging information on AtoN between lighthouse, authorities, hydrographic offices, and related organizations. The product contains the positions, properties, operational status and general comments related to an AtoN.
17. In the Capacity Building sector, cooperation was marked by participation in numerous meetings of the IHO's Regional Hydrographic Commissions and the planning and conducting of joint technical visits to those countries that need more support in the development of hydrographic capacity and in the Aids to Navigation sectors.

#### **Maintain relationship with the International Electrotechnical Commission (IEC)**

18. IEC/TC80 prepare standards for maritime navigation and radiocommunication equipment and systems making use of electrotechnical, electronic, electroacoustic, electro-optical and data processing techniques. TC80 standards are widely used by Administrations for type approval of equipment which is a regulatory requirement under the IMO International Convention for the Safety of Life at Sea (SOLAS). The International Hydrographic Organization (IHO) is a Liaison member of IEC/TC80 and participates in its standards development and maintenance Working Groups.
19. In TC80 the MT7 is responsible to maintain the IEC 61174 test standard for ECDIS. This standard is based on IMO resolution MSC 232(82) and related IHO ECDIS standards S-52, S-57, S-63 and S-64. The current 4th edition of IEC 61174 was published in Aug 2015. The Plenary concluded that there was ample reason to consider a revision of IEC 61174 and considering the timelines, and such work commenced by July 2022 noting the endorsement of the Amended ECDIS Performance Standards at the 9th session of the Sub-Committee on Navigation, Communications and Search and Rescue (NCSR) meeting in June 2022.
20. IEC was represented in the IHO drafting group that produced the draft amendments to the ECDIS Performance Standards (MSC232(82)).

#### **Maintain relationship with the International Maritime Organization (IMO)**

21. IHO committed to submit draft amendments for Performance Standards of ECDIS (MSC.232(82)) to IMO NCSR9 for consideration by the Sub-Committee. The IHO initiative included engagement with Member States and international organizations (CIRM, IEC and INTERTANKO) in the preparation of the proposed amendments to

resolution MSC.232(82). The proposed amendments to NCSR was submitted by IHO with CIRM and INTERTANKO as co-sponsors. NCSR9 endorsed the revised ECDIS PS in June 2022 and submitted it to IMO MSC106 for adoption. On 11 November 2022 MSC106 adopted the Resolution on Performance Standards for Electronic Chart Display and Information Systems (ECDIS) and thereby making the use of S-100 and its related products a reality for improving safety of navigation. S-100 ECDIS will be legal to use after 1 January 2026 with a transition phase until 1 January 2029 when all new systems must comply with the new IMO Resolution on ECDIS Performance Standards (MSC 530(106)). The Committee invited IHO to keep IMO informed on the process development of the IHO S-100 framework standard.

22. IMO's final approval marks the finalization of a yearlong process to let the IHO S-100 concept become inherent part of the IMO regulatory framework for international shipping. Its strategic relevance cannot be overestimated. This decision underpins the instrumental role of the IHO being IMO's relevant partner in the integration of hydrographic elements into the next phase of digitalization of sea transportation. The elevation of the ECDIS technology to the next level is instrumental for any progress in autonomous shipping and route optimization in support of green shipping and the blue economy.

#### **Maintain relationship with the Intergovernmental Oceanographic Commission (IOC) of UNESCO**

23. Relations between IHO and IOC have been given a major boost since 2021, with the ignition of the most important initiative ever launched by the United Nations in favor of the oceans: the UN Decade of Ocean Science for Sustainable Development (2021-2030). The overall coordination of this comprehensive programme stretching over all scientific domains engaged with the ocean is done by IOC/UNESCO.
24. In the context of this initiative, IHO and IOC are in full agreement of the strategic and operational value of the GEBCO programme at a global level, for a better understanding of the marine environment and its internal dynamics.
25. Based on this shared understanding, the collaboration between IHO and IOC has undergone a significant improvement especially in the management - as Parent Organizations - of the GEBCO programme, through its Guiding Committee and Sub-Committees. Specifically, IHO and IOC decided to initiate a review of GEBCO's Governance through a Working Group managed directly by representatives of the two Organizations and with the help of external advisors, with the aim of presenting the Assemblies of the two organizations with the first results during 2023.
26. An upcoming theme addressed under the framework of the Ocean Decade is the *Digital Twin of the Ocean* approach. The Secretariat highlighted on several occasions IHO's competencies in cross sectoral standardization of marine data products and will keep on striving to gain acceptance for the S-100 approach within the oceanographic domain.

#### **Maintain relationship with the International Organization for Standardization (ISO)**

27. The IHO is a class A liaison member of the ISO Technical Committee 211 (ISO/TC211) and has contributed towards the development of the 19100 series of standards and technical specifications for geospatial information. These ISO standards have been used for the development of the S-100 - IHO Universal Hydrographic Data Model, the IHO Geospatial Information (GI) Registry and S-100-based product specifications.
28. ISO/TC 211 held its 51st, 52nd, and 53rd meetings in virtual format. Over one hundred participants from thirty countries and liaison organizations attended; some twenty working groups and advisory groups convened; open seminars addressed geospatial data in various domains and was very well-attended; the plenary session was attended by over ninety delegates. Special regard was put on the collaboration between the two internationally recognized standardization bodies. ISO and IHO, for the subject of IHO's



S-100 framework as the most important implementation of the ISO 19000 series of geospatial standards for hydrographic, maritime and related issues.

29. Since IHO and ISO agree by a MoU on mutual recognition and cooperation between the two organizations to continue to develop relevant contemporary standards and avoid duplication of effort. In order to avoid the latter, both organizations are jointly partnered with the Open Geospatial Consortium OGC. OGC represents Geoinformation Software industry and coordinates the provision and presentation of S-100 based data products through web service and other contemporary digital means.

#### **Maintain relationship with United Nations (UN) organizations based in New York**

30. The Secretariat has progressively raised the profile of the IHO in several United Nations (UN) bodies during the reporting period.

#### ***UN-GGIM***

31. UN Committee of Experts on Global Geospatial Information Management (UN-GGIM). The UN-GGIM reports to the UN Assembly via the UN Economic and Social Council (ECOSOC). The principal purpose of the UN-GGIM is to play a leading role in setting the agenda for the development of global geospatial information management and to promote the use of geospatial information in addressing key global challenges.
32. The Secretariat represented the IHO in the annual meetings of the UN-GGIM and several of its inter-sessional high-level forums as well as side events and workshops.
33. The IHO Secretariat co-authored with the ISO/TC 211 and the Open Geospatial Consortium key revision of the UN-GGIM Guide to the Role of Standards in Geospatial Information Management (“the Guide”). The goal of the Guide is to “provide detailed insights on the standards and good practices necessary to establish and maintain geospatial information management systems that are compatible and interoperable with other systems within and across organizations. The Guide also underscores the importance of standards in facilitating the application of the FAIR (Findable, Accessible, Interoperable, and Reusable) data principles - promoting improved policymaking, decision making and government effectiveness in addressing key social, economic, and environmental topics, including attainment of Sustainable Development Goals” and is available as a living online recourse document.

#### ***UN Division of Oceans and Law of the Sea (UN-DOALOS)***

34. The Secretariat provided to UN DOALOS the IHO contribution to the annual report of the UN Secretary General to the UN General Assembly on Oceans and Law of the Sea. Liaison was also maintained through the IHO-IAG Advisory Board on the Law of the Sea (ABLOS). DOALOS gained support through development of the S-100-based product specification on maritime limits and boundaries (S-121) to form the recommended format for States to deposit data in support of maritime limits and boundaries with the United Nations in accordance with the provisions of the UN Convention on the Law of the Sea (UNCLOS).

#### ***UN-OICP***

35. The Secretary-General attended the United Nations Open-ended Informal Consultative Process on Oceans and the Law of the Sea at the UN headquarters in New York, contributing to the session on ocean observing in June 2022. His presentation on *Mapping the Ocean* to deliver baseline information for all specific observations and interoperable Ocean data in support of the digital twin triggered discussions on the interrelation between hydrography and oceanography. The event which took place on World Oceans Day offered the opportunity to be part of the festivities at the UN in the presence of the UN Secretary-General António Guterres.

### **Maintain relationship with the World Meteorological Organization (WMO)**

36. The WMO actively cooperates with the IHO as trio with IMO in maintenance of the World Wide Navigational Warning Service (WWNWS), which includes NAVAREAs and coastal warnings. To consolidate the cooperation between IHO, WMO and IMO, it is worthy to mention that – after the long break due to the COVID-19 pandemic –, in 2022 the IMO/WMO/IHO Tri-Secretariat meeting aimed to enhance the cooperation on marine safety and ocean related matters, with a focus on the proper provision of Marine Safety Information in terms of coverage, availability, proper conduct and future digitalization of these global services.
37. In order to address the digitalization aspect under the paradigm of the S-100 Standard framework, the WMO contribution is committed to the production of S-4xx Product Specifications, amongst which particular attention has been paid to the S-413 Weather and Wave Conditions and S-414 Weather and Wave Observations.
38. The WMO Services Commission (SERCOM), with whom WWNWS-SC cooperates closely, has established the Worldwide Met-Ocean Information and Warning Service Standing Sub-Committee (WWMIWS-SubC) to monitor and guide the provision of met-ocean MSI in real time through the network of METAREAs which will provide valuable information for all hydrographic survey activities in open waters.

### **Maintain relationship with the International Seabed Authority (ISA)**

39. The IHO established a MoU with the ISA. This MoU enables the IHO to provide advice and comment to the Secretariat of the ISA, particularly in relation to improving access to bathymetric data upon which the ISA manages its contracts in The Area. In May 2022 the collaboration of the two organizations culminated in a formal data submission agreement aiming to the provision of bathymetric data gathered by ISA contractors in their respective license areas to for inclusion in the IHO Data Centre for Digital Bathymetry (DCDB) Archive.
40. ISA plans to make an initial contribution of ~7,000 GB of multibeam echosounder (MBES) data, and ancillary data, to contribute to the objectives of the UN Decade of Ocean Science and eventually to IHO's and IOC-UNESCO's joint General Bathymetric Map of the Oceans (GEBCO) programme. This initial contribution covers the ISA backlog of approximately 15 years of data recording. Going forward, the ISA estimates an annual contribution of approximately 750 GB of bathymetric data each year. ISA's commitment and the resulting data contributions are of significance to fill the gaps of the GEBCO grid in deep water regions under ISA coordination.

### **Maintain relationships with other international and observer organizations when their agendas have relevance to the programme of the IHO**

41. The Secretariat proactively contributed for the first time to the UN Ocean Conference held in June 2022 in Lisbon, Portugal. The IHO and Stockholm Environment Institute, Sweden organized a very informative side event which shed light on how hydrography can support a wide range of activities and help countries develop the Blue Economy. Participants learned how hydrographic survey data in Belize delivered measurable benefits and was used to inform decisions regarding electricity cables, coastal habitat mapping with sea grass, implementing resilience measures.

### **FIG and International Cartographic Conference**

42. The International Federation of Surveyors (FIG) is a long standing partner of IHO in the lasting discussion on surveying concepts and their applicability in the marine domain. FIG was founded on 18 July 1878, in Paris, by delegates from seven national associations - Belgium, France, Germany, Great Britain, Italy, Spain and Switzerland - and was known as the Fédération Internationale des Géomètres. It is an UN-recognized non-governmental organization (NGO), representing more than 120 countries

throughout the world, and it aims to ensure that the disciplines of surveying and all who practice them meet the needs of the markets and communities that they serve.

43. The cooperation between IHO and FIG has a long history based on the shared areas of interest clearly demonstrated by the fact that one of the ten Commissions of FIG is called Hydrography. One area of continued collaboration for several decades is the education with the recognized need to develop and maintain international standards of competence for the hydrographic surveying profession. A Memorandum of Understanding (MoU) between IHO and FIG was established in 2003 to provide a framework for continuing cooperation between the two organizations.
44. At the FIG2022, the IHO Secretariat delivered a presentation titled “The Universal Hydrographic Data Model S-100: A Revolutionary Approach to the Nautical Cartography and Maritime Services”. Besides, at FIG2022, the activities executed in the last year with the participation of some members in workshops and seminars, the participation in the revision of IHO S-44, the outcomes of the e-Working Week 2021, the changes in the IBSC Members from FIG as well as the IBSC meetings, the future evolvement of the IHO International Hydrographic Review, as well as the need to develop increasing outreach of Hydrography within the FIG were discussed.
45. The International Cartographic Association (ICA) is a long standing partner of IHO in the lasting discussion on general cartographic concepts and their applicability in the marine domain. ICA’s main organ is the International Cartographic Conference. The ICC 2021 summit consisted of the Conference, where numerous scientific papers on cartography-related matters were presented throughout the week in sessions running in parallel and a Cartographic Exhibition, where various maps and other cartographic products from ICA member countries were presented with several examples of Nautical Charts.
46. In the programme of the Conference there were sessions dedicated to the Marine Cartography organized by the ICA Commission on Marine Cartography that has as Chair and Vice-Chair who are also the two ICA representatives on the IHO/FIG/ICA International Board on Standards of Competence for Hydrographic Surveyors and Nautical Cartographers (IBSC). ICA’s Marine Cartography Commission held a side meeting to which the IHO delegation was invited. The meeting focused on the activities of the Commission and the need to recruit members that can eventually become members of the IBSC.
47. The IHO Delegation used the opportunity of participation to discuss improvements of future collaboration in different areas such as the Capacity Building, the Spatial Data Infrastructures, the IBSC and Cartographic Exhibitions.

## **Element 1.2 Information Management**

48. The information management infrastructure of the Secretariat and the IHO has been progressively developed and improved over the reporting period.
49. The internal IT personnel continues to rely on a combination of one dedicated member of staff and approximately a third of the time of an Assistant Director, together with assistance and services provided by several service providers under contract terms. A new challenge was the provision of matured hard- and software infrastructure for remote and hybrid meeting formats. Investments were made in cameras, microphones, loudspeaker, and video production software.
50. In-kind contributions of Member States hosting applications such as the DCDB (USA), S-100 Registry and IHO e-learning center (both by Republic of Korea). The Secretariat’s operational maintenance of the S-100 Registry forming the core digital component of the S-100 framework absorbs three third of the time of the appointed staff expert. Digital tools such as the online meeting registration system and the *formstack* system enabling the digital management of Member States responses to Circular Letters performing only

thanks to the technical and operational support of project officers from Japan and Republic of Korea.

### **Element 1.3 Public Relations and Outreach**

#### **Digital communication**

51. The outreach of IHO themes is more than ever based on digital provisions. Social media such as linkedIn, facebook and twitter have become relevant communication channels in parallel to the IHO website. The website of the International Hydrographic Review underwent a full re-launch providing now substantially extended functionality. The use of VTC and hybrid formats for meetings hosted by the Secretariat have become common practice.

#### **World Hydrography Day**

52. World Hydrography Day was celebrated each year during the reporting period but had to be adapted in its format to COVID constraints.
53. The Secretariat organized various forms of communication outreach, some in conjunction with Monacology, a marine science based event to raise children's awareness about the environment and sustainable development and the Monaco Ocean week. The peak event were the celebrations of the IHO Anniversary on 21<sup>st</sup> June 2021. The celebrations in Monaco included speeches by high level participants such as HSH Prince Albert II of Monaco, HEM Peter Thomson, UN special Envoy to the Oceans, the visit of the Italian Navy training ship *Amerigo Vespucci* and the live presentation of modern autonomous survey vehicles by French Companies iXblue and ECA group.
54. The 2021 years' motto was promoted by the publication of the prestige book titled *One hundred years of international cooperation in hydrography*. The Editor in Chief, Mr. Gilles Bessero, former IHO Director, managed the contributions of more than a dozen co-authors to finalize this important publication coming in separate English and French versions in an outstanding manner. Germany sponsored the production of the printed samples.
55. The Secretariat maintained a record of the principle IHO activities in the monthly publication of the International Hydrographic Bulletin composed of the meeting brief reports, as well as providing a quarterly article in the journal *Hydro International*.

### **Element 1.4 Work Programme & Budget, Strategic Plan and Performance Monitoring**

56. This element of the work programme concerns the execution of the IHO work programme, the future structure and organization of the IHO and its capacity to meet future requirements.

#### **Work Programme & Strategic Plan**

57. The conduct of the IHO Work Programme was permanently overseen by the Council. As a result of 2<sup>nd</sup> Assembly's approval of the revised Strategic Plan each item of the Work Programme was associated with the respective goals and targets. Despite the COVID constraints most programmed work items were met. The detailed review of the IHO Work Programme items addressed at Council meetings resulted in concrete proposals for decisions and actions, which are now brought forward to the Assembly for consideration and subsequent approval.

#### **Performance Monitoring**

58. The second Assembly tasked the Council to monitor closely the appropriateness and applicability of the proposed Strategic Performance Indicators and amend them if

deemed necessary (Decision A2/20). Under the aegis of the responsible Committee chairs, both HSSC and IRCC managed a comprehensive review of the proposed indicators and submitted proposals for endorsement at Council. The annual Status Report on Performance Monitoring available forms Annex B to the IHO Annual Report (Publication P-7). This Annex also includes a set of SPI's for Work Programme 1 *Corporate Affairs* which is based on the proposals made by the Secretary-General and endorsed by Council.

### **Budgetary and financial situation**

59. The Council has permanently overseen the budget and the financial situation by consideration of the respective annual reports of the Secretary-General and the endorsement of annual budget estimates during the inter-Assembly period. The Council also endorsed the budget estimates for the period 2023 – 2026 proposed by the Secretary-General and to put forward as Assembly Proposal A3 PRO 1.5 for approval.
60. The current financial situation as of April 2023 will be reported separately based on the Finance Committee Report as a result of the meeting of the Finance Committee meeting on the day preceding the Assembly. (see future Assembly document A.3/F/01).

### **Element 1.5 Secretariat Services**

61. This element covers the provision of a range of Secretariat's and other services required by Member States and relevant stakeholder organizations.

### **Staff Regulations**

62. As reported regularly to the Council, the IHO Secretariat's collective medical insurance and the regime to meet the Secretariat's retirement obligations for active and retired staff have to be renegotiated with competent insurers.
63. Another unexpected development for the Secretariat's working regime was triggered by various constraints as a result of the COVID pandemic. In order to comply with the containment measures announced by the Governments of France and the Principality of Monaco to slow the spread of the virus, one of the preventive measures to minimize the risk of infection through pragmatic measures was the introduction of teleworking to enable the staff to work from home. After two years of practice this tool has now turned out to be flexible and efficient for most of staff members.
64. All three items require an adaptation of the IHO Publication M-7 Staff Regulations. As a consequence, the Secretariat has drafted a revised version of M-7 which focuses on adaptations to the changed situation. The proposed revision was discussed with the Joint Staff Consultation Committee, submitted to the Finance Committee for comments and will be brought forward to Assembly for discussion and approval by means of A3 PRO 1.5.

### **Staff Numbers**

65. For two thirds of the reporting period, the Secretariat comprised 20 Members of Staff, supplemented by three officers seconded by Member States to work on specific projects otherwise beyond the resources of the Secretariat. The total number of employees remained unchanged compared to the previous reporting period. One staff position is currently pending replacement but the job description may be redefined from administrative work towards IT system maintenance.
66. Significant changes have been applied to the profile of permanent staff members. Two outgoing translators have not been replaced internally. Instead, the Spanish translation work is fully outsourced to a competent external translator and the French translation work is partly outsourced and partly done internally by the remaining head of the translation post who also coordinates all internal and external translations.

67. In the face of evolving new requirements in the provision of GIS services hosted by the Secretariat, a dedicated GIS expert was hired as permanent staff. His expertise is instrumental for the proper provision of the thematic geodata services bundled under the INtoGIS portal.
68. Registration and operational management tasks for Capacity Building was concentrated on one post. This gave leeway to hire a Public Relations Assistant to permanently aggregate content for all digital and printed media streams served.

### **Seconded Officers**

69. One officer each from the Korea Hydrographic and Oceanographic Agency and the Hydrographic and Oceanographic Department of the Japan Coast Guard have been posted to the Secretariat throughout the period. An officer from the Directorate of Hydrography and Navigation of Peru is seconded to the Secretariat from January 2022.

### **Retirements, termination of service and replacements**

70. Three long-standing members of the Secretariat staff retired during the reporting period. Mr. Daniel Menini, Cartographic & Graphic Arts Assistant left in August 2021 after 38 years' service and so did Ms. Mary Paz Muro, Spanish Translator after 29 years' service. Ms. Ghislaine Fauchois, Manager Finance & Administration, went for retirement in September 2022 after 12 years' service. Ms. Perrine Sauveur, French translator, left the Secretariat because of family reasons after five years in March 2022. Mr David Wyatt, Assistant Director Surveying and Operations left after the elapse of nine years' service in August 2021. He was replaced by Mr. Samuel Harper. Mr. Rémy Roquefort joined the Secretariat as GIS Services & Graphic Arts Assistant in October 2021.

### **Workload**

71. The principal tasks of the administrative staff in the Secretariat involve the management and production of IHO documentation. The drastic increase of VTCs and hybrid formats for in-house meetings added a new work item to the IT related personnel. Another add on comes with the extended GIS services hosted by the Secretariat and the coordination of the increasing digitalization of the IHO standards maintenance through web based applications such as the S-100 Registry and the variety of digital tools related to. The continued supply of all those services was only possible thanks to the dedicated assistance of the project officers detached to the Secretariat.
72. The workload of the Secretary-General, Directors and Assistant Directors remained at a very high tempo throughout the reporting period. This has been caused by a combination of added burden induced by the COVID constraints, greater levels of liaison with other international organizations and stakeholder groups as a result of the expansion of the work programme scope to the targets of Goal 2 and Goal 3 of the IHO Strategy, together with the active involvement of the Secretariat Staff in timely limited projects such as Empowering Women in Hydrography. As a result, the senior staff are fully stretched.

## **Element 1.6 IHO Council and Assembly**

### **Fourth, fifth and sixth meeting of Council**

73. For more than two years the activities of this Council were cast against the backdrop of the COVID-19 pandemic. The 2<sup>nd</sup> IHO Assembly and the 4<sup>th</sup> meeting of the IHO Council, which launched this triennium, was virtual and abbreviated. The 5<sup>th</sup> meeting was in hybrid virtual/in-person format, and Council members were finally able to meet in person for the 6<sup>th</sup> meeting of the IHO Council.
74. The main reference for all Council activities in the inter-assembly period have been the A-2 Decisions allocated to the Council. Despite the COVID pandemic, Council has made significant progress on the items it was tasked by Assembly. Two key objectives have

been first priority: the effective implementation of the revised Strategic Plan and second: the launch of the decade of implementation of delivery of S-100 services.

75. During the course of its business the Council produced a number of decisions leading to concrete directions for action by the Secretariat, HSSC and IRCC. The detailed review of the Work Programme items addressed at Council meetings resulted in concrete proposals for decisions and actions, which are now brought forward to the Assembly for consideration and subsequent approval.

### **Third Assembly**

76. The 3<sup>rd</sup> Session of the IHO Assembly was originally planned to be held at the principal venue, the Rainier III Auditorium in Monaco from 25 – 28 April 2023. Unfortunately, due to the continuing presence of the COVID Centre of the Principality of Monaco at this venue and the uncertainty if and when this arrangement will cease, the IHO Secretariat had to proceed to find an alternative venue.
77. The only sensible option identified was the Grimaldi Forum of Monaco. The Grimaldi Forum, being a conference center by design, offers excellent conditions for the conduct of the Assembly and the associated exhibitions, however the only available slot offered in timely vicinity of the originally planned dates is the period from 2 to 5 May 2023, which in essence results in a shift of the event by one week.
78. The Directing Committee has, after careful consideration and in anticipation of the unplanned substantial extra burden to the IHO Conference Funds, decided that the 3<sup>rd</sup> Session of the IHO Assembly will take place at the Grimaldi Forum in the Principality of Monaco from 2 to 5 May 2023.
79. The IHO Secretariat is well aware of the inconvenience and difficulties this change may cause to the IHO Member States and all participants (International Organizations, National Institutions and Industry Stakeholders), but is convinced that this timely shift and change of the venue is the best arrangement for the proper conduct of the Assembly.





**3<sup>rd</sup> SESSION OF THE ASSEMBLY**  
**Monaco, 2 – 5 May 2023**

**ENDORSEMENT OF**  
**THE SELECTION PROCESS FOR THE COUNCIL**

Submitted by the Secretary-General

**Background**

1. In accordance with the basic documents of the IHO that entered into force on 8 November 2016, a new Council must be established before the end of each ordinary session of the IHO Assembly. The new Council commences its work after the end of the 3<sup>rd</sup> Session of the Assembly. The members of the 3<sup>rd</sup> Council shall hold office until the end of the next ordinary Session of the Assembly in 2026 for three years.
2. In accordance with Article VI (a) of the IHO Convention as amended, 30 Member States shall take seats in the Council as long as the number of Member States is not greater than 120.
3. The procedure for determining the composition of the Council is set out in Article 16 of the General Regulations. This article requires in particular that:
  - (d) *Before the end of the ordinary session the Secretary-General shall submit the full list of Council members to the Assembly.*
  - (e) *The Assembly shall review and endorse the selection process to ensure that these principles have been correctly followed.*

**Selection process**

4. A first set of 20 seats shall be allocated on a regional basis. In application of the General Regulations, the Secretary-General invited Member States, which were full members of more than one Regional Hydrographic Commission (RHC), to indicate in which RHC they wished to be counted for the purpose of enabling the Secretary-General to determine the number of seats on the Council allocated to each RHC (IHO CL 27/2022 dated 29 June 2022 refers). The allocation was reported in IHO CL 43/2022 dated 7 November 2022, which also invited the Chairs of RHCs to provide the identity of the State(s) that will occupy the seat(s) allocated to their RHC.
5. In accordance with sub-paragraph (b) (vi) of Article 16 of the General Regulations, the Secretary-General ensured that the outcome was not affected by any new States becoming members of the IHO up to 3 months before the beginning of the 3<sup>rd</sup> Session of the Assembly, that is before 2 February 2023.
6. Most of the RHCs have already officially declared the Member States which are selected to take seats on the Council. Table 1 below provides the resultant distribution of the 20 seats on the Council allocated to the RHCs indicating those States that were eligible to be selected to occupy those seats and where known, the identity of the State(s) selected to occupy the seat(s) allocated to each RHC.

**Table 1 showing the number of seats on the IHO Council distributed on a regional basis and the Member States eligible to occupy those seats**

Regional Hydrographic Commission (RHC)	Member States (MS) eligible to occupy one of the 20 Council seat(s) allocated to the RHCs (MS that are Members of more than one RHC shown in bold) (MS whose rights are suspended shown in <del>strike through</del> )	Number of MS to be counted in the calculation of the number of seats on a proportional basis	Number of Council seats allocated to the RHC	MS selected by the RHC to occupy the Council seat(s) allocated to the RHC
MBSHC	Algeria, Bulgaria, Croatia, Cyprus, <b>Egypt, France</b> , Georgia, Greece, Italy, Lebanon, Malta, Monaco, Montenegro, Romania, <del>Serbia</del> , Slovenia, <b>Spain</b> , <del>Syria</del> , Tunisia, Türkiye, Ukraine.	19	3	Croatia, France, Italy
EAHC	Brunei Darussalam, China, Democratic People's Republic of Korea, <b>Indonesia</b> , Japan, Korea (Rep of), Malaysia, Philippines, Singapore, <b>Thailand</b>	10	2	Malaysia, Thailand
MACHC	Cuba, Dominican Republic, Guatemala, Guyana, Jamaica, Mexico, <b>Netherlands</b> , Suriname, Trinidad and Tobago, Venezuela.	10	2	Jamaica, Netherlands
RSAHC	Bahrain, Iran (Islamic Rep. of), Kuwait, Oman, <b>Pakistan</b> , Qatar, <b>Saudi Arabia</b> , United Arab Emirates	8	1	Saudi Arabia
SWPHC	Australia, Fiji, New Zealand, Papua New Guinea, Samoa, Solomon Islands, Tonga, <b>USA</b> , Vanuatu	9	2	Fiji, New Zealand
NIOHC	Bangladesh, India, Myanmar, Sri Lanka	4	1	India
SAIHC	Angola, Kenya, Mauritius, Mozambique, Seychelles, South Africa, <b>United Kingdom</b>	7	1	Angola
EAtHC	Cameroon, Democratic Rep of Congo, Ghana, <b>Morocco</b> , Nigeria, Portugal	6	1	Portugal
NSHC	Belgium, <b>Germany</b> , <b>Iceland</b> , Ireland	4	1	Germany
BSHC	Estonia, <b>Finland</b> , Latvia, Poland, <b>Sweden</b> , <b>Russian Federation</b>	6	1	Sweden
SEPRHC	Chile, <b>Colombia</b> , Ecuador, Peru	4	1	Chile
ARHC	<b>Denmark</b>	1	1	Denmark
SWAtHC	Argentina, <b>Brazil</b> , Uruguay	3	1	Brazil
NHC	<b>Norway</b>	1	1	Norway
USCHC	<b>Canada</b>	1	1	Canada
Total		93	<b>20</b>	

7. The remaining 10 seats on the IHO Council are to be allocated to Member States that have not already been selected to occupy a seat allocated on a regional basis. These 10 seats are to be allocated on the basis of hydrographic interests, which under the current regulation is defined as national flag tonnage. In accordance with Article 6 (a) of the Financial Regulation, the Secretary-General refers to the table of tonnages that had entered into force on 1 January 2021 (Decision A2/05) and will be approaching each Member State on the list, which is in order of highest tonnage, inviting the State to declare if it wishes to take up one of the 10 seats (if not already selected by a RHC). The process continues until all 10 seats are filled.

8. The full allocation process of Council seats will be finalized under agenda item 12 with reference to the document A3\_2023\_E\_02\_Rev1– *Table of Tonnages, Shares and Votes applicable at A-3*. The provisional list is provided in Table 2 below.

Table 2 of tonnages (based on table in force since 1 January 2021)	Tonnage
CHINA	97 570 000
SINGAPORE	91 047 748
MALTA	77 231 000
INDONESIA	45 194 835
UNITED KINGDOM	44 876 668
REPUBLIC OF KOREA	42 189 086
GREECE	39 949 462
JAPAN	28 302 915
UNITED STATES OF AMERICA	24 885 595
CYPRUS	24 391 273





### Items to be reported

- HSSC Introduction
- Implementation of the IHO Strategic Plan
- S-100: Why, How and When?
  - Identified benefits with S-100
  - Fundamental differences with S-100
  - Plan of action
- Future of the paper chart
- Other highlights from the HSSC Work Plan
- Future challenges

A3 Agenda Item 4 WP2 Report **2**

### HSSC, Introduction

HSSC, focuses on developing and maintaining global hydrographic standards to enhance navigational safety, efficiency and security enabling reduced environmental impact and protection of the marine environment.

<p><b>S-100 WG</b> S-101PT S-102PT S-121PT S-129PT S100P PT</p>	<p><b>TWCWG</b> Tides, Water Level and Currents</p>	<p><b>NIPWG</b> Nautical Information Provision</p>	<p><b>NCWG</b> Nautical Cartography</p>	<p><b>HSWG</b> Hydrographic Surveys</p>
<p><b>MASS PT</b> S-130 PT</p>	<p><b>ENCWG</b> ENC Standards Maintenance</p>	<p><b>DQWG</b> Data Quality</p>	<p><b>ABLOS</b> Advisory Board of Law of the Sea</p>	<p><b>HDWG</b> Hydrographic Dictionary</p>

A3 Agenda Item 4 WP2 Report **3**

## The implementation of the IHO Strategic Plan

Goal 1 : Evolving the hydrographic support for safety and efficiency of maritime navigation		Goal 2 : Increasing the use of hydrographic data for the benefit of society	
1.1 DELIVER STANDARDS FOR HYDROGRAPHIC DATA AND SPECIFICATIONS OF HYDROGRAPHIC PRODUCTS		1.2 DEVELOP STANDARDS & SPECIFICATIONS	2.2 PROMOTE NEW TOOLS AND METHODS
	1.1.1 Member States produce & deliver products based on S-100	1.1.2 Number of hydrographic data products and services based on S-100	2.2.2 Number of new applications of the new version of Standards for Hydrographic Survey (S-44)
Target	2026 : 60% of MS distribute at least 1 product*	2026 : 10** S1xx Product Specifications are operational (Edition 2.0.0)	Number of downloads of S-44 Edition 6.0.0 and following ones
Value 31/12/2021	0% of MS distribute official products Several MS distribute S-102 & S-111 compliant with current editions of PS	0/10 S-100 Edition 5.0.0 endorsed at HSSC 14	59
<small>* Based on that 62 of 94 IHO MS produce S-57 ENC's (March 2021)                      ** S-101, S-102, S-104, S-111, S-122, S-124, S-127, S-128, S-129, S-131</small>			



## Why do we need S-100?

### Paper Charts to Today's ENCs



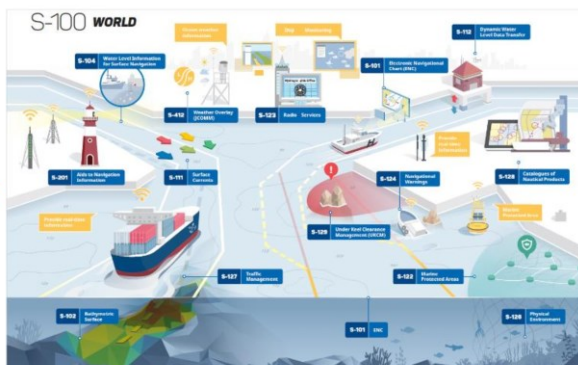
ECDIS, an electronic version of the paper chart



## Future ECDIS supporting E-navigation



ECDIS with one ENC layer

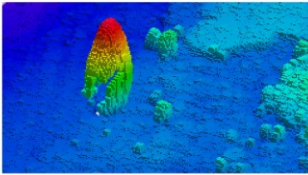


ECDIS with multiple interoperable layers adding the vertical and real time information dimension to the main ENC layer



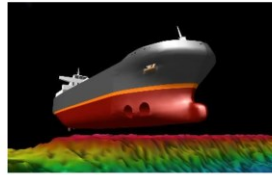
## Major Benefits with S-100

### Improved Safety



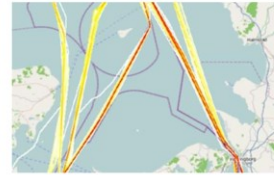
High resolution bathymetry in combination with other datasets.

### Optimized Loading



Under Keel Clearance Management with S-100

### Route Optimization and Just in Time



Decreased fuel consumption. Avoid squat, usage of tide, currents and weather information

**Increased Safety, Efficiency and Reduced Environmental Impact**



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## Major Benefits with S-100

### Maintainable and Cyber Secure



Updates of S-100 Product Specifications can be managed in S-100 ECDIS and Cyber Security is improved.

### Automated Navigation



Machine readable nautical information can facilitate IMO MASS – Maritime Autonomous Surface Ships

**Cyber secure, optimal decision-aids, multiple usage beyond safety of navigation, future proof and a first step towards MASS**



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## Fundamental changes in S-100 ECDIS

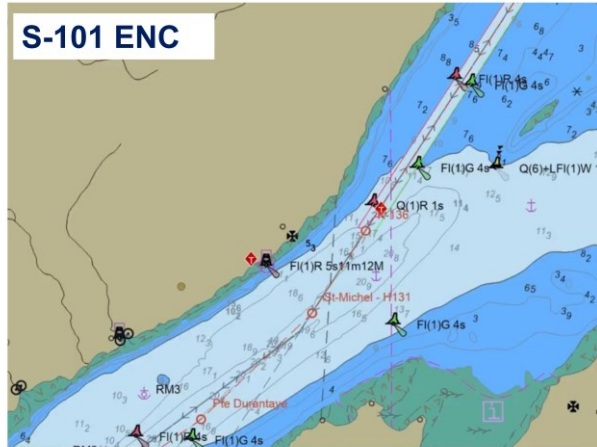
- The single layer official S-57 ENC's will be replaced by multiple, interacting layers of navigational data
- The S-101 ENC will always be the navigational base layer
- In the new IMO ECDIS Performance Standards the term *Electronic Navigational Data Service (ENDS)* is used for the multiple layers to be used in S-100 ECDIS
- **Electronic Navigational Data Service (ENDS)** means a special-purpose database compiled from nautical chart and nautical publication data, standardized as to content, structure and format, **issued for use with ECDIS by or on the authority of a Government, authorized Hydrographic Office or other relevant government institution**, and conforming to IHO standards; and, is designed to meet the requirement of marine navigation and the nautical charts and nautical publications carriage requirements in SOLAS regulations V/19 and V/27. **The navigational base layer of ENDS is the Electronic Navigational Chart (ENC).**
- S-98 is the product specification which will handle how multiple layers are portrayed and how alarms are triggered



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### Suppression of S-101 ENC depth information

S-101 ENC



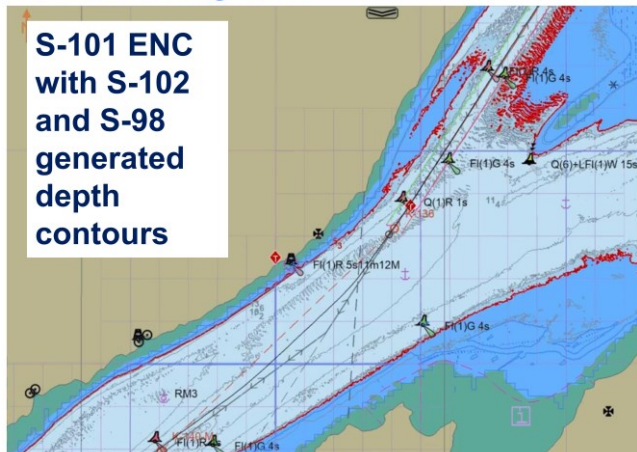
With permission from the Canadian Hydrographic Service



A3 Agenda Item 4 WP2 Report 10

### Suppression of S-101 ENC depth information with S-102 using S-98

S-101 ENC with S-102 and S-98 generated depth contours



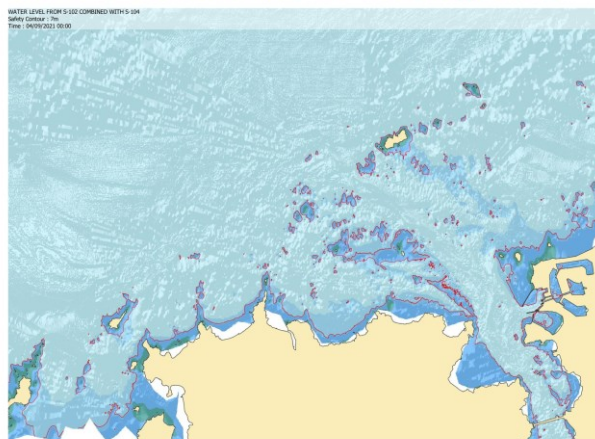
With permission from the Canadian Hydrographic Service



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### Suppression of S-101 ENC depth information with S-102 and S-104 using S-98

WATER LEVEL FROM S-102 COMBINED WITH S-104  
Safety Contour 7m  
Time: 19/05/2023 09:00



Safety Contour 7m. The safety contour changes are based on S-102 bathymetry and Water Level Adjustment (WLA), using S-104, over a period of 21 hours.



With permission from SHOM



A3 Agenda Item 4 WP2 Report 12

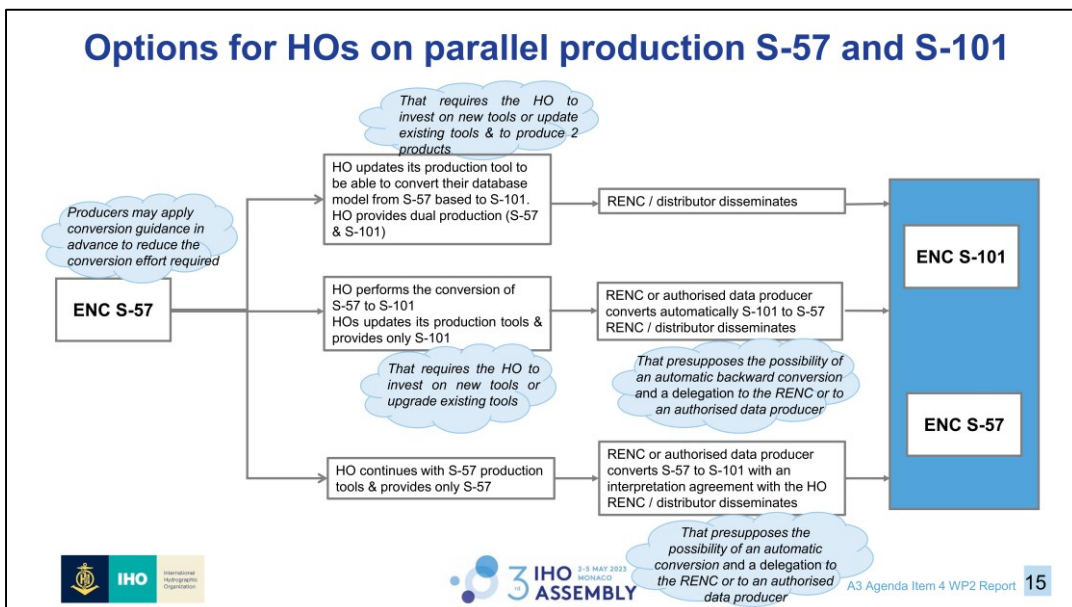




### Transition from S-57 to S-101 ENC

- ENCWG has developed a S-57 ENC to S-101 Conversion Guidance which was approved in its first edition at HSSC14. For implementation and testing. Published as S-65 Ed 1.0.0.
- HSSC14 also tasked the ENCWG to develop an encoding guidance for the backward conversion from S-101 to S-57. It is expected that the backwards conversion would be a more automatic process.
- The IHO-Singapore Tech Lab, IC-ENC and PRIMAR have ongoing activities regarding S-57 to S-101 conversion and vice versa.
- All these initiatives are aimed to support the transition from S-57 ENCs to S-101 ENCs, so IHO MS can achieve substantial coverage of S-101 ENC in advance of the new IMO ECDIS Performance Standards in force dates.

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## IMO Approval of S-100 in ECDIS Performance Standards

- The IHO organized a drafting group consisted of relevant parts of the HSSC Chair group, CIRM, IEC, INTERTANKO and a few other relevant stakeholders.
- The drafting group was chaired by the IHO Technical Director and a draft redline version was submitted by IHO, cosponsored by CIRM and Intertanko, to the IMO NCSR9 meeting, held in June 2022.
- With the exception of the withdrawal of functionalities for route exchange all other proposed changes were endorsed by NCSR9. The proposal was subsequently approved by IMO MSC106 in November 2022.
- A transition period was agreed upon, meaning that S-100 ECDIS will be legal to use after **1 January 2026** and from **1 January 2029** new systems must comply with the new IMO Resolution MSC.530(106) on ECDIS Performance Standards.

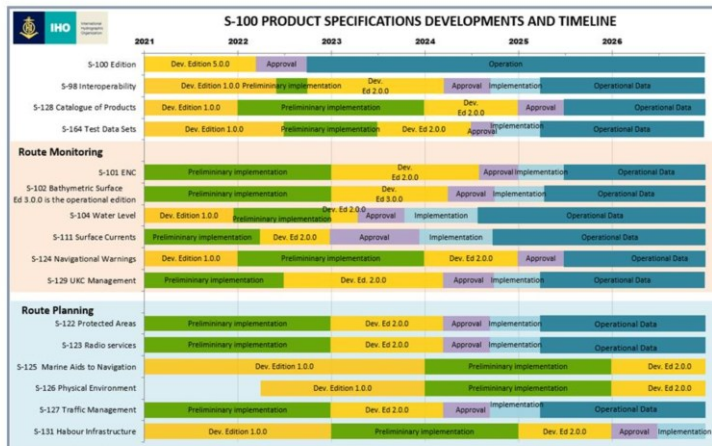


## When should we be ready for S-100 and consequences for IHO and IHO MS

- Inclusion of S-100 in the IMO regulatory framework is a major success for IHO.
- IHO has now commitments towards IMO and other stakeholders to achieve operational status on the prioritized S-100 product specifications.
- Timely Development of S-101 Product Specification under special monitoring (ISO 9001) by HSSC.
- Active contribution in S-100 related WGs and PTs must be increased.
- Member States to achieve substantial coverage of S-101 by 2026. Coordinated by IRCC, WENDWG and RHC.
- S-100 ECDIS legal to use, 1 January 2026, at the end of the IHO work programme 2023 – 2026.



## S-100 Timeline



Available in the IHO S-100 Roadmap, Annex 2. Updated annually after the HSSC Meeting and reported to IHO Council and IMO NCSR.

This version is updated July 2022



## The implementation of the recommendations on the Future of the Paper Nautical Chart

- A project team is established under NCWG to develop a Baseline Symbology to support the automated production of paper charts from S-101 data.
- Some MS suggested a varied approach to achieve better guidance.
- HSSC and NCWG perspective is that Chart Specification S-4 gives enough flexibility. The general approach agreed upon at A-2 2020, regarding paper charts, is reasonable.
- Council 6 (2022): US (supported by AU, DE, DK, KR, and NZ) to document use cases, develop associated guidelines and identify challenges with S-4. Proposal to be submitted to the HSSC/NCWG.



## Other highlights in the ongoing HSSC Work Plan

- The ENCWG has finalized a revision of the Use of the Object catalogue, S-57 Annex A and a new edition of the ENC Validation Checks, S-58 edition 7.0.0 was approved by IHO Member States 2022.
- The new Hydrographic Survey WG is progressing well. The Hydrographic Survey Standard S-44 Edition 6.1.0 was approved by IHO Member States 2022.
- The MASSPT is expected to deliver their final report at HSSC 15.
- The S-130 PT (Polygonal demarcation of global sea areas) have been established and delivered its first status report at HSSC 14.
- HSSC 15 will take place in Helsinki Finland 5 - 9 June 2023, with one day reserved for a Stakeholder session.



## Future Considerations and Challenges

- IHO MS active contribution in the technical WG/PTs should be increased. Active participation – fundamental difference for HOs to implement new technology, standards and S-100 products and services.
- Industry partners in the WG/PTs are appreciated. Though, a risk to become too dependant on industry when S-100 is developed?
- S-100 is a complex echo system:
  - IHO is the focal point
  - IMO e-Nav is dependent on S-100
  - IALA, WMO, IEC and others are contributing but need support from IHO
  - Kind contribution from ROK to setup and maintain the IHO Geospatial Information Registry
  - Operational resources within IHO are limited. A sustainable structure is needed to maintain the technical and administrative infrastructure around S-100.
  - Can we, IHO, contribute to needed resources?







## Items to be reported

- IRCC Introduction
- Implementation of the IHO Strategic Plan
- IRCC Workshops
- WEND-100
- Capacity Building Strategy
- IHO e-learning Center
- Other highlights from the IRCC Work Plan
- Future challenges



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## IRCC Introduction

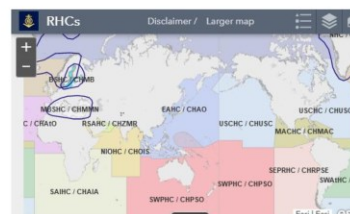
The Inter-Regional Coordination Committee (IRCC) is the steering committee of the IHO for inter-regional coordination and support.

Chair: Mr Thomas DEHLING (Germany)

Vice-Chair: Dr John Nyberg (USA)

Members: Chairs of the 15 RHCs and of HCA  
Chairs of 9 subordinate bodies

(WWNWS, CBSC, WENDWG, MSDIWG, IENWG, CSBWG, IBSC, DCDB, GGC)



Excellent cooperation between IRCC and HSCC



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## Implementation of the IHO Strategic Plan

More time for strategic issues at IRCC

Workshops of the IRCC as a new tool of online and intersessional operation

- First Workshop in 2021 on Strategic Plan including “Gap Analysis” approach from SWPHC
- Second Workshop in April 2022 on SPI
- Plans to have regular Workshops on important topics....



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## Implementation of the IHO Strategic Plan

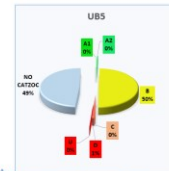
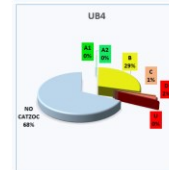
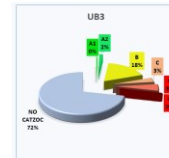
How to measure progress?  
Strategic Performance Indicators(SPI)

9 SPIs allocated to IRCC

- keep it simple, figures measuring the success,
- comparable, simple, digital means,
- find global indicators that doesn't leave any MS behind.

Examples

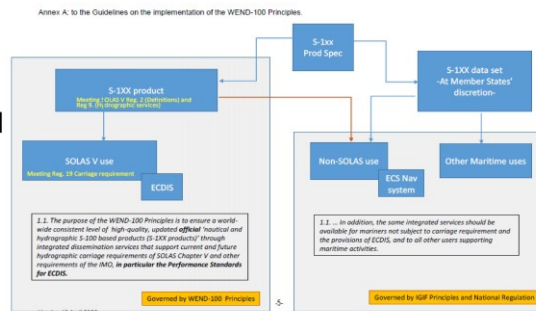
- SPI 1.2.2; adequacy of hydrographic knowledge is assessed through appropriate indicators
- SPI 2.2.1; percentage of adequately surveyed area per coastal state



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## WORLDWIDE ENC DATABASE WORKING GROUP

- WEND-100 principles to ensure world-wide consistence of S-1XX Products developed and adopted in 2021
- Guidelines on the implementation of WEND-100 principles
- IGIF Principles
- Close cooperation with HSSC



A3 Agenda Item 6 WP3 Report

## Capacity Building

### Revised Capacity Building Strategy

- IRCC/CBSC were tasked by A-2 to revise the CB Strategy (2014)
- New edition is even better aligned to the IHO Strategic Plan
- It was endorsed at C-6
- IHO Assembly 3 will be invited to approve and adopt the Revised Capacity Building Strategy (PRO 3.2)



A3 Agenda Item 6 WP3 Report

## Capacity Building

### Establishment of the IHO e-learning Center

- Proposal by the Republic of Korea endorsed at A-2
- CBSC established the e-Learning Project Team (PT)
- Guidelines in cooperation with the Republic of Korea.

This very important development was made thanks to the outstanding contribution and sustained support of ROK and especially KHOA.

Center is operational now under: <https://elearning.iho.int/>

Thanks go to ROK and KHOA also for confirming the ongoing support to the Center financially, technically and with human resources.

- Planned approval of the Guidelines at next CBSC and IRCC
- IHO CL formalizing the establishment and functionality of the Center



A3 Agenda Item 6 WP3 Report

## Capacity Building

### Funds and contributions

- limited funds not earmarked to specific sponsored activities
- generous financial contributions from ROK and Nippon Foundation from Japan
- Financial contribution from Canada to the *Empowering Women in Hydrography* project and in-kind contributions from other MS
- Need to find new ways for acquisition of additional resources



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## Empowering Women in Hydrography

The IHO has launched a new project “Empowering Women in Hydrography” with the goal of :

- ...raising awareness about career opportunities in hydrography
- ...to increase the number of women in leadership positions.



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## Empowering Women in Hydrography

- Initiative and initial funds from Canada
- Canada – IHO Agreement for the Empowering Women in Hydrography (EWH) project signed on 12 May 2021
- EWH project as a Capacity Building activity
- International Project Team established
- IHO internal structure and resources
- Several activities started
- Recognition as a project of the UN Decade of Ocean Sciences for Sustainable Development

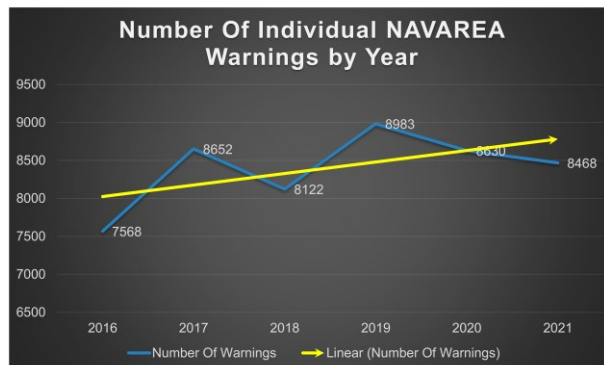


## WWNWS

### Sub-Committee on the World-Wide Navigational Warning Service

“On average, there were 41,548 [Inmarsat] messages per month, including repeated messages. The average messages per month increased by 7,648 compared to the last reporting period” (NCSR 9/10/3)

Challenges are the alignment to new digital means in encoding (S-124) and transmission of NAVAREA Warnings (Iridium)



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## MSDIWG

### Marine Spatial Data Infrastructures Working Group

- Ongoing cooperation with
  - Marine Domain Working Group (MDWG) of the Open Geospatial Consortium (OGC).
  - UN-GGIM Working Group on Marine Geospatial Information (WG-MGI),
  - combined with an International Seminar on United Nations Global Geospatial Information Management in May 2022.
- MSDIWG intends to provide guidance on how IHO MS can use the FAIR principles (Findable, Accessible, Interoperable, Re-usable) in their work and develop an HO MSDI FAIR principles check list.



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## IENWG

### IHO-EU Network WG

- 10th Anniversary of IHO-EC MoU celebrated on 6 May 2022,
- the interoperability between bathymetric Data of European waters (EMODnet) and the GEBCO Grid,
- Marine Spatial Planning-MSP is becoming a major topic of interest in European Waters



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## IBSC



### FIG/IHO/ICA International Board on Standards of Competence for Hydrographic Surveyors and Nautical Cartographers

- new: review of individual recognition schemes
- Need to improve the quality of initial submissions
- Enlarged Board (from 10 to 12)
- First discussions on how to reflect better the growing relevance of geodata management expertise in the course schemes

2022	In the IBSC45 Meeting		Intersessional Revision	After Intersessional Revisions	
	Total	Standards		Total	Standards
Recognized	3	1 S-5A			
	1	S-5B			
	1	Scheme			
Could Be Recognized	7	2 S-5A		2	
	3	S-5B		3	
	2	Scheme		2	
Not Recognized	3	2 S-5B		2	
	1	S-8B		1	
<b>Total</b>	<b>13</b>		<b>10</b>		

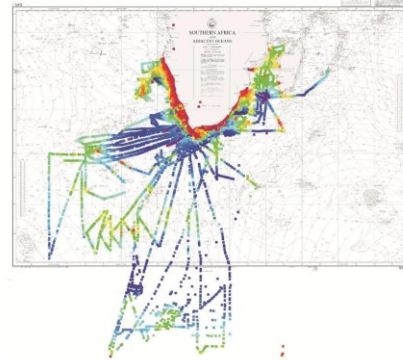


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## GEBCO, CSB, DCDB and Seabed 2030

Joint efforts and successes in gathering more existing and new bathymetric data

- Crowd Sourced Bathymetry WG
- General Bathymetric Chart of the Ocean Guiding Committee and Seabed 2030 Project
- IHO Data Center on Digital Bathymetry



“How to get the remaining ~75% of our planet’s unmapped ocean seafloor mapped”



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## Future challenges

- Need to find new ways to acquire additional resources for CB
- Steadily increasing need for coordination on RHC level and between RHCs in different fields of the IHO Strategic Plan
- Active participation in the development of S-100 products and services layout
- “How to get the remaining ~75% of our planet’s unmapped ocean seafloor mapped?”
- Improvements in outreach: do good things and talk about!



A3 Agenda Item 6 WP3 Report

# FINANCE



**3<sup>rd</sup> SESSION OF THE ASSEMBLY**  
**Monaco, 2-5 May 2023**

**IHO FINANCE REPORT 2020-2022 (as approved)**

**Submitted by the Secretary-General**

## **INTRODUCTION**

### **Preparation of the Report**

1. This report on the administration of the finances of the IHO for the period 1 January 2020 to 31 December 2022 has been prepared by the IHO Secretariat for examination by the Finance Committee (FC) and subsequent recommendation for approval by the Assembly in accordance with Article 10(b) of the IHO General Regulations.

### **Audit of the accounts**

2. The IHO's accounts for 2020 and 2021 have been audited by PricewaterhouseCoopers (PwC). The annual reports of the auditor for 2020, and 2021 have been included in the Annual Report, Part 2 – Finance. Both were subsequently approved by Member States. The auditing of the 2022 IHO's accounts was undertaken by the external auditor CABINET TARAMAZZO. The change of the external auditor from PwC to CABINET TARAMAZZO - Member of the Order of the Chartered Accountants of the Principality of Monaco, was required because of PwC's unilateral cancellation of the contract. The Audit Report is provided as Assembly Document [A3 2023 F 02 Add1 EN](#).

### **Currency - Banks**

3. The Euro (€) was introduced on 1 January 2002 as the currency to be used for the accounting purposes of the Organization in accordance with Article 2(a) of the IHO Financial Regulations in force at that time. The Secretariat has made use of the services of CMB, SMC and CIC in Monaco for its financial and banking requirements.

### **Annual Financial Statements**

4. Financial statements made in 2020 and 2021 have been forwarded annually to Members of the Finance Committee for comment. Upon review and any necessary action, these comments have been included in Part 2 of the respective Annual Report, for subsequent approval by the Member States.

### **IHO Secretariat Monthly Finance Monitoring**

5. A monthly financial reporting statement is prepared which provides detailed information on the budgetary statement of Incomes and Expenditure as well as information on financial holdings. This statement is examined by the Secretary-General and Directors in order to monitor the financial situation of the Organization, monitor progress of the budget and take any necessary action as and if needed.

### **Finance Committee Officers' meetings**

6. The Chairman and Vice-Chairman of the Finance Committee met with the Directing Committee and the Council Chair once per year to review the financial status of the Organization and the progress of the budget. Reports of these Finance Committee Officers Meetings were circulated to Member States after every meeting and formed the basis for later decisions approved by Member States.

**INCOME 2020-2022** (see Table 1)**Contributions**

7. The three-year budget estimates (2020-2022) were prepared for the 2<sup>nd</sup> Session of the Assembly based on a number of shares calculated at the time from the tonnage reported by Member States in accordance with the Articles 4, 5 and 6(a) and 6(b) of the IHO Financial Regulations in force at the time.

**Number of shares**

8. During the three-year period there were several changes in the number of shares due to changes in the tonnage figures reported by Member States in accordance with Article 6(d) of the IHO Financial Regulations that were in force at the time.

9. The 846 shares calculated in 2020 progressed to 852 in 2021, 854 in 2022. Lebanon with 3 shares joined in 2020, Kenya, Iraq and Angola with 2 shares joined in 2021, and Albania with 2 shares joined in 2022.

**Value of a share**

10. The share value has remained unchanged since 2016 at 4,024.32 €.

**Suspension of rights and benefits**

11. Currently Serbia and Syria, had their rights suspended for failing to pay their annual financial contribution in accordance with Article XV of the IHO Convention.

**Payments of contributions**

12. Payments of contributions were generally satisfactory throughout the period. The status of contribution payments was provided in Part 2 of each Annual Report. For the period 2020-2022, 66% of the contributions were paid by the end of May each year, while the final amount received at the end of the years varied between 94% (in 2020 and 2021) and 86% (in 2022) with an average over the three year period of 91%.

13. A cause for concern is the increasing difficulty for some Member States to forward their subscriptions because of international sanctions against the transfer of funds and the consequent refusal of banks to handle the transactions. On several occasions the Secretariat assisted in finding acceptable ways to ensure that some payments were able to be made.

**Interest on bank accounts**

14. The total interest earned on bank deposits in the period 2020-2022 was 109,594 €.

**GEBCO Grant**

15. Throughout the three-year period, the Government of the Principality of Monaco generously continued its annual contribution of 8,300 € towards the running of the GEBCO project, amounting to 24,900 € in total.

**Internal Tax**

16. All IHO employees paid an Internal Tax, which was 10% of their gross salary.

**Extraordinary income**

17. Extraordinary income of 226,456 € resulted mainly from an administration fee associated with certain donations to the Capacity Building Fund (18,295 €), and the payment of contributions in arrears (208,161 €) by some Member States.

**Summary of income**

18. The total estimated income for the period 2020-2022 was 10,615,973 €, whereas the actual total income received during the period was 10,850,852 €. The increase was mainly

due to the increased number of shares described earlier induced by accession of new Member States, and to a better return on investments than estimated.

## **EXPENDITURE 2020-2022** (see Table 2)

### **Chapter I – Personnel costs**

#### **Salaries**

**19.** IHO salaries increased in accordance with the cost of living index, promulgated by the Government of Monaco, and represented by the value of the index point, which went from 8.32077 € in January 2020 to 9.00462 € in December 2022. This was an overall increase of approximately 8.21% over the three-year period, or an average 2.74% per year. Salary promotions were made in accordance with the Staff Regulations and the salary tables in force.

#### **Medical expenses**

**20.** The Secretariat's contract with the collective medical insurance provider, CIGNA took effect in June 2019. The premiums paid per insured person raised from 233,307 € in 2020, 229,602 € in 2021, to 260,424 € in 2022. This was an overall increase of approximately 11.6% over the three-year period, or an average 3.87% per year.

#### **Retirement expenses**

**21.** In order to meet the retirement obligations placed on the Secretariat by means of the Staff Regulations (Article 9.6.1), the IHO had a contract with a local insurer, NSM/Neuflize, to provide capital or a pension by event of retirement of the locally recruited members of staff. This contract was a type of life insurance which allowed to accumulate capital with interest, but with no guarantee to pay a pension on a level equivalent to the local pension system (CAR) in place for workers in the Principality. On retirement the Staff Member could choose the accumulated capital or a pension paid by the IHO. In the case of the choice of a pension, the accumulated capital was transferred to the Secretariat, who then paid a pension equivalent to the one provided by the CAR to the new retiree. In February 2021, NSM/Neuflize cancelled this contract without pre-warning.

**22.** The Secretariat has successfully managed to contract another insurance company, GAN VIE, to fully externalize the obligations set out by the Staff Regulations. The capital or the pension as required by the Staff regulations will now be paid directly by the insurer. The new contract is based on the condition that the capital needed to provide this pension for the duration of the statistic life expectancy is accounted to the insurance depot at the date of retirement of the staff member. A calculation of the provision needed to pay this capital is made and adjusted every year. At the end of 2021, this provision was estimated to be 2M € in total until the furthest date of retirement of the current staff members within the next 35 years. A settlement of 499,000 € was made in 2021 to the new system and further provisions totaling 470,000 € were made in 2022. Further reasonable provisions will be required over the years to come. Though the need for capital is substantial, this contract is advantageous for IHO, as it removes the uncertainty about the expected duration of payment from the IHO budget. This pension insurance contract applies to future retirees only. The current group of retirees will continue to receive payment from the old system of the Internal Retirement Fund.

#### **Summary**

**23.** Total expenditure in Chapter I for the three-year period was 7,717,815 € compared to the approved expenditure in Chapter I of 8,158,000 €.

**24.** The expenditure in Chapter I represents 80.3% of the total expenditure (see paragraph 44).

## Chapter II – Current operating costs

### Maintenance

25. The cost of maintenance contracts for the premises and the IT equipment remained stable throughout the three-year period. Following negotiations with service providers, savings were achieved in both IT and building maintenance.

### Post, telephone and telefax

26. Expenditure for all the communication costs of the Secretariat remained steady throughout the three-year period. This can mainly be attributed to the increased use of the IHO web site by Member States to download various documents and the use of e-mails and other electronic means by the Secretariat to send Circular Letters and other documents.

### Contract support

27. During the three-year period 49,308 € were paid in contract support.

### Travel (technical assistance and long distance travel)

28. Induced by the global constraints of the pandemic, savings were achieved in expenditure on travel in 2020 and 2021 and accounted under the annual surplus.

## Chapter III – Capital Expenditure

29. A total of 88,623 € was expended in the three-year period for the purchase of office equipment, furniture and publications.

### Summary: Total operating costs for Chapter I, Chapter II and Chapter III

30. The total operating costs during the three-year period was 8,785,273 €. This was 10.21% less than the approved budget of 9,784,500 €.

## Funds

### GEBCO Fund

31. Based on a proposal of the Nippon Foundation and the GEBCO Guiding Committee, the IHO and the IOC as parent organizations of GEBCO agreed on a joint project named SEABED2030 aiming to increase the detail of global knowledge of the seabed topography of the seas and oceans. Within the framework of the project, the IHO Secretariat accepted to administer the project fund as donated by the Nippon Foundation.

### Assembly Fund

32. At the end of 2019 the Conference fund had a balance of 292,085 €. The three-year budget allocated the addition of 60,000 € over the period. A total of 24,319 € was spent in the planning and execution of the 2020 2<sup>nd</sup> Session of the Assembly conducted in hybrid format. At the end of 2022, 274,334 € is available in the Assembly Fund for the planning and execution of the subsequent IHO Assemblies.

### Relocation of Directors and Assistant Directors Fund

33. The Relocation of Directors and Assistant Directors Fund covers all the obligations for the relocation of the Directors and Assistant Directors (furniture, tickets, et cetera) and their dependents when they join or leave the Secretariat.

34. The three-year budget made no provisions to the fund. A total of 193,985 € was expended during the period and at the end of 2022, 47,129 € are available in the fund.



### Capacity Building Fund

35. The Capacity Building Fund was established at the end of 2004 to meet the Capacity Building Program requirements of the Organization. During the three-year period the Fund has received 355,000 € from the budget, 291,000 € from the audited budget surplus and 2,195,416 € in donations from the Republic of Korea and the Nippon Foundation. During the period 2020-2022, 1,102,406 € were spent on authorized activities in the Capacity Building programme. At the end of 2022, 1,663,834 € are available in the Capacity Building Fund. The high amount of available funding were induced by the interruptions of the planned capacity building projects through the global COVID pandemic constraints.

### IHO Internal Retirement Fund (IRF)

36. The Internal Retirement Fund (IRF) supports the IHO's long-established independent retirement plan (pension scheme) for a number of the longer-serving and retired members of the Secretariat staff. The pensions of ten retired members and one current member of staff are covered by the IRF. The IRF is purposely maintained in low-risk investment accounts.

37. The estimated liability on the IRF is calculated and adjusted every year using an actuarial assessment. It is dependent on several factors that are very difficult to predict including the estimate of long-term interest rates, and the longevity of the pensioners in the relatively small cohort of beneficiaries of the pension scheme.

38. An ongoing allocation to the IRF of 70,000 € per year was included in the proposed budget for the triennial period 2020-2022.

39. The value of the IRF on 31 December 2022 is 3,321,858 €.

### Special Projects Fund.

40. The Special Projects Fund was established in 2012 to cover various special projects, such as the maintenance or drafting of standards, the editing or updating of complex publications, translations, and particular requirements identified by the Committees and other bodies of the Organization. This fund supports in particular the development of the new generation of S-100 based standards. Expenses made for the celebration of the IHO centenary of an amount of 87,652 € were covered from this Fund.

### IBSC Fund

41. The IBSC Fund was established in 2010 to support the work of the International Board on Standards of Competence (IBSC) operated jointly by the IHO, the Fédération Internationale des Géomètres (FIG), and the International Cartographic Association (ICA). The Board maintains the Standards of Competence for Hydrographic Surveyors and Nautical Cartographers, as well as reviewing and granting recognition to suitable courses upon application. At the request of the FIG Secretariat which had administered the Fund on behalf of the Board since its establishment, the IHO as secretary of the IBSC, took over the role of treasurer of the Fund in 2015.

### Operating Cash Reserve

42. An operating cash reserve has been established to ensure the financial stability of the Organization and to avoid any cash liquidity difficulties. In accordance with Article 17 of the IHO Financial Regulations the amount that the IHO shall have at its disposal, on 31 December of each year, shall not be less than three-twelfths of the total annual operating budget of the Organization. At the end of 2022 the operating cash reserve should be not less than 813,125 €.

### Emergency Reserve Fund

43. In accordance with Article 18 of the IHO Financial Regulations, the IHO shall have an emergency reserve fund, the amount of which shall be not less than one-twelfth of the total

annual operating budget of the Organization that is exclusively designated to enable the Organization to meet extraordinary expenditures. At the end of 2022 the emergency reserve fund was valued at 297,825 € and this amount is held in reserve by the IHO.

#### **Summary of expenditure**

**44.** The total expenditure, including the total operating cost and the actual expenditure in the operational funds, was 9,614,873 € over the three-year period. This is 10.56% less than the total approved budget of 10,750,100 € for the period.

#### **CONCLUSIONS**

**45.** The Secretariat has striven to constrain costs such that, total income has exceeded total expenditures throughout the three-year budget period. This has provided monies which have variously been applied to increase the various Funds of the Organization, to increase the operating cash reserve and to support newly arising liabilities placed on the health insurance and the new local employee pension insurance.

**46.** The details of income, expenditures, net effect on capital, liabilities, health and pension insurance are presented in the attached tables.

## THREE YEAR REPORT 2020-2022

TABLE 1  
INCOME 2020- 2022 (€)

	2020	2021	2022	Total of period
Number of shares of contribution	812,0	843,0	852,0	
New Member States	1,0	3,0	1,0	
Variation of tonnages				
Yearly Unit value of the share of contribution	4 024,32	4 024,32	4 024,32	
CONTRIBUTIONS FOR THE YEAR				
(a) Received	3 070 264	3 227 361	2 942 573	9 240 197
(b) Remaining due at end of year	197 484	189 287	551 332	938 103
	3 267 748	3 416 648	3 493 905	10 178 300
INTEREST ON MONIES IN BANKS	33 436	45 124	31 034	109 594
INTERNAL TAX	185 453	193 767	184 934	564 154
TOTAL INCLUDING CONTRIBUTIONS DUE	<u>3 486 637</u>	<u>3 655 539</u>	<u>3 709 872</u>	<u>10 852 048</u>
Annual budget presented	3 498 748	3 627 502	3 489 724	10 615 973
<u>EXTRAORDINARY INCOME</u>				
Interest on overdue contributions				0
Administration fees CBF	8 281	9 889	125	18 295
Other extraordinary income	30	98 303	109 828	208 161
	<u>3 494 948</u>	<u>3 763 731</u>	<u>3 819 825</u>	<u>10 870 342</u>

**TABLE 2**  
**EXPENDITURE 2020- 2022 (€)**

	2020	2021	2022	Total of period
<b>I - PERSONNEL COSTS</b>				
a) Salaries - Directing Committee	504 728	501 261	523 398	1 529 387
b) Salaries - Category A	607 814	594 178	632 922	1 834 914
- Translators	209 715	184 657	104 742	499 114
- Category B	483 062	484 843	526 923	1 494 828
- Overtime	1 671	1 064	9 397	12 132
c) Annual Bonus	37 732	44 937	43 998	126 667
d) Payment to Retirement Funds	382 488	372 670	381 191	1 136 349
e) Insurances based on staff wages	6 985	14 424	14 758	36 167
f) Medical GAN premiums	269 456	272 160	308 163	849 779
g) Family Allowances	20 096	26 854	28 753	75 702
h) Education Grants	0	0	0	0
i) Medical claims paid	0	0	0	0
j) Medical claims - refunds from GAN	0	0	0	0
k) Home Rental	5 125	3 844	0	8 968
l) Home Leave	7 113	1 528	9 441	18 083
m) Miscellaneous Personnel Expenses	2 019	1 473	4 082	7 575
n) Salaries - Temporary staff	28 539	32 922	25 039	86 500
o) Training	999	0	650	1 649
<b>Total Actual Chapter I</b>	<b>2 567 543</b>	<b>2 536 815</b>	<b>2 613 457</b>	<b>7 717 815</b>
<b>Total approved Budget for Chapter I</b>	<b>2 710 000</b>	<b>2 757 000</b>	<b>2 691 000</b>	<b>8 158 000</b>

	2020	2021	2022	Total of period
<u>II - CURRENT OPERATING COSTS</u>				
a) Maintenance of building	31 054	40 350	44 977	116 382
b) Multirisk Insurance	3 805	3 534	3 498	10 837
c) Maintenance of IT equipments	36 725	50 578	46 611	133 914
d) Office Stationery	5 210	5 979	9 264	20 453
e) Postage, telephone, telefax	21 999	23 145	21 093	66 237
f) Local Travel	510	902	1 481	2 893
g) Bank Charges	5 825	5 689	7 725	19 239
h) Contract support	3 121	14 399	31 788	49 308
i) Administrative support for the Council		4 951	8 217	
i) Auditor's fees	8 900	9 100	10 285	28 285
j) Public Relations	8 455	6 675	9 977	25 106
k) Miscellaneous Operating Expenses	2 219	1 897	153	4 269
l) Technical Assistance	0			0
m) Long Distance Travel	70 497	11 751	219 660	301 909
n) I.H. Review	10 000	10 000	10 000	30 000
o) Other publications	614	559	727	1 900
p) Provision for bad debts	98 596	12 073	44 268	154 936
Total Chapter II	307 531	201 582	469 723	978 835
Total approved Budget for Chapter II	488 500	539 500	500 500	1 528 500
<u>III - CAPITAL EXPENDITURE</u>				
a) Purchase of IT equipments	6 294	3 990	11 652	21 936
b) Purchase of furniture & other equipments	2 020	2 840	7 316	12 176
c) Depreciation of fixed assets	18 843	18 663	16 704	54 210
d) Purchase Publications & binding	300	0	0	300
Total Chapter III	27 457	25 493	35 673	88 623
Total approved Budget for Chapter III	31 000	31 000	36 000	98 000
Total Operating Costs	2 902 531	2 763 890	3 118 852	8 785 273
Total approved Budget for Operating Costs	3 229 500	3 327 500	3 227 500	9 784 500

	<b>2020</b>	<b>2021</b>	<b>2022</b>	<b>Total of period</b>
- GEBCO	18 200	18 200	18 200	54 600
- I.H.O ASSEMBLY FUND	20 000	20 000	20 000	60 000
- RELOCATION OF DIRECTORS ALLOCATION	0	0	0	0
- SPECIAL PROJECTS FUND	40 000	30 000	80 000	150 000
- IBSC FUND		0	0	
- CAPACITY BUILDING ALLOCATION	130 000	125 000	100 000	355 000
- INTERNAL RETIREMENT FUND	70 000	70 000	70 000	210 000
	3 180 731	3 027 090	3 407 052	9 614 873
Total approved Budget per year	3 507 700	3 726 700	3 515 700	10 750 100
EXTRA EXPENDITURES AND LOSSES	0	0	0	0
GRAND TOTAL	3 180 731	3 027 090	3 407 052	9 614 873

TABLE 3

**NET EFFECT ON CAPITAL 2020- 2022 (€)**

	<b>2020</b>	<b>2021</b>	<b>2022</b>	<b>Total of period</b>
APPROVED EXPENDITURE LEVEL	3 507 700	3 726 700	3 515 700	10 750 100
TOTAL EXPENDITURE	-3 180 731	-3 027 090	-3 407 052	-9 614 873
TOTAL INCOME	3 494 948	3 763 731	3 819 825	11 078 504
Surplus on yearly Budget	314 217	736 641	412 773	1 463 631
WORKING CAPITAL AT YEAR'S END	2 726 863	2 817 428	2 891 736	
EMERGENCY RESERVE FUND	279 375	271 042	297 825	
TOTAL FUNDING AT YEAR'S END	<u>3 006 238</u>	<u>3 088 470</u>	<u>3 189 561</u>	

**TABLE 4**  
**COMPARISON OF BALANCE SHEETS**  
**(as of 31st December 2020 - 2022)**

<b>I - ASSETS (€)</b>			
	<b>2020</b>	<b>2021</b>	<b>2022</b>
<b>CASH INVESTED FOR RETIREMENT FUND</b>			
- Retirement Cash invested (IRF)	2 625 426	2 206 449	1 978 461
- Long term guaranty from IHO funds	1 064 291	1 400 857	1 343 397
- Retirement Cash invested (External Pension Plans)	412 104	524 475	365 950
	4 101 821	4 131 780	3 687 808
<b>VARIOUS DEBTORS</b>			
- Purchases made in advance	3 738	3 194	3 051
- Outstanding bills	0	0	2 000
- Advance to staff	4 200	0	22 600
- Interest to be received	3 313	5 495	3 294
- Claim for refunding of VAT	36 603	38 532	44 351
- Various debtors			
	47 854	47 221	75 296
<b>OUTSTANDING CONTRIBUTIONS</b>			
- Contributions for the year	197 484	189 287	486 148
- Contributions for previous years	98 596	26 158	64 389
- Contributions for suspended Member States	201 769	192 928	84 272
- Interest due	-1 132	-1 132	0
	496 718	407 241	634 809
<b>FURNITURES AND INSTRUMENTS</b>			
- Value of purchases	318 431	332 958	338 488
- Depreciation	-282 817	-301 481	-318 185
- Library	36 664	36 664	36 664
	72 277	68 141	56 967
<b>CASH IN BANK AND ON HAND</b>			
- Bank current accounts	3 114 951	2 655 204	2 327 970
- Bank deposit accounts	4 980 375	7 507 476	7 293 942
- Petty cash	4 233	1 554	663
	8 099 559	10 164 234	9 622 575
<b>ASSETS GRAND TOTAL</b>	<b>12 818 229</b>	<b>14 818 618</b>	<b>14 077 456</b>



## II - LIABILITIES (€)

	2020	2021	2022
STAFF INTERNAL RETIREMENT FUND			
- Internal Retirement fund	1 363 061	1 379 259	1 301 507
- Provision to ensure pensions to retired staff	2 326 656	2 228 047	2 020 351
Net IRF Liability	3 689 717	3 607 306	3 321 858
- Rights for External Pension Plans	408 155	528 161	365 936
VARIOUS CREDITORS			
- Guaranty to the IRF	1 064 291	1 400 857	1 343 397
- Pension plans NSM		69 431	0
- Provision for doubtful contributions	304 222	224 723	129 527
- A.M.R.R Complementary Retirement Scheme	17 694	17 765	0
- Accruals (outstanding bills...)	97 709	646 472	594 105
- Travel claims & wages	0	0	2 398
- Deposits received for Conference (stand)	5 210	5 210	5 210
- Various creditors	0	1 350	0
I.H.O FUNDS			
- Organization of IH Assemblies	287 766	310 873	269 839
- Relocation of Directors and Ads	88 911	47 129	47 129
- Ablos Conference fund	14 748	12 748	10 748
- GEBCO fund	1 368 685	1 634 037	1 948 882
- Capacity Building fund	1 015 818	1 666 790	1 663 834
- Special Projects Fund	156 515	254 431	292 436
- Renovation Fund	57 545	47 955	61 508
- Presentation Library Fund	51 062	55 062	59 062
- IBSC Fund	67 147	85 111	66 072
CONTRIBUTIONS RECEIVED IN ADVANCE			
- Received in advance or in excess	1 116 796	1 114 738	727 198
	6 122 275	8 122 842	7 587 281

<b>II - LIABILITIES (Continuation)</b>			
	<b>2020</b>	<b>2021</b>	<b>2022</b>
<b>CAPITAL</b>			
- Emergency Reserve Fund	279 375	271 042	297 825
- Reserves to be distributed		100 000	100 000
- Provisions for risks (IRF & suspended MS)	-2 363 261	-2 264 652	-2 044 258
- Net yearly result	349 883	229 622	100 697
- Net Members States funds	4 740 240	4 752 457	4 735 297
Permanent funding	3 006 238	3 088 470	3 189 561
<b>LIABILITIES GRAND TOTAL</b>	<b>12 818 229</b>	<b>14 818 618</b>	<b>14 098 701</b>
<b>Cash reserve to continue operations (Fin. Regs Art 18)</b>			
- IHO Cash balances	8 099 559	10 164 234	9 622 575
- Advance contributions for next year	-1 116 796	-1 114 738	-727 198
- Emergency reserve fund	-279 375	-271 042	-297 825
- Special purpose reserves and funds	-3 108 196	-4 114 136	-4 519 510
- Guaranty to the IRF	-1 064 291	-1 400 857	-1 343 397
Operating Cash Reserve	2 530 900	3 263 461	2 734 645
Total Actual Operation costs	2 902 531	2 763 890	3 118 852
Total Budget for future operations	3 352 500	3 227 500	3 252 500
Number of weeks of operations	45,3	61,4	45,6
Minimal Requirements (3 months - 13 weeks)	838 125	806 875	813 125

**TABLE 5**  
**INTERNAL RETIREMENT FUND (IRF) EVOLUTION**

	2020	2021	2022
Situation of the fund on 1st January	3 386 153	3 407 486	3 325 075
Contributions received (Secretariat & Staff)	9 444	0	17 378
Interest received on investments	22 510	22 850	68 588
Pensions paid	-218 374	-232 652	-196 699
Support from previous year's result		146 000	
Provision	30 000	80 000	70 000
	-----	-----	-----
Sub-total	3 229 733	3 423 684	3 284 342
Provision for liability			
- at 1st January of the year	-2 148 903	-2 326 656	-2 228 047
- at 31 December of the year	2 326 656	2 228 047	2 020 351
	-----	-----	-----
Net variation for the year	177 753	-98 609	-207 696
Situation of the fund on 31st December	3 407 486	3 325 075	3 076 646



## Table of Tonnages, Shares and Votes



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### TABLE OF TONNAGES AND NUMBER OF SHARES AND VOTES

For the period 1 January 2021 to 31 December 2023

### TABLEAU DES TONNAGES ET NOMBRE DE PARTS ET VOIX

Pour la période 1 janvier 2021 au 31 décembre 2023

As of / à jour au 01/03/2023

Member States <i>Etats Membres</i>	Tonnages	Shares - Parts			Votes - Voix		
		Fix.	Sup.	Tot.	Fix.	Sup.	Tot.
ALBANIA - ALBANIE	30,000	2	0	2	2	0	2
ALGERIA - ALGERIE	766,367	2	4	6	2	2	4
ANGOLA - ANGOLA	98,000	2	0	2	2	0	2
ARGENTINA - ARGENTINE	1,139,968	2	5	7	2	2	4
AUSTRALIA - AUSTRALIE	1,684,678	2	6	8	2	2	4
BAHREIN - BAHREIN	410,488	2	2	4	2	1	3
BANGLADESH	1,189,381	2	5	7	2	2	4
BELGIUM - BELGIQUE	6,473,271	2	12	14	2	3	5
BRAZIL - BRESIL	3,735,793	2	9	11	2	3	5
BRUNEI DARUSSALAM	582,237	2	3	5	2	2	4
BULGARIA - BULGARIE	139,624	2	1	3	2	1	3
CAMEROON - CAMEROUN*	251,000	2	2	4	2	1	3
CANADA	3,096,746	2	8	10	2	3	5
CHILE - CHILI	1,046,040	2	4	6	2	2	4
CHINA - CHINE	97,570,000	2	25	27	2	4	6
COLOMBIA - COLOMBIE	119,100	2	1	3	2	1	3
CROATIA - CROATIE	1,228,300	2	5	7	2	2	4
CUBA	70,430	2	0	2	2	0	2
CYPRUS - CHYPRE	24,391,273	2	23	25	2	4	6
D.P.R. OF KOREA - REP. POP. DEM. DE COREE*	531,471	2	3	5	2	2	4
DEM. REP OF THE CONGO - REP. DEM. DU CONGO	114,000	2	1	3	2	1	3
DENMARK - DANEMARK	20,952,071	2	21	23	2	4	6
DOMINICAN REPUBLIC - REP DOMINICAINE*	10,000	2	0	2	2	0	2
ECUADOR - EQUATEUR	671,753	2	3	5	2	2	4
EGYPT - EGYPTE*	1,073,000	2	5	7	2	2	4
ESTONIA - ESTONIE	501,518	2	3	5	2	2	4
FIJI - FIDJI*	99,000	2	0	2	2	0	2
FINLAND - FINLANDE	1,877,355	2	6	8	2	2	4
FRANCE	6,673,466	2	13	15	2	3	5
GEORGIA - GEORGIE	123,420	2	1	3	2	1	3
GERMANY - ALLEMAGNE	8,112,621	2	14	16	2	4	6
GHANA	60,349	2	0	2	2	0	2
GREECE - GRECE	39,949,462	2	25	27	2	4	6
GUATEMALA	5,571	2	0	2	2	0	2
GUYANA*	207,000	2	1	3	2	1	3
ICELAND - ISLANDE	167,511	2	1	3	2	1	3
INDIA - INDE	13,078,616	2	17	19	2	4	6
INDONESIA - INDONESIE	45,194,835	2	25	27	2	4	6
IRAN (ISLAMIC REPUBLIC OF - REP. ISLAMIQUE D')	12,500,000	2	17	19	2	4	6
IRAQ - IRAQ	35,000	2	0	2	2	0	2
IRELAND - IRLANDE	313,440	2	2	4	2	1	3
ITALY - ITALIE	14,812,739	2	18	20	2	4	6
JAMAICA - JAMAIQUE	152,992	2	1	3	2	1	3
JAPAN - JAPON	28,302,915	2	24	26	2	4	6
KENYA - KENYA	16,000	2	0	2	2	0	2
KUWAIT - KOWEIT	2,886,000	2	8	10	2	3	5
LATVIA - LETTONIE	254,133	2	2	4	2	1	3
LEBANON - LIBAN	193,305	2	1	3	2	1	3
MALAYSIA - MALAISE	7,394,162	2	13	15	2	3	5
MALTA - MALTE	77,231,000	2	25	27	2	4	6
MAURITIUS - MAURICE	164,349	2	1	3	2	1	3

## Table of Tonnages, Shares and Votes

Member States <i>Etats Membres</i>	Tonnages	Shares - Parts			Votes - Voix		
		Fix.	Sup.	Tot.	Fix.	Sup.	Tot.
MEXICO - MEXIQUE	4,161,025	2	10	12	2	3	5
MONACO	1,228	0	0	0	2	0	2
MONTENEGRO	141,890	2	1	3	2	1	3
MOROCCO - MAROC	540,558	2	3	5	2	2	4
MOZAMBIQUE	45,581	2	0	2	2	0	2
MYANMAR	530,252	2	3	5	2	2	4
NETHERLANDS - PAYS-BAS	7,976,548	2	14	16	2	3	5
NEW ZEALAND - NOUVELLE ZELANDE	280,713	2	2	4	2	1	3
NIGERIA	2,920,219	2	8	10	2	3	5
NORWAY - NORVEGE	20,160,334	2	21	23	2	4	6
OMAN SULTANATE - SULTANAT D'OMAN	85,330	2	0	2	2	0	2
PAKISTAN	534,263	2	3	5	2	2	4
PAPUA NEW GUINEA - PAPOUASIE NOUVELLE GUINEE	203,520	2	1	3	2	1	3
PERU - PEROU	621,523	2	3	5	2	2	4
PHILIPPINES	6,054,460	2	12	14	2	3	5
POLAND - POLOGNE	121,022	2	1	3	2	1	3
PORTUGAL	15,512,864	2	19	21	2	4	6
QATAR - QUATAR	1,112,830	2	5	7	2	2	4
REPUBLIC OF KOREA - REPUBLIQUE DE COREE	42,189,086	2	25	27	2	4	6
ROMANIA - ROUMANIE	131,855	2	1	3	2	1	3
RUSSIAN FEDERATION - FEDERATION DE RUSSIE	9,969,641	2	15	17	2	4	6
SAMOA	3,000	2	0	2	2	0	2
SAUDI ARABIA - ARABIE SAOUDITE	7,512,183	2	13	15	2	3	5
SEYCHELLES - SEYCHELLES*	195,000	2	1	3	2	1	3
SINGAPORE - SINGAPOUR	91,047,748	2	25	27	2	4	6
SLOVENIA - SLOVENIE	3,434	2	0	2	2	0	2
SOLOMON ISLANDS - ILES SOLOMON	122,240	2	1	3	2	1	3
SOUTH AFRICA - AFRIQUE DU SUD	457,298	2	3	5	2	1	3
SPAIN - ESPAGNE	2,322,286	2	7	9	2	3	5
SRI LANKA	280,306	2	2	4	2	1	3
SURINAME	4,344	2	0	2	2	0	2
SWEDEN - SUEDE	2,956,221	2	8	10	2	3	5
THAILAND - THAILANDE	3,846,758	2	9	11	2	3	5
TONGA	5,379	2	0	2	2	0	2
TRINIDAD & TOBAGO - TRINITE ET TOBAGO*	55,000	2	0	2	2	0	2
TUNISIA - TUNISIE	372,242	2	2	4	2	1	3
TÜRKIYE	6,611,305	2	12	14	2	3	5
UKRAINE	985,673	2	4	6	2	2	4
UNITED ARAB EMIRATES - EMIRATS ARABES UNIS	651,832	2	3	5	2	2	4
UNITED KINGDOM - ROYAUME UNI	44,876,668	2	25	27	2	4	6
UNITED STATES OF AMERICA - ETATS UNIS D'AMERIQUE	24,885,595	2	23	25	2	4	6
URUGUAY	296,717	2	2	4	2	1	3
VANUATU	2,003,000	2	7	9	2	3	5
VENEZUELA	1,834,000	2	6	8	2	2	4
VIETNAM	4,492,000	2	10	12	2	3	5
<b>TOTAL (Member States / Etats membres)</b>	<b>736,796,721</b>	<b>190</b>	<b>676</b>	<b>866</b>	<b>192</b>	<b>187</b>	<b>379</b>
<i>Suspended Member States / Etats Membres privés de leurs droits</i>							
SERBIA - SERBIE	0	0	0	0	0	0	0
SYRIA - SYRIE	498,145	0	0	0	0	0	0
<b>TOTAL (Member States / Etats membres)</b>	<b>737,294,866</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>

**MEETING OF THE FINANCE COMMITTEE**  
**Monaco, 1 May 2023**

**REPORT OF THE FINANCE COMMITTEE to the 3<sup>rd</sup> Session of the IHO ASSEMBLY**

References:

- a. A3\_2023\_F\_01\_EN – Finance Report 2020-2022
- b. A3\_2023\_F\_02\_EN – Annual Finance Report 2022
- c. A3\_2023\_F\_02\_Add1\_EN – Audit Report 2022
- d. PRO-1.4 3-Year Work Programme and Budget 2024 -2026
- e. C6-05.1A IHO Budget for 2023 (Approved by C6 / Decision C6/47)

**Introduction**

The Finance Committee met on Monday 1 May 2023 from 14:00 to 15:00 under the chairmanship of Mr Andrew Millard (United Kingdom of Great Britain and Northern Ireland), Vice-Chair Finance Committee to determine its recommendations on the financial statements, budget estimates and reports on administrative matters that had been prepared by the Secretary-General for presentation to the Assembly.

**Member States in attendance:** Australia, Brazil, Bulgaria, Cameroon, Canada, Denmark, Fiji, Finland, France, Greece, Jamaica, Japan, Lebanon, Mauritius, Morocco, Mozambique, Netherlands, Republic of Korea, Suriname, Sweden, United Kingdom, United States of America, Uruguay.

**1. Opening of the meeting**

Mr Andrew Millard (Vice-Chair) opened and chaired the meeting in the unavoidable absence of the Chair, Ms Isabelle Rosabrunetto (Chair).

**2. Adoption of the agenda**

The agenda was adopted.

**3. Finance Report 2020–2022**

The SECRETARY-GENERAL drew attention to the IHO Finance Report 2020–2022 (document A3\_2023\_F\_01\_EN/Rev3). The number of shares increased to 854 following the accession of new Member States and increases to some Member State's tonnage figures; for that reason, and because of better investment returns, the total income received in the period 2020 – 2022 was slightly higher than estimated, at €10,850,852, representing 91% of the assessed contributions due from Member States.

Expenditure increased over the period, mainly owing to salary increases in line with the Monaco cost-of-living index, a sharp increase in medical costs from 2018 onwards amounting to approximately 11.6% over the three years, and the increased costs associated with the new pension scheme. The new insurer stipulated that the capital required to finance a staff member's pension must be accounted to the insurance company immediately, on the date of retirement of the staff member. The total expenditure on personnel costs over the three-year period was €7.7 million, representing 80.3% of total operational costs. The inflation rate in Monaco increased sharply from 2020 onwards, rising to 6.7% in 2022 alone.

#### 4. **Audit results for the Annual Finance Report 2022**

The SECRETARY-GENERAL said that the new independent auditor, Ms Pascale Taramazzo, has declared herself satisfied that the IHO financial statements presented fairly the balance sheet of the Organization as at 31 December 2022 and the profit and loss statement for the associated year. The audit did not cover the provisions made under the new pension insurer, but the latter had no financial implications.

**Recommendation of the Secretary-General:** A3 to approve the appointment of Cabinet Taramazzo to audit the 2022 IHO accounts (approval ex post facto) and to audit the accounts for the fiscal years 2023– 2025.

#### 5. **Recommendation of the Secretary-General for the 2022 surplus**

**Recommendation of the Secretary-General:** the effective budget surplus from 2022 of €101,000 to be allocated in its entirety to the Assembly Fund to cover the extra costs of holding A3 at Grimaldi Forum.

#### 6. **Three-year budget 2024–2026**

The SECRETARY-GENERAL said that, in the period January– March 2023, contributions received by IHO amounted to €1,537,186.45, or 42% of the budget estimates approved by the Council at its sixth session (Decision C6/48). The potential for reducing expenditure was limited and lay mainly in reducing travel costs, activities under the Special Project Fund and the Capacity Building Fund; and freezing recruitment for vacant posts. The recommendation of the Council to the Assembly is to approve an increase of up to 3% in Member State contributions between 2024 and 2026 (Council Decision C6/49). In view of the recent sharp increases in personnel costs and inflation, the SECRETARY-GENERAL alternately proposed that the Assembly approve the full additional contribution of 3% in one instalment in 2024.

The UNITED STATES OF AMERICA expressed approval of the proposed three-year budget and commended the Secretariat and the officers of the Finance Committee on the sound financial management of the Organization.

SURINAME likewise approved the budget proposals but asked whether any savings could be made in personnel costs. An appropriate clause should be added to the final agreement to be concluded with the new health insurers to cover the orderly termination of the agreement, should that prove necessary.

Replying to a point raised by MAURITIUS, the SECRETARY-GENERAL said that, as in most organizations, personnel costs accounted for a high proportion of overall operating costs and was in line with IHO Convention and IHO Staff Regulations in force. The Secretariat already had good experiences of working with the new health insurers, CIGNA, which provided health insurance for many intergovernmental organizations including all special UN Organizations.

AUSTRALIA expressed support for the proposal to request the 3% increase in Member State contributions in a single instalment in 2024.

#### 7. **Revision of IHO Publication M7 – Staff Regulations**

The SECRETARY-GENERAL said that the proposed changes to the Staff Regulations (Assembly Proposal 1.5) did not affect the Organization's obligations towards its staff or incur any new changes to the budget beyond those already reported.

#### 8. **(any item the inclusion of which has been requested by the Finance Committee)**

None.



## 9. Election of the Chair and the Vice-Chair for the term 2023-2026

The CHAIR proposed that Ms Rosabrunetto (Monaco) should be re-elected Chair of the Finance Committee and that Ms Sonia Chanell (United Kingdom of Great Britain and Northern Ireland) should be elected Vice-Chair.

## 10. Report to the Assembly

The Finance Committee recommends the Assembly to

- a) to approve the Finance Report 2020 – 2022;
- b) to approve the Annual Finance Report 2022;
- c) to approve the Secretary-General recommendations for the use of the effective budget surplus 2022.
- d) to appoint Cabinet Taramazzo
  - a. to audit the 2022 IHO's accounts ex post facto
  - b. to audit the fiscal years 2023 – 2025.
- e) to approve the 3 years' budget 2024 – 2026;
- f) to approve the increase of the value of the Member States contribution share by 3% to 4,145.05 Euro (~120 Euro increase per share) in one step taking effect in 2024;
- g) take note that the revision of the IHO M-7 Staff Regulations has no financial implications other than those already reported in the annual reports and budget plans.;
- h) take note of the re-election of the Ms Isabelle Rosabrunetto (Monaco) as Finance Committee Chair and the election of Ms Sonia Chanell (United Kingdom of Great Britain and Northern Ireland) should be elected Vice-Chair as Finance Committee Vice-Chair for the term 2024 – 2026.



**LIST OF THE IHO 3<sup>RD</sup> ASSEMBLY DECISIONS**



DECISIONS OF THE 3 <sup>rd</sup> SESSION OF THE IHO ASSEMBLY	
Decision No.	Decision
1	The Assembly confirmed the election of Mrs Pia Dahl Højgaard (Denmark) as Assembly Chair by acclamation.
2	The Assembly elected Mr Adam Greenland (New Zealand) as Assembly Vice-Chair by acclamation.
3	The Assembly adopted the Agenda (Doc. A3_2023_G_01_EN_Rev4).
4	The Assembly endorsed the Council Report subject to the specific approval of the proposals submitted, namely PRO 1.1, 1.2, 1.3, 1.4, 2.1, 3.1 and 3.2.
5	The Assembly endorsed that the item related to a revised definition of hydrographic interest is closed until a new submission or proposal by Member State(s) is put forward to the Council/Assembly.
6	The Assembly endorsed the Report of the Work Programme 1.
7	PRO 1.1: The Assembly approved the new Resolution on S-100 Implementation including the editorial suggestions proposed by Canada.
8	<p>PRO 1.2: The Assembly:</p> <ul style="list-style-type: none"> <li>a) agreed on the continuation of conduct of the annual Work Programmes on the basis of the Strategic Plan in place for 2021 – 2026 and directed the Council accordingly.</li> <li>b) approved that Goal 1 of the IHO Strategic Plan and its targets shall have the highest priority in the implementation of the 2024–2026 Work Programme.</li> <li>c) directed IRCC to provide guidance to the MSDI Working Group on the implementation of Goal 2/Target 2.1 through supporting national and regional MSDIWG efforts via RHCs and the continued provision of global thematic layers by means of the existing IHO GIS infrastructure (trusted source, standardized, interoperable). Any proposed extension of the portfolio of global thematic layers by MSDIWG has to be brought forward to IRCC for endorsement and Council for approval.</li> <li>d) agreed to task the Secretariat, assisted by the HSSC and IRCC chairs, to continue to measure the effectiveness and the efficiency of the three Work Programmes implementation by means of the Strategic Performance Indicators as endorsed by the Council.</li> <li>e) tasked the Council with the development of the revised Strategic Plan to be put in place for 2027 – 2032 in compliance with the Planning Cycle and to submit the result for adoption by A-4 in 2026. The Council is empowered to establish a Working Group for this discrete purpose, if appropriate.</li> </ul>

## ASSEMBLY DECISIONS

<b>9</b>	<p>PRO 1.3: The Assembly:</p> <ul style="list-style-type: none"> <li>a) approved the proposed amendment to IHO Resolution on gender-inclusive language to be used in IHO documents and communications.</li> <li>b) directed the IHO Secretariat to implement the gender-inclusive language in M-1 as a first step and invited all IHO Committees, Sub-Committees, Working Groups, Project Teams and Regional Hydrographic Commissions to review their TORs and ROPs in application of the new IHO Resolution.</li> <li>c) endorsed that the application process of IHO Res.1/2020 will become part of the regular drafting and revision process of all IHO documents and communication.</li> </ul>
<b>10</b>	<p>PRO 1.5: The Assembly:</p> <ul style="list-style-type: none"> <li>a) approved the Revision of the IHO Publication M-7 Staff Regulations.</li> <li>b) endorsed to set the new Edition 9.0.0 in force by 1 July 2023 subject to a check of gender neutral language prior to its publication.</li> </ul>
<b>11</b>	<p>PRO 1.6: The Assembly:</p> <ul style="list-style-type: none"> <li>a) endorsed the Secretary-General's recommendation to postpone the consideration of the necessity of the subsequent development of basic guidelines for the allocation and display of attributes of sea areas to be applied to Geographic Information Systems after the S-130 Product Specification and the implementation as authoritative S-130 dataset will be finalized.</li> <li>b) endorsed the Secretary-General's recommendation to postpone the consideration of subsequent amendments to the relevant IHO Resolutions, for endorsement by the Council, if appropriate, after the S-130 Product Specification and the implementation as authoritative S-130 dataset will be finalized.</li> </ul>
<b>12</b>	The Assembly endorsed the Report of the Work Programme 2.
<b>13</b>	PRO 2.1: The Assembly took note and approved the fundamental strategic change introduced by the S-100 framework and approved the Dual Fuel Concept for S-100 ECDIS.
<b>14</b>	<p>PRO 2.2: The Assembly:</p> <ul style="list-style-type: none"> <li>a) recognized the need to establish the S-100 Infra Center and approved the foundation of a new Project Team under HSSC with a three-year work plan including the establishment of the S-100 Infra Center and to prepare for the actual implementation period with consideration of the possible location of the Center.</li> <li>b) requested HSSC to propose to the Council to establish the S-100 Infra Center and how it can support the S-100 framework.</li> <li>c) tasked Council to report to the 4<sup>th</sup> IHO Assembly the progress of its three-year operation including the establishment of the S-100 Infra Center.</li> </ul>
<b>15</b>	PRO 2.3: The Assembly was not able to reach an agreement but anticipate that the UK will keep Council and HSSC informed on the progress achieved with IMO and other interested partners.

## SUMMARY RECORDS

<b>16</b>	The Assembly endorsed the Report of the Work Programme 3.
<b>17</b>	PRO 3.1: The Assembly approved the revision of clause (e) of Article 8 of the General Regulations of the IHO.
<b>18</b>	PRO 3.2: The Assembly approved and adopted the revised Capacity Building Strategy.
<b>19</b>	PRO 3.3: The Assembly: <ul style="list-style-type: none"> <li>a) approved the proposed IHO Resolution on the recognition of the Southern Ocean.</li> <li>b) took note of the consequences on the limits of some global sea areas as a result of recognition of the Southern Ocean.</li> <li>c) endorsed the fact that this new Resolution is without prejudice to or limitation of the views of the IHO, any other international body or any IHO Member State regarding the subject matter addressed.</li> </ul>
<b>20</b>	PRO 3.5: The Assembly: <ul style="list-style-type: none"> <li>a) Recognized the important global maritime issues facing the hydrographic community worldwide and that addressing these issues will require expanded global hydrographic capacity.</li> <li>b) Approved the proposal to establish an ad hoc Project Team under IRCC to explore the possible establishment of reliable alternative funding for activities including capacity building and GEBCO.</li> <li>c) Authorized Council via IRCC to review progress reports from the Project Team at least annually and provide guidance to the Project Team in preparation to report out to 4<sup>th</sup> Assembly (A4).</li> </ul>
<b>21</b>	The Assembly tasked the Council to discuss the request from the SWPHC for the provision of mechanisms to ensure greater inclusion and participation of all Member States at IHO meetings, in particular the IHO Assembly and come up with solutions as soon as possible.
<b>22</b>	The Assembly approved the Finance Report 2020 – 2022.
<b>23</b>	The Assembly approved the Annual Finance Report 2022 (Annual Report 2022 Part II) and noted the Annual Report 2022 (draft Edition 1.1.0, April 2023) (Doc. A3_2023_G_09 refers).
<b>24</b>	The Assembly approved the Secretary-General's recommendations for A3 for the use of the 2022 surplus to add it to the Assembly Fund.
<b>25</b>	The Assembly endorsed the appointment of CABINET TARAMAZZO (Monaco) <ul style="list-style-type: none"> <li>• to audit the 2022 IHO's accounts ex post facto</li> <li>• to audit the fiscal years 2023 – 2025.</li> </ul>
<b>26</b>	The Assembly approved the 3 years' budget 2024 – 2026.
<b>27</b>	The Assembly approved the increase of the value of the Member States contribution share by 3% to 4,145.05 Euro ( ~ 120 Euro per share) in one step taking effect in 2024.

## ASSEMBLY DECISIONS

<b>28</b>	<p>PRO 1.4: The Assembly:</p> <ul style="list-style-type: none"> <li>a) approved the 3 years' Work Programme 2024 – 2026;</li> <li>b) approved the 3 years' budget estimates 2024 – 2026;</li> <li>c) tasked the Council to adapt the Work Programme 2024 – 2026 and Budget Estimates 2024 – 2026 according to the applying decisions made at A3.</li> </ul>
<b>29</b>	The Assembly approved the Table of Tonnages, Shares, Contribution and Votes (Doc A3_2023_G03_EN/FR_V3) as prepared according to IHO Financial Regulations, Articles 5 and 6.
<b>30</b>	<p>The Assembly elected successively:</p> <p>Dr Mathias Jonas (Germany) to the post of Secretary-General, for a term of office of three years starting on 1 September 2023,</p> <p>Dr John Nyberg (USA) to a post of Director for a term of office of six years starting on 1 September 2023.</p>
<b>31</b>	The Assembly endorsed the selection process of the Members of the Council 2023-2026 (Doc. A3_2023_G_07_EN_v3).
<b>32</b>	The Assembly approved the Members of the Council 2023-2026 (Doc. A3_2023_G_08_EN_v3).
<b>33</b>	The Assembly agreed to plan the 4 <sup>th</sup> Session of the Assembly (A-4) for 20-24 April 2026.
<b>34</b>	The Assembly agreed to start the seating order of 4 <sup>th</sup> Session of the Assembly (A-4) with Character A of the French alphabet.
<b>35</b>	<p>The Assembly:</p> <p><i>Recognizing</i> the continued close association and significant support of His Serene Highness Prince Albert II and the Government of the Principality of Monaco in hosting the International Hydrographic Organization,</p> <p><i>Appreciating</i> the kind generosity of His Serene Highness and the Government of the Principality of Monaco in providing premises for the Organization,</p> <p><i>Further appreciating</i> the provision of a reception to the participants of the 3rd Session of the Assembly,</p> <p><i>Further appreciating</i> the provision of the Port Facilities of Monaco for the ships that called during the 3rd Session of the Assembly,</p> <p><i>Expresses</i> its profound gratitude to His Serene Highness Prince Albert II and the Government of the Principality of Monaco for their graciousness and kind hospitality extended to the Organization, and</p> <p><i>Requests</i> the delegation of the Principality of Monaco to convey to His Serene Highness and the Government of the Principality of Monaco the sincere sentiments of the Assembly expressed above.</p>



**SUMMARY RECORDS**



3<sup>rd</sup> SESSION OF THE IHO ASSEMBLY

SUMMARY RECORD OF THE FIRST PLENARY SESSION

2 May 2023

**WELCOME REMARKS BY THE SECRETARY-GENERAL**

The SECRETARY-GENERAL, delivering some welcome remarks, noted that the Assembly was being held in full compliance with the Convention on the IHO and the General Regulations, Financial Regulations and Rules of Procedure of the IHO Assembly, as set out in the Basic Documents of the IHO (publication M-1), and with the Resolutions of the IHO (publication M-3). Since a total of 56 delegations of Member States were registered as being present, the 3<sup>rd</sup> IHO Assembly was duly quorate.

**CONFIRMATION OF THE ELECTION OF THE CHAIR OF THE ASSEMBLY**

The SECRETARY-GENERAL announced that Ms Pia Dahl Højgaard (Denmark) had been elected as Chair of the Assembly through the usual correspondence procedure.

The election of Ms Pia Dahl Højgaard was confirmed by acclamation.

The Secretary-General handed over the chair to Ms. Pia Dahl Højgaard.

**ELECTION OF THE VICE-CHAIR OF THE ASSEMBLY**

The CHAIR announced that Mr Adam Greenland (New Zealand) was nominated as Vice-Chair of the Assembly.

Mr Adam Greenland was elected Vice-Chair by acclamation.

**APPOINTMENT OF SCRUTINEERS**

A team of scrutineers was appointed, consisting of one representative each from Canada, Denmark, Italy, Portugal and Singapore.

**APPOINTMENT OF RAPPORTEURS**

A team of rapporteurs was appointed, consisting of one representative each from Japan and Papua New Guinea and two representatives each from the United Kingdom of Great Britain and Northern Ireland and the United States of America.

**OPENING CEREMONY**

HIS SERENE HIGHNESS PRINCE ALBERT II was escorted into the Assembly Hall.

The SECRETARY-GENERAL delivered his opening address, which is reproduced in these proceedings.

The CHAIR delivered her opening address, which is reproduced in these proceedings.

Dr HEIKE DEGGIM, Director, Maritime Safety Division of the International Maritime Organization (IMO), delivered a keynote address, which is reproduced in these proceedings.

Dr VLADIMIR RYABININ, Executive Secretary of the Intergovernmental Oceanographic Commission of UNESCO (IOC), delivered a keynote address, which is reproduced in these proceedings.

Dr KERRI-ANN JONES, Deputy Secretary General of the Organization for Economic Cooperation and Development (OECD), delivered a keynote address, which is reproduced in these proceedings.

HIS SERENE HIGHNESS PRINCE ALBERT II of Monaco delivered an address declaring open the 3rd Session of the Assembly of the International Hydrographic Organization, which is also reproduced in these proceedings.

### **PRESENTATION OF THE PRINCE ALBERT I MEDAL**

HIS SERENE HIGHNESS PRINCE ALBERT II of Monaco presented the Prince Albert I Medal for Hydrography 2020 to Mr Peter Doherty (United States of America) and the Prince Albert I Medal for Hydrography 2023 to Captain Mark Van der Donck (Netherlands), in recognition of their diligent and long-standing work that provided a lasting legacy in relation to the objectives of IHO.

### **FLAG PRESENTATION CEREMONY**

The representatives of Republic of Bulgaria, Cooperative Republic of Guyana, Solomon Islands, Republic of Ghana, Republic of Iraq, Republic of Angola and the Republic of Albania were invited successively to present their flag as is the tradition. The Secretary-General presented each representative with the IHO crest.

HIS SERENE HIGHNESS PRINCE ALBERT II was escorted from the Assembly Hall to the exhibition venue to open and visit the Industry Exhibition and the Member States' Exhibition.

Participants were encouraged to take full advantage of the opportunity the Exhibitions provided to learn about innovations in the field of hydrography.

[Annexes (verbatim transcripts of addresses by Secretary-General, Chair of the Assembly, IMO, IOC, OECD, HSH Prince Albert) to follow]

3<sup>rd</sup> SESSION OF THE IHO ASSEMBLY

SUMMARY RECORD OF THE SECOND PLENARY SESSION

2 May 2023

**ADOPTION OF THE AGENDA (AGENDA ITEM 3)**

(A.3/G/01/Rev.4)

The CHAIR invited the Assembly to adopt the draft agenda contained in document A.3/G/01/Rev.4.

The agenda was adopted.

**CONSIDERATION OF COUNCIL CHAIR REPORT AND PROPOSALS (WORK PROGRAMME 1) (AGENDA ITEM 4)**

**SUMMARY REPORT ON COUNCIL ACTIVITIES (COUNCIL CHAIR) (AGENDA ITEM 4.1)**

(A.3/G/05/v2.1)

COUNCIL CHAIR, drawing attention to the report of the IHO Council contained in document A.3/G/05/v2.1, gave a presentation outlining the Council's activities since 2020, which is reproduced in these proceedings. In particular, as directed by the second Assembly, the Council had continued to discuss the definition of "hydrographic interest" at its fourth meeting and had invited parties interested in developing a revised definition of the term to participate in an informal group with a view to producing a single, consolidated proposal on the subject. It had further been suggested that the group review and consider all related materials, including past proposals and other Assembly or Conference outcomes. The goal had been to prepare a new proposal for the sixth meeting of the Council or the third Assembly, but the pandemic of coronavirus disease (COVID-19) had prevented interested parties from meeting in person until 2022. Since the 2020–2023 Council was now dissolved, the agenda item had been closed at the Council's sixth meeting, with the suggestion that it be taken up again by the next Council once more detailed solutions had been developed. The Council therefore recommended to the Assembly that the topic be put on hold until the interested parties had worked out and submitted a mature proposal for a revised definition.

SECRETARY-GENERAL explained that, as the Council had been formally disbanded pending the establishment of a new Council by the third Assembly, the issue of finding a way forward on the definition of "hydrographic interest", which the Council had recommended be put on hold, was considered formally closed. It would be placed on the agenda of either the Assembly or the Council, only if a new proposal to that effect is presented from a Member State.

GERMANY expressed support for this interpretation of the position by the Secretary-General.

CHAIR concluded that the Assembly agreed to endorse both the presentation given by the Council Chair and the written report of the Council contained in document A.3/G/05/v2.1, subject to the specific approval of the proposals submitted, namely PRO 1.1, 1.2, 1.3, 1.4, 2.1, 3.1 and 3.2, and in the light of the clarification provided by the Secretary-General.

It was so agreed.

CHAIR further concluded that the Assembly agreed to endorse the position that the item relating to a revised definition of "hydrographic interest" would remain closed until a new submission or proposal by Member States was put forward to the Council or the Assembly.

It was so agreed.

## **SUMMARY REPORT ON WORK PROGRAMME 1 (SECRETARY-GENERAL) (AGENDA ITEM 4.2)**

(A.3/G/05.1/v2)

SECRETARY-GENERAL gave a presentation outlining the work of IHO during the period 2021–2023 on the six elements of Work Programme 1, “Corporate affairs”. In addition to the excellent relations the Organization enjoyed with the Government of Monaco, it had strong working relationships with a number of international Organizations and had continued to participate in relevant meetings.

Work within the United Nations Committee of Experts on Global Geospatial Information Management (UN-GGIM) provides greater scope on how to manage geospatial information, of which hydrographic information was a subset. Together with the International Organization for Standardization Technical Committee ISO/TC 211 (Geographic Information/Geomatics) and the Open Geospatial Consortium (OGC), IHO had co-authored a key revision of the UN-GGIM Guide to the Role of Standards in Geospatial Management, which was a fundamental tool for establishing Marine Spatial Data Infrastructure (MSDI). IHO also worked closely with the United Nations Division of Oceans and Law of the Sea (UN-DOALOS), the IHO–International Association of Geodesy (IAG) Advisory Board on the Law of the Sea (ABLOS) and the United Nations Open-ended Consultative Process on Oceans and the Law of the Sea. A presentation on mapping the ocean had been well received, helping participants in the Open-ended Consultative Process to understand why it was an essential activity that provided baseline data for use in a variety of applications. UN-DOALOS had gained support through the development of the S-121 Product Specification on Maritime Limits and Boundaries as the recommended format for States to deposit data in support of maritime limits and boundaries within the United Nations, in accordance with the provisions of the United Nations Convention on the Law of the Sea. It was anticipated that legal advice would be sought from UN-DOALOS in relation to the issue of crowd-sourced bathymetry data, especially in the context of the “30 by 30” initiative on marine protected areas.

IHO’s relations with WMO continued to mature. WMO was faced with the challenge of setting up a global meteorological service based on modern data standards and had decided to use the S-4xx range of data Product Specifications, based on S-100 paradigms, which would help to increase the popularity of the S-100 framework. If S-100 became better integrated into digital frameworks, it would be better for all processes affected. There had also been promising developments in relations with the International Seabed Authority (ISA): many years of negotiations had resulted in an agreement that bathymetry data gathered by ISA contractors in their respective licence areas would be submitted for inclusion in the IHO Data Centre for Digital Bathymetry archive. IHO was grateful to the ISA for its flexibility.

One of IHO’s strategic goals was to improve links with the ocean community, and good progress had been made in that regard. In June 2022, IHO had contributed proactively for the first time to the United Nations Ocean Conference, organizing a side event on how hydrography could support a wide range of activities and help countries to develop the Blue Economy. It had also continued to work with the International Federation of Surveyors (FIG) and the International Cartographic Association (ICA) to ensure that training courses for cartographers and surveyors remained fit for purpose and responded to technological changes in the industry.

In the area of information management, digital processes had been implemented to maintain relations with Member States. IHO was grateful for support from Japan and the Republic of Korea in the form of Project Officers to help provide these digital services. Public relations and outreach had also changed significantly with the vast increase in use of social media, making it easier to enhance the Organization’s visibility and to leverage resources as a result. The IHO website had been reviewed and relaunched, and the Organization was keen to hear of

activities in Member States to mark World Hydrography Day, as well as taking part in events in the host State. The centenary of the Organization had been celebrated on 21 June 2021.

The conduct of Work Programme 1 was permanently overseen by the Council. The mechanism worked well and provided good oversight. The report of the Finance Committee, which had met the previous day, would be submitted to the Assembly once it had been finalized.

In terms of Secretariat services, the Staff Regulations would be discussed separately later in the week. There had been significant changes in the profile of permanent staff members. With the departure of two translators from the permanent staff, much translation into Spanish and French had been outsourced to competent external translators. Thanks were due to the officers who had helped with the process. The arrival of a dedicated Geographic Information System (GIS) expert on the permanent staff was welcome. Gratitude was also due to Japan, the Republic of Korea and Peru for providing seconded officers to work on specific projects. The Secretariat's workload had increased with the vast expansion in video teleconferencing and hybrid formats for in-house meetings. That trend looked set to continue, especially as the S-100 framework increases in popularity.

Holding the Assembly at the Grimaldi Forum instead of the original venue of the Auditorium Rainier III, which had proved impossible as a result of continuing COVID-related measures, would have a significant impact on its cost. Consideration would need to be given to ways of compensating for the additional financial burden in the coming years. The issue would be deliberated with the Council in the context of preparing budget estimates for 2024.

The Assembly was invited to take note of the fact that the Secretariat had maintained its operational duties and had represented the Organization's scope and interests despite COVID-19 constraints; that greater levels of liaison with other international Organizations and stakeholder groups had been achieved as a result of the expansion of the Work Programme scope to the targets of Goal 2 and Goal 3 of the IHO Strategy, together with the active involvement of the Secretariat Staff in time-limited projects; and that any request for increased operational duties placed on the Secretariat should take into account the required additional personnel and material resources.

CHAIR invited the Assembly to comment on the Secretary-General's summary report on Work Programme 1.

NORWAY, emphasizing how much IHO had changed in recent years in response to broader changes in the world, welcomed the increasing professionalization of the Organization and congratulated the Secretary-General and his team on their work.

CHAIR took it that the Assembly agreed to endorse the summary report on Work Programme 1 contained in document A.3/G/05.1/v2.

It was so agreed.

## **CONSIDERATION OF COUNCIL CHAIR REPORT AND PROPOSALS (WORK PROGRAMME 1) (AGENDA ITEM 4)**

### **PRO 1.1 – NEW IHO RESOLUTION – S-100 IMPLEMENTATION (IHO COUNCIL) (AGENDA ITEM 4.3)**

COUNCIL CHAIR said that Proposal 1.1 introduced a new, overarching Resolution on S-100, embracing concepts and pathways depicted in the Roadmap for the S-100 Implementation Decade 2020 – 2030 with reference to the new IMO Resolution on Performance Standards for ECDIS and the enforced dates agreed upon.

She recalled that, at A2, Republic of Korea had proposed that IHO Resolutions be updated to include elements of S-100 implementation; it became apparent that there was a need for an overarching Resolution in order to tie together the particular elements of S-100 implementation

including guidance, timelines, maintenance and which body would be responsible for monitoring the implementation. The new Resolution was to be guided by the Roadmap and its Annexes and it would emphasize the expectation of adequate S-100 ENC coverage and appropriate S-100 data products and services when S-100 ECDIS became operational in 2026. Noting the endorsement by Council, the Assembly was invited to approve the proposed Resolution.

CHAIR noted that there had been unanimous support in the Red Book with one comment from Canada proposing editorial changes so that the Annexes were renamed numerically to correspond with the IHO-100 implementation strategy webpage.

In the absence of any comments, the CHAIR took it that the Assembly approved the new Resolution on S-100 Implementation including the editorial suggestions proposed by Canada.

PRO 1.1, as amended, was adopted.

### **PRO 1.2 – IMPLEMENTATION AND REVIEW OF THE STRATEGIC PLAN (IHO COUNCIL) (AGENDA ITEM 4.4)**

(A3/2023/EN/PRO 1.2)

COUNCIL CHAIR said that, in accordance with IHO Resolution 12/2002, the Strategic Plan was to be reviewed by the Council for fitness of purpose prior to each Session of the Assembly. In its latest review, the Council had found that current version of the Strategic Plan was still viable and recommended that it continued to be used to provide general context and direction to the IHO Work Programme.

The Council's deliberations had also led to the proposals on adjusting priorities and on a change of focus for one of the targets. In 2022, the International Maritime Organization (IMO) had endorsed a proposal for revision to the Electronic Chart Display and Information System (ECDIS) Performance Standards and ECDIS Guidance for Good Practice to include S-100 functionality and the timelines for the phase-in of S-100 capable ECDIS from 01 January 2026. In order to meet the expectations set in place by the IMO decisions, it was important for Member States and stakeholders to accelerate the pace of development in S-100, S-98, S-164 and S-128 so that the operational versions of the Specifications would be capable of supporting S-101 Electronic Navigational Chart (ENC) in use. The goal was to provide as much as possible S-101 ENC coverage where there were also S-57 ENCs, by 01 January 2026. In order to achieve that aim, Council proposed to prioritize Goal-1-related activities. The increased focus on Goal 1 was to be temporary pending progress towards complete S-101 coverage.

After careful consideration and analysis, Goal 2 / Target 2.1, to "Build a portal to support and promote regional and international cooperation in Marine Spatial Data Infrastructures (MSDI)" was deemed to be impractical and a duplication of national efforts. As an alternative, Council proposed to focus on a portal consisting of global thematic layers of information such as those that were already provided under IHO online catalogues on the IHO website.

Council believed that the Strategic Performance Indicators, as developed, were sufficient to measure progress and success and recommended that the Council begin preparations for the next Strategic Plan to be put in place for 2027–2032.

The Assembly was invited to agree on the continuation of conduct of the annual Work Programmes on the basis of the Strategic Plan in place for 2021–2026; to approve that Goal 1 of the IHO Strategic Plan and its targets should have the highest priority in the implementation of the 2024–2026 Work Programme; to direct the Inter-Regional Coordination Committee (IRCC) to provide guidance to the MSDI Working Group on the focus shift in implementation of Goal 2/Target 2.1 towards an IHO Data-Products-Services portal providing global thematic layers; to continue to measure the effectiveness and the efficiency of the three Work



Programmes' implementation by means of the Strategic Performance Indicators in place; and to provide directions to the next Council for the preparation of the Strategic Plan 2027–2032.

CHAIR noted that there had been unanimous support and some comments in the Red Book for the five points outlined in the proposal. She invited further comments.

UNITED KINGDOM believed that, at this stage, efforts should be targeted on supporting national and regional MSDI through Regional Hydrographic Commissions (RHCs) rather than through creating a global portal. The United Kingdom advocated the use of the nine strategic pathways of the United Nations Integrated Geospatial Information Framework (UN-IGIF) to maximize the value of geospatial data to societies and economies; and took the view that technologies and portals represented only one aspect of that holistic framework. At the request of the CHAIR, UNITED KINGDOM undertook to provide a proposed amendment to paragraph (c) of the proposed decision, setting out the views of the United Kingdom Hydrographic Office on MSDI and the IHO Data-Products-Services portal providing global thematic layers. The United Kingdom supported all other proposed paragraphs.

UNITED STATES OF AMERICA supported Proposal 1.2 on implementation and review of the Strategic Plan. The next three years would be a critical period for realizing IHO's vision of the promised S-100 products and services, and the proposal recognized the important connectivity between the Strategic Plan, the Work Programme and deliverables in the efforts to achieve Goal 1. The United States looked forward to working with Member States, the IHO Secretariat and key stakeholders in those regards. The Science on the Sphere display demonstrated the value of hydrography beyond navigation in addressing, among others, local, regional and global challenges including sea-level rise, hazard forecasting in mitigation and marine spatial planning. While Goal 1 was foundational to IHO's work, hydrography's considerable additional value beyond navigation was also affirmed in Goals 2 and 3. United States also supported United Kingdom's comments on the IGIF pathways and noted that a new version of the IGIF-Hydro would be available to Member States between May and August 2023.

SWEDEN supported the review and proposed implementation of the Strategic Plan. It was of particular importance that IHO focused on Goal 1 and S-100 implementation. Sweden appreciated the additional comments from Canada and the Secretariat, but believed that the existing wording was generic enough to cover any concerns.

SURINAME supported the Secretariat's recommendation to refocus the function of the MSDI portal on global thematic layers.

CHAIR took it that the decision was agreed apart from subparagraph (c) for which UNITED KINGDOM would submit a proposal of amendment on the following day.

It was so agreed.

### **PRO 1.3 – GENDER-INCLUSIVE LANGUAGE TO BE USED IN IHO DOCUMENTS AND COMMUNICATIONS (IHO COUNCIL) (AGENDA ITEM 4.5)**

(3\_2023\_EN\_PRO\_1.3)

COUNCIL CHAIR recalled that, at its second session (A2), the Assembly had tasked the Secretary-General with conducting a comprehensive review of IHO basic documents and resolutions with respect to the use of gender-inclusive language and to submit draft revisions of IHO publications M-1 and M-3 to A3; to monitor IHO's progress towards the implementation of the relevant United Nations guidelines in all IHO documentation and communications; and to report to A3.

The review of the documents had revealed relatively few single-gender references and the modifications required did not impact the readability of the documents. Based on the Secretary-General's report to the fifth session of the Council (C5), it was recommended that,

to the extent possible, the updating of gender references in existing IHO documents would take place in conjunction with other edits and revisions which had been received as proposals from IHO bodies; there would be no systematic updating of all IHO documents for the single purpose of addressing gender language issues. The Council also proposed that guiding principles on gender-inclusive language, once approved, would apply to all new IHO documents and communications. An amendment was proposed to IHO Resolution 1/2020 in order that the use of gender-inclusive language should become part of the regular drafting and revision process of all IHO documents and communication.

The Assembly was invited to approve the proposed amendment to IHO Resolution 1/2020 on gender-inclusive language to be used in IHO documents and communications; to direct the IHO Secretariat to implement the gender-inclusive language in M-1 as a first step and invite all IHO Committees, Sub-Committees, Working Groups and Project Teams to review their Terms of Reference and Rules of Procedure in application of the new IHO Resolution; and to endorse the proposal that the application process of the proposed revised version of IHO Resolution 1/2020 would become part of the regular drafting and revision process of all IHO documents and communications.

JAPAN supported the proposal, noting that the East Asian Hydrographic Commission had amended its statute to provide for the use of gender-inclusive language. Japan proposed therefore that, in paragraph (b), Regional Hydrographic Commissions should also be invited to review their Terms of Reference and Rules of Procedure in application of the new IHO Resolution.

UNITED STATES strongly supported IHO's commitment to gender equity and equality and the empowerment of women in hydrography. United States supported the use of gender-inclusive language in IHO documents and activities and supported the proposal by Japan to include a reference to Regional Hydrographic Commissions in the draft decision. United States recognized the administrative burden of amending documents and stood ready to provide support in the rewording of documents.

NEW ZEALAND supported the amendment proposed by Japan to include a reference to Regional Hydrographic Commissions reviewing their Terms of Reference and Rules of Procedure.

CHAIR took it that the decision was approved, with the amendment proposed by Japan. She suggested the following wording: "b) to direct the IHO Secretariat to implement the gender-inclusive language in M1 as a first step and invite Committees, Working Groups and Regional Hydrographic Commissions to review their Terms of Reference and Rules of Procedure in application of the new IHO Resolution".

PRO 1.3, as amended, was adopted.

### **PRO 1.5 – REVISION OF M-7 IHO STAFF REGULATIONS (SECRETARY-GENERAL) (AGENDA ITEM 4.6)**

(A3/2023/EN/PRO 1.5)

SECRETARY-GENERAL, introducing PRO 1.5, said that the proposal to revise M-7 IHO Staff Regulations had been prompted by rearrangements made in connection with the health insurance and retirement system for IHO Secretariat staff. IHO obligations in respect of rights granted to staff members would not change as a result of the proposal, which would similarly have no impact on the IHO Budget. Based on experiences during the COVID-19 pandemic, one of the main changes proposed was to introduce teleworking as an option available to IHO staff on a permanent basis. During the revision process, the opportunity had been taken to make minor editorial changes, updates and clarifications to the publication. The proposal had been endorsed by the Council and the Finance Committee.

The Assembly was invited to take note of the need to revise the IHO Staff Regulations for the reasons set out in PRO 1.5; approve the proposed revision of the IHO Publication M-7 Staff Regulations; and endorse the proposal to put the new Edition 9.0.0 in force by 1 July 2023, subject to the inclusion of gender-inclusive language in accordance with the decision taken under agenda item 4.5.

CHAIR said she took it that the Assembly wished to agree to each of those three actions.

It was so agreed.

PRO 1.5 was adopted.

**PRO 1.6 – POLYGONAL DEMARCATION OF GLOBAL SEA AREAS (SECRETARY-GENERAL) (AGENDA ITEM 4.7)**

(A3/2023/EN/PRO 1.6)

SECRETARY-GENERAL, introducing PRO 1.6, recalled that A2 had approved the proposal for the future of S-23 as a package and had tasked him with its implementation. It had also tasked the Hydrographic Services and Standards Committee (HSSC), as the responsible technical body, with the development of a new S-130 Polygonal Demarcations of Global Sea Areas Product Specification. The 11 members of the S-130 Project Team (S-130PT) established for that purpose had worked in accordance with the Rules of Procedure and Terms of Reference endorsed by the HSSC. At the HSSC's 14<sup>th</sup> session (HSSC14), the S-130PT Chair had provided a progress report stating that S-130 Product Specification Edition 1.0.0 would be submitted to HSSC15 for endorsement in June 2023; that the related initial implementation and test phase with a view to Edition 2.0.0 would be completed by the end of 2023; and that Edition 2.0.0 and the authoritative S-130 dataset would be submitted to HSSC16 in May or June 2024 for endorsement and subsequent report to C8. On the assumption that those timelines would be met, C9 was expected to be in a position to report to A4 accordingly.

SECRETARY-GENERAL, noting that the Council had endorsed the timelines mentioned, said that the Assembly was invited to take note of the timeline for the development and implementation of the S-130 Product Specification; endorse his recommendation to postpone consideration of the need for the subsequent development of basic guidelines for the allocation and display of attributes of sea areas to be applied to geographic information systems until the S-130 Product Specification and the implementation as authoritative S-130 dataset had been finalized; and endorse his recommendation to postpone the consideration of subsequent amendments to the relevant IHO Resolutions 32/1919, as amended, and 13/1919, as amended, for endorsement by the Council, if appropriate, until the S-130 Product Specification and the implementation of the authoritative S-130 dataset had been finalized.

SWEDEN, speaking in its capacity as HSSC Chair, confirmed that S-130 Edition 1.0.0 had already been submitted and would be made available on the IHO website in advance of HSSC15 in June 2023.

JAPAN expressed support for the proposal, as well as great appreciation for the sincere efforts and generous support of the Secretary-General concerning the implementation of the decisions adopted in respect of PRO 1.9 at A2.

BELGIUM, speaking in its capacity as Chair of the S-130 Project Team and likewise expressing support for the proposal, thanked all team members who had contributed to the work to date and would continue to contribute on a technical level in future.

CHAIR said she took it that the Assembly wished to take note of the timeline detailed by the Secretary-General and to endorse his two recommendations.

It was so agreed.

PRO 1.6 was adopted.

**3rd SESSION OF THE IHO ASSEMBLY**  
**SUMMARY RECORD OF THE THIRD PLENARY SESSION**

3 May 2023

**PRO 1.2 – IMPLEMENTATION AND REVIEW OF THE STRATEGIC PLAN (IHO COUNCIL) (AGENDA ITEM 4.4)** (continued)

(A3/2023/EN/PRO 1.2)

UNITED KINGDOM presented a proposed amendment, comprising a change to the wording of the last sentence to reflect the view that guidance to the Marine Spatial Data Infrastructures Working Group (MSDIWG) should be achieved through supporting regional and national efforts through the Regional Hydrographic Commissions (RHCs) rather than through the creation of a global portal. Noting that a portal created previously by the United Kingdom Hydrographic Office had not proven successful, he said that the purpose and defined customer requirement for a global portal were not clear. United Kingdom supported the use of the United Nations Integrated Geospatial Information Framework (UN-IGIF) pathways as a modern framework to maximize the value of data to societies. Funding and capacity for such a portal would also prove challenging. The role of the MSDIWG should therefore be to support national and regional efforts instead of creating a global portal.

NORWAY said that work of the MSDIWG had helped to create a more mature understanding of MSDI. He supported the changes proposed by United Kingdom; it was unclear who the customer would be for a global portal. Resources should be directed towards support on a national and regional level.

INDIA said that MSDI was still at a nebulous early stage and could not yet be considered to have “matured”. He emphasized the essential nature of global coordination so that layers were developed in a standardized way and ensured interoperability.

GERMANY said that their understanding had been that the proposal was not to develop another worldwide portal, but to make use of the mechanisms that already existed to provide the necessary data infrastructure, which included the UN-IGIF. The original proposal did not hinder regional or national approaches. Either option would be acceptable, but Germany suggested that in either case it be clarified that the aim was to support UN-IGIF rather than to build another portal.

BRAZIL and NEW ZEALAND expressed full support for the United Kingdom’s proposed amendment.

The SECRETARY-GENERAL explained that the idea of a portal had originally emerged in deliberations on the Strategic Plan during the 1<sup>st</sup> Session of the IHO Assembly. He fully concurred that there was no good purpose for a global portal to be maintained by IHO. He further stated that there was a system already in place under the Secretariat that provided Member States access to global thematic layers. Instead of a global portal, he suggested maintaining the current mechanism to provide global thematic layers, while also integrating the United Kingdom’s proposal to enhance support to national and regional MSDIWG efforts through the RHCs.

GERMANY supported the Secretary-General’s solution and expressed willingness to contribute to the development of the necessary wording.

UNITED STATES OF AMERICA endorsed that approach and said that, conceptually, the United States was a strong supporter of using the UN-IGIF pathways. They noted that it was a major change from the task assigned, and expressed willingness to help develop the necessary wording.

INDIA and FRANCE supported the Secretary-General's solution and expressed willingness to help develop the necessary wording.

UNITED KINGDOM endorsed the approach and said they saw value in articulating the problem the portal was seeking to solve and being specific about the outputs and outcomes it hoped to achieve.

PRO 1.2: The Assembly directed IRCC to provide guidance to the MSDI Working Group on the implementation of Goal 2/Target 2.1 through supporting national and regional MSDIWG efforts via RHCs and the continued provision of global thematic layers by means of the existing IHO GIS infrastructure (trusted source, standardized, interoperable). Any proposed extension of the portfolio of global thematic layers by the MSDIWG has to be brought forward to IRCC for endorsement and Council for approval.

### **PRO 1.7 – DEPRIVATION OF THE IHO MEMBER STATE STATUS FROM THE RUSSIAN FEDERATION (UKRAINE) (AGENDA ITEM 4.8)**

(A3/2023/EN/PRO 1.7)

The CHAIR said that Ukraine had unfortunately been unable to attend the Assembly to present its proposal. She noted that the proposal invited the Assembly "to consider the ability" of the Assembly to make a decision of deprivation of IHO Member State status from the Russian Federation on the basis of its military aggression against Ukraine. She clarified that the Assembly's ability to make such a decision was determined by the IHO Convention and General Regulations that do not provide for any mechanism for suspending a Member State for reasons other than two consecutive years' non-payment of contributions. She therefore concluded that the Assembly did not have such an ability.

SWEDEN, speaking on behalf of European Union Member States, who were also IHO Member States, delivered a statement expressing full solidarity with Ukraine and the Ukrainian people. He called on the Russian Federation to cease action and withdraw from Ukraine. He further stated that the Russian Federation must respect international law, including human rights. Sweden requested that their statement is reproduced in these proceedings.

UNITED STATES condemned in the strongest possible terms the Russian Federation's unprovoked and illegal war against Ukraine, and the fact that the event had created a humanitarian catastrophe. The United States expressed full support for all efforts to ensure the safety of seafarers, commercial vessels, and the marine environment in the Black Sea and Sea of Azov, and further stated that it was important that lawful hydrographic services and activities be facilitated, even in situations involving armed conflict. It was noted that the armed conflict was blocking such activities. The swiftest way to ensure that maritime activities could continue in those areas would be for the Russian Federation to immediately end its illegal war and withdraw all its forces.

NORWAY stated that it was not a member of the European Union, but expressed support for the statement made by Sweden.

JAPAN expressed concern about the impact of Russian Federation's actions, which were shaking the very foundation of the international order based on the rule of law. Japan took seriously the maritime safety of civilian vessels in the regions that were being attacked and condemned the Russian Federation's actions. Japan was hopeful that a peaceful environment would return to Ukraine.

UNITED KINGDOM stated that it was not a member of the European Union, but supported the statement by Sweden. The United Kingdom expressed full support for Ukraine in standing against ongoing illegal aggression from the Russian Federation and condemned that country's unprovoked and premeditated invasion of Ukraine. It was through international bodies such as the IHO that countries should seek to hold the Russian Federation accountable for its illegal and unsafe actions, which were impacting Ukraine's ability to undertake its duties as a national

hydrographic office and jeopardizing the safety of the international mariner. Working with other IHO partners, the United Kingdom had responded fully to Ukraine's request for support, detailed in Circular Letter 16/2022, by providing support and assistance to Ukraine to enable it to undertake its responsibilities under the International Convention for the Safety of Life at Sea (SOLAS) as a sovereign coastal State. The United Kingdom would continue to do so, for as long as necessary.

RUSSIAN FEDERATION thanked colleagues who had shown professionalism in abstaining from any comments in what was a political matter. The Russian Federation was making every effort to maintain hydrographic activities and assure navigational safety in the region. The Russian Federation had never stopped conducting bathymetric activities in the Black Sea and Sea of Azov, charting activities and updating maps, and assuring safe navigational activities. The practical results of those efforts were that more than 12,500 ships had passed the Kerch Strait in both directions since navigation had opened. The Russian Federation noted revision efforts by the Russian hydrographic service to support navigational security in the region.

CHINA attached great importance to the sovereignty of Member States, and noted that unilateral sanctions impacted safety of navigation in the region. China called for all countries to strengthen solidarity and work together to avoid adverse effects. They stated that the IHO was an intergovernmental technical advisory body and not a political organization. The Assembly was not a forum suitable for discussion of political issues.

The Assembly took note of the Chair's clarification that neither the IHO Convention nor the General Regulations of the IHO provide a mechanism to suspend a Member State from IHO membership for reasons other than non-payment of contributions for two consecutive years.

## **CONSIDERATION OF REPORTS AND PROPOSALS: WORK PROGRAMME 2 (AGENDA ITEM 5.1)**

HSSC CHAIR presented a summary report of activities under Work Programme 2. The main focus of HSSC's work was to develop and maintain the IHO Standards necessary for safe navigation in a way that also supported the harmonized use of data beyond navigation. HSSC organized its work through nine working groups, whose areas of work he outlined. The S-100 Working Group included five Project Teams. A further Project Team was focused on Maritime Autonomous Surface Ships (MASS) and another on S-130. Lastly the Advisory Board of the Law of the Sea (ABLOS) comprised four representatives of IHO Member States and four from the International Association of Geodesy. HSSC Chair shared an implementation dashboard, which was kept up to date by the HSSC Vice-Chair and was reported annually to the Council.

Explaining the need for the move to S-100, HSSC Chair gave examples to highlight the value of moving to an ECDIS based on multiple interoperable layers. Moving beyond electronic versions of a chart format optimized for the paper media would allow the full potential of available data to be utilized. For example, enabling the creation of a unique safety depth layer that would also take into account dynamic information about water level and currents would contribute to reduced fuel consumption and so fewer emissions. Major benefits included improved safety (high resolution bathymetry in combination with other datasets such as under keel clearance management), optimized loading and route optimization and just-in-time arrival (decreased fuel consumption, avoid squat, usage of tide currents and weather information). The ability for ships to be able to share their planned route with shoreside entities would be another major innovation that would allow ports to work more effectively. S-100 would also be maintainable and cyber-secure, and constituted a start towards automated navigation as machine-readable nautical information could facilitate the development of MASS.

In replacing S-57 ENC's with multiple interacting layers, the concept was that S-101 ENC would always act as the base layer. Further information could then be layered on top, but

users should always be able to revert to the ENC in one click. The system was under development, and HSSC Chair encouraged Member States to engage to ensure that IHO could deliver new systems in a safe but understandable manner. He emphasized the importance of information being issued for use with ECDIS by or on the authority of a government-authorized hydrographic office or other relevant government institution. The navigational base layer of the newly defined Electronic Navigational Data Service (ENDS) was the ENC.

A two-step approach to implementation will focus first on a package of Product Specifications relating to navigational route monitoring mode, then on those relating to navigational route planning mode. In the transition from S-57 to S-101 ENC, backwards conversion was expected to be a more automatic process, which would mean it may be preferable to first produce S-101 data and convert this back to S-57. Various ongoing activities and initiatives were aimed at supporting the transition from S-57 to S-101 so that Member States could achieve substantial coverage before the new IMO ECDIS Performance Standards in-force dates. He encouraged technical experts to study carefully the options for hydrographic offices as there were strategic decisions that needed to be made in relation to parallel production of S-57 and S-101.

IHO had organized a drafting group and a draft redline version of the revised IMO ECDIS Performance Standards had been submitted to the IMO Sub-Committee on Navigation, Communications and Search and Rescue (NCSR) 9<sup>th</sup> meeting, held in June 2022. With the exception of the withdrawal of functionalities for route exchange all other proposed changes were endorsed by NCSR9. The proposal was subsequently approved by the IMO Maritime Safety Committee (MSC) 106<sup>th</sup> meeting in November 2022. A transition period had been agreed upon, meaning that S-100 ECDIS would be legal to use after 01 January 2026 and from 01 January 2029 new systems must comply with the new IMO Resolution MSC.530(106) on ECDIS Performance Standards. The inclusion of S-100 in the IMO regulatory framework was a major success for IHO, but meant that IHO had commitments towards IMO and other stakeholders to achieve operational status on the prioritized S-100) Product Specifications. An increase in active contributions in S-100-related Working Groups and Project Teams was therefore needed and Member States must do as much as possible to achieve substantial coverage of S-101 by 2026.

A Project Team was established under the Nautical Cartography Working Group (NCWG) to develop a baseline symbology set to support the automated production of paper charts from S-101 data. Some Member States had suggested a varied approach to achieve better guidance. The HSSC and NCWG perspective was that the IHO Chart Specifications S-4 provided enough flexibility. The general approach agreed upon at A-2 in 2020, regarding paper charts, is reasonable.

Member States were encouraged to engage in the work of HSSC, which would help them to ensure competencies in their own organizations while contributing to the development of new Standards. The involvement of Member States was important to avoid becoming too dependent on industry, and to ensure that the whole S-100 ecosystem was implemented in a safe way. As IHO's operational resources were limited, a sustainable structure was needed. HSSC Chair thanked all those who participated in the activities of the Working Groups and the HSSC Chair team.

UNITED KINGDOM expressed appreciation for the report. They said that the move away from paper charts towards digital charts was evidenced by a significant reduction in the volume of paper charts sold by Admiralty internationally, from 5 million sheets of paper charts in 2015 to 575 000 charts sold internationally in 2022.



UNITED STATES OF AMERICA expressed appreciation for the report and looked forward to continuing to support such work in future.

The Assembly endorsed the Report of Work Programme 2.

**PRO 2.1 – DUAL FUEL CONCEPT FOR S-100 ECDIS (IHO COUNCIL) (AGENDA ITEM 5.2)**

(A3/2023/PRO 2.1)

COUNCIL CHAIR, explaining the rationale behind the dual fuel concept, said that S-100-compliant additional data layers would be interoperable only with S-101 Electronic Navigational Charts (ENCs). Introducing PRO 2.1, she noted that there were no substantive objections to the concept and that the Hydrographic Services and Standards Committee (HSSC) and Council had endorsed the document “Dual Fuel Concept for S-100 ECDIS” and the related executive summary.

The Assembly was invited to approve the dual fuel concept for S-100 Electronic Chart Display and Information Systems (ECDIS), including the prefacing executive summary as presented in Annex A, and to note the importance of the fundamental strategic change introduced by the S-100 ECDIS dual fuel concept with regard to multiple interacting navigational data layers.

SURINAME said that it supported the proposal.

CHAIR said she took it that the Assembly approved both proposals.

PRO 2.1: The Assembly took note of and approved the dual fuel concept for S-100 ECDIS including the prefacing Executive Summary as presented in Annex A. The Assembly further took note and approved the fundamental strategic change introduced by the S-100 framework and approved the dual fuel concept for S-100 ECDIS.

**PRO 2.2 – ESTABLISHMENT OF AN S-100 INFRASTRUCTURE CENTRE TO SUPPORT THE IMPLEMENTATION OF S-100 (REPUBLIC OF KOREA) (AGENDA ITEM 5.3)**

(A3/2023/PRO 2.2)

REPUBLIC OF KOREA, introducing PRO 2.2, said that a permanent and stable support structure would be essential for the IHO to achieve the S-100 Implementation Roadmap and related commitments. The proposed S-100 Infrastructure Centre could assist Member States in implementing the S-100 framework through the sustainable operation of the Geospatial Information Registry, with efficient communication with existing IHO bodies and the Secretariat, and through the update and maintenance of S-100 catalogues and development tools and S-164 test datasets.

Taking into consideration Sweden’s comment in the Red Book, Republic of Korea proposed that the Project Team should develop the objectives, scope and operational governance of the proposed Centre and report to HSSC, which should in turn report to Council for approval. Council should then report to the Assembly. It was hoped that the Project Team would find a suitable funding solution to avoid burdening the IHO. As a proponent of the proposal, the Korea Hydrographic and Oceanographic Agency (KHOA) would be actively involved in the Project Team’s work.

The Assembly was invited to recognize the need to establish the S-100 Infrastructure Centre and approve the foundation of a new Project Team under HSSC, with a three-year Work Plan including the establishment of the S-100 Infrastructure Centre to prepare for the actual implementation period, with consideration of the possible location of the centre; request the HSSC to propose to the Council how the S-100 Infrastructure Centre could support the S-100 framework; and request the Council to report to the 4<sup>th</sup> IHO Assembly on the progress of the

three-year operation of the Project Team, including the establishment of the S-100 Infrastructure Centre.

NORWAY, acknowledging the need to address the topic, said that it wished to help to develop a solution. It stressed, however, that a decision on the exact form or name of the structure might be premature at the present stage.

UNITED KINGDOM agreed with Norway that the proposed effort might be premature, but expressed a willingness to work with the Republic of Korea to develop the proposal.

SINGAPORE supported the proposal in principle and stressed the need for further discussion at HSSC about the roles and responsibilities of the proposed Centre. It looked forward to exploring possible collaboration between the Centre and the IHO–Singapore Innovation and Technology Laboratory on S-100 related projects.

UNITED STATES OF AMERICA, emphasizing the need for an S-100 technical support centre, said that it endorsed the proposal. There were clear roles for both the IHO Singapore Innovation Laboratory and the proposed Centre, and it would be important to put in place a well-documented, coordinated management structure at the IHO to avoid duplication of efforts. United States stood ready to contribute to the planning process.

SURINAME supported the proposal.

CANADA said that its concerns documented in the Red Book had been addressed. It looked forward to supporting Republic of Korea with the proposed centre.

MALTA, welcoming the initiative, said that, in preparation for the S-100 ECDIS compliance deadline, the proposed centre should consider issues regarding end-user equipment and the implementation of S-100 requirements; for example, whether the ship was new, whether S-100-compliant equipment had been built into a new ship or was retrofitted into an existing ship; whether existing ship equipment would need to be replaced in the medium term; and matters regarding port State control and flag State. Malta stated that these were questions for the International Maritime Organization (IMO), and not the IHO. The proposed S-100 Infrastructure Centre should consider the end-user and how it would benefit end-users without too much hardship.

PORTUGAL, having received answers to a number of questions, expressed support for the proposal.

SECRETARY-GENERAL, stressing the indispensability of making the IHO a cutting-edge technical standardization body, said that a complex digital ecosystem consisting of all the elements contained in the proposal was necessary. The maintenance of that constantly evolving ecosystem would become an operational role requiring substantial human and material resources. Consideration must therefore be given to where to locate the proposed Centre and to how to maintain and resource it.

REPUBLIC OF KOREA thanked Member States for supporting the proposal and looked forward to fruitful discussions in the project team.

UNITED KINGDOM asked whether “recognize” in paragraph (a) of the proposal should be changed to “approve” or “investigate further”.

REPUBLIC OF KOREA confirmed that agreement was sought on the need for the proposed Centre and on the establishment of a Project Team.

NORWAY suggested rewording paragraph (a) to recognize only the need to address the topic, as it was too early to specify the nature of the solution.

CHAIR said that she understood the proposal was to establish an S-100 Infrastructure Centre and to create a Project Team to explore the matter and report to HSSC, which would in turn report to Council on whether to establish such a Centre and how it would support S-100 implementation.

HSSC CHAIR suggested changing the wording to “the possibility of establishing an Infrastructure Centre Project Team”.

REPUBLIC OF KOREA said that if the proposed Centre could not be established within the three-year Work Plan, Council would report that the work was still in progress. It hoped, however, that that would not be the case, given the urgency of S-100 implementation.

DIRECTOR KAMPFER, noting broad support for recognizing the need for such a structure, suggested including a reference to the operational establishment of the proposed Centre. In view of the approaching S-100 deadlines, it was important to put the Centre into operation as soon as possible.

UNITED STATES OF AMERICA endorsed the proposal as presented by Republic of Korea and concurred with Chair’s interpretation.

CHAIR clarified that HSSC would report to Council on whether to establish the proposed Centre and how it could support the S-100 framework. She therefore proposed amended wording of paragraph (b) of the proposal to that effect.

In the absence of any comments, the CHAIR took it that the Assembly wished to adopt the proposal with her amendment.

PRO 2.2: The Assembly recognized the need to establish the S-100 Infrastructure Centre and approve the foundation of a new Project Team under HSSC with a three-year Work Plan including the establishment of the S-100 Infrastructure Centre and to prepare for the actual implementation period with consideration of the possible location of the Centre; requested HSSC to propose to the Council to establish the S-100 Infrastructure Centre and determine how it can support the S-100 framework; and tasked Council to report to the 4<sup>th</sup> IHO Assembly on the progress of its three-year operation, including the establishment of the S-100 Infrastructure Centre.

### **PRO 2.3 THE FUTURE OF DIGITAL CHARTING (UNITED KINGDOM) (AGENDA ITEM 5.4)**

(A3\_2023\_EN\_PRO\_2.3)

UNITED KINGDOM noted that, with the development of the new S-100 standards and mobile technology, hydrographic offices were in a position to offer accessible official digital solutions that would increase the safety of navigation for those below the ECDIS-mandated sector. However, the regulations, standards and infrastructure required to use hydrographic data in systems below the ECDIS mandate were currently not in place. It was proposed that a Project Team should be established under IHO to investigate the potential issues in the current S-100 infrastructure to support Electronic Chart System (ECS) users and to elaborate recommendations that would allow for regulated and approved non-ECDIS vessel equipment to utilize hydrographic data from navigational charts. The establishment of a Project Team would enable different maritime administrations to contribute to a single solution, developed in conjunction with IHO, which would propose changes, where necessary, to the regulations at IMO and for those to be mandated.

NEW ZEALAND supported the proposal, believing that all sectors of the global maritime community should benefit from the shared future of digital charting using S-100. The time was right to engage with the regulator and enable a regulatory regime where approved ECSs, when loaded with official Electronic Navigational Charts, could meet the requirements of all commercial vessels.

GERMANY noted that extending the regulations was primarily a task for IMO, assisted by IHO.

SURINAME supported the proposal, since it would further enhance the safety of navigation.

SWEDEN said that IHO should focus its attention and resources, until 2026, on implementation of S-100 in the ECDIS market. The proposal under discussion was mainly a regulatory issue, and hence not a primary question for IHO; nor was it a technical problem that required additional standards or specialized products. Sweden did not support the proposal for the time being; such an initiative should come instead from the regulatory side, possibly through IMO Member States.

INTERNATIONAL CENTRE FOR ELECTRONIC NAVIGATIONAL CHARTS (IC-ENC) said that it had been looking into the possibility of harmonization of the regulatory environment but had paused that work pending the outcome of the discussion at the 3<sup>rd</sup> Assembly. On that basis, it lent its support, as an observer, to the proposal.

NIGERIA supported the proposal, as it sought to improve navigational safety.

UNITED KINGDOM said that ECDIS had been in place before being regulated retrospectively by IMO. Setting up a Project Team to look at the sub-ECDIS sector would benefit implementation of the whole S-100 Roadmap. IHO should take the lead on work in that sector.

NORWAY said that ECDIS consisted of two components: software and data, or content, for which IHO was responsible; and hardware, the system itself, for which IMO was the regulatory body. They wondered how realistic it would be, from an IMO perspective, to expand on the current ship types using ECDIS. Norway was continuing to provide S-57 and S-101 data for use in ECS. From a regulatory perspective, the country was well prepared for the next step in S-100 implementation.

ITALY strongly supported the proposal, in view of the large numbers of fishing and leisure vessels registered in the country. The process of applying S-100 to the sub-ECDIS sector should be speeded up, under the umbrella of IMO, with proper digital products available to all users.

UNITED STATES OF AMERICA agreed that IHO should consider a short-term Project Team to assess potential differences between the ECDIS and sub-ECDIS markets. It supported the request for IHO to work with IMO and other relevant organizations to ensure that the relevant sub-ECDIS Specifications acknowledged the importance of IHO Standards.

MALTA noted that SOLAS had not yet been amended to accommodate S-100, so the performance appraisal for the equipment had not been established. The S-100 Infrastructure Centre should start work in that area forthwith. The task of amending national codes was made more difficult by the need to specify the equipment that would be required in order to replace paper charts. National maritime administrations would have to conduct extensive discussions on the matter.

TÜRKIYE fully supported the proposal. The needs of non-SOLAS vessels should be addressed without further ado. Even though S-57 data were provided to ECS, they did not meet IMO chart carriage requirements.

DENMARK said that IHO should have a place where the sub-ECDIS market could be discussed. It supported the suggestion to have a short-term Project Team look at the question and elaborate the IHO position.

IRELAND supported the proposal, drawing attention in particular to workboats, fishing boats and other domestically mandated vessels.

SINGAPORE supported the proposal, noting that in Singapore, there were many vessels sharing very limited waters but not all sharing the same navigational data. This is a cause for concern. It was noted that the IHO also issues guidelines that are not enforced by international regulations; if it did so for the sub-ECDIS sector, Singapore would seriously consider adopting them for non-SOLAS ships.

SPAIN said that the non-ECDIS sector needed standards in order to improve safety, and it therefore supported the proposal.

SECRETARY-GENERAL said that IHO was an accredited observer of IMO and its role within the IMO framework was anchored in SOLAS Chapter V, Regulation 9. As such, IHO had been invited by IMO in 1986 to draft ECDIS Performance Standards and Specifications for Chart Content and Display, which were adopted in 1995. The mandated carriage requirement had come many years later, in 2012. IHO did not have a role in proposing to IMO an enhancement with regard to carriage requirements. That was the sovereign right of an IMO Member State.

URUGUAY supported the proposal, believing that the sector needed regulation by IMO.

THE CHAIR suggested that the last phrase of the proposal could be amended so that Member States, rather than IHO, would request IMO to consider an update to the relevant resolutions.

TÜRKIYE said that non-SOLAS vessels were one reason why hydrographic offices continued to produce paper charts, which was a considerable burden on them. It would be beneficial to contact IMO and explore the possibility of changing carriage requirements.

SECRETARY-GENERAL reiterated that a proposal to amend carriage requirements must be presented to IMO by Member States. The IHO could not propose actions to the IMO but could agree to work out guidelines as it had been suggested by Singapore.

UNITED KINGDOM said that most hydrographic offices did not have the resources to continue “triple fuelling”, or issuing paper charts as well as S-57 and S-101 products. The narrative with IMO was not about imposing additional carriage requirements but about moving to digital navigation and retiring paper charting.

DENMARK proposed that the first paragraph in the proposal could be amended to read “development of guidelines”, as had been suggested by Singapore. The third paragraph in the proposal should be reworded to address the request to IHO Member States to approach IMO.

FRANCE was concerned about the mention of “supplementary standards” in the first paragraph of the proposal. S-100 had the flexibility to allow for the development of products for the non-ECDIS sector. France also expressed concern at the reference to international standards in the second paragraph of the proposal, believing that the existing standards could be applied to vessels below the mandated ECDIS requirements.

GERMANY supported the amendments proposed by Denmark and France.

SWEDEN, speaking in its capacity as HSSC Chair, doubted whether there was regulatory expertise within HSSC to set up a sub-ECDIS Project Team. Perhaps such a body should be established under the Council.

DIRECTOR KAMPFER said that getting items on the agenda of IMO was a lengthy process. The Project Team might wish to conduct a study to ascertain what impact the proposal to replace paper charts would have on IMO and its Member States.

PRO 2.3: The Assembly was not able to reach an agreement but anticipates that United Kingdom will keep Council and HSSC informed on the progress achieved with IMO and other interested partners.



**3<sup>rd</sup> SESSION OF THE IHO ASSEMBLY**  
**SUMMARY RECORD OF THE FOURTH PLENARY SESSION**

3 May 2023

**PRESENTATION OF THE HIGHLIGHTS OF WP3 (IRCC CHAIR) (AGENDA ITEM 6.1)**

**CONSIDERATION OF REPORTS AND PROPOSALS: WORK PROGRAMME 3 (AGENDA ITEM 6)**

IRCC CHAIR gave a summary report on Programme 3 of the IHO, which was the focus of the Inter-Regional Coordination Committee (IRCC), the steering committee for IHO inter-regional coordination and support. Members of IRCC included the 15 Chairs of the Regional Hydrographic Commissions (RHCs) and the Hydrographic Commission on Antarctica (HCA) as well as the chairs of the nine subordinate bodies of IRCC. Although its membership is limited, meetings of IRCC are open to all Member States. There was excellent cooperation between IRCC and the Hydrographic Services and Standards Committee (HSSC).

In recent years, meeting time allocated for exchanges of information had been reduced, with more time devoted to discussion of strategic matters. Successful workshops on strategic issues had included a 2021 workshop on the Strategic Plan including the “gap analysis” approach from the South West Pacific Hydrographic Commission (SWPHC) and a workshop in April 2022 on the Strategic Performance Indicators (SPIs). It was planned to hold workshops on other important topics. Suggestions on topics and participation from all Member States was welcomed.

Measurement of progress through the SPIs was a key focus, with the allocation of nine SPIs to IRCC that were simple, used figures to measure success, were comparable, used digital means as far as possible and were global with the aim of leaving no Member State behind. Examples included SPI 1.2.2 on adequacy of hydrographic knowledge assessed through appropriate indicators and SPI 2.2.1 on the percentage of adequately surveyed area per coastal State. Several States had sophisticated means of measuring and collating information, but simpler methods were required at the global level.

Concerning the nine subordinate bodies, of particular note was the achievement of the World-Wide Electronic Navigational Chart Database (WEND) Working Group in developing the WEND-100 Principles to ensure world-wide consistency of S-100 products developed and adopted in 2021. Guidelines on the implementation of WEND-100 principles had been developed and the United Nations Integrated Geospatial Information Framework (IGIF) Principles reviewed in close cooperation with HSSC.

The Capacity Building Strategy had been revised in cooperation with the Capacity Building Sub-Committee (CBSC). The new edition was better aligned to the IHO Strategic Plan. It had been endorsed at the sixth session of the Council (C-6) and would be presented to A3 for approval (proposal PRO 3.2). Thanks were given to the Republic of Korea for the establishment of a new IHO e-Learning Center and for its outstanding ongoing financial, technical and human resources support. Capacity building was important for all Member States and many of them depended, at least partially, on support for training and other activities. Financial contributions were primarily from Republic of Korea and the Nippon Foundation, with Canada supplying additional funds. Non-earmarked funds were limited, and new ways must be found to acquire additional resources for capacity building.

IHO had launched a new project on Empowering Women in Hydrography (EWH), with the goal of raising awareness about career opportunities in hydrography and increasing the number of women in leadership positions. Supported by Canada, a project team had been established to take the matter forward.

The Sub-Committee on the World-Wide Navigational Warning Service (WWNWS-SC) was a strategic body which had focused on the challenges of alignment with new digital means in encoding and promulgating Navigational Warnings (Product Specification S-124) and transmission of NAVAREA Warnings. The Marine Spatial Data Infrastructures Working Group (MSDIWG) continued cooperation with the Marine Domain Working Group (MDWG) of the Open Geospatial Consortium (OGC) and the United Nations Committee of Experts on Global Geospatial Information Management (UN-GGIM) Working Group on Marine Geospatial Information.

There was intense cooperation with the European Union through the IHO-EU Network Working Group (IENWG). The tenth anniversary of the IHO-EC Memorandum of Understanding had been celebrated on 06 May 2022. Major topics of cooperation included interoperability between bathymetric data of European waters (European Marine Observation and Data Network (EMODnet)) and the General Bathymetric Chart of the Oceans (GEBCO) Grid. Marine spatial planning was becoming a major topic of interest in European waters.

The FIG/IHO/ICA International Board on Standards of Competence of Hydrographic Surveyors and Nautical Cartographers (IBSC) had reviewed individual recognition schemes and the need to improve the quality of initial submissions. The Board had been enlarged from ten to 12 members. First discussions had been held on how to reflect better the growing relevance of geodata management expertise in the course of schemes.

Concerning GEBCO, crowd-sourced bathymetry, the Data Centre for Digital Bathymetry (DCDB) and the Seabed2030 Project, joint efforts and successes in gathering more existing and new bathymetric data included: Crowd Sourced Bathymetry Working Group (CSBWG) and the GEBCO Guiding Committee (GGC).

Future challenges included finding ways to acquire additional resources for capacity building; the steadily increasing need for coordination on and between RHCs in the different fields of the IHO Strategic Plan; active participation in the development of S-100 products and services; how to map the remaining 75% of the planet's unmapped ocean seafloor; and achieving improvements in outreach – to do good things and talk about them. In closing, IRCC Chair thanked Member States for their valuable and indispensable contributions to the work of IRCC and its subordinate bodies.

DENMARK expressed appreciation for the work of the e-Learning Center: the first of Denmark's staff had just completed all four of the training courses and, in view of their success, the e-learning courses would be incorporated in the on boarding programme for new staff members of the Danish Hydrographic Office.

NORWAY, speaking as CHAIR of the CBSC, expressed appreciation for the work accomplished by the IRCC and highlighted the importance of e-learning and the contributions of Republic of Korea, the Nippon Foundation of Japan and others who had made it possible. Capacity building was a strategic pillar of the work of IHO.

CANADA expressed support and gratitude to Republic of Korea for its work on e-learning. Canada viewed it as a way forward for training and was pleased to note the positive feedback from Denmark. Canada hoped to contribute some modules or content to the e-Learning Center. The Center would remain relevant with ongoing contributions from Member States. Concerning the Empowering Women in Hydrography Project, there was one more year of funding left from Canada: additional contributions, whether in cash or in-kind, from other Member States would be most welcome and would send a strong statement that the Project had been successful and that it was worth continuing to fund.

The Assembly endorsed the Report of Work Programme 3.



**PRO 3.1: AMENDMENTS TO GENERAL REGULATIONS, Art. 8.e – MEMBERSHIP OF THE HCA (IHO COUNCIL) (AGENDA ITEM 6.2)**

(A3\_2023\_EN\_PRO\_3.1)

SECRETARY-GENERAL, speaking as Chair of the Hydrographic Commission on Antarctica (HCA), said that the IHO Strategic Plan had recognized a broader user community of data, products and services beyond IHO's traditional safety of navigation customers. In order to address that point and to reflect the changing data and user environment and the shift from paper to digital services, it was proposed to change the current wording of Article 8(e) of the General Regulations of the IHO to remove the limitation on full HCA membership by proposed new wording to allow HCA participation by IHO Member States more broadly.

Noting the endorsement by the Council, the Assembly was invited to: a) approve the proposed revision of Article 8(e) of the General Regulations of IHO; and b) note the possibility now offered to all IHO Member States by the revised HCA Statutes to become more engaged in HCA activities.

CHAIR said that the Red Book recorded unanimous support for the proposed change. She invited other comments.

CHILE expressed approval of the proposal and expressed its wish to participate in the work of the Antarctic Treaty System.

SECRETARY-GENERAL agreed that it was a fundamental assumption that current and future Member States of the IHO would be included in the work of the Antarctic Treaty System.

UNITED STATES OF AMERICA supported the change and congratulated the HCA for the advancement of IHO Goal 2 in the Antarctic region. It was noted that Netherlands, Poland and Türkiye were in the process of becoming full members. United States welcomed new members and encouraged all IHO Member States that were parties to the Antarctic Treaty to consider becoming full members in the region.

CHAIR took it that the proposed change to Article 8(e) of the General Regulations of IHO was accepted.

PRO 3.1: The Assembly approved the revision of clause (e) of Article 8 of the General Regulations of the IHO.

**PRO 3.2: REVISED CAPACITY BUILDING STRATEGY (IHO COUNCIL) (AGENDA ITEM 6.3) (A3\_2023\_EN\_PRO\_3)**

COUNCIL CHAIR presented the request for approval of the revised Capacity Building Strategy. Capacity building remained a core function of the IHO and the need would be even greater as Member States transitioned to S-100 products and services and given the need to not leave any nation behind. In recognition of the ongoing transformation in navigation, such as e-Navigation, autonomous shipping and reduction of emissions, leading to a profound evolution in hydrographic services, IRCC had tasked the CBSC to revise the Capacity Building Strategy in alignment with the IHO Strategic Plan 2021–2026. The revision had been conducted by a CBSC ad hoc Project Team and the resulting revised Strategy had been approved by the CBSC and, subsequently, by the sixth Session of the Council. The purpose of the revision was to refine the context and the processes that would lead to improving hydrographic capability, capacity, training, science and data management.

The Assembly was invited to: approve and adopt the proposed revised Capacity Building Strategy; and undertake, through IRCC and CBSC, the measurement of effectiveness of capacity building assistance through continued monitoring and evaluation.

CHAIR noted the unanimous support in the Red Book for the proposal to approve and adopt the revised Capacity Building Strategy and to undertake measurement of the effectiveness of

capacity building assistance. In the absence of any further comment, she took it that the proposal was approved.

PRO 3.2: The Assembly approved and adopted the revised Capacity Building Strategy.

**PRO 1.2 - IMPLEMENTATION AND REVIEW OF THE STRATEGIC PLAN (IHO COUNCIL)  
(AGENDA ITEM 4.4) (continued)**

(A3/2023/EN/PRO 1.2)

SECRETARY-GENERAL, continuing the discussion of PRO 1.2, presented a proposed alternative to paragraph c) of the proposal, amended to reflect both the wording as originally presented and the alternative to that wording as proposed by the United Kingdom. The proposed alternative read:

“c) To direct IRCC to provide guidance to the MSDI Working Group on the implementation of Goal 2/Target 2.1 through supporting national and regional MSDIWG efforts via RHCs and the continued provision of global thematic layers by means of the existing IHO GIS infrastructure (trusted source, standardized, interoperable). Any proposed extension of the portfolio of global thematic layers by MSDIWG has to be brought forward to IRCC for endorsement and Council for approval.”

NORWAY expressed support for the proposed alternative.

CHAIR said she took it that the Assembly wished to endorse to the proposed alternative version of paragraph c) of PRO 1.2.

It was so agreed.

PRO 1.2: c) The Assembly directed IRCC to provide guidance to the MSDI Working Group on the implementation of Goal 2/Target 2.1 through supporting national and regional MSDIWG efforts via RHCs and the continued provision of global thematic layers by means of the existing IHO GIS infrastructure (trusted source, standardized, interoperable). Any proposed extension of the portfolio of global thematic layers by MSDIWG has to be brought forward to IRCC for endorsement and Council for approval.

**PRO 2.3 – THE FUTURE OF DIGITAL CHARTING (UNITED KINGDOM) (Agenda item 5.4) (continued)**

(A3/2023/EN/PRO 2.3)

CHAIR, continuing the discussion of PRO 2.3, said that the proposal had been amended in the light of views expressed and that the Assembly was accordingly invited to approve the request for the IHO to consider development of digital navigation capability for the sub-ECDIS community; approve the request to task the HSSC to set up a sub-ECDIS Project Team or Working Group to validate the requirement for international technical standards related to data format, display, encryption and licensing for those vessels below the mandated Electronic Chart Display and Information System (ECDIS) requirements; and approve the request to inform the International Maritime Organization (IMO) of the establishment of the sub-ECDIS Project Team or Working Group highlighting the global trend towards digital navigation and, when work is at an appropriate level of maturity, to request Member States to approach their IMO representative to consider an update to the relevant resolutions.

FRANCE said that the second subparagraph relating to the establishment of an ECDIS Project Team or Working Group could be spared due to redundancy and should be deleted.

UNITED STATES OF AMERICA agreed with the removal of the second subparagraph.

UNITED KINGDOM said that the second subparagraph provided context for the aims sought and should be retained; if one were to be removed, it was the first subparagraph that should be deleted.

SWEDEN suggested as a compromise that the Council should be tasked with taking the proposal forward.

UNITED KINGDOM, noting that 13 Member States had expressed support for the initiative in the earlier discussion, said that a Project Team should be set up without further delay so as to identify the requirements for a single digital solution that suited the needs of all users across all different vessel types and thereby end the production of paper charts.

AUSTRALIA expressed strong support for the amended proposal and stated its willingness to provide expertise and personnel for such a project team.

NEW ZEALAND also expressed support for the proposal, as amended.

CHAIR, responding to FRANCE's assertion that it was essential to avoid entering into a commitment to develop any additional standards, said that the intention was to work with existing standards only in the endeavour to support the sub-ECDIS community.

UNITED STATES OF AMERICA said that, unlike the ECDIS market, the sub-ECDIS market had been involved in highly innovative navigational testing and development that had produced good and interesting ideas, including in the area of data implementation. Care should therefore be taken not to reproduce in a sub-ECDIS environment the challenges faced by the ECDIS market.

GERMANY said that the second paragraph would limit the outcome, while the first subparagraph of the amended proposal embodied a wider approach and therefore offered more flexibility. The elimination of paper charts was an entirely different matter requiring a different approach. In any event, there was no need to develop standards for the ECDIS market, as the standards in place were sufficient. Moreover, the continued use of paper charts was not a matter within the IHO remit; it fell instead to IMO.

UNITED KINGDOM said that it was already working with its national regulator to identify ways of developing capabilities for enabling it to withdraw from paper charting. United Kingdom expressed disappointment that the matter was not destined to be resolved at the current Session, but proposed to take the matter outside of the group and keep HSSC involved. If such work could not be undertaken within the IHO framework, the United Kingdom proposed that it should keep the HSSC informed of progress achieved, including in conjunction with like-minded Member States, and of its engagement with the IMO.

PRO 2.3: The Assembly was not able to reach an agreement but anticipates that the United Kingdom will keep Council and HSSC informed on the progress achieved with IMO and other interested partners.

### **PRO 3.3 – RECOGNITION OF THE SOUTHERN OCEAN (HCA CHAIR) (AGENDA ITEM 6.4)**

(A.3/PRO 3.3)

The SECRETARY-GENERAL, introducing PRO 3.3, which he had submitted in his capacity as HCA Chair, said that the full proposal had been distributed by 20 December 2022, in accordance with the applicable regulations. The proposal was indirectly related to PRO 1.6, on Polygonal Demarcation of Global Sea Areas (S-130). Appendix 1, containing general information, national positions and reservations expressed by Member States, formed an integral part of the proposal and was therefore open to further amendment.

In 2021, National Geographic USA, quoting the IHO, had informed the public of its formal recognition of the Southern Ocean as the fifth ocean. The IHO Secretariat had subsequently

received a significant number of requests for explanations on how the name had been discussed during the review of S-23. The Secretariat had noted the global popularity of the designation of Antarctic waters as “Southern Ocean”, a term not limited to academic circles but also used by international bodies such as the Antarctic Treaty Consultative Meeting (ATCM), the Scientific Committee on Antarctic Research (SCAR) and the International Bathymetric Chart of the Southern Ocean (IBCSO), the media, and teachers and universities all over the world.

As reported under item 1.6 of the Agenda, the S-130 Project Team was currently defining a polygonal demarcation dataset model using a system of unique numerical identifiers only. When the corresponding dataset was produced, a decision would be needed on whether the limits of the Southern Ocean existed.

Noting the well-established global use of the denominator “Southern Ocean” by geographers, the scientific community and broader society, HCA Members had finally agreed at HCA-18 to submit a proposal for a new IHO Resolution for approval by IHO Member States, focusing solely on recognizing the existence of the Southern Ocean. Such recognition came with the demarcation of its northern geographic limit at 60°S latitude and attendant consequences for the southern geographic limits of the Atlantic, Indian and Pacific Oceans, which would become identical to the northern geographic limit of the Southern Ocean, superseding the limits mentioned in Publication S-23, Ed. 3, 1953, for the areas concerned. Such a decision would have a direct impact on the vertices of the planned authoritative S-130 dataset for the region.

The Assembly was invited to approve the proposed IHO Resolution on the recognition of the Southern Ocean; to take note of the consequences on the limits of some global sea areas as a result of recognition of the existence of the Southern Ocean; and to endorse the fact that the new Resolution was without prejudice to or limitation of the views of the IHO or any IHO Member State regarding the subject-matter addressed.

The CHAIR, noting that all but one of the comments contained in document A.3/G/02/v1/Rev.2 (the “Red Book”) were generally supportive of the proposal, invited further comments on the matter.

INDIA said that IHO’s approach of polygonal demarcation had been a positive response to political difficulties that had arisen in the naming of various areas of water around the world. With regard to the area under discussion, naming it and defining its limits were two separate issues. Should it be named? If so, should the term “Southern Ocean” be used? As for its limits, some countries already had an established approach to where they lay, while others either recognized the area but had not defined its limits, or did not recognize it at all. Further reflection was needed on the proposal.

AUSTRALIA said that it supported the proposal as submitted because of the wording in the fourth paragraph of the draft Resolution to the effect that the limits referred to therein had neither political nor oceanographic nor, more generally, any environmental significance whatsoever, so that hydrographic offices could continue to adopt their own limits as long as they remained technically consistent with the data model of the polygonal demarcation of global sea areas.

ARGENTINA said that there were no technical, scientific or hydrographic grounds for assigning a separate name to the area in question, which corresponded to the southern zones of the Atlantic, Indian and Pacific Oceans; moreover, such a decision would exceed IHO’s consultative and technical mandate. Adopting the draft Resolution submitted would therefore have no political or legal implications for Member States. Given the lack of consensus on the issue and its complexity, it should be discussed further.

CHILE, welcoming the Secretary-General’s work on the issue in his capacity as HCA Chair, expressed support for the proposal.

NORWAY, while acknowledging the views of Argentina, expressed support for the proposal. The term “Southern Ocean” had been in use among the science community and mariners for centuries.

GERMANY, expressing full support for the proposal, said that the approach being taken would positively impact IHO’s visibility on the international stage.

UNITED KINGDOM, echoing the comments made by Norway, expressed strong support for the proposal, which would afford recognition to the use of the term “Southern Ocean” and the identification of that sea area.

UNITED STATES OF AMERICA supported the position of Australia, Germany, Chile, Norway and the United Kingdom, observing that the fourth paragraph of the draft Resolution and Appendix 1 provided the necessary context and caveats.

AUSTRALIA, reaffirming its support for the proposal, added that the term “Southern Ocean” was commonly used and well understood in Australia and was taught in schools. From a scientific perspective, the area in question was almost a distinct body of water.

The SECRETARY-GENERAL, emphasizing that IHO had no authority to name areas of water, said that the proposal was merely intended to recognize the existence of a commonly used name. The limit of 60°S latitude was likewise in widespread use among cartographers and geographers. The best means of reflecting the fact that adopting the Resolution would have no political or legal implications for Member States would be to annex Argentina’s comments to the text. The process of preparing the draft Resolution had been fully transparent, with ample opportunity for Member States to comment and all avenues of argument fully explored. The Secretary-General was confident that adopting the draft Resolution was the logical conclusion.

ARGENTINA said that it is willing to discuss the issue; however, the fact that its requests for circulation of its national position had not been met until a late stage of the Assembly preparatory process meant that further discussion would be needed before agreement could be reached.

NEW ZEALAND said that it supported the proposed Resolution, noting that the term “Southern Ocean” had been in common usage in scientific and other journals for many years and that there was no political, geographical or environmental significance whatsoever to the limits referred to in the draft Resolution.

NORWAY said that, as pointed out by the Secretary-General, a wide range of arguments had been put forward and discussed fully during the preparatory process; further debate was unlikely to be fruitful. Formally noting Argentina’s comments in the draft Resolution might present a solution.

MALTA, while raising no objection to the substance of the matter at hand, asked whether consideration had been given to any possible implications for ships’ compliance with the Polar Code, which made no mention of the term “Southern Ocean”.

URUGUAY, as a party to the Antarctic Treaty and member of the HCA, expressed support for Argentina's request for the issue to be discussed at greater length.

NORWAY reiterated that the aim of the proposal was simply to recognize the use of an existing name, with no legal or political implications attached.

UNITED STATES OF AMERICA suggested that the concerns expressed by Malta might be allayed by including a reference to “any other international body with recognized competence” in the third paragraph of the proposed text.

POLAND expressed full support for the position stated by Norway.

AUSTRALIA said that not adopting the proposal would imply an active decision on IHO's part not to recognize a widely used term, putting its practice at odds with that of other organizations. Did the Assembly wish to place the Organization in that position?

FRANCE expressed support for the proposal, which reflected common usage.

The CHAIR, summing up the debate, said that very few reservations had been expressed to the proposal, which otherwise seemed to enjoy overwhelming support.

ARGENTINA, reiterating its position, said that consensus had not yet been reached. Uruguay had supported its call for further discussion; other Member States might also have reservations on the issue.

The CHAIR, while acknowledging the lack of consensus, nevertheless emphasized that the majority of speakers had supported the proposal. She asked whether the Assembly agreed to adopt it.

ARGENTINA said that, if the rest of the Assembly so agreed, it would not block such a decision; however, it requested that its position statement be annexed thereto.

PRO 3.3: The Assembly approved the proposed IHO Resolution on the recognition of the Southern Ocean; took note of the consequences on the limits of some global sea areas as a result of recognition of the Southern Ocean; endorsed the fact that this new Resolution is without prejudice to or limitation of the views of the IHO, any other international body or any IHO Member State regarding the subject matter addressed.

### **PRO 3.4 – ACCESS TO SOFTWARE, HARDWARE AND TRAINING COURSES (ISLAMIC REPUBLIC OF IRAN) (AGENDA ITEM 6.5)**

(A3/2023/EN/PRO 3.4)

ISLAMIC REPUBLIC OF IRAN, presenting PRO 3.4, said that, in addition to Article II of the IHO Convention, the achievement of the IHO Strategic Plan, in particular Goal 1 thereof, of the three-year IHO Work Programme and of the Roadmap for the S-100 Implementation Decade (2020-2030) was dependent on Member States' full access to the latest software, hardware and relating training for the production and updating of Electronic Navigational Charts. Such access was now limited, however, for a number of Member States on various pretexts, which should not include safety of navigation. With the community bound to ensure that no one was left behind, the Assembly was invited to take note of that critical issue and to task the Secretariat with taking action through relevant channels.

CHAIR noted that the Secretary-General had stated in the Red Book in response to Member States' comments on PRO 3.4 that Member States were invited to take note of Article II of the IHO Convention and IHO Resolution 2/1972, as amended, which addressed the scope of the proposal.

SECRETARY-GENERAL said that, while empathetic to the Iranian request, the IHO could do little in the way of support other than to call on Member States to implement Resolution 2/1972, as amended, on technical assistance and cooperation in the field of hydrography.

CHAIR said that the IHO Secretariat could not be tasked with any action unless it had the means at its disposal for achieving an outcome. She therefore suggested that the Assembly take note of the critical issue raised by the Islamic Republic of Iran.

It was so agreed.

The Assembly noted that the scope of PRO 3.4 is sufficiently addressed by Article II of the IHO Convention and IHO Resolution 2/1972.

3rd SESSION OF THE IHO ASSEMBLY  
SUMMARY RECORD OF THE FIFTH PLENARY SESSION

4 May 2023

**CONSIDERATION OF REPORTS AND PROPOSALS (WORK PROGRAMME 3)  
(AGENDA ITEM 6) (continued)**

**PRO 3.5 ESTABLISHMENT OF A TASK FORCE TO EXPLORE THE POTENTIAL MERITS, STRUCTURES, AND OPTIONS FOR ALTERNATE FUND GENERATION TO SUPPORT CAPACITY BUILDING AND OTHER IHO INITIATIVES (UNITED STATES OF AMERICA, CANADA, NORWAY, UNITED KINGDOM AND AUSTRALIA) (AGENDA ITEM 6.6)**

(A3/2023/PRO 3.5)

UNITED STATES OF AMERICA, introducing PRO 3.5, said that coastal nations required more capacity building support to achieve the IHO Strategic Plan. With funding requests for capacity building in recent years persistently exceeding the amounts available, only a relatively small number of projects were accepted each year. That situation would be exacerbated by the challenge of fulfilling the S-100 implementation plan. Moreover, annual Member State contributions were unlikely to increase, and the finite solution of adding new Member States was undermined by the fact that those same States generally required the most capacity building assistance. Highlighting the generally supportive comments in the Red Book, the United States noted that the suggested changes had been taken into account and invited the Assembly to approve the exploratory and non-binding proposal.

PORTUGAL, expressing concern at the decline in funding for capacity building, said that it endorsed the proposal. It welcomed initiatives to seek new, stable funding sources which strengthened IHO's commitment to capacity building.

SWEDEN, strongly supportive of the proposal, said that it agreed that the task force should be established under the Inter-Regional Coordination Committee (IRCC). It was also important to strengthen IHO's work concerning the S-100 infrastructure.

NORWAY thanked the United States for proposing a long-overdue solution. It was crucial to address the strategic pillar of capacity building and ensure that Member States' requests in that area could be met.

CHILE said that it fully backed the proposal and encouraged the exploration of innovative pathways to fund capacity building.

ITALY, endorsing the proposal, suggested strengthening the role of the Capacity Building Sub-Committee (CBSC) by adding "especially regarding the search for reliable alternative funding sources" in the second paragraph of the proposal.

SURINAME said that it supported the proposal, which would ensure that no one was left behind.

NEW ZEALAND, recognizing that alternative funding was indispensable to achieve the IHO Strategic Plan, said that it supported the proposal.

CANADA said that it supported the proposal and the search for new sources of stable and sustainable funding. At a time of significant transformation and change, capacity building was vital to ensure that no one was left behind. Canada looked forward to participating in the initiative.

INTERNATIONAL CENTRE FOR ELECTRONIC NAVIGATIONAL CHARTS (IC ENC), noting the reference in the proposal to Regional Electronic Navigational Chart Coordinating Centres

(RENCs), said that it stood ready to provide guidance to the proposed task force in areas such as financial infrastructure, policies and processes.

FINLAND said that it supported the proposal as presented.

FRANCE, endorsing the proposal, reiterated that the task force should come under IRCC.

DIRECTOR SINAPI said that the establishment of a powerful task force would require networking with national, regional and international institutions able to support hydrographic capacity building. The Secretariat therefore stood ready to support the proposed initiative by facilitating those connections.

IRCC CHAIR, appreciative of the proposal and the Secretariat's offer of assistance, agreed that an ad hoc project team under IRCC would be the most suitable format. Given that the revised Capacity Building Strategy adopted the previous day entailed a greater number of S-100 activities, creative ways to increase funding were urgently needed. If the Assembly decided to make IRCC responsible for the task force, work could begin at the upcoming IRCC meeting in June 2023.

INDONESIA, expressing support for the proposal, said that the Regional Hydrographic Commissions (RHCs) should explore ways to fund regional capacity building, in particular for young hydrographers.

CHAIR, highlighting the overwhelming support for the proposal, suggested amending the second and third paragraphs to specify that the Project Team would come under IRCC and that Council would be authorized to review progress via that body.

In the absence of any objections, the CHAIR took it that the Assembly agreed with the amended wording.

It was so agreed.

TÜRKIYE said that the proposed task force should also consider ways to improve spending efficiency. A lack of coordination among RHCs sometimes led to duplicate capacity building requests, thereby contributing to the lack of funding.

IRCC CHAIR said that the CBSC was working to improve interregional cooperation and had already delivered several cross regional training sessions. However, the limited funds had to be focused on those Member States most in need.

PRO 3.5: The Assembly recognized the important global maritime issues facing the hydrographic community worldwide and that addressing those issues would require expanded global hydrographic capacity; approved the proposal to establish an ad hoc Project Team under the IRCC to explore the possible establishment of reliable alternative funding for activities including capacity building and GEBCO; and, authorized Council via IRCC to review progress reports from the Project Team at least annually and provide guidance to the Project Team in preparation to report out to 4<sup>th</sup> Assembly (A4).

### **PRESENTATION OF THE REPORTS OF THE 15 REGIONAL HYDROGRAPHIC COMMISSIONS (AGENDA ITEM 7)**

The CHAIR invited the Chairs of the Regional Hydrographic Commissions to present summaries of their reports, noting that the full reports were available on the IHO website.

DENMARK presented the report of the Nordic Hydrographic Commission.

The Assembly took note of the report.

SWEDEN presented the report of the North Sea Hydrographic Commission.

The Assembly took note of the report.



CROATIA presented the report of the Mediterranean and Black Seas Hydrographic Commission.

The Assembly took note of the report.

DENMARK presented the report of the Arctic Regional Hydrographic Commission.

The Assembly took note of the report.

FINLAND presented the report of the Baltic Sea Hydrographic Commission.

The Assembly took note of the report.

UNITED STATES OF AMERICA presented the report of the US–Canada Hydrographic Commission.

The Assembly took note of the report.

INDONESIA presented the report of the East Asia Hydrographic Commission.

CHAIR congratulated the East Asia Hydrographic Commission on its 50th anniversary in 2021.

The Assembly took note of the report.

PRESENTATION OF THE REPORT OF THE IHO HYDROGRAPHIC COMMISSION ON ANTARCTICA

SECRETARY-GENERAL, as Chair of the IHO Hydrographic Commission on Antarctica (HCA), presented the report of the HCA and concluded by commending Mr Lee Truscott (United Kingdom), Chair of the HCA Hydrographic Priority Working Group and ENC/INT Chart Coordinator, for his outstanding achievements and sustained support to the work of the Commission.

The Assembly took note of the report.

FRANCE presented the report of the Eastern Atlantic Hydrographic Commission.

The Assembly took note of the report of the Eastern Atlantic Hydrographic Commission.

PERU presented the report of the South East Pacific Regional Hydrographic Commission.

The Assembly took note of the report of the South East Pacific Regional Hydrographic Commission.

NEW ZEALAND presented the report of the South West Pacific Hydrographic Commission.

The Assembly took note of the report of the South West Pacific Hydrographic Commission and agreed to consider the implementation of appropriate mechanisms to ensure greater inclusion, representation and participation of Member States at IHO meetings, in particular the IHO Assembly.

UNITED KINGDOM presented the report of the Meso American & Caribbean Sea Hydrographic Commission.

The Assembly took note of the full report of the Meso American & Caribbean Sea Hydrographic Commission and noted that work on maintenance of IHO Capacity Building Fund for annual Seminars on Raising Awareness in Hydrography, Technical Visits and High-Level Technical Visits for Associate Members was already under way.

UNITED KINGDOM presented the report of the Southern African and Islands Hydrographic Commission.

The Assembly took note of the report of the Southern African and Islands Hydrographic Commission.

INDONESIA presented the report of the North Indian Ocean Hydrographic Commission.

The Assembly took note of the report of the North Indian Ocean Hydrographic Commission.

OMAN presented the report of the ROPME Sea Area Hydrographic Commission.

The Assembly took note of the report of the ROPME Sea Area Hydrographic Commission.

BRAZIL presented the report of the South West Atlantic Hydrographic Commission.

The Assembly took note of the report of the South West Atlantic Hydrographic Commission.

### **IMPLEMENTATION OF APPROPRIATE MECHANISMS TO ENSURE GREATER INCLUSION, REPRESENTATION AND PARTICIPATION OF MEMBER STATES AT IHO MEETINGS, IN PARTICULAR THE IHO ASSEMBLY**

The CHAIR proposed that Assembly should task Council with discussing appropriate mechanisms to ensure greater inclusion, representation and participation of Member States at IHO meetings, in particular the IHO Assembly, and bring a proposal to the next Assembly. The initial request had come from the South West Pacific Hydrographic Commission (SWPHC).

NEW ZEALAND supported the proposal but asked how the process might be expedited, given that the next Assembly was three years away.

UNITED KINGDOM strongly supported the proposal and shared the concerns that three years was too long. He noted that although the Assembly was quorate, many countries were unrepresented.

SURINAME supported the proposal and suggested that a hybrid meeting format be utilized to facilitate participation.

SECRETARY-GENERAL said that the proposal was to put the item on the agenda of the Council for its October 2023 session. His understanding was that Members would be invited to put proposals, the Secretariat would provide its position, and the Council could start discussions in October about how to address the issue in a balanced way. He noted that certain technical, regulatory and financial conditions set down in the IHO Basic Documents would need to be assessed for any changes required; an open discussion was therefore needed on if and how to make any changes. If there were decisions to be made that might affect the next Assembly, those decisions could be made at Council level, as Council was mandated to oversee operations of the Organization in between Assemblies. He understood that there was no intention to move the Assembly itself. The changes needed would depend on what mechanisms were wanted. He noted that it was not realistic to change the IHO Convention but that amending other instruments might be possible in due course if it were so agreed.

CHAIR proposed a two-step approach, in which it was first considered what could be done within the existing framework and then what facilitatory changes it might be necessary to ask the next Assembly to make to the Basic Documents.

NORWAY noted that the IRCC meeting would be the next opportunity for discussions.

SWEDEN appreciated the concerns expressed by New Zealand but fully supported the idea of delegating the task to Council as the current Assembly did not have a mature proposal for its consideration.

UNITED KINGDOM said that although he recognized that procedurally IHO must wait for Council, he noted that remote and hybrid meetings were already a de facto way of working for Regional Hydrographic Commissions and that remote working arrangements for the Secretariat had already been approved. Given IHO's responsibility of stewardship towards the environment, hybrid work was a way to reduce the Organization's carbon emissions.

CHAIR said there was a recognized need for greater inclusion, as well as a need to have a balance between meeting physically and virtually at Assembly, Council and RHCs. Council could be tasked with discussing the request and coming back as quickly as possible with proposals. She emphasized the need for a specific proposal from a Council member, and the desire for the Council to work together to find solutions as fast as possible.

SECRETARY-GENERAL said that the Secretariat had done its best to prepare the technology needed to accommodate hybrid meetings, which had already become common practice in Secretariat working groups. However, the high-level decision-making bodies of the Organization came with a different level of responsibility, as the use of remote or hybrid formats came with substantial side effects, including financial implications as digital meetings were not free. IHO's working methods had already begun to reflect the changes being seen in the world, but discussion was needed of how the Organization wished to go further.

The Assembly tasked the Council to discuss the request from the SWPHC for the provision of mechanisms to ensure greater inclusion and participation of all Member States at IHO meetings, in particular the IHO Assembly, and come up with solutions as soon as possible.

### **OFFICIAL SIGNATURE CEREMONY OF THE STATUTES OF THE IHO HYDROGRAPHIC COMMISSION ON ANTARCTICA (AGENDA ITEM 8)**

The new HCA members, Netherlands, Poland and Türkiye, signed the HCA Statutes in the presence of HCA CHAIR.

### **INTERNATIONAL HYDROGRAPHIC REVIEW CENTENARY (EDITOR IN CHIEF OF THE INTERNATIONAL HYDROGRAPHIC REVIEW) (AGENDA ITEM 9)**

EDITOR IN CHIEF OF THE INTERNATIONAL HYDROGRAPHIC REVIEW presented a history of the publication through to the present day. First issued as The Hydrographic Review from 1923 to 1946, with the aim of communicating the purposes of hydrography and sharing new developments in the field, the name of the publication was changed to International Hydrographic Review (IHR) in 1947. Since 2009 the review had been a digital publication and was made available free of charge. A new website, [ihr.iho.int](http://ihr.iho.int), had been launched in 2021. A printed anniversary issue had been provided to Assembly participants. It included a compendium of 13 reprinted articles chosen by the editorial board and showcased the new format for the review. He thanked the German hydrographic office for printing and binding the anniversary issue.

He emphasized the value of the review in facilitating interdisciplinary knowledge exchange. As an applied science, hydrography encompassed fields such as geophysics, oceanography, geodesy, acoustics, cartography, remote sensing and others. The goal was that the International Hydrographic Review would become the go-to international journal for people with a hydrographic background as well as for those working in neighbouring disciplines. The Review published double-blind peer-reviewed articles, as well as event announcements, book reviews and so on, and so provided a platform for discussion to allow exchange within the hydrographic community. A number of changes had been made to make the journal more attractive to publish in, including a new and modern layout and the introduction of digital object identifiers, improvements to the review process and to correspondence with authors and more effective use of social media. Key next steps included registering IHR for journal ranking lists and feeding relevant repositories with new International Hydrographic Review content, more frequent publication of special issues and further optimization of the website. The infrastructure was thus in place, but contributions still had to be chased up: he therefore encouraged participants to consider submitting or encouraging colleagues to submit contributions as a means of sharing knowledge. He thanked colleagues at IHO as well as the editorial board, whose members were representatives of hydrographic commissions.

## **SUMMARY RECORDS**

SWEDEN thanked the Editor in Chief of the International Hydrographic Review for his work, which had raised the standard of the publication to a much higher level.

THE CHAIR commended the Editor in Chief on the new approach he had introduced and noted that all should seek to increase the wisdom of the IHO community by contributing to IHR.

**3<sup>rd</sup> SESSION OF THE IHO ASSEMBLY**  
**SUMMARY RECORD OF THE SEVENTH PLENARY SESSION**

5 May 2023

**FINANCE REPORTS, WORK PROGRAMME AND BUDGET MATTERS (AGENDA ITEM 11)**

**PRESENTATION OF FINANCE COMMITTEE REPORT (AGENDA ITEM 11.1)**

(A3/2023/F/01/EN; A3/2023/F/02/EN; A3/2023/F/03/EN; A/2023/09/EN)

CHAIR invited the Vice-Chair of the Finance Committee to introduce the agenda item.

VICE-CHAIR OF THE FINANCE COMMITTEE reported that the Finance Committee had met on Monday, 1 May 2023, the day before the opening of A-3, with representatives of 23 Member States attending. Agenda items discussed at the meeting had included the Finance report 2020–2022 (A3/2023/F/01/EN) and Annual Finance Report 2022 (A3/2023/F/02/EN); implementation of the budget for 2023; the three-year budget 2024–2026; and election of the Finance Committee Chair and Vice-Chair for the term 2024–2026.

The Finance Committee had recommended that the Assembly should:

- Approve the Finance Report 2020–2022;
- Approve the Annual Finance Report 2022;
- Approve the Secretary-General's recommendations for the transfer of the 2022 budget surplus to the Assembly Fund;
- Appoint Cabinet Taramazzo to audit the 2022 IHO accounts (approval ex post facto) and to audit the fiscal years 2023–2025;
- Note the implementation of the Budget for 2023;
- Approve the three-year budget 2024–2026;
- Approve an increase in the value of the Member States' contribution share by 3% to €4,145.05 (approximately 120 euros per share) in one step, taking effect in 2024;
- Take note of the fact that the revision of the IHO M-7 Staff Regulations had no financial implications other than those already reported in the annual reports and budget plans.

The Finance Committee had further re-elected Ms Isabelle Rosabrunetto as Chair and elected Ms Sonia Chanell as Vice-Chair by acclamation.

The Finance Committee transmitted the above recommendations to the Assembly for adoption.

CHAIR opened the floor to Member States for comments on the report of the Finance Committee.

UNITED KINGDOM fully endorsed the recommendations of the Finance Committee and thanked the Vice-Chair for his service to IHO.

GERMANY commended the work done by the Finance Committee and fully supported its recommendations.

The Assembly approved the Finance Report 2020–2022.

The Assembly approved the Finance Report 2022 (Annual Report 2022 Part II) and noted the Annual Report 2022 (draft Edition 1.1.0, April 2023) (Doc. A3 2023 G 09 refers).

The Assembly approved the Secretary-General's recommendation to A3 for the use of the 2022 surplus to add it to the Assembly Fund.

The Assembly endorsed the appointment of CABINET TARMAZZO (Monaco) to audit the 2022 IHO's accounts ex post facto and to audit the fiscal years 2023–2025.

The Assembly approved the 3 years' budget 2024 – 2026.

The Assembly approved the increase in the value of the Member States' contribution share by 3% to €4,145.05 (~ €120 per share) in one step, taking effect in 2024.

The Assembly took note of the fact that the revision of the IHO M-7 Staff Regulations had no financial implications other than those already reported in the annual reports and budget plans.

The Assembly took note of the re-election of Ms Isabelle Rosabrunetto (Monaco) as Chair and the election of Ms Sonia Chanell (United Kingdom) as Vice-Chair of the Finance Committee for the term 2024–2026.

### **APPROVAL OF THE THREE-YEAR WORK PROGRAMME AND BUDGET 2024–2026 (IHO COUNCIL) (AGENDA ITEM 11.2)**

(A3/2002/EN/PRO 1.4)

SECRETARY-GENERAL explained that, as part of the IHO Planning Cycle for Assembly years, the IHO Convention mandated the Council to prepare a proposal for the three-year Work Programme and budget estimates for Assembly adoption. The Council, assisted by the Secretary-General, had drafted a proposal of a three-year Work Programme 2024–2026, based on the priorities of the existing IHO Strategic Plan. The Council had endorsed the three-year budget estimates 2024–2026 including recommendations regarding pragmatic allocations in case the Assembly decided in favour of an increase of the value of the Member States' contribution share.

As the Assembly had approved that Goal 1 and its Targets in the IHO Strategic Plan should have the highest priority in the 2024–2026 Work Programme, it was expected that the Assembly would task the Council to review and possibly adapt the Work Programme 2024–2026 at the Council's seventh meeting in October 2023.

The Assembly: a) approved the 3 years' Work Programme 2024-2026; b) approved the three-year budget estimates 2024-2026; c) tasked the Council to adapt the Work Programme 2024-2026 and budget estimates 2024-2026 according to the applying decisions made at A3.

### **APPROVAL OF THE TABLE OF TONNAGES 2024–2026 (AGENDA ITEM 11.3)**

(A3/2023/G/03)

SECRETARY-GENERAL presented the recommendation of the Finance Committee that the Assembly adopt the proposed Table of Tonnages as submitted in document A.3/2023/G/03.

The Assembly approved the Table of Tonnages, Shares, Contribution and Votes (Doc A3/2023/G03/EN/FR V3) as prepared according to IHO Financial Regulations, Articles 5 and 6.

### **ANNOUNCEMENT AND FIRST INSTRUCTIONS FOR THE ELECTION PROCESS (AGENDA ITEM 11.4)**

CHAIR instructed that only one delegate from each Member State can be present in the Auditorium during the vote, accompanied only by a personal interpreter as necessary. All

delegates and observers who were not entitled to vote were asked to leave the Auditorium Hall.

SECRETARY-GENERAL noted that the election process would comprise two rounds of voting in closed session, the first round to elect the Secretary-General and the second round to elect a Director. Director Sinapi would perform the responsibilities of the Secretary-General for the Assembly during the election process.

**ELECTION FOR THE POSITION OF IHO SECRETARY-GENERAL AND IHO DIRECTOR (AGENDA ITEM 12)**

(A3/2023/E/01 Rev.1 and A3/2023/E/02 Rev.1)

ASSISTANT DIRECTOR GUILLAM displayed the names of the eligible candidates for the position of Secretary-General and asked if the representatives had received the correct number of ballot papers. In the absence of a response to the contrary, he instructed the delegates to fill out their ballot papers.

(A vote was taken by secret ballot, and the ballot box was then handed to the Scrutineers for counting.)

CHAIR confirmed that the expected 308 ballot papers had been received and read the results as compiled by the Chair of the Scrutineers:

Rhett HATCHER,	91
Mathias JONAS,	181
Abraham KAMPFER,	36

ASSISTANT DIRECTOR GUILLAM displayed the names of the eligible candidates for the position of Director. He asked if the representatives had received the correct number of voting papers and received no response.

(A vote was taken by secret ballot, and the ballot box was then handed to the Scrutineers for counting.)

CHAIR, confirming that the expected 308 ballot papers had been received, reporting that there had been three abstentions. He read the results as compiled by the Chair of the Scrutineers:

Abraham KAMPFER,	128
John NYBERG,	177

The Assembly elected successively:

- Dr Mathias JONAS (Germany) to the post of Secretary-General, for a term of office of three years starting on 1 September 2023;
- Dr John NYBERG (United States of America) to a post of Director for a term of office of six years starting on 1 September 2023.

(Delegates and observers resumed their seats in the Auditorium Hall.)

**ENDORSEMENT OF THE SELECTION PROCESS OF THE MEMBERS OF THE IHO COUNCIL 2023–2026 (AGENDA ITEM 12.1)**

(A3/2023/G/07 V3 and A3/2023/G/08 V3)

SECRETARY-GENERAL gave a short presentation about the selection process and read out the list of Council members for 2023–2026. He concluded by explaining the election process for the positions of Chair and Vice-Chair of the Council.

The Assembly endorsed the selection process of the Members of the Council 2023-2026 (document A3/2023/G/07 V3).

The Assembly approved the Members of the Council 2023-2026 (document A3/2023/G/08 V3).

**REVIEW OF ASSEMBLY DECISIONS (AGENDA ITEM 12.2)**

(A3/2023/G/10)

ASSISTANT DIRECTOR MANTEIGAS presented the list of draft decisions of the 3rd Assembly.

In the absence of any comments, CHAIR took it that the Assembly wished to adopt the decisions.

The Assembly decisions were adopted.

**AWARD FOR THE BEST MEMBER STATE EXHIBITION (AGENDA ITEM 12.3)**

CHAIR announced that the United States of America was the winner, with Greece in second place, and Portugal, Saudi Arabia, United Kingdom and Uruguay in joint third place.

**PRESENTATION OF A VIDEO OF THE FRENCH GOVERNMENT INVITING PARTICIPANTS TO THE UNITED NATIONS OCEAN CONFERENCE 2025 IN NICE, FRANCE (AGENDA ITEM 12.4)**

The video was unfortunately not available. It will be shown at a future IHO meeting.

**CLOSING CEREMONY (AGENDA ITEM 13)**

**DATE OF THE FOURTH SESSION OF THE ASSEMBLY IN 2026 (AGENDA ITEM 13.1)**

CHAIR announced that the date proposed for the next session of the Assembly was 20–24 April 2026.

The Assembly agreed to plan the fourth session of the Assembly (A4) for 20–24 April 2026.

**SEATING ORDER AT THE NEXT SESSION OF THE ASSEMBLY (AGENDA ITEM 13.2)**

The letter “A” was drawn by the Assembly Vice-Chair to be used in determining the seating order.

The Assembly agreed to start the seating order of 4<sup>th</sup> Session of the Assembly (A-4) with letter A of the French alphabet.

**ANY OTHER BUSINESS (AGENDA ITEM 13.3)**

**RESOLUTION EXPRESSING GRATITUDE TO THE HOST COUNTRY (A.1/MISC/02)**

CHAIR read out the following resolution:

The Assembly:

Recognizing the continued close association and significant support of His Serene Highness Prince Albert II and the Government of the Principality of Monaco in hosting the International Hydrographic Organization,



Appreciating the kind generosity of His Serene Highness and the Government of the Principality of Monaco in providing premises for the Organization,

Further appreciating the provision of a reception to the participants of the 3rd Session of the Assembly,

Further appreciating the provision of the Port Facilities of Monaco for the ships that called during the 3rd Session of the Assembly,

Expresses its profound gratitude to His Serene Highness Prince Albert II and the Government of the Principality of Monaco for their graciousness and kind hospitality extended to the Organization, and

Requests the delegation of the Principality of Monaco to convey to His Serene Highness and the Government of the Principality of Monaco the sincere sentiments of the Assembly expressed above.

The CHAIR said she took it that the Assembly wished to adopt the resolution.

The resolution was adopted.

### **STATEMENTS BY OUTGOING AND INCOMING SECRETARY-GENERAL AND DIRECTORS (AGENDA ITEM 13.3) (continued)**

Mr KAMPFER, outgoing Director, extended congratulations to Dr Mathias Jonas, the Secretary-General, on his re-election and to Dr John Nyberg on his election as Director. He had been deeply honoured to serve as Director of the IHO technical programme for six years. He thanked everyone for their support and confidence. He knew that he was not the only one to be excited about the future of the Organization, with the focus on the S-100 standards being ready to provide compatible data and services in 2026. The well-functioning Secretariat, Committees and Working Groups, with their dedicated office bearers, had been in evidence during the course of the Assembly. He was confident in the future of the Organization. He would follow the progress of S-100 with great interest and wished the new team in the Secretariat every success.

Dr JONAS, incoming Secretary-General, expressed his relief, gratitude, pride and joy for the recognition shown on his re-election. When he had first been elected in 2017, he had found that no one could be fully prepared for the position, since there was no "Category A" course for incoming Secretaries-General! He had learned the job by doing it and had tried to make as few mistakes as possible. He stated that the IHO was in excellent shape but faced technical and organizational challenges in the coming decade, including promoting technical standards to the next level of digitization and investing in the capacity to apply them both inside and outside the IHO community, and liaising with collaborating partners with greater intensity. Those goals and targets were addressed in the agreed IHO Strategic Plan. As an organization with a technical focus, IHO's leverage to build a global system of hydrographic services crossed administrative, cultural and political boundaries. Digitization would allow IHO to become more visible while visibility would, at the same time, raise expectations from a much-expanded range of stakeholders. In order to meet those expectations, IHO would do more on sustainability. He confirmed that his motivation was high and the dedication and commitment of Member States would be crucial to the success and evolution of the Organization. According to him, IHO faced the challenge of reaffirming its constitutional nature as a technical and consultative organization, as IHO's predecessors had done for over a century through times of political conflict. His guiding principle remained multilateralism for global cooperation in hydrography. He extended his wholehearted gratitude to the outgoing Director of the IHO Technical Programme, Mr Kampfer for his tireless work, achievements and personal friendship. He welcomed the incoming Director, Dr Nyberg and looked forward to working with him. He renewed his promise as Secretary-General to work as the first servant of the Organization.

Dr NYBERG, incoming Director, thanked Member States, the Secretariat and his own country for the support he had received. He would not forget that he had been elected to work for Member States. He was aware of the messages received during the Assembly that no country should be left behind in their hydrographic capacity and ability to meet the challenges of the Strategic Plan. Together, Member States and the Secretariat must see through implementation of the S-100 data model and expand opportunities through diversity and inclusion. He expressed sincere gratitude and respect to the candidates for the posts of Secretary-General and Director, who had all contributed greatly to the hydrographic community. He sincerely looked forward to working with the IHO Secretariat and for Member States over the coming six years.

### **CLOSING REMARKS BY THE CHAIR OF THE ASSEMBLY (AGENDA ITEM 13.4)**

Mrs DAHL HØJGAARD, Chair of the Assembly, said that, in a week of hard work, an impressive number of decisions had been taken that would guide the cooperation within the hydrographic community during the coming years. The strategic decision to put focus on the implementation of the S-100 standards in the next triennium to be ready to provide compatible data and services in 2026 was of particular significance. IHO Member States had chosen a pathway to follow together and had committed to sharing their experiences and coordinating efforts regionally and internationally. She wished to rephrase the vision “from the Ocean we have, to the Ocean we want” to read “from the Hydrography we have, to the Hydrography we want”, since it framed very well the discussions held that week.

The new organizational structure, which was put into play with the first Assembly in 2017, had shown its strength. The role of the Council, working in the interim to facilitate discussions, had provided and matured a number of proposals for final decision at Assembly, which had been unanimously supported. She thanked the Council Chair, Dr Geneviève Bécard, who had made the decision-making possible with her very inclusive and consultative manner, which had made sure that everyone was heard. Acknowledgement was also due to the Chairs of the subsidiary bodies, the Inter-Regional Coordination Committee and the Hydrographic Services and Standards Committee.

The lively discussions had focused mostly on the new proposals coming from Member States or regional commissions, and common ground had been reached. She thanked Member States for the respectful and positive atmosphere in which the proceedings had been held. She had been glad to feel part of an international community in which there was a shared passion for hydrography and a common wish to preserve the world’s oceans and keep seafarers safe.

In closing, she congratulated the elected Secretary-General and Director and thanked Mr Kampfer, who would be missed. She thanked the guests, exhibitors, rapporteurs and interpreters who had enabled the development of the proceedings and lasting record of the Assembly. Thanks were due also to the Vice-Chair, Adam Greenland, for his support, and to all members of the Secretariat, whose dedicated efforts behind the scenes had helped the Assembly to run smoothly.

(Amid applause, the IHO Secretariat was invited to ascend the stage.)

The SECRETARY-GENERAL presented a commemorative gift to the outgoing Chair in acknowledgement of her outstanding work in guiding the Assembly.

(Following the customary exchange of courtesies, the 3<sup>rd</sup> Session of the Assembly of the International Hydrographic Organization was declared closed.)

**LIST OF THE 3<sup>RD</sup> ASSEMBLY  
CIRCULAR LETTERS  
2022 - 2023**

## LIST OF ASSEMBLY CIRCULAR LETTERS

## ASSEMBLY CIRCULAR LETTERS (ACL)

Title	ACL N°
Result of the election for the posts of IHO Secretary-General and Director of the IHO	ACL 18
Closing of Nominations of candidates for Secretary-General and Directors of the IHO	ACL 17
Distribution of the second tranche of Assembly documents	ACL 16
Distribution of the Assembly Documents	ACL15
Hydrographic Industry Exhibition	ACL14
Selection of Chair of the 3rd Session of the IHO Assembly	ACL13
Approval of the lists of invited observers	ACL12
Proposals for consideration by the 3 <sup>rd</sup> session of the IHO Assembly	ACL11Bis
IHO MEMBER STATES' EXHIBITION - UPDATE "Mapping the marine environment in the Ocean Decade"	ACL11
Selection of Chair of the 3rd Session of the IHO Assembly	ACL10
Submission of Proposals to the Assembly - Reminder	ACL09
Preparation of the table of tonnages	ACL08
Invited observers - Submission of final lists for approval	ACL07
IHO Member States Exhibition	ACL06-Rev1 Member States - Exhibitor's Guide Exhibition Layout
Ship's visits and receptions	ACL05-Rev1
Observers at the 3rd Session of the IHO Assembly	ACL04-Rev1
Submission of proposals to the Assembly	ACL03-Rev1
Nomination of Dr. John Nyberg by the United States of America for the post of Director of the IHO	ACL02-Rev1/Bis4
Nomination of Rhett Hatcher by the United Kingdom for the post of Secretary-General of the IHO	ACL02-Rev1/Bis3
Nomination of Abraham Kampfner by the Republic of South Africa for the post of Secretary-General and Director of the IHO	ACL02-Rev1/Bis2
Nomination of Dr. Mathias Jonas by Germany for Secretary General of the IHO	ACL02-Rev1/Bis1
Call for nomination of candidates for the position of IHO Secretary General and IHO Director	ACL02-Rev1
Announcement and general arrangements	ACL01-Rev1