Ocean Affairs and the Law of the Sea

Contribution of the Intergovernmental Oceanographic Commission of UNESCO to the Report of the Secretary-General

Coordinating Project (IOCCP, which also operates as the Biogeochemistry Panel of the Global Ocean Observing System); the Surface Ocean-Lower Atmosphere Study (SOLAS); the Integrated Marine Biosphere Research Project (IMBeR); the Climate and Ocean Variability, Predictability and Change (CLIVAR) core project of the WCRP; and the Global Carbon Project (GCP). The goal of this initiative is to design an integrated research and observation agenda in the next decade in support of relevant efforts by the UNFCCC and

8. IOC was invited to contribute with Ocean Acidification data to the *WMO Statement on the state of the Global Climate* in 2021 and 2022, published in April 2022 and 2023, respectively.

9. Capacity deve

UN Ocean Conference (27 June–1 July 2022, Lisbon, Portugal), which contributed to raising the profile of blue carbon for climate action.

15. IOC continues to co-sponsor GESAMP Working Group 41 on Ocean Interventions for Climate Change Mitigations (formerly Geo-engineering in the Marine Environment), which provides for a continued interagency focus on the challenges and possibilities in marine geo-engineering (also referred to as 'carbon dioxide removal and negative emissions techniques'). In its current phase, GESAMP WG 41 is focusing on wider societal implications of different marine geo-engineering approaches for the marine environment. This will include the development of an assessment framework that covers social, political, economic, ecological, ethical and other societal dimensions. IOC continues to facilitate the contribution of GESAMP WG 41 to the work of the UNFCCC related to 'negative emissions' (carbon removal and other similar techniques), as part of the mitigation element of the Convention's programme of work. GESAMP WG 41 met in Copenhagen, Denmark, on 9-12 May 2023 hosted by IMO and the IOC Science and Communication Centre on Harmful Algae Blooms at University of Copenhagen.

Research on multiple ocean stressors and their effects on the world ocean

16. As reflected in the IPCC *Special Report on the Ocean and Cryosphere in a Changing Climate* and the Sixth IPCC Assessment Report (AR6), de-oxygenation is an emerging problem exemplifying the effects of climate change-induced ocean warming, and also related to eutrophication along coastal areas. IOC leads scientific and capacity development efforts related to deoxygenation, for the benefit of its Member States, through its working group on Global Ocean Oxygen NEtwork (GO_2NE). The GO_2NE series of regular webinars (19 webinars in total at April 2023) continues to be a huge success with on average more than 100 participants. Since November 2020 year scientists and other stakeholders from 95 countries joined.

17. In order to improve data availability and quality, GO_2NE contributed to the planning of an ocean oxygen data portal and a white paper was published in December 2021. The working group also published a scientific paper comparing low oxygen areas around the world. Following the call for international programmes contributing to the United Nations Decade of Ocean Science for Sustainable Development (2021–2030), GO_2NE and its partners submitted the "Global Ocean Oxygen Decade" (GOOD) propmA ebdis partners submi א OD) pror r

speakers and young researchers. The annual GO_2NE meeting in 2022 took place just before the Liege Colloquium. In 2023 IOC organized it on 15–16 April 2023, preceding the 5th Symposium on Effects of Climate Change on the World's Ocean (ECCWO5).

21. IOC together with ICES, PICES and FAO co-organized ECCWO5, on 17–21 April 2023, in Bergen, Norway. More than 800 experts (343 ECOPs, 239 remote participation) joined the meeting and discussed different aspects of the ocean changes due to climate change in more than 19 sessions, multiple side meetings and four workshops.

22.

Research (SCOR), USA, France, Australia, China, Canada, European Commission, United Kingdom, Japan, Germany, Italy, India, New Zealand, South Africa, and Monaco.

26. Guided by its 2030 Strategy, GOOS works to transform the capacity of the Global Ocean Observing System to deliver fit-for-purpose ocean information to science and society, and for the core team to increase its effectiveness in supporting this transformation. Goal 1: Deepen engagement, partnership and impact; Goal 2: Enhance system integration, delivery and fit-for-purpose; and Goal 3: Build for the future through innovation, capacity development and good governance.

27. GOOS is also evolving to become more user led: the GOOS 2030 Strategy has the value chain, from observations, through data, modelling and assessments, to user services, at its core. These connections are being actively developed through the work of the GOOS Expert Team on Operational Ocean Forecasting, (ETOOFS), the three GOOS Ocean Decade Programmes (CoastPredict, Ocean Observing Co-Design, and Observing Together), and WMO.

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27.

providers and users to understand how the data flow from different countries through the network specific data quality control procedures, and through to Glool ity d qoAsse(d)11(id)-bty nol ad DC

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and its partners will also contribute to this year's Informal Consultative Process on Oceans and the Law of the Sea, topic of Marine Technology, around the GOOS-MTS-NOAA Dialogues with Industry.

39. GOOS again raised the profile of the ocean and the critical need for observations at the UN Climate Change Conference (COP-27) in November 2022, and again at the UN Biodiversity Conference (COP-15) in December 2022. The event where the ocean observing community had the most influence in reaching country climate negotiators was the Earth Information Day—a UNFCCC-organized event. The event was attended by hundreds of negotiators and featured clear messages from UNESCO and other agencies on the need to systematically monitor the climate for the purposes of [illegible] was highlighted at an oceans event organized by the IOC Ocean Decade team.

40. A GOOS Communications Plan was finalized and is now being implemented. This aims to both connect with the ocean observing community and highlight the critical need for ocean observing to government, policy, science, private sector, and coastal communities[illegible]

and integrating data and metadata, across an expanding network of global oceanographic and marine meteorological observing communities.

46. In 2021, OceanOPS coordinated a sailing vessel charter to re-seed sparse areas of the Atlantic Ocean with 80 Argo floats, at low cost and with a low carbon footprint. This was a new example of international cooperation, achieved with the USA, Canada, and the European Commission. A successful pilot to import real-time data on R/V cruise plans into OceanOPS from the new Marine Facilities Planning tool from the International Research Ship Operators–IRSO (the international coordination body for research vessels) was completed. This link has the potential to drive greater efficiency in the coordination of instrument deployments. OceanOPS also launched the Odyssey Project for the start of the One Ocean Summit in Brest (France), in February 2022. Through this Ocean Decade endorsed project, OceanOPS is aiming to unlock the potential of more ocean-going vessels, from racing yachts, NGOs, divers, and the commercial sector to make needed ocean observations.

47. OceanOPS increased its capacity in 2021, with the hiring of a new OceanOPS manager, a position supported by WMO, and a new Technical Coordinator for metadata implementation. A new Technical Coordinator post for Biogeochemical-Argo will be established in 2022 through support from Monaco.

Strengthening knowledge and exchange around services to boost local uptake

48. The Expert Team on Operational Ocean Forecasting Systems (ETOOFS) has completed the development of its guide *Implementing Operational Ocean Monitoring and d1(t)5( )-107(o)-nBT107(a)-1t*

GOOS at the heart of the Ocean Decade

52. GOOS observations and predictions are fundamental to achieving the ambition of the UN Ocean Decade. In 2021, GOOS responded to the Ocean Decade's call for transformational action to address the Decade challenges by launching three ambitious Ocean Decade programmes. These programmes share a vision for a co-designed and integrated ocean observing and forecasting system. Details can be found here: *Observing Together*, *CoastPredict*, *Ocean Observing Co-Design*. Much has been achieved with limited resources. Ocean Observing Co-Design and CoastPredict made significant progress, these programmes now have clear plans for transformational change of the ocean observing system around areas of clear societal need. The GOOS Ocean Decade Programme Observing Co-Design is working with 11 endorsed projects and 6 Exemplar Co-Design projects around key areas for delivery—with a number of pilot areas globally under consideration. The Exemplar Projects aim to lift the ocean observing system in key areas: Ocean Carbon, Tropical Cyclones, Marine Life, Storm Surge, Marine Heatwaves and Boundary Systems. The CoastPredict Programme has 68 partner organizations contributing to the CoastPredict Steering Committee, and three core and three affiliated projects, contributing to six thematic areas for action in the global coastal ocean. Global Coast Experiment will develop the implementation of this programme in and with several regions over the next 3–4 years. The first Ocean Observing Co-Design Workshop held in June 2022 was attended by 274 participants from 42 different countries. The Observing Together programme is working with five endorsed projects. One example of an initial project is the establishment of a national ocean observing system, which is underway with National Commission for Educati

28 October 2022 in Kigali (Rwanda) and focused on developing partnerships between GOOS-AFRICA and GMES & AFRICA, in order to improve the African ocean observations network.

GOOS and its co-sponsor WMO

57. The 2021 Extraordinary World Meteorological Congress (October 2021) approved the new WMO Unified Data Policy, which supersedes its older policies relating to the international exchange of meteorological, hydrological and climate data between the 193 Member states and territories of the WMO. The approved WMO Unified Data Policy Resolution (Res.1) can be found here. For the

underwater telecommunication cables for tsunami detection and climate applications, and bottom pressure was added as a new Essential Ocean Variable (EOV), important for tsunami networks.

63. The 12th Session of the GOOS Steering Committee (April 25–27, Halifax, Canada) focused

IODE Contribution to the UN Ocean Decade

67. IODE has now successfully submitted six Decade Actions by IODE: (i) environmental-DNA

portal was developed by the OBIS secretariat. The portal now holds information from over 600 programmes worldwide. The GOOS BioEco portal aims to be the backbone for future GOOS outputs, including assessing the status of BioEco EOV monitoring, which will feed into the annual *GOOS Report Card*, and other assessments of the state and trends in ocean observation. The portal's initial funding has been exhausted, and additional funding is necessary to sustain and expand its development.

The Ocean Data and Information System (ODIS) and Ocean InfoHub (OIH)

79. The ODIS Catalogue of Sources (ODISCat) (http://catalogue.odis.org) is an online browsable and searchable catalogue of existing ocean related web-based sources/systems of data and information as well as products and services. The content of the catalogue has continuously been growing and (as on 18 April 2023) contains now 3,105 entries of on-line content sources covering 16 content types. 2,

European Commission on 4 October 2022 in Ispra (Italy). The workshop was attended by a total of 70 expert participants. Furthermore, an experts meeting was co-organized with the National Institute of Geophysics and Volcanology (INGV) in Naples (Italy) on 28–30 November 2022 to explore opportunities and identify key actions to implement the new *ICG/NEAMTWS 2030 Strategy*. The meeting was attended by a total of 68 participants.

92. ICG/CARIBE-EWS-XVI was convened on 25–28 April 2023, hosted by the Government of Costa Rica (Cf. ICG/CARIBE-EWS-XVI/3s).

93. In the Pacific Ocean, the 29th Session of Intergovernmental Coordinating Group for the Pacific Tsunami Warning System (ICG/PTWS-XXIX,) was organized online on 1–8 December 2021 (116 participants, 27 Member States). Additional online meetings of the Steering Committee and Working Group for the South China Sea Region (WG-SCS) and Central America (WG-CA) were organized. An IOC training for seismic and tsunami warning operators on strengthening standard operating procedures for seismic data and tsunami warning in the South China Sea region, 9–10 December 2021 was organized (56 participants).

94. The project ‘Strengthening the Resilience of Coastal Communities in the North-Eastern Atlantic, Mediterranean Region to the Impact of Tsunamis and Other Sea Level-Related Coastal Hazard” (CoastWave) was launched through an online kick-off workshop on 17 and 20 December 2021. The project is financially supported by the European Union Directorate-General for European Civil Protection and Humanitarian Aid Operations (DG ECHO). The workshop was organized with the participation of partner Member States: Cyprus, Egypt, Greece, Malta, Morocco, Spain and Turkiye, as well as key project partners including the European Commission's science and

105. This is the first time that the PTWC had to respond to such an event since the system is primarily focused on earthquake-generated tsunamis causing nearly 90% of the world's historical tsunamis. In 2015 at its 8th session, the IOC TOWS-WG decided to adopt an IOC all-ICG Post-Event Assessment Questionnaire to be triggered when there is a tsunami threat of more than 1 m-

Targeted capacity development and technical assistance

115. Human and national capacity to deal with tsunamis are still unevenly spread among nations. Since its start the Tsunami programme has contained a strong capacity development component. The aim of these activities is to enable Member States to understand the risk and know ways in which they can mitigate the hazard, provide warning to people in a timely manner, and be able to carry out awareness and preparedness activities to sustain knowledge and ability-to-respond across generations.

116. In the backdrop of the pandemic and under the coordination of the IOC-UNESCO Tsunami Unit in close collaboration with Tsunami Information Centres (CTIC, ITIC, IOTIC, NEAMTIC), the International Tsunami Information Center (ITIC) and Indonesia BMKG were chosen as OTGA Specialized Training Centres (STC). A series of online or blended trainings will be developed by ITIC and BMKG within the framework of OTGA. Delivery is planned for 2022–2023 and will include seven courses: Tsunami Awareness, Tsunami Ready, Tsunami Early Warning Systems, Tsunami Warning and Emergency Response SOPs, TEMPP, Tsunami Warning Centre Competencies and Tsunami Hazard/Risk Assessment. These training courses will be developed based on the related IOC Manual Guides and training that have been implemented by the Tsunami Information Centres and hosted on the OceanTeacher e-Learning Programme. The first training on Tsunami Awareness has been made available (online) in the first semester of 2022 and the second training on Tsunami Ready will be available (online) in the second semester of 2023.

117. With support from the Government of Indonesia, the Partnership Agreement between UNESCO/IOC and BMKG on the Indian Ocean Tsunami Information Centre (IOTIC) has been extended for the period 2022–2027 with revised Terms of Reference endorsed by the ICG/IOTWMS. The Partnership Agreement will support the sustainability and continuation of services of the IOTIC for the Indian Ocean Member States for the next five years.

118. The UNESCAP funded project on “Strengthening Tsunami Early Warning in the North-West Indian Ocean region through Regional Collaboration” implemented in India, Iran, Pakistan, Oman, and United Arab Emirates continued to engage with the participating Member States via online national consultations and hybrid regional workshops as part of Phases 1, 2a, and 2b. The ICG/IOTWMS and IOTIC organized three regional training workshops on Standard Operating Procedures (SOP) for tsunami early warning and emergency response in the North-West Indian Ocean (NWIO) region for NTWCs, DMOs and the broadcast media (7–9 September, 26–28 October 2021, and 31 October–3 November 2022). Gap analyses on capacity of Member States for tsunami inundation modelling and evacuation planning was undertaken in 2022. Tsunami evacuation planning workshops were organized 24 August 2022 (regional), 13 September 2022 (India), 5 October (Pakistan), and 26 November 2022 (regional). Tsunami inundation modelling workshops were organized on 7 September 2022 and 26 November 2022. The hybrid “Workshop on Makran Subduction Zone Science Strengthening Tsunami Warning and Preparedness” was held on 14–16 November in the UAE. Phase 2c of the project has been approved by UNESCAP and is planned to start on 1 June 2023.

119. On Wednesday 22 November 2022, a final activity of the Tsunami Unit (UNESCO/IOC) – Man and Biosphere Programme (UNESCO/MAB) Joint Initiative on Integrated approach to coastal hazards in the Savegre Biosphere Reserve, Costa Rica: saving lives, protecting biodiversity, was held with local and national stakeholders, including the Comision Nacional de Emergencias (CNE), the Comite Municipal de Emergencias (CME) of Quepos, the Parque National Manuel Antonio, the Municipality of Quepos, the National Tsunami Warning Center of Costa Rica SINAMOT, the MAB Board for the Savegre Biosphere Reserve, ASANA. The meeting took place in the meeting room of Parque Nacional Manuel Antonio and coincided with celebrations for the 50th anniversary of the park. This initiative was designed to strengthen the resilience of vulnerable coastal communities in Savegre Biosphere Reserve by developing an integrated approach to coastal hazard preparedness. At the end of the project, selected communities of the Savegre Biosphere Reserve obtained an improved understanding of coastal hazard risks based on sound scientific assessments.

Facebook with the announcement of the Indian Ocean Youth Video Competition winners. In the Indian Ocean for WTAD 2022, IOTIC and ICG/IOTWMS Secretariat organized the hybrid North-West Indian Ocean Regional Standard Operating Procedure Workshop for NTWCs, DMOs, and the Broadcast Media in the Tsunami Warning Chain, 31 October–3 November 2022.

125. In the Pacific Ocean, regional activities included seminars on International Cooperation on Tsunamis in Asia-Pacific, introduced by Sweden, with contribution from the Philippines, UNDRR, ESCAP, UNESCO, and UNDP, and International Cooperation for Tsunami Warning and Mitigation in Pacific Island Countries (PIC), introduced by Fiji, with contributions from Cook Islands, UNDRR, SPC, ICG/PTWS Vice Chair (Tonga), and ITIC. PIC activities included active Facebook posts from

Science for Sustainable Development – Current Status, Challenges and Opportunities", 10–12 May 2022.

131. The 15th Meeting of the TOWS-WG (online), on 24–25 February 2022, noted the establishment of the Scientific Committee (SC) for the Ocean Decade Tsunami Programme; and accepted the workplan of the SC to develop the *Draft 10-Year Research, Development, and Implementation Plan* for consideration by the TOWS-WG at its 16th meeting in February 2023.

132. The 16th Meeting of the TOWS-WG (TOWS-WG XVI) reviewed and endorsed (subject to a relative few modifications) the latest dmo70 g0 G[e)-119.00000880.0000. Tm0s0 BT/F3 11 Tf1 0 0 1 78.275 66

GESAMP Task Team on Sargassum in developing a white paper on Sargassum science and research needs as well as a social network analysis and survey on Sargassum. This will involve the GESAMP technical secretaries of the sponsoring agencies that have indicated an interest in this topic (IOC, UN Environment, FAO, UNDP, WMO, IAEA). The white paper will be published in a peer-reviewed journal and will form the basis for GlobalHAB's and GESAMP's future engagement in the Sargassum issue. The white paper will be prepared to complement the United Nations Environment Programme- Caribbean Environment Programme (2021). Sargassum White Paper – *Turning the crisis into an opportunity*.

140. IOC and FAO have joined forces to develop and test early warning systems (EWS) for HABs in Africa. Based on a survey among African Member States, Namibia and Morocco were selected as pilot countries. In both countries stakeholder workshops were conducted to co-design EWS for HAB to meet national needs. The initiative is supported by funding from the Government of Norway (NORAD) and draws on the expertise in the IOC-FAO Intergovernmental Panel on Harmful Algal Blooms (IPHAB) Task Team on the Early Detection, Warning and Forecasting or Harmful Algal Events. The workshop in Namibia was held in partnership with the Namibian Ministry for Fisheries and Marine Resources in Swakopmund on 5–7 October 2022, with 32 stakeholders from various industries and backgrounds gathering together to define the early warning system requirements for

144. Through the IOC Science and Communication Centre on Harmful Algae the longstanding opportunities for capacity enhancement in monitoring of HABs continue with several annual courses.

structures and support the initial information requirements of the GloFouling Partnerships for understanding the role of biofouling in the transfer of non-indigenous species. The Working Group comprises experts from various disciplines and sectors which are related to impact and management of biofouling. They worked by e-mail correspondence and met face to face on 7–9 February 2023 in Copenhagen (Denmark) to deliver a first draft of their global overview.

FUNCTION D: ASSESSMENT & INFORMATION FOR POLICY
Support assessment and information to improve the science-policy interface

Sustainable Development Goals (SDG)

150. In the context of the 2030 Agenda for Sustainable Development, several targets of SDG 14 are directly relevant to the work of IOC, particularly in the areas of marine pollution, ocean acidification, ecosystem-based management, as well as marine research capacity and transfer of marine technology. IOC is identified as the UN custodian by the Inter-agency and Expert Group on SDG Indicators (IAEG-SDGs) for SDG indicators 14.3.1 (ocean acidification) and 14.a.1 (scientific knowledge and ocean research capacity). IOC has recently provided reporting on these indicators for inclusion in the UN Secretary General's Progress Report towards the SDGs in 2022 and 2023.

151.

in a given country. The full analysis will be presented in the

2022) to present the pilot StOR to the wider public. StOR will be reviewed by the IOC-32 Assembly under a dedicated agenda item.

General Bathymetric Chart of the Oceans (GEBCO)

161. The GEBCO symposium: Map the Gaps Symposium was held from 30 November to 3 December 2021, with approximately 70 panelists addressing several topics such as Regional Mapping Initiatives, Crowdsourced Bathymetry, Technology Innovations, the Nippon Foundation-GEBCO Seabed2030, Africa and Ocean Mapping, Economic Equity in Ocean Mapping, Building an Inclusive Ocean Mapping Community.

162. Several meetings of the GEBCO Sub-Committee on Undersea Features Names (SCFUN) took place in November (SCUFN 34 virtual meeting) and March 2022 (SCUFN 35 as hybrid meeting at UNESCO HQ).

163. The 38th Meeting of the GEBCO Guiding Committee (GGC) took place in Monaco at the IHO on 21–23 April 2022. The GGC approved the terms of reference of a new Sub-Committee on Education and Training (SCET) to develop and coordinate the education and training strategy of the GEBCO Programme. In addition, SCET aims to raise awareness amongst academic institutions of gaps in education and training that may impact on the progress and development of ocean mapping and in particular, the objectives of the GEBCO Programme. Recognizing the need to periodically review the governance of organizational frameworks and acknowledging recent important new developments with the two parent organizations (e.g. for IOC and IHO new strategic frameworks, the Ocean Decade, the Nippon Foundat

published document CBD/WG2020/3/INF/4 providing information on marine and coastal indicators, and listed several potential contributions from IOC. In particular the role of a global marine biodiversity observing system based on the Essential Ocean Variables, which is coordinated through the Biology and Ecosystems Panel of the Global Ocean Observing System could have a prominent role in supporting Goal A of the proposed framework—Ecosystem Integrity collaborating with the Ocean Biodiversity Information System (OBIS), the Marine Biodiversity Observation Network (MBON) of GEO BON, and the new UN System for Environmental Economics (UN SEEA) Ecosystem Assessment working group which has been given formal responsibility for these ecosystem indicators. On 19 January 2022, IOC participated and presented on those IOC

English, French, Spanish and Arabic. The guide was collaboratively developed with the support of MSPglobal experts from Africa, the Americas, Asia and Europe.

175. One of the objectives of the MSProadmap and the MSPglobal Initiative was the promotion of transboundary MSP, i.e., to improve the dialogue on MSP among Member States that share the same sea-basin so they can develop marine spatial plans coherent across borders, taking into consideration transboundary issues. The initiative focused on two pilot projects: Western Mediterranean and Southeast Pacific. Together with MSPglobal national focal points nominated by IOC focal points, regional roadmaps on MSP and sustainable blue economy were developed for each region. The WestMED Initiative Steering Committee decided to endorse the Western Mediterranean Roadmap at their meeting on 30 June 2021. As a follow-up of this pilot, IOC is now an observer of the recently launched Mediterranean Maritime Spatial Planning Community of Practice (MED-MSP-CoP).

176. Another key MSPglobal output is the IOC-UNESCO knowledge platform on MSP www.mspglobal2030.org. The website is a multilingual repository (English, Spanish, French and Arabic) where all IOC products on MSP can be found, as well as an assessment about _____ _____. Country profiles were created or updated with the information shared by Member States when answering the IOC Circular Letter, 2891 (May 2022). IOC Secretariat is currently developing some new methods to improve the regular assessment on the status of MSP globally. Within the context of the IOC State of the Ocean Report (StOR), an MSP typology criteria was developed to help IOC to assess whether there are commonalities, differences and/or trends in the adoption of MSP worldwide.

177. In November 2022, IOC-UNESCO and the European Commission's Directorate-General for Maritime Affairs and Fisheries (DG MARE) jointly organized in Barcelona (Spain) the 5th International MSPforum (86 participants from 43 nationalities) and the 3rd International Conference on MSP (168 participants from 63 nationalities). The events marked the launch of the Updated MSProadmap (2022-2027), which has six priority areas: 1. knowledge support; 2. capacity development and awareness; 3. transboundary cooperation; 4. climate-smart MSP, 5. marine protection and restoration; and 6. sustainable blue economy. This framework identified 15 actions that will guide IOC work on MSP in the following years.

178. To develop some of these actions, a new phase of the MSPglobal project is under preparation (MSPglobal 2.0), which will be co-funded by DG MARE. At the global level, the project's expected result is a larger and strengthened pool of practitioners and stakeholders ready to support MSP. Tools complementary to the MSPglobal Guide will be co-developed with the support of internal and external collaborators. Besides, new capacity development and awareness opportunities will be created through a multilingual online training on OceanTeacher Global Academy, the 6th edition of the International MSPforum in 2024 and communication activities. At regional level, the project will focus on transboundary pilots in the Gulf of Guinea and the Western Pacific regions. Through national and regional activities, the project will provide support towards institutionally strengthened MSP processes.

179. Within the context of the 5th Phase of the GEF IW:LEARN project (International Waters Learning Exchange and Resource Network: Strengthening transboundary water management of the GEF International Waters portfolio), IOC will lead regional capacity building activities on MSP for the GEF portfolio of LME projects. In addition, IOC will assist GRID Arendal in the development of a practical approach to integrate MSP into the GEF Transboundary Diagnostic Analysis and Strategic Action Program (TDA-SAP) methodology.

180. Since 2019, the Government of Sweden has provided additional support to the IOC Secretariat to assist the MSProadmap through the organization of meetings, workshops and trainings. During the second semester of 2021, with the support of national authorities as well as regional and international organizations, IOC-UNESCO jointly organized a diverse set of activities to promote the MSP approach and tools among different stakeholders from IOC Member States. National activities were organized in Comoros, Kenya and Morocco, while five regional dialogues/workshops were organized in Africa, Latin America and the Caribbean, East Asia and

Pacific. Among the regional activities, it can be highlighted the partnership with FAO in the organization of workshops on _____ in order to strengthen the alignment of sectoral planning with MSP. Case studies on “Gender and Poverty Perspectives of Marine Spatial Planning” were implemented in Kenya, Madagascar and Tanzania in

United Nations Decade of Ocean Science for Sustainable Development (2021–2030)

186. The period from June 2021 to May 2023 covered a critical first two years of implementation of the implementation of the Ocean Decade and was a period of intense activity on numerous fronts. Significant efforts were made on engagement and visibility, building of a strong and supported portfolio of Decade Actions, and the establishment of the central and decentralized architecture for the governance and coordination of the Decade.

187. Building on the first Call for Decade Actions (No. 01/2020) that solicited close to 250 potential Decade contributions, four additional Calls for Decade Actions were launched during this period. Call for Decade Actions No. 02/2021 was launched in October 2021 and closed on 31 January 2022. This Call solicited programmes contributing to Ocean Decade Challenges related to marine pollution, ecosystem management and restoration, and the ocean-climate nexus. The third Call for Decade Actions No. 03/2022 was launched on 15 April 2022 and closed on 30 August 2022 and solicited programmes contributing to Ocean Decade Challenges related to sustainable blue food and sustainable ocean economy, as well as projects for 16 endorsed Decade programmes. This Call also solicited in-kind or financial contributions to support Decade Actions in Africa and Pacific SIDS. Call for Decade Actions No. 04/2022 was opened on 15 October 2022 and closed on 31 January and solicited programmes related to the digital ocean ecosystem and coastal resilience. Call for Decade Actions No. 05/2023 was opened on 15 April 2023 and will close on 31 August 2023. It is soliciting programmes related to marine pollution, with a focus on the sub-themes of plastic and nutrient pollution; and programmes related to ecosystem management and restoration with a focus on area based management tools, ecosystem restoration and multiple ocean stressors. All Calls for Decade Actions also solicited projects to attach to already endorsed Decade Programmes.

188. As of May 2023, the Calls for Decade Actions have resulted in the endorsement of 47 programmes, 235 projects and 79 contributions. An additional set of Decade Actions including a new programme and over 30 projects is expected to be endorsed in June 2023. The portfolio of Decade Actions covers all ocean basins and all 10 Decade Challenges. It represents the collective work of thousands of individuals, and hundreds of institutions and is an indication of the continued significant and global interest in the Ocean Decade. The first iteration of the Ocean Decade Monitoring and Evaluation Framework was launched q0.0000088711(d)-11(85(D)-4)-11(8)11(8)-11(.)]TJETQq0.00000887 0

Ocean Decade strategy for this region, and an initial scoping for the creation of a DCO in the IOCARIBE office was presented to the IOCARIBE session in May 2023. Work is continuing with partners in the South Pacific to establish a Decade Collaborative Centre. Additional in-kind and financial resources will be required to fully support these efforts in Africa and SIDS and ensure stronger engagement of these countries in the Decade.

191. During this period, two meetings of the Interim Decade Advisory Board were held before this group was disbanded in late 2021. The Decade Advisory Board was established in December 2021 and held its first meeting in January 2022 and then met in-person for its first operational meeting in March 2022. Three online meetings followed in 2022 and early 2023, and the second in-person meeting of the Board was held in May 2023. During their meetings, the Board discussed recommendations related to the endorsement of Decade programmes from Calls for Decade Actions and discussed a range of strategic issues related to measuring progress of the Decade, resource mobilization, the role of indigenous and local knowledge in the Decade, and the means of increasing engagement of SIDS and LDCs. IOC/INF-1426 presents a summary of the work of the Board over this period.

192. During this period, three Decade Coordination Offices (DCOs), six Decade Collaborative Centres (DCCs), and nine Decade Implementing Partners were established. The DCOs and DCCs are playing an essential role in supporting the Decade Coordination Unit to coordinate Decade Actions, catalyze new initiatives, build stakeholder engagement, mobilize resources and communicate on the Decade. The three DCOs are being hosted by IOC (Western Pacific Region—WESTPAC, Data Sharing–IODE, and Ocean Observations–GOOS); The first of these is being supported by Thailand, however additional resources are required for the full operationalization of the Data Sharing and Ocean Observations DCOs. IOC/INF-1425 presents a summary of the IOC contribution to the Decade and the resource needs. DCCs have been established by partners and are fully resourced and funded. IOC/INF-1424 provides information on the existing DCCs. In addition to the DCOs in IOCAFRICA and IOCARIBE that are being scoped to play an essential regional coordination role, discussions are ongoing with partners to establish DCCs for the Southern Ocean, Arctic and South Pacific regions.

193. Thirty-four (34) National Decade Committees have been created and are implementing diverse initiatives to catalyze national interest and resources for the Decade, as well as provide a platform for the discussion of national priorities aligned to the Decade. Notable gaps exist in the global coverage of NDCs, particularly in SIDS. IOC/INF-1429 presents a recent publication developed with the existing cohort of NDCs.

194. A Data Coordination Group was established in December 2021 to support development and operationalization

Alliance, including their Excellencies the Presidents of Kenya, Portugal and Palau. The Decade also ran a highly successful multi-stakeholder event showcasing achievements and partnerships.

196. Engagement in key events will continue in the coming period. Planning is underway for the 2024 Ocean Decade Conference that will be hosted by the Government of Spain in April 2024. This milestone event will provide an important platform for the Ocean Decade community to convene in advance of the 2025 UN Ocean Conference (Nice, June 2025).

197. The revamped Ocean Decade website was launched in October 2021 and continues to be ameliorated. It incorporates the Ocean Decade Network, an online community platform for exchange and collaboration which has over 6,200 registered users and is the digital home to the different groups working as part of the Decade. The GenOcean communications campaign was launched on 4 April 2022 and is the public facing communications campaign of the Decade that aims to incite the general public to take action based on enhanced ocean knowledge. An internal review of this campaign has been undertaken and it will be relaunched in late 2023. Social media followers across all platforms have grown to approximately 45,000.

198. Mobilization of resources remains a key challenge for the Decade during the transition from the planning phase to the action phase. The Ocean Decade Alliance has grown during this period and now numbers 10 Patrons and 18 institutional members. Alliance members have been strongly engaged in high-level events and in raising visibility of the Ocean Decade amongst their constituencies. Efforts continue to work with Alliance members to develop joint funding or support initiatives for the Decade. Sponsored Calls for Decade Actions have been concluded with AXA Research Fund, MeerWissen Initiatives, JPI Oceans, and national funding agencies in Canada and Norway.

199. There have been significant efforts to engage philanthropic Foundations during this period, and an in-person meeting of the Foundations Dialogue was held on 1–3 June 2022 in Rabat (Morocco) hosted by the Foundation Mohamed VI for the Protection of the Environment and led to the development of new partnerships and initiatives related to co-design, strategic communications and capacity development. The next edition of the Foundations Dialogue will convene over 30 philanthropic Foundations in Monaco in June 2023, hosted by the Prince Albert II of Monaco Foundation.

200. Secondments and loans of staff have been finalized with France, Japan, and Fugro (a private sector partner) and have provided invaluable support to the coordination of the Decade. A private sector taskforce has been established to support the development of a strategic approach for engagement with industry partners.

201. To maintain the current momentum and level of activity, additional financial or in-kind resources are urgently required to allow the full resourcing and operation of the Decade Coordination Unit (IOC/INF-1424). Significant mobilization of resources will also be required to support Decade Actions; an updated resource needs assessment for Decade Actions is reported in IOC/INF-1425.

IOC Sub-Commission for Africa and the Adjacent Island States (IOCAFRICA)

202. Planning for the implementation of the UN Decade of Ocean Science for Sustainable Development in the region progressed well, with the following activities already organized: Regional Consultations and codesign workshops organized in collaboration with UNEP (Abidjan and Nairobi

Decade Roadmap plan for Africa and the partnerships, co-design and co-delivery processes required for the development of the Ocean Decade Actions to deliver the Science “We Need for the Ocean We Want” in Africa.

204. A special session on “The Ocean Decade: A Framework for Strengthening the Science Policy

208. O

project is expected to advance to a permanent mechanism to reduce duplication, and ensure that organizations work together to support healthy oceans.

IOC Sub-

227. During the inter-sessional period emphasis, at the global coordination level, was placed on the revision IOC Capacity Development Strategy. An important new related development is the launch of the Ocean CD-Hub that will provide easy discovery of CD opportunities.

228. The OceanTeacher Global Academy has continued offering online, on-site and hybrid courses and the subject area has been further expanded through cooperation with IOC programmes and other organizations.

229. The Government of Flanders (Kingdom of Belgium) continues its support through the Flanders

242. In January 2023, a new project called “Kindergarten of the Lagoon” an innovative educational project on outdoor education and ocean literacy for pre-school children was launched in Venice.

243. The interactive exhibition called “Ocean&Climate Village” continued to travel in different locations and was enriched with an installation for visually impaired, and blind people called “Feel the change”. An online version is now available: https://ocv.decenniodelmare.it/, and a catalogue was published. This project is developed through the support of the Government of Sweden, which allowed the organization of the first Ocean Literacy Training for urban planners, architects and designers, done in partnership with e-platform of Ocean Teacher Global Academy as well.

244. As contribution to the EU4Ocean coalition, and under the three-year partnership signed with the European Commission Directorate-General for Maritime Affairs a training on ocean science communication for youth, and a winter school on ocean literacy and collaboration, with a focus on the Mediterranean, were organized.

245. The new design of the IOC Ocean literacy portal (https://oceanliteracy.unesco.org) is an important step to facilitate the interaction and the exchange of information for all stakeholders concerned. A new functionality for teachers was implemented.

246. In accordance to IOC Assembly Decision A-31/3.5.4, -the IOC Ocean Literacy Group of Experts was set-up, and it comprises 20 experts from the following countries: Seychelles, Kuwait, Brazil, France, Malaysia, Ecuador, USA, UK, Italy, Chile, India, Fiji, Belgium, Spain, Kenya and Norway.

IOC Sub-Commission for Africa and the Adjacent Island States (IOCAFRICA)

247. Capacity development continues to be a main area of focus, with three Regional Training Centres for the new phase of the Ocean Teacher Academy programme designated at the University of Ghana (Accra, Ghana), the Eduardo Mondlane University (Maputo, Mozambique) and the Kenya Marine and Fisheries Research Institute (Mombasa, Kenya). Training courses were organized on the following topics: Biological Observations in the Indian Ocean-from Microbes to Megafauna (online from 8–12 November 2021, conducted by INCOIS, India and DFFE, South Africa and attended by 70 students, 28 of them from Africa); Modelling for Ocean Forecasting and Process Studies (online 6–10 December 2021 conducted by INCOIS and ITCOOcean from India and attended by 78 students, 25 of them from Africa); Fundamentals of Ocean Mapping (hosted online by KMFRI from 28 November to 17 December 2021, and attended by 18 trainees all from Africa); Earth Observation data and techniques for fisheries management (24 January–4 February 2022 hosted online by the University of Ghana); Oceanographic data collection techniques and access to free online data (9 May–31 October 2022, Mozambique, hosted online by the Eduardo Mondlane University, Maputo, Mozambique); Vessel-based ocean monitoring with applications to R/V *Dr Fridtjof Nansen* surveys (30 May–17 June 2022, jointly organized with the FAO/EAFNANSEN programme and hosted by the National Marine Information Centre in Swakopmund, Namibia); Remote sensing applied to oceanography (21–25 November 2022, hosted by the Université Félix Houphouët-Boigny, in Côte d'Ivoire).

248. Bolstered by support from NORAD, the development of the regional node for the Ocean Information Hub has progressed well, with two online stakeholders’ meetings held in June 2020 and June 2021. Within the framework of this initiative IOCAFRICA has collected information on Marine policies and legislations, Ocean observations platforms, and marine related projects, experts and institutions which will be used to develop and update databases to be linked to the information hub. The development of a regional portal on training opportunities was completed and is now available at https://africa.marinetraining.org/. IOCAFRICA is working with partners, including IUCN, CORDIO, UNEP (Abidjan and Nairobi Convention secretariats), and WIOMSA on developing interoperability with existing information sources.

249. Marine Spatial planning is another area of focus with a series of national marine spatial planning workshops (including environmental pressures that impact on MSP and decision support tools) were organized with support from the Government of Sweden in 2020/2021 in Cameroun,

Comoros, Gabon, Ghana, Kenya, Madagascar, Mauritius, Morocco, Mozambique and Tanzania. A regional workshop was also organized for the Gulf of Guinea region. IOCAFRICA in collaboration with the Swedish Agency for Marine and Water Management implemented case studies on Gender and Poverty perspectives in marine spatial planning in Kenya, Madagascar and Tanzania.

250. IOCAFRICA organized a series of regional workshops on: “Mapping the Sea Floor around Africa” jointly with the GEBCO SeaBed2030 project (online 10 and 24 February 2021 attended by

to carry out training, seminars, workshops and courses, including the IAEA partnership for ocean acidification workshops.

257. The regional node for Ocean InfoHub LAC component has progressed well, and in the last two quarters of 2021 has significantly advanced with its development building on the CHM-TMT designed by INVEMAR and in the Caribbean Marine Atlas experience. There was an acknowledgement of the need to assess gaps in capacity, and build a regional programme for filling those gaps.

258. Marine Spatial Planning (MSP) is a priority for SIDS in the Caribbean region, and several IOC MSP programmes are underway within Member States. During December 2022, the 1st MSP Regional Forum was held in the region, which mobilized participants to request additional support for the MSP process. The region's Member States welcomed the Draft Rolling Operational Strategy for SIDS and, recognizing their limited capacity for ocean science, agreed to mobilize resources for regular forums on MSP and other priorities for SIDS.

259. ODINCARSA counts with 10 NODCs, 7 ADUs (5 OBIS) and 1 AIU, and they carry their activities individually. ODINCARSA is actively participating in the development of the LAC OIH. OIH held 7 coordination meetings through 2021 and hosted one webinar. The region has 3 RTCs and 1 STC of OTGA. In 2021, 13 training courses were delivered with a total of 490 participants. Closer coordination with the TAC UN Decade Regional Planning Group may result in increasing activities and benefits for the region.

260. IOCARIBE continued working with partners to further develop: (i) the Sargassum Information Hub, as a centralized location for information sharing related to Sargassum; (ii) regular and sustained Atlantic-wide monitoring products and inundation reports that is being developed within the framework of the IOC of UNESCO and NOAA (USA) June 2021 MoU; (iii) comprehensive guides on best management practices for Sargassum management; and, (iv) trans-Atlantic collaboration between IOCARIBE, IOCARIBE GOOS, GEO Blue Planet and IOCAFRICA, UN Environment, Cartagena and Abidjan Convention Secretariats, AtlantOS, the AIR Centre and other partners are working to create a Sargassum community of practice.

IOC Sub-Commission for the Western Pacific (WESTPAC)

261. Capacity development has been an integral part of each WESTPAC programme and activity. To assist Member States achieving the SDG 14, the Sub-Commission endeavours to accelerate transformations in capacity development through the integration of training and research, an enhancement of endogenous capabilities and ownership of Member States, and the well-established mutual assistance and cooperation in the region. Over the last intersessional period, WESTPAC continuously co-designed and co-implemented its capacity development activities with Member States in the region.

262. The Sub-Commission continues to implement the IOC Capacity Development Strategy (2015–2023), and fulfill its voluntary commitment to the UN Ocean Conference-"Develop research capacity and transfer of marine technology through the UNESCO/IOC Regional Network of Training and Research Centers (RTRCs) on Marine Science" (#OceanAction15266), and the UN Decade Action 23: "Accelerating capacity development transformations in the Western Pacific - Regional Network of Training and Research Centers (RTRCs) on Marine Science". Over the last intersessional period, the Regional Training and Research Centre on Marine Biodiversity and Ecosystem Health (RTRC-MarBEST) in Indonesia organized its 6th International Training on Mangrove Monitoring (29 October–6 November 2021, virtual), in partnership with the Coral Reel Rehabilitation and Management Program -Coral Triangle Initiative (COREMAP-CTI), UNDP, and the Archipelagic & Island States (AIS) Forum. The Regional Training and Research Centre on Ocean Dynamics and Climate (RTRC-ODC) conducted its 10th International training on the regional application of coupled climate models online from 5–16 July 2021. The Regional Training and Research Center on Coral Reef Restoration and MPAs in the Philippines just organized a training workshop on Coral Larval Reseeding, 1–11 April 2023. Meanwhile, another two RTRCs, namely on Marine Toxin and Food Security, and Plastic Marine Debris and Microplastics, have taken the pandemic as an

opportunity to co-design with other stakehold

Development and Recommendation. More generally, CD cuts across the entire Workplan of IOCINDIO.

269. IOCINDIO joined hands with Mercator Ocean International for enhanced operational ocean sciences, technologies, innovations and services in the Indian Ocean. In fact, the First Mercator Regional Team