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INTERNAL OVERSIGHT SERVICE

EVALUATION OF THE STRATEGIC POSITIONING OF IOC-UNESCO

UNESCO Internal Oversight Service Evaluation Office

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Evaluation period:
December 2020 – June 2021

Location of the evaluation:
The Evaluation covers the work of IOC-UNESCO at the global level by sampling a representative number of Member States and stakeholders. It conducted focus group discussions to further explore the issues of gender equality, Small Island Developing States, and Africa, as well as two dedicated case studies on the Blue Economy and Marine Spatial Planning. The evaluation focuses on IOC-UNESCOs work over three biennia from 2016 to 2021 relating to three cycles of the UNESCO Programme and Budget documents (38, 39 and 40 C/5).

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Abstract & Acknowledgements

Abstract

The Intergovernmental Oceanographic Commission (IOC-UNESCO) has functional autonomy within UNESCO. It is the only UN body specializing exclusively in ocean science, ocean observation, ocean data and information exchange and dedicated ocean services such as Tsunami Early Warning Systems. In 2019, UNESCO's Intergovernmental Oceanographic Commission was tasked to lead the UN Decade of the Ocean. This opportunity, combined with a fast-evolving ecosystem of international actors in an expanding and increasingly crowded ocean policy and marine science space, prompted IOC-UNESCO to request an evaluation of IOC-UNESCO with a focus on its strategic positioning within the UN system and the broader landscape of ocean-related actors and programmes to meet the high demand for sound ocean science in an oceanographic space. The evaluation found that IOC-UNESCO is a valued partner for Member States as well as other international and national actors, and indispensable for strengthening capacities and providing the data and technical information on ocean science policy that serves as a basis for national level data. IOC-UNESCO has been most successful in providing contributions to UN Frameworks and Conventions (e.g. UNFCCC, Sendai and CBD), in acting as a neutral platform to discuss the increasingly relevant issue of ocean health and climate change, in bringing Member States together and fostering exchanges between governments and scientists, as well as in providing to the extended oceanographic community access to data, information and science. However, strategic advocacy at the national level, engagement at the regional level, and resourcing and visibility of gender equality and women's empowerment in the ocean space within and outside IOC-UNESCO are among the areas where further improvements are required. The establishment of the Decade of Ocean Science for Sustainable Development is the most important strategic institutional achievement of IOC-UNESCO in recent years. It is an important opportunity, but the absence of a clearly defined results framework and inadequate resources could jeopardize its success. Furthermore, it still needs to be determined how to best exploit IOC-UNESCO's data and knowledge base and how UNESCO can best support the Decade, among other through intersectoral work.

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Invaluable advisory guidance was provided by the members of the Evaluation Reference Group, comprising both internal and external members, such as IOC-UNESCO national focal points, other globally recognized ocean experts, and UNESCO and IOC-UNESCO managers while additional quality assurance was provided by IOS. Special thanks go to the IOC Secretariat including Mr. Vladimir Ryabinin, IOC-UNESCO Assistant Director General and Executive Secretary, Ms. Xenia Yvinec, Head of the IOC-UNESCO Operational Support Unit, and Mr. Julian Barbière, Head of the IOC-UNESCO Marine Policy and Regional Coordination Section. The report benefitted from external quality assurance by Ms. Claudia Marcondes, independent evaluation consultant.

Bernardin Assiene
Director, IOS

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Acronyms and Abbreviations

BBNJ	Marine biodiversity of areas beyond national jurisdiction
BCI	Blue Carbon Initiative
BSP	Bureau of Strategic Planning
CARIBE	IOC-UNESCO Sub Commission for the Caribbean and Adjacent Regions
CBD	Convention on Biological Diversity
CI	Conservation International
CPPS	Commission of the South Pacific
EBSA	Ecologically or Biologically Significant Marine Areas
EEZ	Exclusive Economic Zone
EOVs	Essential Ocean Variables
EU	European Union
EWS	Early Warning System
GCOS	Global Climate Observing System
GEWE	Gender Equality and Women's Empowerment
GOA-ON	Global Ocean Acidification Observing Network
GOOS	Global Ocean Observing System
GOSR	Global Ocean Science Report
HLO	High Level Objective
IAEG-SDG	Inter-Agency and Expert Group on Sustainable Development Goal Indicators
IDOE	International Decade of Ocean Exploration
IOCARIBE	IOC-UNESCO Sub-Commission for the Caribbean and Adjacent Regions
IOC-UNESCO	Intergovernmental Oceanographic Commission of UNESCO
IODE	International Oceanographic Data Exchange
IHO	International Hydrographic Organization
IOS	Internal Oversight Service
IPCC	Intergovernmental Panel for Climate Change
ISA	International Seabed Authority
ISC	International Science Council
IUCN	International Union for Conservation of Nature
LDC	Least Developed Country
MOPAN	Multilateral Organization Performance Assessment Network
MPAs	Marine Protected Areas
MSP	Marine spatial planning
MTS	Medium-Term Strategy
NDC	Nationally Determined Contribution
NODC	National Oceanographic Data Centre
OBIS	Ocean Biodiversity Information System
ODINAFRICA	Ocean Data Information Network in Africa
ODIS	Ocean Data and Information System
OTGA	Ocean Teacher Global Academy
PIR	Programme Implementation Report
RTC	Regional Training Centre
RTRC	Regional Training and Resource Centre
SDG	Sustainable Development Goal
SIDS	Small Island Development States
SO	Strategic Objectives
SPC	Pacific Community
SPINCAM	Southeast Pacific Data and Information Network in support to integrated coastal area management
SPREP	Secretariat of the Pacific Regional Environment Programme
SRR	Strategic Results Report
STC	Specialised Training Centre
TOC	Theory of Change
TSU	IOC-UNESCO's Tsunami Unit
UNCLOS	United Nations Convention on the Law of the Sea
UNDESA	United Nations Department of Economic and Social Affairs
UNDP	United Nations Development Programme
UNDRR	United Nations Office for Disaster Risk Reduction
UNEG	United Nations Evaluation Group
UNEP	United Nations Environment Programme
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNFCCC	United Nations Framework Convention on Climate Change
UNGA	United Nations General Assembly
WESTPAC	IOC-UNESCO Sub-Commission for the Western Pacific
WIOMSA	Western Indian Ocean Marine Science Association
WMO	World Meteorological Organization

Executive Summary

UNESCO'S INTERGOVERNMENTAL OCEANOGRAPHIC COMMISSION

1. The Intergovernmental Oceanographic Commission (IOC-UNESCO) is a body with functional autonomy within UNESCO. It is the only UN body specializing exclusively in ocean science, ocean observation, ocean data and information exchange, and dedicated ocean services such as Tsunami Early Warning Systems. Today the demand for sound ocean science to underpin the sustainable management of the oceans is more pressing than ever. In addition, the UN General Assembly has tasked IOC-UNESCO with the design and delivery of the UN Decade of Ocean Science for Sustainable Development (2021-2030). The Decade provides a common framework to ensure ocean science can fully support countries to achieve the 2030 Agenda for Sustainable Development.
2. In the context of the upcoming UN Decade of the Ocean, the IOC-UNESCO agreed with the Internal Oversight Service (IOS) on the merit of conducting an evaluation of its strategic positioning within the UN system and the broader landscape of ocean-related actors and programmes, taking into account relevant enabling policy frameworks to which the work of the Commission responds.

Objectives and methodology of the evaluation

3. The evaluation aimed to assess the extent to which IOC-UNESCO is strategically positioned to meet the high demand for sound ocean science in support of sustainable management of the oceans in an oceanographic space that is both expanding and increasingly crowded. It is the first strategic evaluation of the IOC-UNESCO in recent years and reflects not only changing global priorities, but its increasing importance reflected in the upcoming 41 C/4 Medium Term Strategy (MTS).
4. The evaluation was conducted between December 2020 and June 2021. It followed United Nations Evaluation Group (UNEG) evaluation norms and standards and ethical guidelines. The evaluation benefitted from an Evaluation Reference Group comprising both internal and external members, such as IOC-UNESCO national focal points, other globally recognized ocean experts, and UNESCO and IOC-UNESCO managers. The evaluation process and tools were in line with UNEG guidance on Gender Equality and the Empowerment of Women policy and principles.
5. The evaluation methodology included a draft Theory of Change to assess and make explicit links and causal linkages between IOC-UNESCO activities, outputs produced and the expected outcomes. The evaluation triangulated data collected from a variety of sources, using a mixed-method data analysis approach including qualitative and quantitative data analysis methods. Furthermore, the conduct of outcome harvesting allowed to validate directly with stakeholders IOC-UNESCO's outcomes, both intended and unintended.
6. The evaluation conducted key informant interviews and a survey of a broad range of stakeholders including UNESCO National Commissions. Focus group discussions to further explore the issues of gender equality, Small Island Developing States, and Africa were also conducted, as well as two dedicated case studies on the Blue Economy and Marine Spatial Planning. Interviewees included Member States, UNESCO staff at headquarters and field offices, non-governmental partners, and other ocean science policy actors.

Key Findings

The work undertaken by IOC-UNESCO is increasingly relevant in the context of the Decade of Ocean Science for Sustainable Development and urgently needed to strengthen the sustainable management of the ocean

7. The Intergovernmental Oceanographic Commission is the world's central repository of oceanographic data and knowledge. Its ocean observing, data and information system[1], as well as its coordination and facilitation of access to technical experts across the globe are universally considered as important services and vital contributions to key UN Frameworks including UNFCCC[2], Sendai and CBD[3]. IOC-UNESCO is also the custodian of the indicators for SDG 14.3 on Ocean Acidification and SDG 14.a on Marine Scientific Research within the context of the 2030 Agenda for Sustainable Development. Indeed, its Global Ocean Acidification Observing Network (GOA-ON) has provided technical advice and held dedicated expert meetings for the development of the indicator for SDG 14.3. The IOC-UNESCOs Global Ocean Science Report (GOSR) is recognised as the main mechanism to measure progress towards the achievement of SDG 14.a. The increasing relevance of ocean science within UNESCO was also confirmed by Member States' engagement in discussions around the 41 C/4 Medium Term Strategy.

IOC-UNESCO has made vital technical contributions at the outcome level towards its high-level objectives[4], although an increasing number of actors have become active in this space

8. IOC-UNESCO provides access to the data, information and science needed by the wider UN family and extended oceanographic community at large. However, in recent years there has been a blurring of lines between IOC-UNESCO and some other UN agencies which are also becoming increasingly active in the same ocean science space as IOC-UNESCO. Beyond collecting and sharing information and data, IOC-UNESCO has made policy contributions, most notably in the area of Marine Spatial Planning which has helped countries develop their protected areas through the development of innovative information systems.

Nonetheless, IOC-UNESCO faces difficulties in engaging policy makers at the national level

9. Despite IOC-UNESCO's success stories, several interviewees felt that it faced challenges in engaging national policy makers, reflecting the lack of a dedicated departmental counterpart at the national level, a limited regional presence, as well as the inherent challenge of ensuring science-based policy making. While IOC-UNESCO has had success engaging with policy makers via existing regional organizations, the examples of this type of engagement are limited.

10. Acting as a neutral platform, bringing Member States together and fostering exchanges between governments and scientists was identified as an area where IOC is most successful. Nonetheless, IOC-UNESCO's impact is constrained at times by reluctance among Member States in sharing data. Collaboration with and among private sector owners of data can help strengthen IOC-UNESCO's contribution, but such collaboration is still incipient.

1 International Oceanographic Data and Information Exchange (IODE), Global Ocean Observing System (GOOS), Ocean Biodiversity Information System (OBIS), and Tsunami Early Warning System (EWS).
2 United Nations Framework Convention on Climate Change.
3 Convention on Biodiversity.
4 High Level Objectives: Healthy ocean ecosystems and sustained ecosystem services; Effective early warning systems and preparedness for tsunamis and other ocean-related hazards; Increased resiliency to climate change and variability and enhanced safety, efficiency and effectiveness of all ocean-based activities through scientifically-founded services, adaptation and mitigation strategies; Enhanced knowledge of emerging ocean science issues. https://ioc.unesco.org/about/mission-vision.

Capacities have been developed at the individual and organizational levels but lack the necessary political will at national level to guarantee more sustainable results

11. Capacity Development is an unambiguous priority for many of IOC-UNESCO's Member States, but particularly for SIDS and LDCs. IOC-UNESCO is well-positioned to meet the capacity needs of its Member States. The Global Ocean Science Report, as well as the biennial Capacity Development Needs Survey, identify existing capacities and needs and priorities, and IOC-UNESCO's Regional Training Centres together with the Regional Sub-Commissions act as delivery mechanisms. However, political commitment by Member States and available resources of IOC-UNESCO are too limited to enable a coherent, sustainable, needs-based and holistic approach.

The UNESCO global priority Gender Equality is not sufficiently resourced and lacks visibility in the ocean space within and outside IOC-UNESCO. While Priority Africa is well represented, attention to other UNESCO regional priority groups such as Pacific SIDS is considered as insufficient

12. Related to gender equality, there remains a lack of women representation in senior leadership positions. There is insufficient data collection to cement IOC-UNESCO's critical leadership role for addressing gender inequality and strengthening women's empowerment. The demand for IOC-UNESCO in Africa is strong, and while a number of African countries are active with IOC-UNESCO, overall resource constraints limit impact. IOC-UNESCO's reach among Pacific SIDS is rather limited.

IOC is not always fully recognized for its contributions not least as a result of inadequate communication

13. IOC-UNESCO's work remains sometimes "invisible". Some 63 percent (104/165) of survey respondents indicated that communicating with a wider audience than just scientists and policymakers would improve IOC-UNESCO's visibility and recognition of its brand. The Ocean Decade is an obvious opportunity for IOC-UNESCO to act upon and grow in this respect.

The UN Decade of Ocean Science is an important opportunity, but the absence of a clearly defined results framework could jeopardize its success

14. The establishment of the Decade of Ocean Science for Sustainable Development is seen as the most important strategic institutional achievement of IOC-UNESCO in recent years. IOC-UNESCO is widely recognised as being the driving force behind the Decade which leverages the 50th anniversary of the International Decade of Ocean Exploration (IDOE, 1971-1980) and also the UN 2030 Agenda and its SDG 14 on the oceans. Still in early stages, there is already enormous interest on the part of the ocean community to participate and more than 230 programme proposals have been received in response to the 1st Call for Decade Action launched by IOC-UNESCO.

15. IOC-UNESCO's challenge is to bring UN agencies, countries and organizations together in support of the UN Decade. However, IOC-UNESCO has yet to develop a clearly defined results framework for the UN Ocean Decade, although a dedicated Working Group on Monitoring and Evaluation has been set up to achieve this. While the Decade has articulated a number of high-level scientific outcomes, not all of these are specific enough and lack indicators for their measurement. In addition, the current level of resources is inadequate compared to resources needed to make a success of such a globally important opportunity, which places the success of the Decade in jeopardy.

IOC-UNESCO and UNESCO have an opportunity to explore mutually beneficial ways of promoting the cultural, educational, and scientific dimensions of the Ocean

16. UNESCO has substantial resources and programmes on education, culture and science that could be directly linked to the ocean. This offers an important opportunity: IOC-UNESCO's budget is centrally allocated by UNESCO, yet currently represents just two percent of UNESCO's budget. Responses from interviews indicate that IOC-UNESCO may currently not be sufficiently benefiting from UNESCO's intersectoral capacities and wider resource pool, while opportunities to mainstream the ocean more fully across all of UNESCO's programmes are emerging, such as by establishing "blue" themes, like "Blue Culture" where the ocean theme would provide a unifying perspective. Furthermore, the IOC-UNESCO Ocean Teacher Global Academy could benefit from a stronger collaboration with UNESCO's Education Sector.

The optimal institutional relationship between UNESCO and IOC-UNESCO is yet to be clarified

17. While holding a status of functional autonomy, IOC contributes to two of UNESCO's medium term strategy 2014-21 Strategic Objectives (SO)[5]. IOC-UNESCO also contributes to SO 2 under the current draft 2022-2029 UNESCO MTS[6]. Furthermore, IOC-UNESCO integrates in its work the two UNESCO cross-cutting global priorities: Global Priority Africa and Global Priority Gender Equality. IOC is considered as critical to UNESCO's mandate to contribute to Agenda 2030, and Member States are emphasizing the importance of IOC-UNESCO's role as steward of the ocean and ocean science at a time of global climate crisis in which the role of the ocean is central. Nonetheless, several key stakeholders see a direct link between IOC-UNESCO's current organizational position within UNESCO and some of its limitations. These include inadequate resourcing, and what is perceived by some as a lack of clarity around its mandate which is exacerbated by the absence of an underlying normative instrument.

IOC-UNESCO's activities increased over the last years, but its budget has not kept pace

18. One of the chief risks on IOC-UNESCO's horizon is that its current resourcing situation is not well-aligned with the number and scale of initiatives in which it is now engaged. Whilst the Ocean Decade is viewed as an opportunity by many, some 15 percent of interviewees, primarily internal, raised concerns about IOC-UNESCO's ability to adequately resource it. There is thus a need for the IOC-UNESCO to engage in strategic partnerships for the Decade to turn it into a "win-win". Given the increased funding that the Ocean Decade requires, its success is likely to rely on the extent to which IOC-UNESCO partners with other UN System organizations. It is also yet to be determined how UNESCO can best support the Ocean Decade.

Conclusions and way forward

19. The promulgation of the UN Decade and decision by the United Nations General Assembly (UNGA) to entrust IOC-UNESCO with its coordination has demonstrated the relevance and strategic value of IOC-UNESCO to the world. In the context of Agenda 2030, IOC-UNESCO's role only increases in importance. The Decade is thus an opportunity for IOC-UNESCO to reaffirm its global leading position and relevance to the members of UN Oceans, to policy makers and to the world at large in helping to bring about a more sustainable management of the ocean.

20. Collaboration with other agencies to develop a monitoring framework with measurable indicators should be prioritized to ensure an optimum allocation of resources and tasks. Increasing decentralized work at the regional level, in particular harmonizing efforts with existing regional networks and organizations, is also a means of enhancing impact at the national level. It is also imperative that IOC-UNESCO strengthens its efforts to provide advisory services to Member States at the national level, supporting the capacity development and national policy development in alignment with objectives laid out in SDG 14 of Agenda 2030.

21. IOC-UNESCO should fully assume its role as steward of the ocean science agenda, in particular by promoting gender equality in leadership positions and as mentors to develop national level initiatives and achievement of outcomes related to marine science gender equality. Finally, the evaluation suggests exploring the optimal financial and organizational arrangements to support Member States in decision-making in view of IOC-UNESCO's envisaged global positioning in science-based ocean management and for leading the UN Ocean Decade as well as to facilitate intersectoral collaboration.

5 Namely: (i) Strategic Objective 4: Strengthening science technology and innovation systems and policies – nationally, regionally and globally; and (ii) Strategic Objective 5: Promoting international scientific cooperation on critical challenges to sustainable development.

6 'Work towards sustainable societies by preserving the environment through the promotion of science, technology and the natural heritage'.

Management Response

Overall Management Response

The IOC-UNESCO Secretariat thanks the UNESCO Internal Oversight Service (IOS) for the evaluation. The domain of IOC-UNESCO activities is indeed becoming increasingly important for sustainable development. Equally, it is a fast-evolving domain where processes of intergovernmental governance lag behind expanding requirements of the world. IOC-UNESCO, as a home and source of authoritative ocean science in the UN system, is harmonically placed to support the mandates of nearly all UN agencies comprising the UN-Oceans consortium and to help them deliver as "one UN". IOC-UNESCO is also increasingly shaping the work of UN conventions by guiding on issues and opportunities, particularly with regard to the climate, biodiversity, disaster risk reduction, ocean-economy and ocean-management. The issue of IOC-UNESCO positioning within UNESCO and the UN and the availability of adequate resources becomes therefore critical. It does require a solution.

In that connection, as also noted in the report, the Ocean Decade brings to IOC-UNESCO an important opportunity to make a difference. However, the opportunity comes along with a risk to visibly fail on delivery, given the scale of the undertaking. Nevertheless, taking the risk is warranted because without the Decade, the IOC-UNESCO would have faced another risk of stagnating and ceding leadership to better resourced organizations. Because of that, IOC-UNESCO seized the opportunity to design and initiate the Decade, deliver on its preparation, and use it as a leverage mechanism.

The Secretariat appreciates the positive assessment of the IOC-UNESCO's traditional work in "functions": research, observations, data, early warning systems (tsunami), ocean management (e.g. maritime spatial planning), assessments, and capacity development. Because the emerging management of the ocean is becoming more and more science-intensive, the Secretariat anticipates fast growth of all existing IOC-UNESCO functions, including accelerated build-up of a user-centred ocean data system, progress in communications, creating a knowledge-building and sharing environment, and promotion of best practices, fuelled by research, observations, analyses and predictions.

Recommendations	Management response
Recommendation 1: ***High Priority*** *By September 2022* Follow up on the request of the IOC-UNESCO 30th Assembly by estimating the necessary resources and accelerating the application of provisions of Article 10.4 of the IOC-UNESCO Statutes to effectively operate the IOC at an optimal level, as well as to determine the most appropriate organizational setting in view of IOC's envisaged global role in science-based ocean management and leading the UN Ocean Decade. Addressed to: *IOC-UNESCO Secretariat and UNESCO Secretariat*	**Accepted** In 2019, the IOC-UNESCO 30th Assembly requested the Executive Secretary to present to the Assembly a vision of "optimal" IOC-UNESCO. Due to the Covid-19 pandemic and, to a greater extent, due to the unprecedented intensity of continuing changes in the ocean-related affairs, including ocean-climate nexus, marine biodiversity of the open ocean, new level of understanding in the area of ocean management related to the work of the High-Level Panel for a Sustainable Ocean Economy, and the arrival of the UN Ocean Decade, the landscape of work, requirements and opportunities for IOC-UNESCO are constantly changing and broadening. Nevertheless, with the help of this Evaluation Report, the sum of knowledge and certainty in anticipation of key developments in the ocean management approaches will create conditions for developing the requested vision. The vision will be the necessary first step towards working on strengthening the position of IOC within UNESCO. It is therefore essential to first of all generate a clear vision of the Member States requirements, then prepare a vision of the capacities and means of delivery by IOC-UNESCO and subsequently undertake an assessment of what is required for achieving the vision and the estimated means of doing so, fully or partially. IOC Member States will be constantly consulted in this process, through the involvement and leadership of Officers, deliberations at the Executive Council in 2022, and Assembly in 2023.
Recommendation 2: ***Medium Priority*** *By June 2022* Develop in partnership with other agencies a Results Framework for the United Nations Decade of Ocean Science for Sustainable Development, clearly identifying objectives, intermediate objectives, indicators, and indicative owners across the UN System and wider in order to monitor and evaluate progress against the Decade's objectives. Addressed to: *IOC-UNESCO Secretariat*	**Accepted** The Ocean Decade Implementation Plan, which was presented to the UN General Assembly 75, has clearly identified objectives of the Decade. The UNGA took note of the Plan with appreciation. The plan is a flexible document, though, given that at the beginning of the Decade development no additional resources were available. The path towards achieving the goals will not look the same as for a simple funded project, such as with a Gant diagram. First, necessary and already partially resourced developments will be approved before moving forward (34 Decade programmes have already been approved). Secondly, under-resourced but necessary developments will be identified and promoted. The overall investment in the Decade will be measured in billions of US Dollar equivalents. The co-design, engagement and resourcing will be achieved through community building. The recommendation rightfully highlights the need to have a sharper vision on deliverables and reporting. Its implementation will be greatly facilitated by forming the Decade Advisory Board (in 2021), which will be pursuing the Decade monitoring and evaluation process, co-designing future directions of Decade actions, and helping IOC to issue and follow on corresponding calls for Decade action. A Monitoring and Evaluation framework has been developed and will provide the key contribution to this work.

Recommendations	Management response
Recommendation 3: ***Medium Priority*** *By June 2022* Determine how UNESCO can support the Decade. Addressed to: *IOC-UNESCO Secretariat and UNESCO Senior Management*	**Accepted** The Recommendation 3 will be brought to the attention of UNESCO Senior Management. There is indeed a need to establish a well-staffed and equipped Decade Coordination Unit, so that the ocean agenda can be further mainstreamed within UNESCO. The Executive Secretary will make a presentation on this matter at the retreat of Senior Management of UNESCO in September 2021. The main proposal will be to expand intersectoral work for the Decade.
Recommendation 4: ***High Priority*** *By June 2024* Consider options for further exploiting IOC-UNESCO's data and knowledge base. *Addressed to:* *IOC-UNESCO Secretariat*	**Accepted** The Recommendation 4 is being implemented. There is a special challenge of the Decade focussing on data and knowledge. A major Decade programme on "digital twin of the ocean" has been endorsed by IOC-UNESCO. The Executive Secretary's proposal to develop a State of the Ocean Report was positively considered by IOC 31st Assembly. A conference on IOC-UNESCO's contribution to the data work, via OceanInfoHub and International Ocean Data and Information Exchange is in the making. There are several notable efforts underway, like Copernicus CMEMS, ocean part of CMIP, and a number of ocean services developed through the GOOS community. It is a useful recommendation for IOC, also because of the need to populate the ocean data ecosystem with predictive data.
Recommendation 5: ***High Priority*** *By June 2022* Explore means of attracting additional senior policy engagement in the work of IOC-UNESCO. *Addressed to: IOC-UNESCO Secretariat*	**Accepted** IOC is working with UNESCO senior management on identifying UNESCO Goodwill Ambassadors interested in ocean matters. IOC will seriously consider possibilities of Establishing an Ocean Science and Policy Forum. Some seed of this forum may already exist in the Decade Alliance, despite the Alliance being more about resource mobilization for the Decade. The Forum would need to be driven by Member States as it will require national contributions to support this process (such as staff, conferences). An initial step might be to conduct a feasibility study to understand the possibilities (given there are several events yearly that address these issues) and the potential additional value that such a forum will bring, as well as to explore resourcing and potential modalities, (including a process to foresee that Member States can offer hosting the forum events). The momentum created by the High-Level Panel for a Sustainable Ocean Economy may lead to similar developments as the proposed Ocean Science and Policy Forum.

Recommendations	Management response
Recommendation 6: ***High Priority*** *By June 2022* Assume a leadership role in the area of gender equality and women's empowerment in marine science, supporting its existing data efforts such as the Global Ocean Science Report with dedicated action. Addressed to: *IOC-UNESCO Secretariat in collaboration with UNESCO's Gender Equality Division*	**Accepted** The IOC-UNESCO management is in full agreement with the recommendation on advancing the gender-equality in IOC-UNESCO and ocean sciences related work. IOC-UNESCO is in a leading position with regard to evaluation of the gender balance in quantitative terms. However, like many other partners, the historically male-dominated landscape of ocean-related activities and the corresponding pedigree of IOC-UNESCO leadership, both in terms of Commission Officers and senior management, are an impediment. This is also an area where the Decade can help, and in June 2021 the Executive Secretary approved a Decade Programme focusing on women leadership in ocean sciences. The deliberations under that Programme may help IOC-UNESCO to develop a plan towards achieving more gender-equality and a gender-balanced work force on all levels.

Introduction

When the Intergovernmental Oceanographic Commission (IOC-UNESCO) was founded in 1960 it had 40 Member States. Three billion people lived on earth, the Intergovernmental Panel for Climate Change (IPCC) did not exist, and the legal governance of the oceans was fragmented into four different conventions. Key functions of IOC-UNESCO included: early warning systems, charting of the sea floor, training and education in Member States, data exchange services and both a regional and global perspective.[7]

Today, 60 years later, the global population has more than doubled to 7.8 billion and IOC-UNESCO has 150 Member States. The United Nations Convention on the Law of the Sea (UNCLOS), a unified "constitution of the oceans", is the foundation of the global system of ocean governance, and IOC-UNESCO's competence in the areas of Marine Scientific Research (Part XIII) and Transfer of Marine Technology (Part XIV) is formally recognised in that Convention.[8] During this period, IOC-UNESCO's responsibilities increased. Climate change became a leading challenge of our time, the ocean-climate nexus increasingly recognised, and the demand for scientifically sound oceanographic data and information to inform both mitigation and adaptation efforts has never been higher. IOC-UNESCO's involvement in early warning systems for tsunamis now spans the globe, expanding rapidly after the Sumatra-Andaman earthquake which killed an estimated 230,000 people in 2004. Similarly, its involvement in hazardous algal blooms has increased. It is also now a major player in disseminating best practice in Marine Spatial Planning.

Agenda 2030 also relies on ocean science. IOC-UNESCO played a prominent role in the formulation of SDG 14 on life below water, and serves as custodian agency for Target 14.3 on ocean acidification and Target 14.a on marine scientific research. In addition, the UN General Assembly tasked IOC-UNESCO with the design and delivery of the UN Decade of Ocean Science for Sustainable Development (2021-2030).[9] The Decade provides a common framework to ensure ocean science can fully support countries to achieve the 2030 Agenda for Sustainable Development.

In short, the demand for sound ocean science to underpin the sustainable management of the oceans is more pressing than ever. This evaluation aims to assess the extent to which IOC-UNESCO is strategically positioned to meet this demand in an oceanographic space that is both expanding and increasingly crowded.

Overview of IOC-UNESCO

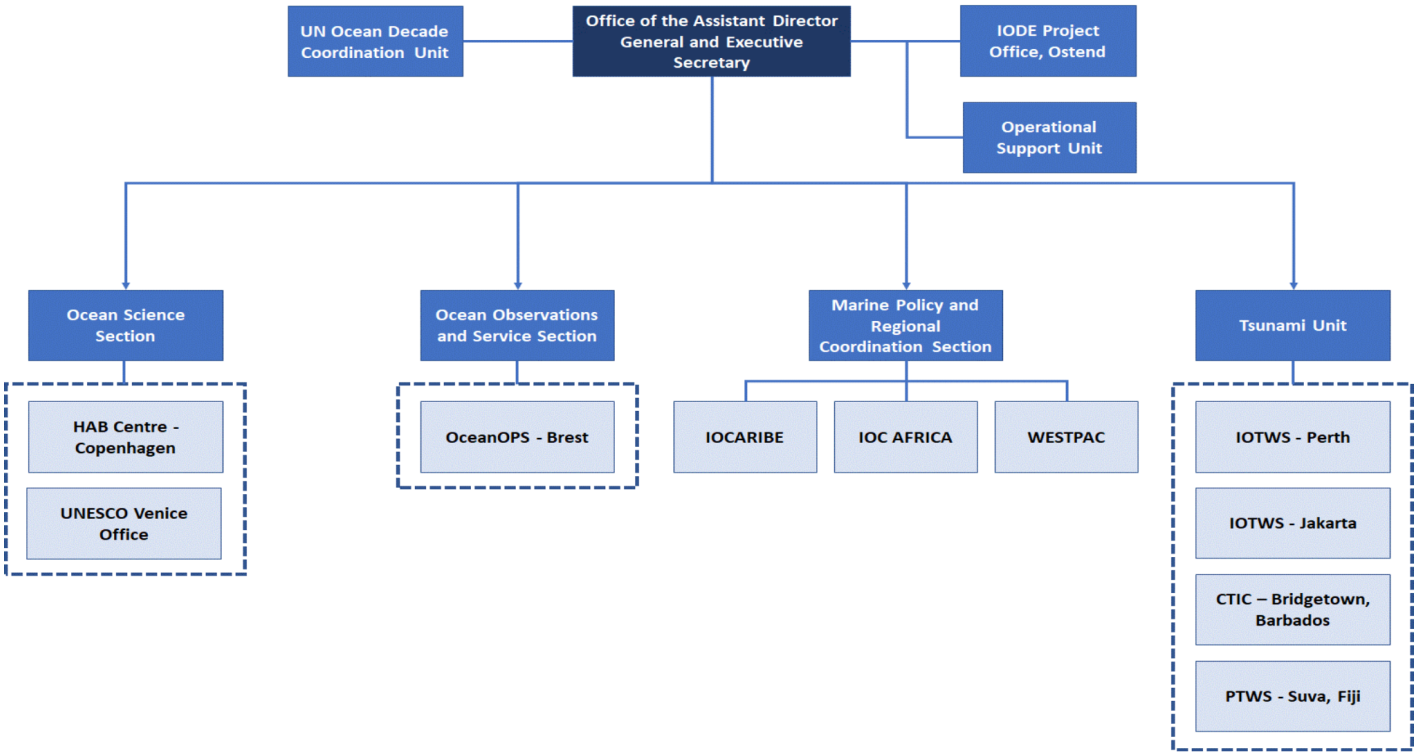
IOC-UNESCO is a body with functional autonomy within UNESCO, and the only UN body specializing exclusively in ocean science, ocean observation, ocean data and information exchange, and dedicated ocean services such as Tsunami Early Warning Systems. IOC-UNESCO comprises its Member States, an Assembly, an Executive Council and a Secretariat staffed by around 29 people. The Secretariat is based at UNESCO headquarters in Paris, France and is structured around the Office of the Assistant Director General and Executive Secretary, the Ocean Science Section, the Ocean Observations and Service Section, Marine Policy and Regional Coordination Section, Tsunami Unit, and the Operational Support Unit. There are 14 professional staff based in Paris, and six support staff. Nine of IOC-UNESCO's professional staff are in field locations worldwide.

7 Gunner Kullenberg, IOC-UNESCO/INF-1337. 2016. Synthesis of IOC-UNESCO Development, Work and Results: Opportunities and Coincidences 1960–2015. Paris, IOC-UNESCO.

8 UN General Assembly, Convention on the Law of the Sea, 10 December 1982, available at: https://www.refworld.org/docid/3dd8fd1b4.html [accessed 1 March 2021]. The Division for Ocean Affairs and the Law of the Sea (DOALOS), which is part of the UN Office of Legal Affairs, serves as the secretariat of UNCLOS (The Division for Ocean Affairs and the Law of the Sea, its functions and activities).

9 On 5 December 2017, the United Nations proclaimed a Decade of Ocean Science for Sustainable Development lasting from 2021 to 2030. Resolution 72/73 of the United Nations General Assembly. Following Resolution 74/19, UNESCO's IOC-UNESCO submitted Version 2.0 of the Implementation Plan to the 75th session of UNGA.

Figure 1: IOC-UNESCO Organogram



Source: Adapted from UNESCO 2018-21 40 C/5

IOC-UNESCO's current Medium-Term Strategy (MTS) covers the period 2014-2021.[10] **The Strategy sets out four** High-Level Objectives (HLOs). A new Medium-Term Strategy covering the period 2022-2029 is currently under preparation. The new Strategy will maintain two of the previous HLOs, streamline two HLOs and separates out a new HLO relating to the sustainable ocean economy.[11]

IOC-UNESCO contributes to two of UNESCO's medium term, 2014-21, Strategic Objectives[12] namely: (i) Strategic Objective 4: Strengthening science technology and innovation systems and policies – nationally, regionally and globally; and (ii) Strategic Objective 5: Promoting international scientific cooperation on critical challenges to sustainable development. IOC-UNESCO also contributes to SO 2 under the proposed new 2022-2029 UNESCO MTS: 'Work towards sustainable societies by preserving the environment through the promotion of science, technology and the natural heritage.'[13] Further, IOC-UNESCO integrates in its work the two UNESCO cross-cutting global priorities: Global Priority Africa and Global Priority Gender Equality.

10 Adopted by Resolution XXVII-2(B) of IOC-UNESCO Assembly at its 27th Session (Paris, 26 June–5 July 2013).
11 The new MTS was endorsed by IOC-UNESCO Assembly at the 31st Session in 2021.
12 37 C/4, 2014-2021, Medium Term Strategy, UNESCO.
13 201/EX-22 Preliminary Proposals by the Director-General Concerning the Draft Medium-Term Strategy for 2022-2029 (41 c/4) and the Draft Programme and Budget for 2022-2025 (41 C/5) which is due to be finally endorsed by the Governing Board in the forthcoming 32nd Session in autumn 2021.

Table 1: Current and New High-Level Objectives Compared

2014-21 MTS	Proposed 2022-29 MTS
Objective 1: Healthy ocean ecosystems and sustained ecosystem services.	No change
Objective 2: Effective early warning systems and preparedness for tsunamis and other ocean-related hazards.	No change
Objective 3: Increased resiliency to climate change and variability and enhanced safety, efficiency and effectiveness of all ocean-based activities through scientifically-founded services, adaptation and mitigation strategies.	Increased resilience and adaptation to climate change and variability
Objective 4: Enhanced knowledge of emerging ocean science issues	Foresight on emerging ocean science issues
	Objective 5: Scientifically-founded services for the development of the sustainable ocean economy

IOC-UNESCO operates through six core functions with associated objectives:[14]

A. Ocean Research: IOC-UNESCO will foster ocean research to strengthen knowledge of ocean and coastal processes and human impacts upon them.

B. Observing System/ Data Management: IOC-UNESCO will maintain, strengthen, and integrate global ocean observing, data and information systems.

C. Early Warning and Services: IOC-UNESCO will develop early warning systems and preparedness to mitigate the risks of tsunamis and ocean-related hazards.

D. Assessment and Information for Policy: IOC-UNESCO will support assessment and information to improve the science policy interface.

E. Sustainable Management and Governance: IOC-UNESCO will enhance ocean governance through a shared knowledge base and improved regional cooperation.

F. Capacity Development: IOC-UNESCO will develop the institutional capacity in all of the functions above, as cross-cutting function.

All IOC-UNESCO programmes, components of programmes and mechanisms of cooperation can be mapped onto the six functions.

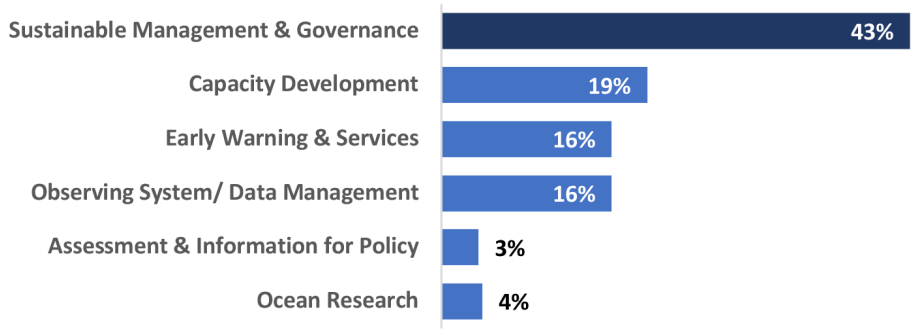
IOC-UNESCO Budget and Expenditure

Between 2016 and 2021, IOC-UNESCO secured a budget of US$79.34 million, comprising funding from its "regular programme" (US$35.72 million) and funding from "voluntary contributions" (US$44.62 million). The three historically largest contributors to the Special Account are Australia, China and Norway (although during 2016-19 the EU, UNDP and Belgium – Flanders - dominated). Top contributors to the Funds-in-Trust during 2016-21 were the EU, UNDP and Belgium (Flanders). Expenditure over the same period amounted to US$56.53 million, implying an overall budget execution rate of 71%.

Table 2: Budget and Expenditure (US$ millions)[15]

	Budget			Expenditure				
Biennium	Regular Programme	Voluntary Contributions	**Total**	Regular Programme	Special Account	Funds-in-Trust	**Total**	**Exec.**
2016/ 2017	$13.86	$10.28	$24.14	$9.44	$3.69	$9.27	$22.40	93%
2018/ 2019	$10.80	$17.58	$28.37	$10.77	$3.61	$10.17	$24.55	87%
2020/ 2021	$11.06	$15.76	$26.82	$4.90	$1.66	$3.03	$9.59	36%
Total	$35.72	$43.62	$79.34	$25.11	$8.95	$22.47	$56.53	71%

Figure 2: Share of Expenditure by Function, 2016-21[16]



14 IOC-UNESCO/INF-1314, 2014-2021, IOC-UNESCO Medium Term Strategy.

15 Source: Calculations based on the Report on Budget Execution 2016-2017 and Outline of 2018-2019 Bu 2021 Budget (IOC-UNESCO/EC-53/3.1(2)); and Report on 2020–2021 (40 C/5) Budget Implementation a

16 Source: Calculations based on the Report on Budget Execution 2016-2017 and Outline of 2018-2019 Budget (IOC-UN EC-53/3.1(2)); and Report on 2020–2021 (40 C/5) Budget Implementation as at 31 December 2020.

Evaluation objectives

This evaluation focuses on outcomes of IOC-UNESCO's work since 2016 and covered by the 37 C/4 Medium Term Strategy (38 C/5, 39 C/5 and up to the current 40 C/5). The four objectives of the evaluation are to:

- assess the **strategic positioning** of IOC-UNESCO within the UN system and the broader landscape of ocean-related actors and programmes, taking into account relevant enabling policy frameworks to which the work of the Commission responds;
- identify the **effectiveness** of the Secretariat and IOC-UNESCO's overall contribution to Member States, including through regional delivery of IOC-UNESCO support, towards defining national ocean science agendas, the enhancement of national capacities in ocean science, and the transfer of the findings of ocean science onto applications for management and a sustainable Blue Economy;
- review the engagement of IOC-UNESCO Member States in overall IOC-UNESCO governance mechanisms, and support to the Secretariat, as well as in the design and delivery of IOC-UNESCO actions and highlight **effective models for national coordination and partnerships**; and
- assess different aspects of **sustainability** of IOC-UNESCO's activities.

Methodology

The evaluation was conducted between December 2020 and June 2021, following United Nations Evaluation Group evaluation norms and standards and ethical guidelines. It comprised three phases: (i) an inception phase during the period January to March 2021; (ii) a data collection and analysis phase from March to May 2021; and (iii) a drafting, quality assurance and validation phase during May and June 2021.

The evaluation adopted a participatory and transparent approach throughout the process.[17] The evaluation was managed by the UNESCO Internal Oversight Service Evaluation Office, supported by an evaluation team from the company Open Cities Ltd (UK).[18] The evaluation benefitted from an Evaluation Reference Group which met twice in a virtual setting, for both an inception and validation workshop.[19]

Gender equality was assessed in line with the UNEG Guidance on Integrating Human Rights and Gender Equality in Evaluation and with guidance from UN Women, the United Nations Entity for Gender Equality and the Empowerment of Women policy and principles.

The evaluation developed, at the outset, a draft Theory of Change (TOC) to make explicit the links and causal relationships from IOC-UNESCO activities to outputs and outcomes, and explore underlying mechanisms, assumptions (both demand and supply side) and behavioral changes required for change. The TOC also identified those outcomes that are amenable to influence through the UN Decade. The TOC was modified over the course of the evaluation, and the final version is presented below.[20]

IOC-UNESCO outputs comprise projects and programs, ocean research and analysis, information exchange and marine data, standards setting (e.g., the case of Essential Ocean Variables), international guidance on specific issues (such as Marine Spatial Planning and Hazardous Algal Bloom management), missions and symposia, public awareness campaigns, training and other work. These outputs contribute to intermediate outcomes via two key assumptions namely that Member States and oceanographers embrace IOC-UNESCO's coordinating role, and that IOC-UNESCO has the budget and engagement skills to effect change. One of the intermediate outcomes, institutional capacity building, will only support the other three intermediate outcomes if IOC-UNESCO is able to accurately identify needs and address them. Assumptions intermediating the contribution of intermediate outcomes to outcomes in the model relate to knowledge generation and uptake, data quality and usage capacity, and the provision and uptake of early warning system services. The four outcomes in the TOC model contribute to IOC-UNESCO's five High Level Objectives, as proposed in the draft Medium Strategy for 2022-2029. The contribution of outcomes to High Level Objectives is via three sets of assumptions. These assumptions relate to uptake of evidence in policy making, adequate provision of resources and the need for other global, regional and national players in the marine institutional ecosystem, especially those with expertise outside IOC-UNESCO's own areas of specialisation, to play their part in achieving the higher-level objectives.

To answer the evaluation questions, the evaluation collected data using a mix of several different instruments: (i) primary and secondary data sources, including available progress reports and internal and external documentation; (ii) key informant interviews; (iii) a survey; (iv) focus groups; and (v) case studies. Semi-structured interviews were conducted with 74 oceanographers, decision makers and other experts (of which 21 women and 53 men) in 51 interviews from within IOC-UNESCO itself and from a mix of UN agencies, national

17 As recommended by United Nations Evaluation Group, 2017. Norms and Standards for Evaluations. New York, UNEG.
18 www.opencities.co.uk.
19 The ERG, which comprised both internal and external members, included: IOC-UNESCO national focal points, other globally recognized oceanographic experts, and UNESCO and IOC-UNESCO managers.
20 The TOC for the evaluation is a separate exercise from the upcoming exercise on TOC formulation for the UN Ocean Decade led by the UNESCO Bureau of Strategic Planning.

and regional governments, state and private oceanographic institutes, NGOs, foundations and academia. The interviews included interviews with stakeholders in African and Small Island Developing States (SIDS). Three focus group discussions gathered in-depth information on gender equality, Africa and SIDS.

The evaluation conducted a survey of IOC-UNESCO Focal Points, UNESCO Member State National Commissions, and other external stakeholders including senior decision-makers within National Governments, intergovernmental organizations, senior officials in ocean research institutes and organizations providing ocean services as well as individual experts in ocean science roles involved in IOC-UNESCO-owned or co-owned initiatives.[21] The survey was distributed in English, French and Spanish, and gathered 188 responses.

The evaluation carried out two case studies on **Blue Carbon** and **Marine Spatial Planning**.[22] Selection criteria included ability to inform on the following dimensions of IOC-UNESCO's work: partnership working, third party funding, user/'customer' orientation, integrated working, communication skills, comparative advantage, innovation, Priority Africa, Priority Gender Equality and SIDS.

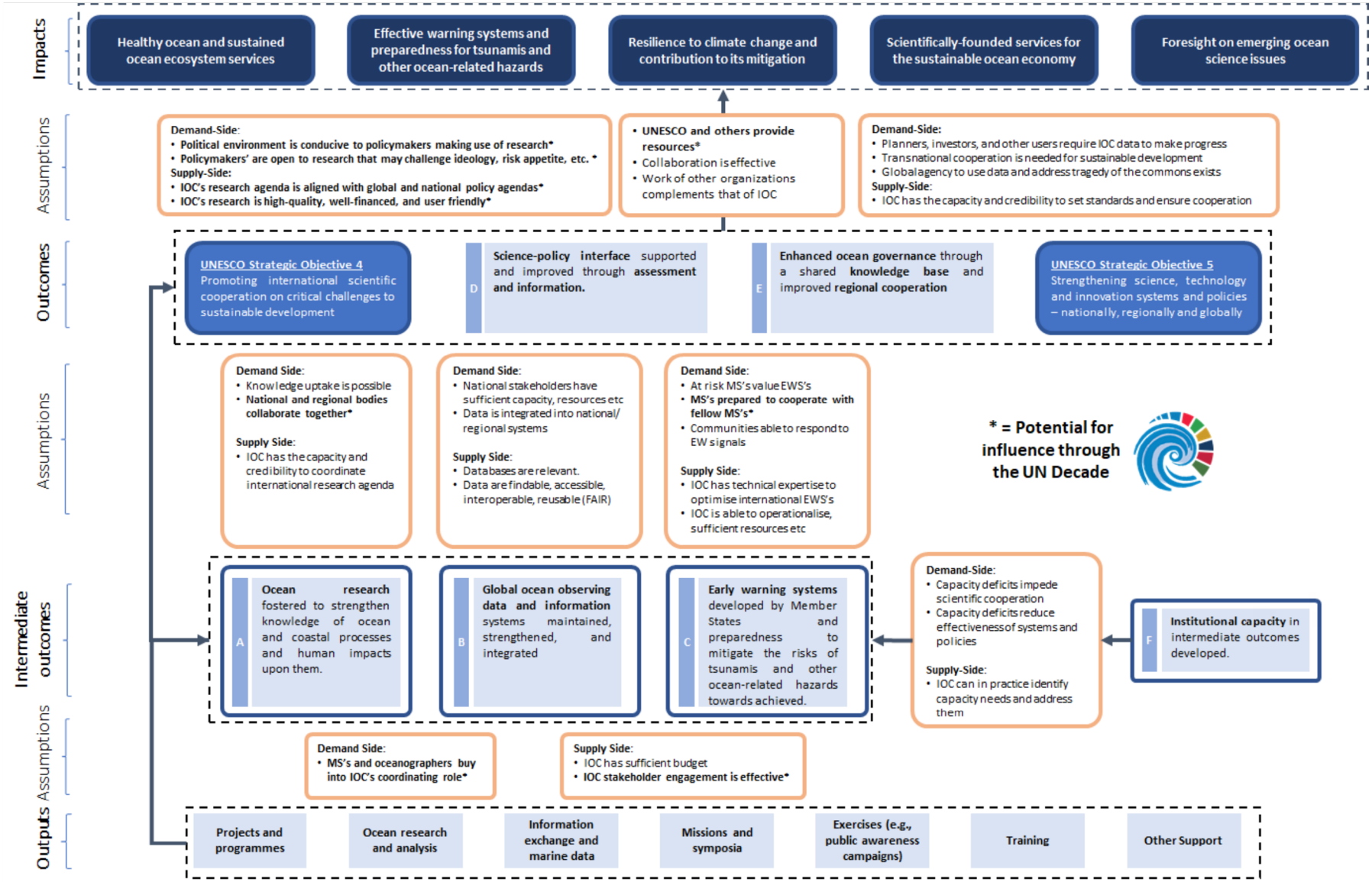
The evaluation triangulated data, using a mixed-method data analysis approach.[23] Qualitative and quantitative data analysis methods were used, in addition to outcome harvesting to validate directly with stakeholders IOC-UNESCO's outcomes, both intended and unintended. (A more detailed description of the methodology is available in Annex H).

Limitations

Survey response was adequate (approximately 26%), and most stakeholders were available for interviews. Nevertheless, the Covid-19 pandemic precluded the evaluation from conducting face to face interviews and carrying out field visits, excluding potential insights from direct observation. The evaluation also took place too late to substantially influence the development of the new 2022-29 Medium Term Strategy for either UNESCO or IOC-UNESCO despite recommendations bearing on the relationship between them. Nevertheless, it was completed in sufficient time to allow for circulation of the main findings at the June IOC-UNESCO 31st Assembly and the 212th session of the UNESCO Executive Board. In addition, interim findings were discussed with IOC-UNESCO in late May/early June 2021.

21 These comprise representatives of both governmental and non- governmental organizations.
22 Often known as 'Blue Economy'.
23 This was supported by importing data (project data, interview notes, as well as other documents) into MAXQDA qualitative analysis software; developing a coding frame, coding the data, exploring the coded data (e.g., comparing cases and groups), and further analysing and visualising the insights and results as appropriate.

Figure 3: Science and Sustainable Ocean Management – A Theory of Change



Main Findings

To what extent is IOC-UNESCO aligned with, and contributing to, relevant processes and frameworks such as UNESCO's Expected Results Framework, the Agenda 2030 including its Sustainable Development Goal 14 on Life Under Water, the UN Decade of Ocean Science for Sustainable Development, UNFCCC and its Paris Agreement, and the Convention on Biological Diversity, the Sendai Framework?

- The majority of stakeholders reported high satisfaction with IOC-UNESCO's alignment with and contribution to their individual Frameworks primarily by providing data, coordinating research, and facilitating access to scientific communities.
- The Secretariats of the UN Frameworks view IOC-UNESCO as a valued partner. IOC-UNESCO provides clear technical contributions to the work of the Frameworks, acting as a source of scientific knowledge, and offering a gateway to the wider scientific community.
- Despite the contributions of IOC-UNESCO to the Frameworks, there are opportunities for IOC-UNESCO to contribute more, especially within the context of the UN Decade.

Convention on Biological Diversity (CBD)

IOC-UNESCO's work is well-aligned with that of CBD's, and there are areas where IOC-UNESCO has significantly contributed to CBD's processes. The identification of Ecologically or Biologically Significant Marine Areas (EBSAs) is one example, where IOC-UNESCO worked closely with CBD and its Member States to identify areas of interest and test whether they meet the criteria of an EBSA. Contribution consisted of giving CBD access to marine scientists to participate in Regional Workshops. Concurrently, the Ocean Biodiversity Information System (OBIS) database – IOC-UNESCO's open-access data and information clearinghouse on marine biodiversity and project of the IODE programme – constituted a fundamental source of data for the CBD during the classification of EBSAs.

Another significant contribution includes Marine Spatial Planning (MSP). For Marine Protected Areas (MPAs) to be successful they need to be situated within a broader, multi-sectoral planning context. CBD's work in the area of MSP focuses on capacity development, helping Member States apply best practices in MSP. CBD invites specialised input from other organizations as part of this capacity development. Here, IOC-UNESCO's OceanTeacher Global Academy (a donor-funded project of the IODE Programme) provided invaluable expertise. Additionally, IOC-UNESCO's "Marine Spatial Planning: A Step-by-Step Approach Toward Ecosystem-Based Management" was cited as a useful reference for best practice for CBD's Member States.

Box 1: Marine Spatial Planning Case Study

Marine spatial planning (MSP) is the public process of analysing and allocating the spatial and temporal distribution of human activities in marine areas to achieve ecological, economic and social objectives that have been specified through a political process. This is particularly important where demand for marine goods and services, such as food, energy, and habitats, exceeds the capacity of marine areas to meet this demand. In many cases, users have free access to marine resources, including space that leads to excessive overuse and eventual destruction of resources.[24]

Interviews confirmed the importance of MSP for a sustainable ocean economy as it enables policymakers to manage conflicts and improve ocean ecosystem health and protecting marine life. IOC-UNESCO pioneered MSP, convening the first international workshop on ecosystem-based management in 2006, and later in 2009 publishing the first detailed guidelines for MSP.[25] The document, now translated into six languages, continues to inform planning in coastal states.

There was consensus that it is IOC-UNESCO's status as a trusted, neutral agency that enables it to bridge the science-policy divide so effectively in MSP and retain the confidence of competing interests. IOC-UNESCO has an important role to play facilitating training on MSP. One example highlighted is the SPINCAM project which is implemented in partnership with the Permanent Commission of the South Pacific (CPPS). Another example was the planning exercise in the Gulf of Guayaquil in the framework of the MSPGlobal project that is shared between Peru and Ecuador. Its objective was to support bi-national mechanisms established after the peace agreement signed in 1998 by Ecuador and Peru. Several interviewees commended this exercise for its role in peacebuilding as well as its technical aspects.

IOC-UNESCO has a niche in the area of MSP in terms of the data and knowledge it produces. Data is at the centre of evidence-based MSPs and IOC-UNESCO's work standardizing data in a transboundary context was generally appreciated, and as particularly underlined by one interviewee, considered as "incredibly important" as without IOC-UNESCO, Member States would be collecting data that would not facilitate MSP in shared waters. An additional IOC-UNESCO strength is translating this data in a way the policymakers can digest. Links to existing regional networks such as the Pacific Community (SPC) and the Secretariat of the Pacific Regional Environment Programme (SPREP), however, were somewhat limited.

Several interviewees felt that IOC-UNESCO could do more to meet the specific needs of SIDS in the context of MSP, as many lack the capacity to fully engage with MSP and develop national ocean policies. Other organizations are seen to take a more active leadership role in the Pacific in this context.

24 Marine Spatial Planning Programme (IOC-UNESCO-unesco.org)
25 https://unesdoc.unesco.org/ark:/48223/pf0000186559

UN Framework Convention on Climate Change (UNFCCC)

According to the UNFCCC Secretariat and six interviews, oceans are well represented in UNFCCC's processes thanks to IOC-UNESCO. The UNFCCC Secretariat confirms IOC-UNESCO as the first point of contact for the best available ocean science and crucial to the effectiveness of the Framework. When Member States have questions about ocean-related carbon cycling, UNFCCC draws on IOC-UNESCO's expertise and its network of scientists. IOC-UNESCO also played an important role at the Ocean and Climate Change Dialogue in December 2020, driving discussions around strengthening adaptation and mitigation action in the ocean space. UNFCCC believes the results of this dialogue will influence decision-making at COP 26 in Glasgow. IOC-UNESCO's Blue Carbon Initiative is also seen as invaluable by UNFCCC for raising awareness of the emissions released by these assets during degradation, loss, or conversion.

An additional IOC-UNESCO contribution to the work of UNFCCC is through IOC-UNESCO's input into the World Meteorological Association's (WMO) reports on the State of the Global Climate. WMO reports on seven state-of-the climate indicators from the Global Climate Observing System (GCOS) – co-sponsored by the Intergovernmental Oceanographic Commission, the United Nations Environment Programme (UNEP), and the International Council for Science (ICSU). The State of the Global Climate reports are an important reference for UNFCCC and are used as inputs into Paris Agreement processes. Oceans are a fundamental driver of climate and four of the seven headline indicators included in the State of the Global Climate reports are ocean-based, on which IOC-UNESCO has a direct responsibility to report. IOC-UNESCO is instrumental in championing the importance of the oceans within climate processes, linking oceans and ocean science to Frameworks such as UNFCCC when they have in the past been seen as just an "add on" to climate work.

Sendai Framework on Disaster Risk Reduction (Sendai)

The United Nations Office for Disaster Risk Reduction (UNDRR) oversees the implementation of the Sendai Framework. UNDRR partners with other organizations to deliver the Sendai Framework's objectives, and with IOC-UNESCO on tsunami risk.

Survey respondents view the work of IOC-UNESCO's Tsunami Unit (TSU) as the area in which it has had the most positive impact, with 84% of respondents indicating IOC-UNESCO's impact on preparedness for ocean-related hazards was "moderately positive" or better. There is a clear value of IOC-UNESCO's tsunami Early Warning Systems (EWS) to disaster

risk reduction and the objectives of the Sendai Framework. The EWSs have undoubtedly reduced disaster risk and loss of life, livelihoods, and health. Through the recent Tsunami Ready Programme, IOC-UNESCO recognises coastal communities as "Tsunami Ready" if they meet a minimum standard level of tsunami preparedness through the fulfilment of a set of established indicators. At least 18 of IOC-UNESCO's Member States established a National Tsunami Ready Board, which form integral parts of their portfolios of disaster risk reduction initiatives. One of Sendai's current strategic objectives is to scale up the Tsunami Ready Programme and increase its contribution to the framework. UNDRR views the relationship with IOC-UNESCO as symbiotic. Sendai itself has helped bring tsunamis into the mainstream, which has created an environment in which IOC-UNESCO's Member States support scaling up tsunami initiatives.

Another contribution of IOC-UNESCO to the work of Sendai is through the annual UNDRR World Tsunami Awareness Day. This is an effort to raise tsunami awareness and share innovative approaches to risk reduction. As part of World Tsunami Awareness Day, IOC-UNESCO contributes to meetings, roundtables, and workshops. It also launches publications and videos. The most recent World Tsunami Awareness Day in 2020 was seen as instrumental in increasing support for national Disaster Risk Reduction Strategies (i.e. Sendai Target E) amongst UNDRR's Member States.

Sustainable Development Goals (SDGs)

IOC-UNESCO is the custodian of the indicators for SDG 14.3 on Ocean Acidification and SDG 14.a on Marine Scientific Research. It also supports the UN Environment Programme (UNEP) develop measurement methodologies for SDG 14.1 on Marine Pollution and SDG 14.2 on Coastal Eutrophication.

IOC-UNESCO has supported the development of an observation methodology for SDG 14.3 on Ocean Acidification through the work of the Global Ocean Acidification Observing Network (GOA-ON). GOA-ON provided technical advice and held dedicated expert meetings for the development of the indicator. In addition, the International Oceanographic Data and Information Exchange Programme (IODE) conducted pilot studies for the collection of ocean acidification data from National Oceanographic Data Centres (NODCs). Moreover, training on the indicator has also been delivered to researchers and data managers via workshops, particularly through the 5th IOC-UNESCO-WESTPAC Workshop on Research and Monitoring of the Ecological Impacts of Ocean Acidification on Coral Reef Ecosystems (November 2018, China) and the Latin American and Caribbean Regional Symposium and Advanced Training on Ocean Acidification Monitoring (January 2019, Colombia). The SDG Indicator 14.3.1 methodology developed by GOA-ON and IODE therefore provides direction to IOC-UNESCO's Member States and other researchers on how to conduct ocean acidification observations successfully and how to submit the data to IOC-UNESCO for reporting purposes. As of the most recent update of the United Nations' Inter-Agency and Expert Group on Sustainable Development Goal Indicators (IAEG-SDGs), the SDG 14.3 indicator had been upgraded to a "Tier II" indicator, recognizing the "conceptual clarity" and international standards of the methodology and data-gathering approach that IOC-UNESCO has developed.

Through the Global Ocean Science Report (GOSR), IOC-UNESCO contributed to reporting on SDG 14.a. IOC-UNESCO Executive Council recognizes the importance of the GOSR as the main mechanism to measure progress towards the achievement of SDG 14.a. The second edition of the GOSR (2020) provides vital information on the proportion of total research budget allocated to research in the field of ocean science. It is the primary reference document for measuring progress towards SDG 14.a.

Despite already making clear contributions to the work of the UN Frameworks, Framework Secretariats signalled that the Ocean Decade is an opportunity to stimulate further contributions. This requires IOC-UNESCO to look across the Frameworks with an oceans "lens" and identify precisely how ocean science can contribute to their objectives over the next decade. In addition to the Decade, some of the Framework stakeholders signalled opportunities for IOC-UNESCO to contribute more to policymaking in their fields. For instance, many of UNFCCC's Member States are in the process of developing policies that support the implementation of the Paris Agreement. Some of these policies will involve the concept of Blue Carbon, where IOC-UNESCO has a particular opportunity to contribute. Likewise, the CBD Secretariat indicated that its Member States are increasingly asking them to address pressing political issues in the ocean space such as Marine Biodiversity of Areas Beyond National Jurisdiction (BBNJ), seabed mining, and fisheries, an area in which IOC-UNESCO is able to contribute. IOC-UNESCO, can also provide valuable data, already on hand, to support CBD reporting.

To what extent is IOC-UNESCO's current strategic positioning vis-à-vis international and national partners and related policy processes and frameworks appropriate and coherent?

- IOC-UNESCO has a healthy relationship with other UN agencies, but could do more to position itself as the "go to" agency for science. IOC-UNESCO's positioning as the "authority" on ocean science is undermined by the lack of a Convention and insufficient resources.
- There is a substantial and increasing overlap with the work of other UN organizations, leading to some uncertainty about mandates and duplication of efforts.
- IOC-UNESCO's activities increased over the last years, but its budget has not kept pace.
- IOC-UNESCO, highly centralized, could do more to engage with regional bodies outside of its own Regional Sub-Commissions/Committees to extend its geographic reach. Member states are poorly represented, reducing IOC-UNESCO's ability to meet their needs.
- The IOC-UNESCO is not effective when engaging with senior decision-makers in Member States.
- The optimal institutional relationship between UNESCO and IOC-UNESCO is yet to be clarified.

IOC-UNESCO has an outstanding reputation for competence in ocean science, coordinating and enabling ocean observing and data systems, implementing early-warning systems for ocean hazards, setting the agenda in important policy initiatives such as MSPGlobal, and as an active force behind capacity building programmes around the globe. IOC-UNESCO's institutional relevance is also reflected by strong involvement in UN initiatives. Since 1991, the UN General Assembly has passed 81 resolutions and decisions on the oceans and the Law of the Sea. IOC-UNESCO is mentioned in more than 20 of them. This underscores IOC-UNESCO's embeddedness in the wider UN System.

In 2003, the UN created UN-Oceans, as the inter-agency coordination mechanism on oceans and coastal issues. While IOC-UNESCO is a long-established member of UN-Oceans and a clear authority on ocean science, its strategic position – defined as the set of issues on which it is clearly mandated and resourced to lead – is blurred by factors such as the lack of an underpinning convention and insufficient resources, mentioned during several partner interviews.

IOC-UNESCO is the only organization dedicated to marine science within the UN system and its role within the UN framework is widely respected. However the visibility of its contribution is sometimes relatively low. For example, GCOS report on ocean acidification to the WMO although the data are mainly derived from the activities of IOC-UNESCO and partners. Other examples include the Global Ocean Observing system (GOOS) which is led by IOC-UNESCO in partnership with the WMO, UNEP and the International Science Council (ISC); the World Climate Research Programme which is led by the WMO and co-sponsored by IOC-UNESCO and the ISC; and the Global Climate Observing System (GCOS) which is led by WMO and partners with IOC-UNESCO, UNEP and the ISC.

In some cases, despite the existence of UN Oceans, the distinction between IOC-UNESCO's mandate in the areas of ocean science and that of some other members of UN-Oceans is unclear and increasingly so. For example, the mandate of the International Seabed Authority (ISA) under UNCLOS is "to organize and control activities in the Area, particularly with a view to administering the resources of the Area" i.e. in those parts of the ocean that lie beyond the limits of national jurisdiction. In ISA's view, the seabed, the water column above it and the ocean surface need to be researched in an integrated approach. The ISA is therefore evolving from a role that centres simply on regulating mining of the ocean seabed to one that increasingly aims to engage in scientific research on broader matters relating to the Area. This is also reflected in the ISA's latest Strategic Plan.[26] The WMO is also increasingly engaged in aspects of ocean science that have previously rested largely within the remit of IOC-UNESCO.

As other agencies build their own independent ocean science mandates, IOC-UNESCO risks losing its institutional niche and unique identity. More importantly, the blurring of lines between mandates risks resulting in a sub-optimal level of cooperation between organizations, at best, and inefficient and counter-productive competition at worst. This risk, at a time when the need for a coherent and sustainable management of the oceans is greater than ever, is clearly a source of concern.

IOC-UNESCO also faces challenges engaging with senior policy makers around the globe. IOC-UNESCO has a centralised structure with the secretariat based in Paris. Its regional sub-commissions provide a regional presence in selected parts of the world only, leaving large parts of the ocean basins uncovered. Moreover existing sub-commissions operate with highly constrained levels of resources. IOC-UNESCO AFRICA sub-commission, for

26 https://www.isa.org.jm/files/files/documents/Strategic_Plan_Booklet.pdf

example, with its secretariat based in Kenya, has one full-time, English-speaking, staff member who has to address the needs of an entire continent and adjacent island states. Its portfolio ranges from the facilitation of ocean science and data collection, to organising workshops on MSP/Sustainable Blue Economy, as well as liaising with national governments on ocean policies which points to a clear mismatch between resourcing and the expectations emanating from such a broad portfolio.

The Sub-Commission for the Western Pacific (WESTPAC) is in a comparable position, in that it has 22 Member States mainly in the eastern Indian Ocean, East Asia, Southeast Asia, and even the South Pacific. Several Pacific SIDS Member States expressed frustration on being grouped into the WESTPAC Sub-Commission because of the geographical remoteness of the regional secretariat for WESTPAC in Bangkok. In addition to this, the specific interests of Pacific SIDS do not necessarily mirror the needs of Member States from the core Western Pacific WESTPAC region.

Similarly, most of the South American Member States are not even nominally represented by an IOC-UNESCO sub-commission, as IOC-UNESCO Sub-Commission for the Caribbean and Adjacent Regions (IOCARIBE) has a clear regional focus. This means that IOC-UNESCO does not have a regional representation in the Eastern Pacific and South American Atlantic coastal states. Other ocean regions that are currently not serviced by a regional sub-commission include Antarctica, the Mediterranean, the Black Sea, and the North Atlantic.

The survey highlighted the challenges facing IOC-UNESCO in promoting science-based policymaking in Member States. Some 64% (98/154) of respondents indicated that national policymakers do not prioritise oceans to the extent that scientists deem they should and 58% (90/154) indicated that the communication channels that exist between these parties are not strong (Figure 4). Within this context, the lack of regional presence constrains IOC-UNESCO's ability to engage with senior decision makers in Member States. Yet, such links are important for enabling IOC-UNESCO to inform and shape regional ocean policies and for Member States to directly communicate their specific needs to the IOC-UNESCO Secretariat. Having those links is also important to advocate for science-based ocean policy.

Issues with national representatives attending IOC-UNESCO's Assemblies were raised by several stakeholders, highlighting the issue that potentially representatives in charge of maritime affairs of Member States were not those attending conferences in Paris. In many instances, IOC Member States are represented by their Permanent Delegation to UNESCO (based in Paris) and this creates the danger of conflating UNESCO-related political debates with IOC matters. It has also been observed that Member State delegates to UNESCO's General Conference/Executive Board have strong links to their Ministries of Education or Culture and relatively less contact with IOC national focal points. IOC-UNESCO's National Focal Points would therefore not always be fully familiar with the overall "ocean governance" environment in which IOC-UNESCO operates.[27]

In principle IOC-UNESCO should be able to draw on its relationship with UNESCO to help address these challenges. UNESCO funds IOC-UNESCO with about two percent of its regular budget and supports it through corporate resource mobilisation efforts. The Organization also has substantial resources and programmes on education, culture and science that could be directly linked to the oceans. Opportunities for mainstreaming oceans across all of UNESCO's programmes could include emerging "blue" themes, such as "Blue Culture" where the ocean theme would provide a unifying perspective. Another example is IOC-UNESCO Ocean Teacher Global Academy which could benefit from a stronger support from UNESCO's education sector. While responses from interviews indicate that IOC-UNESCO is currently not sufficiently benefiting from UNESCO's wider resource pool, the (draft) MTS 2022-2029 and Programme and Budget for 2022-2025 provides a new results framework for the work of the Organization, including the IOC-UNESCO. Based on an increased focus on interdisciplinary action it provides a promising framework and opportunity to address complex and interrelated development challenges in a more holistic manner.

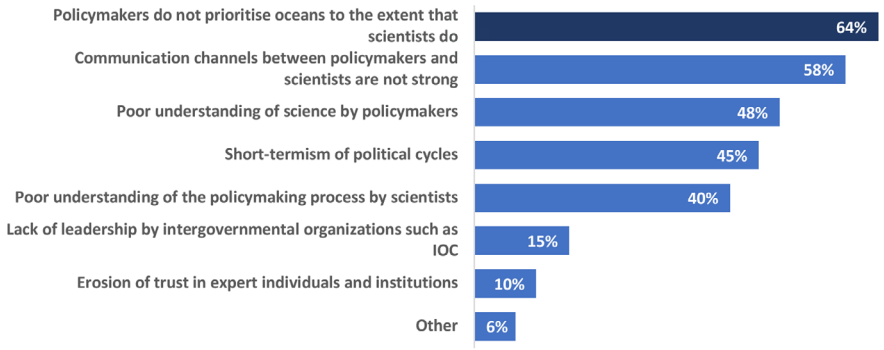
IOC-UNESCO is also recognised as a "competent international organization" as defined by UNCLOS, with a wide range of functions in its own right. It reports directly to the UN General Assembly through the Annual Secretary General's Report on the Ocean. The same mechanism applies for updating UNGA Member States on implementation of the Decade. The IOC also benefits from having its own voice in UN Mechanisms such as CBD, UNFCCC, and UNCLOS/BBNJ). However, there have also been situations where the IOC has had to communicate indirectly via its affiliation to UNESCO, e.g. at the UN Conference for Sustainable Development or the UN 2017 Ocean Conference.

IOC-UNESCO's position of functional autonomy within UNESCO elicited a variety of responses among interviewees. For some, IOC-UNESCO should do more to capitalize on the UNESCO brand which, as one interviewee expressed it, is "worth its weight in gold". However a majority of senior interviewees were more circumspect. Several interviewees

27 The International Hydrographic Organization (IHO) offers a sharp counterexample in this respect. IHO and IOC-UNESCO have a complementing institutional brief, but access to different communities: IHO's members tend to be Hydrographic Offices seated in Ministries of Defence/ Navies. This gives the IHO a direct and effective channel of influence into the executive policy level of its Member States. What is true of IHO is also true of the other UN Specialized Agencies: FAO links directly with Ministries of Fisheries; UNEP with Ministries of Environment; WHO with Ministries of Health etc. IOC-UNESCO's contact points, on the other hand, tend to be from independent research communities with much less influence at the policy level. A compounding factor for influencing national ocean policy is that there are very few dedicated Ministries of the Ocean.

(a mix of senior national focal points, global oceans figure heads and others) posed the question as to what extent the IOC's affiliation to UNESCO that was established in 1960 is still appropriate 60 years later, given the pressing challenges that lie ahead in this century compared to the limited resourcing that IOC-UNESCO receives from UNESCO. One UN Oceans member expressed concern for IOC-UNESCO's position, given its current resource base, and the implications for the wider global agenda around ocean science. For some, the lack of an underlying normative framework also weakens IOC-UNESCO. The majority, however, emphasized the importance of IOC-UNESCO's role as steward of the ocean and ocean science at a time of global climate crisis in which the role of the ocean is central.

Figure 4: Barriers to Science-Based Policymaking for the Oceans[28]



How well is IOC-UNESCO positioned to leverage its comparative advantage for the upcoming Decade of the Ocean?

- The Decade of Ocean Science for Sustainable Development is a triumph of strategic imagination and has the potential to increase awareness of ocean issues across the UN System and to galvanize contributions.
- The Decade offers an opportunity to bridge the science-policy divide, especially in a number of opportunity areas such as BBNJ or data-sharing.
- The Decade is treated as more of an 'add on' to IOC-UNESCO's existing programs rather than as a unifying framework.
- IOC-UNESCO needs to seek coherence in coordinating its work better with that of other UN System organizations in order to avoid duplications.
- Linking the Decade to UN Frameworks more explicitly would further raise the profile of the Decade.

The establishment of the Decade of Ocean Science for Sustainable Development is seen as the most important strategic institutional achievement of IOC-UNESCO in recent years. IOC-UNESCO is widely recognised as being the driving force behind the Decade which leverages the 50th anniversary of the International Decade of Ocean Exploration (IDOE, 1971-1980) and also the UN 2030 Agenda and its Sustainable Development Goal 14 on the oceans. IOC-UNESCO proposed the Decade to the UNGA, it was then mandated to coordinate the preparatory phase and to develop an implementation plan. This is seen as a massive vote of confidence for the Commission and stakeholders surveyed are cautiously optimistic that IOC-UNESCO will be able to deliver on the promise of the Decade (Figure 5).

There is a perception that the Ocean Decade has ushered in a "new age" for IOC-UNESCO. It has reinvigorated its purpose. It presents a substantial opportunity for IOC-UNESCO to pivot to a more "active" sort of ocean science linking more closely to the science-policy interface.

The Decade is also an opportunity for IOC-UNESCO to raise the profile of the ocean itself with the potential to serve as a unifying platform that galvanises ocean related activities across the UN System and beyond. Still in early stages, there is already enormous interest on the part of the ocean community to participate and more than 230 programme proposals have been received in response to the 1st Call for Decade Action launched by IOC-UNESCO.

The UN Decade of Ocean Science for Sustainable Development is an example of how IOC-UNESCO has been successful in developing linkages to policy makers and growing the recognition of the oceans. The emphasis on "Ocean Science for Sustainable Development" widens the scope of the decade beyond classic oceanography. This reflects the long-term trend towards an evolution away from simple exploration to a more unified view of the ocean where scientific data is used to underpin ocean management and ocean conservation. There is now a general acceptance that mismanagement of ocean resources has led to a dramatic degradation of ocean biodiversity.

28 Please note that respondents could select more than one response.

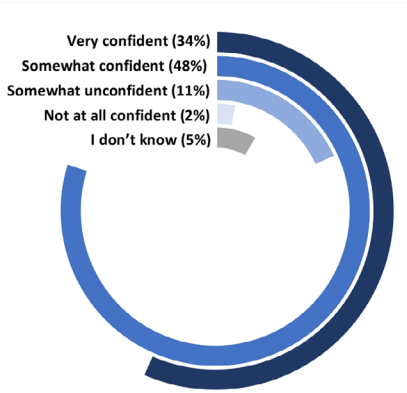
The current BBNJ negotiations are linked to this situation and the outcomes of these negotiations will directly feed back into the Ocean Decade activities. Ocean monitoring and data management are expected to play a central role. These fields are core competences of IOC-UNESCO, as has been outlined in IOC-UNESCO's non-paper [29] on its potential role as a clearing house mechanism.

The expected evolution of data-driven area-based ocean management during the Decade could also improve the open data practices in the ocean community. Currently, the distribution of data across IOC-UNESCO Member States and their openness to share data is not homogenous. The Ocean Decade will help to identify these gaps.

The majority of interviewees expressed concerns about IOC-UNESCO's strategic workplan, as the Decade appeared to be an "add-on" to the regular IOC-UNESCO programmes. They further indicated that more effort needs to be made to identify how pre-existing initiatives can be packaged and integrated into the Decade given that the success of the Decade hinges on IOC-UNESCO's current programmes prioritizing the Decade.

The Ocean Decade is also seen as a risk that could undermine IOC-UNESCO's credibility. A central concern is that since some Member States discontinued funding as of 2011 and withdrew from UNESCO in 2019, IOC-UNESCO experienced substantial funding cuts. The resource requirements for managing the Decade create the danger that too much is promised by IOC-UNESCO for the Ocean Decade and risks not being fulfilled. This illustrates the reservations of some members of the ocean community when it comes to the practical implementation of the Decade. While 34% (58/165) of survey respondents replied they are "very confident" that IOC-UNESCO has the capabilities to ensure that the Decade will make a difference, the largest group, 48% (78/165) of survey respondents, were only "somewhat confident" (Figure 5).

Figure 5: Confidence in IOC-UNESCO to lead a Successful Ocean Decade



At the same time, the Decade establishes an opportunity for IOC-UNESCO to think more strategically and consider how to leverage the resources of other organizations. Involving external stakeholders in the decade is a theme that clearly emerged from stakeholder interviews, specifically reaching out to other UN-Oceans organizations and inviting them to contribute to the agenda setting of the Decade. Sister organizations should be given responsibilities to deliver parts of the Decade.

UN Frameworks such as the CBD, the UNFCCC, and the Sendai Framework all have substantial ocean elements which create excellent opportunities to integrate these programmes into the Decade. This is particularly valid for the Agenda 2030 and its 17 sustainable development goals. SDG 14 is a core goal in this context. However, there is a wide range of other SDGs that also have relevance for the Decade of Ocean Science for Sustainable Developments. Incorporating these into the Decade would further integrate the Decade into the wider UN network and establish a stronger coherence of international initiatives.

29 https://IOC-UNESCO.unesco.org/publications/non-paper-existing-and-potential-future-services-IOC-UNESCO-unesco-support-future-ilbi

What results, intended or unintended, have been achieved in the areas of IOC-UNESCO's High-Level Objectives, including the Global Ocean Science Report? What outcomes can be observed in relation to gender equality, inclusion of disadvantaged groups and in the area of Priority Africa? What are the key achievements and challenges for IOC-UNESCO's work?

- IOC-UNESCO has made multiple vital technical contributions at the level of outcomes to its High-Level Objectives.
- IOC-UNESCO's contribution goes beyond the provision of data and tools and includes the ability bring stakeholders together to help make the world of oceanography greater than the sum of its parts.
- However, IOC-UNESCO's ability to foster data sharing is limited by a lack of engagement by some Member States.
- IOC-UNESCO has not yet developed strategic partnerships with major private sector owners of data.
- There is also scope for IOC-UNESCO to engage more proactively to develop interoperable datasets.
- IOC-UNESCO's impact in Africa is positive as far as it goes but could do more to foster intra-regional linkages between scientists.

IOC-UNESCO reports its results to both UNESCO and IOC-UNESCO governing bodies in six-monthly summaries of programme implementation against work plans developed in the context of IOC-UNESCO's quadrennial programme and associated biennial budgets as part of UNESCO's C/5 planning process (see further below). These reports indicate that for the period 2014-17, IOC-UNESCO fully or mostly achieved 13 out of 38 indicators; partially achieved three; and did not achieve one. A further 21 indicators were not verifiable due to lack of data. During 2018-19, 21 out of 26 indicators were fully or mostly achieved, two were partly achieved and one was not verifiable due to lack of data. Overall, therefore, out of 42 verifiable indicators, 34 were fully or mostly achieved, 5 partially achieved and 3 not achieved. This overall positive outcome is tempered, however, by the large number of indicators that are not capable of validation due to a lack of data.

Among those interviewed, IOC-UNESCO was widely recognised to play a vital role in global oceanography. The majority of interviewees cited one or more of the following as examples of IOC-UNESCO's most important contributions:

Ocean Observation, Data and Information Systems. IOC-UNESCO's ocean observing and data and information programmes such as the International Oceanographic Data and Information Exchange (IODE) and the Argo float system of the Global Ocean Observing System (GOOS) underpin IOC-UNESCO's contribution to all five HLOs. The Argo programme, which is hosted by IOC-UNESCO, comprises 10,000 Argo floats that collect data on the physical, chemical, and biological nature of the ocean across the globe. These data are vital in understanding the changing state of the oceans and designing solutions to mitigate the impact of climate change, for example. The designation of a subset of these data as Essential Ocean Variables (EOVs) under GOOS is itself another major achievement.

Ocean Acidification. IOC-UNESCO's work on ocean acidification is a prime example of its contribution to *Healthy Ocean and Sustained Ocean Ecosystem Services and Resilience to Climate Change and Contribution to Its Mitigation*. Since 2004 IOC-UNESCO has been at the vanguard of identifying the issue of ocean acidification, convening international symposia and bringing ocean acidification to the attention of the international community. In 2012, IOC-UNESCO convened NOAA and the IAEA and established the Global Ocean Acidification Observing Network (GOA-ON). Since then, more than 108 countries have become members and over 800 individuals are involved in ocean acidification research.

Box 2: Mapping the Essential Ocean Variables against the High-Level Objectives

IOC-UNESCO plays an instrumental role in the Global Ocean Observing System GOOS. GOOS expert panels have defined 31 Essential Ocean Variables (EOV) to establish relevant and feasible indicators for global ocean observation across the complete range of ocean science disciplines. The EOVs supplement data on the chemical and physical characteristics of the oceans with important biological characteristics. These indicators can be directly linked to IOC-UNESCO's organisational brief as shown in Annex F and summarised below. This matrix maps the respective contribution of each EOV to addressing IOC-UNESCO's high-level objectives by using a three-level ranking of low (light-blue), medium (mid-blue), and high (dark-blue).

IOC-UNESCO High-Level Objective	High Contribution (# Indicators)	Med. Contribution	Low Contribution (# Indicators)
HLO1: Healthy Ocean Ecosystems	19	3	9
HLO2: Effective Early Warning Systems	7	7	17
HLO3: Increased Resiliency to Climate Change	17	8	6
HLO4: Enhanced Knowledge of Emerging	7	22	2

Early Warning Systems. The Tsunami Programme is a globally recognized achievement that supports the HLO on Effective Warning Systems. IOC-UNESCO established networks of governments along the entire value chain from measurement to warning in the wake of the Boxing Day tsunami. It created warning systems in basins where there were not any before. A majority of those interviewed specifically on the issue of tsunamis affirmed that IOC-UNESCO's contributions have increased safety and reduced harm. According to IOC-UNESCO itself, some 3,000 people have been trained on tsunami EWSs since 2015 in the Pacific region alone. IOC-UNESCO succeeded in enabling 800,000 people to participate in tsunami preparedness drills in one day. Although there is no way of quantifying the counterfactual, IOC-UNESCO's impact on lives through its work on EWS appears absolutely unquestionable.

Marine Spatial Planning. There is strong and increasing demand for MSP by Member States. MSP is systemically important for the Sustainable Ocean Economy and one of the key tools in the policymaker's toolkit for improving the management of domestic waters and coastlines. Interviews with senior policy makers, UN agencies, the private sector and other oceanographic experts affirmed the importance of IOC-UNESCO's contribution to MSP through the workshops it has organised and the training it has delivered. IOC-UNESCO's work producing its Guidelines for MSP has been instrumental in operationalising MSPs across the world. MSP is a strong example of where IOC-UNESCO has clearly influenced policy.

GOSR. The Global Ocean Science Report is IOC-UNESCO's main contribution to Foresight on Emerging Ocean Science Issues. GOSR I (2017) and GOSR II (2020) provide detailed statistics on regional data producers and users. Importantly, this includes a detailed assessment of national data centres in relation to the FAIR data principles (findable, accessible, interoperable, and reusable) that are now recognized as a central feature of data dissemination and data policies.

As conveyed in the Theory of Change in Figure 3, the examples cited above depend for their success on IOC-UNESCO's coordinating, convening, brokering, acting as a hub and leveraging capabilities which in turn contribute to the outcomes captured in UNESCO's Strategic Objectives 4 (International Scientific Cooperation) and 5 (Strengthening Systems and Policies) as well as the ocean-science policy interface and improved ocean governance. These in turn contribute, individually and severally, to the five HLOs.

For example, as noted by several UN and Member State policy advisers interviewed, the success of the Argo float system, is largely dependent on countries willingness to

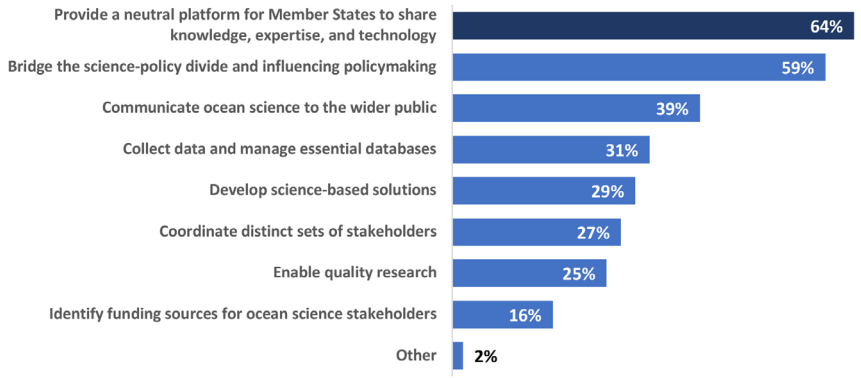
subsume sovereign concerns over data rights to the greater global good of data exchange. IOC-UNESCO's success in brokering agreement across sovereign nations to allow these devices to drift in and out of the Economic Exclusion Zones of IOC-UNESCO Member States has been a major success. This cooperation across Member States reflects IOC-UNESCO's careful work over many years developing the Framework that underpins the Argo Programme, as well as IOC-UNESCO's comparative advantage as a "neutral" platform. Some 64% (112/175) of survey respondents indicated that IOC-UNESCO has a special ability to provide a neutral platform for Member States to share knowledge, expertise, and technology (Figure 6). Because of this work, an updated agreement for the new generation of Argo floats which include more sensors could be established much more quickly. This is an indicator of the level of trust that IOC-UNESCO has among partners.

In the area of ocean acidification, IOC-UNESCO has brought together research communities that might not otherwise have interacted. This reflects IOC-UNESCO's capability of coordinating distinct sets of stakeholders, an idea reinforced by 27% (47/175) of survey respondents. As a result of the Global Ocean Acidification - Observing Network (GOA-ON) there have been meetings across the world, regional hubs established, and collaborations with other organizations in order to provide training for researchers in LDCs. This work feeds into the first HLO (Healthy Ocean and Sustained Ocean Ecosystem Services) and third (resilience to climate change and contribution to its Mitigation).

Marine Spatial Planning is an essential building block for the Sustainable Ocean Economy and a clear example of where IOC-UNESCO has successfully bridged the science policy divide. Some 59% (104/175) of survey respondents cited this as a comparative advantage of IOC-UNESCO. IOC-UNESCO's ability to coordinate interested parties has enabled countries to learn lessons from one another including throughout COVID-19. Without IOC-UNESCO and MSP Global, it is unlikely that MSP would have gained the traction that it has.

IOC-UNESCO cannot effectively foster data sharing without the active engagement of its Member States. Yet, Member States themselves are not always able, or willing, to engage to the extent required to enable IOC-UNESCO to deliver the collective goods and services that the world needs. Some Member States hold their data within the Ministry of Defence, which may be reluctant to share their data. In the Africa Focus Group, there was consensus that many governments are highly protective of data and averse to sharing. Others do not have the technical capacity to collect and /or share data. An important objective of the Ocean Decade as well of the Ocean Data and Information System (ODIS) and Ocean InfoHub will be to address these bottlenecks in the IODE system.

Figure 6: IOC-UNESCO's Strengths [30]



At the national level, data-sharing on ocean-related issues within a Member State's national ministries does not always occur. For example, while Mauritius and Madagascar both have centralised oceanographic government agencies, this is less true in Seychelles and Comoros. This has led to a tendency for information relevant to ocean science to be kept within individual departments, rather than shared across Government, reducing the extent to which knowledge is applied across institutions. Data is not always harmonised between these institutions either, making data sharing difficult even when there is willingness and interest in doing so.

While IOC-UNESCO's contribution to ocean science is widely recognised, there was a view among many respondents with a policy or implementation remit that IOC-UNESCO needs to increase efforts to demonstrate the practical value of its outputs. About 10% (9/74) of interviewees, both internal and external, essentially asked: "Science for what?" In particular, two Member State interviewees felt that IOC-UNESCO is uniquely well positioned to develop an advanced model of marine ecosystems which could be used for producing future pathways for key variables including some of the Essential Ocean Variables. Although individual models already exist, they have less legitimacy than would a model developed by IOC-UNESCO. IOC-UNESCO could borrow features of the best available national models to create such a model and use the global data that it has access to underpin the estimation of model equations. As in other fields such as international economics, the production of global forecasts by leading international agencies can be a globally important service.

30 Please note that respondents could select more than one response.

When partnering with global IT corporations, IOC-UNESCO will need to take account of several considerations. The case for governments and other public bodies to share data for use and profit by private companies may be complicated when those companies do not pay taxes in the countries that are contributing data. This in turn may require the design of cost and profit-sharing mechanisms that fully incentivise data sharing. In other cases, where data is collated from private sector entities by private sector data companies there may be reluctance to share data by the data providers. According to one major commercial supplier of meteorological and oceanographic data services interviewed, however, there is increasing value placed by the commercial owners of data, especially publicly traded companies with global shareholders, on the public recognition of their contributions to global public goods such as bathymetric mapping etc. A second challenge is harmonization of datasets to wider databases. There might be a tendency for commercial companies to "silo" datasets. Finally, leaving private sector entities as the owners of the data could increase the risk of the closing down of data services on purely commercial grounds. In such cases IOC-UNESCO would need to act as steward and ensure that there are policy frameworks that ensure data's longevity. The Ocean Decade could be an opportunity to press for greater collaboration amongst the public and private sector. With the data that IOC-UNESCO holds there is scope to produce massive multi-use datasets.

Members of the Africa Focus Group recognised the value of IOC-UNESCO's work in Africa, notably the Ocean Data and Information Network in Africa (ODINAFRICA) which brings together more than 40 marine-related institutions from 25 countries. However, there was also consensus that official unwillingness to share data in some countries coupled with a lack of resources meant that ODINAFRICA was barely visible in many of the institutions where it operates. In addition, according to several interviews, many of those trained under ODINAFRICA have since moved on and have either not been replaced or replaced with untrained staff who have not subsequently been trained.

There was a view that one of Africa's priorities is to develop a more regional approach to ocean science, better connecting the community of talented scientists that work in Africa. An example of such a network is the Western Indian Ocean Marine Science Association (WIOMSA) which fosters connectivity within East Africa very effectively. However similar regional associations appear to be lacking in other parts of the continent. WIOMSA has created a science to policy platform which contributes to the scientific knowledge base. The Nairobi Convention then brings together governments for UNEP's Regional Seas programme. In the area of MSP, much science and knowledge has been provided by WIOMSA's platform. An organization such as WIOMSA has a clear benefit to IOC-UNESCO in partnering.

There is also an opportunity for closer ties between IOC-UNESCO and the African Union which has produced a number of plans for the Blue Economy. Although AU Member State representatives do not generally have an ocean remit. WIOMSA itself is starting to engage to see what it can bring to the AU table and closer links between IOC-UNESCO and existing regional structures would be welcomed.

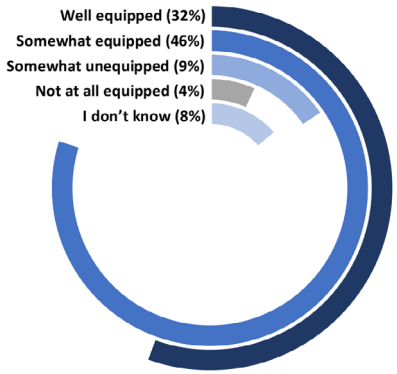
To what extent has IOC-UNESCO contributed to capacity development for Member States at the individual, institutional and political levels?

- Capacity development is a priority for Member States and IOC-UNESCO is seen as fairly well-positioned to support this.
- The GOSR has been an important step in identifying capacity constraints.
- The Regional Training (and Research) Centers are widely recognized as a successful network for delivery.
- Capacities have been developed at the individual and organizational levels but lack the necessary political will at national level to guarantee more sustainable results.
- While Priority Africa is well represented, attention to other UNESCO regional priority groups such as Pacific SIDS is considered as insufficient.
- IOC-UNESCO has not sufficiently met the needs of SIDS in the Pacific – in part due to a lack of a region-specific Commission.
- Limited resources mean that IOC-UNESCO should focus on eliciting and identifying areas for which there is strong Member State need and demand.

Capacity development was frequently cited as a priority in ocean science by informants over the course of the Evaluation. Some 43% (78/184) of survey respondents listed capacity development and accelerated technology transfer, training, and education as a priority theme, more so than any other priority included in the survey. Respondents also indicated that IOC-UNESCO is fairly well-positioned to address such capacity needs. Indeed, 46% (34/74) of respondents indicated that IOC-UNESCO was "somewhat equipped" to meet

these needs and a further 32% (24/74) indicated that it was "well equipped" (Figure 7). However, as discussed in more detail in the following Section, IOC-UNESCO's ability to address the capacity needs of its Member States is undermined by limited resources. IOC-UNESCO can at best act as a mediator, coordinating its Member States to deliver capacity between themselves and bolstering existing capacity development efforts.

Figure 7: IOC-UNESCO readiness for capacity development



One of the reasons that IOC-UNESCO is viewed as well-positioned to support capacity development is because the Commission has a strong knowledge of what the capacity constraints are across the spectrum of ocean science, largely thanks to the Global Ocean Science Report (GOSR). It is the first report of its kind to collect data from across IOC-UNESCO's Member States and report on ocean science capacity, identifying bottlenecks to be addressed. Almost 75% (90/123) survey respondents indicated that it contributed to knowledge of capacity deficits to "some" extent or more.

Interviewees from Africa particularly praised the GOSR. The first edition of the GOSR included a map that indicated the relative lack of research in African waters relative to the rest of the world. This created an awareness amongst Africa's ocean science community and policymakers that more training is needed to enable scientists to analyse local data and to turn this into information and knowledge on the African region as a whole.

However, there are concerns about the completeness of the data included inside GOSR. Two external interviewees indicated that they struggled to receive responses from scientific communities within their countries when collecting data for the report. This sentiment was also echoed in the Gender Focus Group. The Africa Focus Group too felt that the credibility of the report was limited by the narrow base of countries in Africa that were willing to share data. One of the reasons that the GOSR failed to attract sufficient responses is because of the difficulty that IOC-UNESCO itself has in connecting with its Member States. Only a small number of Member States have established "IOC-UNESCO National Coordination Committees" that are responsible, in part, for identifying capacity needs and communicating them to IOC-UNESCO. Often IOC-UNESCO does not even have an up-to-date contact for the Member State's Focal Point which further compounds the issue.

This undermines the GOSR's usefulness as a reference document for policymaking because it is unlikely to be a faithful reflection of what capacity constraints actually are. As a result, just 30% (37/123) of survey respondents indicated that it was being used to design responses to capacity deficit to "some" extent or more. Meanwhile, only 30% (37/123) of respondents indicated that it was being referenced in policy development processes to "some" extent or more. This implies that the GOSR is not the panacea for IOC-UNESCO's support to capacity development. It is not as effective as it could be in identifying priorities and motivating action, although this may improve if it becomes more robust in following editions, or if it is paired and communicated with other tools such as the proposed State of the Ocean Report and IOC-UNESCO Capacity Development Survey.

The Ocean Teacher Global Academy's network of Regional and Specialised Training Centres (RTCs & STCs) and IOC-UNESCO/WESTPAC's network of Regional Training and Research Centers (RTRCs) on Marine Sciences in the Western Pacific were also widely recognized by 10% of survey respondents as a successful delivery modality for capacity development by external interviewees. IOC-UNESCO's training is now delivered in a in a wider set of languages than English, French, and Russian, increasing the accessibility of IOC-UNESCO's Capacity Development programme. The OTGA RTCs and WESTPAC RTRCs also provide opportunities for countries to meet and share knowledge, expertise, and technology. Overall, they are seen as an instrumental part of IOC-UNESCO's Capacity Development programme, decentralizing activities and moving towards a South-South model of cooperation.[31]

However, if IOC-UNESCO's capacity development is to be truly effective it needs to target individual, institutional and political capacity at once – that is, it requires a "holistic" approach. There are clear examples of success at the individual level. Generally, IOC-UNESCO is praised for its ability to forge links between early career scientists in

31 There is now a total of 16 RTCs and STCs of OTGA around the world and 5 RTRCs in the Western Pacific. These OTGA RTCs and WESTPAC RTRCs invite experts to deliver training to individuals from Member States with clear capacity development needs. Courses are offered in emerging issues such as Blue Carbon (where training is provided in developing indices of ***mangrove***, tidal marsh, and ***seagrass*** meadow health), coral reef conservation, and micro plastic research and monitoring, as well as more established issues such as data management and modelling, ocean dynamics and climate.

LDCs and experts overseas to help such individuals enter ocean science. IOC-UNESCO delivers research capability into LDCs through mentoring opportunities, supplementing this with advice and in some cases small amounts of money. Within the context of IOC-UNESCO's Tsunami Programme, interviews with TSU indicated that they increased individual capacities as well, via workshops and trainings in the area of tsunami EWSs for an estimated 3,000 individuals since 2015.

There are also clear examples of success at the *institutional* level. Within the context of WESTPAC, IOC-UNESCO has delivered assistance to the Government of Thailand in developing an ocean model with the capacity to forecast where casualties may be in the event of search and rescue operations, directly increasing the institutional capacity of the Thai Coast Guard. Another example is SPINCAM, a project designed to support Southeast Pacific countries to develop science-based strategies for the sustainable development of their coastal areas. One component of SPINCAM was "institutional strengthening" recognizing that there was not only a need to address the capacity of individuals, but also the institutional disparities between countries. IOC-UNESCO supported Ministries of Environment, Science, and Hydrography, and even sometimes Foreign Affairs Offices, to develop institutional capacities in the areas of ecosystem-based management, data, and information. Yet, there are less clear success stories at the *political* level of capacity. As ocean policy is often fragmented at the national level, IOC-UNESCO struggles to connect with decision-makers.

This is true particularly of the SIDS. SIDS are often thought of as "Large Ocean" States because their EEZs are often many times larger than their landmass. This makes ocean science crucial to these States to address the decline in ocean health and other ocean issues. According to the SIDS Focus Group, however, their capacity to undertake ocean science is severely limited. Pacific SIDS are sometimes represented by four SIDS countries (Fiji, Samoa, Solomon Islands, Tonga) in WESTPAC. The needs of these SIDS are quite different from countries in East and South-East Asia. If IOC-UNESCO wants to be more inclusive of its Pacific SIDS then it may consider setting up a Sub-Commission for the Pacific. Alternatively, IOC-UNESCO may link more to existing regional networks such as SPC and SPREP to identify and address the needs of Pacific SIDS.

However, IOC-UNESCO's capacity development initiatives cannot support every Member State. Its scope is limited by the resources it has available to it. It needs to ensure its programming is need-driven, matching offers to where there is the strongest demand. Hence, there is a need to support capacity development in science within LDCs and SIDS first and foremost. Some LDCs and SIDS do not have the human capacity to fully understand and engage with the data and information that IOC-UNESCO is producing. This is often because many of their scientists leave for European or North American research institutes, but it is also because scientists in LDCs simply do not have access to science to the same extent as elsewhere. This makes it nearly impossible for policy decisions to be made on the basis of scientific evidence in such countries. This is where IOC-UNESCO has the most potential to make an impact.

Given the "intergovernmental" nature of IOC-UNESCO, it is well-placed to connect its Member States to deliver capacity development bilaterally. Playing the role of a "matchmaker" and creating a network through which countries that are willing and able to provide support can do so may be a relatively cheap way of IOC-UNESCO expanding its programme. It may also be a strategic move, signalling that IOC-UNESCO has such a competence and positioning it well to support the clearing house mechanism within the upcoming BBNJ.

To what extent does IOC-UNESCO enhance gender equality in ocean science?

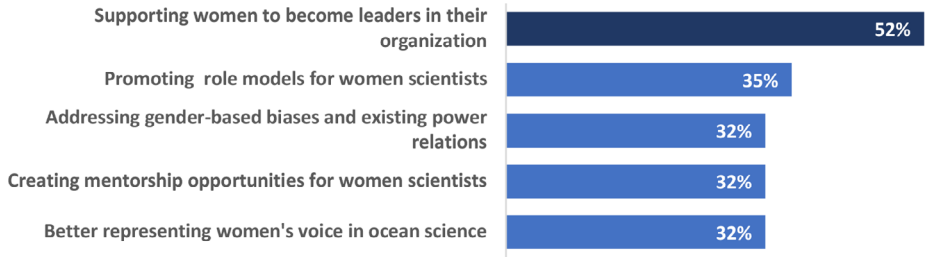
- Stakeholders see an important leadership role for IOC-UNESCO in gender and intersectionality, however, this role has not been fulfilled to its full potential.
- The UNESCO global priority Gender Equality is not sufficiently resourced and lacks visibility in the ocean space within and outside IOC-UNESCO.
- The GOSR is a leading effort to collect data on women in ocean science, but IOC-UNESCO must go beyond data collecting and reporting.
- The data may motivate Member States and institutions to respond, but IOC-UNESCO needs to show leadership by taking action.
- IOC-UNESCO lacks a vision for impact and corresponding action plan to address GEWE.

Although progress is being made in GEWE in the field of ocean science, there remains a lack of women in senior leadership positions within ocean organizations and insufficient promotion of women role models. Survey respondents identified supporting women as organizational leaders (52% of respondents; 79/153) and promoting role models for women scientists (35% of respondents; 54/ 153) as the top priorities for addressing GEWE in ocean science (see Figure 8). IOC-UNESCO's Ocean Literacy Programme was noted by the Gender Focus Group as a good example of gender leadership from IOC-UNESCO as it plays an important role in developing the capacity of tomorrow's scientists. Creating mentorship opportunities through broadening participation to include the full range of women in ocean science and ensuring they are active participants was highlighted as a key means to increase gender equality.

IOC-UNESCO's regularly produces gender-disaggregated data. This role is increasingly challenging due to new privacy laws in Europe and North America that make it difficult to obtain information on gender. Training activities typically also monitor the number of women participants. IOC-UNESCO's gender-disaggregated data on the role of women in ocean science is disseminated through the GOSR. While the GOSR is the first report of its kind to collect data on women in ocean science, it is an imperfect tool to address GEWE issues. Questions were raised in interviews and during the gender focus group about the accessibility for IOC-UNESCO members to share data on GEWE issues and the accuracy of the findings in the GOSR, primarily due to data representativeness at the national level.

The Decade Roadmap ignores the issue of GEWE until page 14. The GOSR has zeroed in on equality of participation, but it has not analysed the power or cultural structures underscoring GEWE issues.

Figure 8: How to improve GEWE in ocean science



IOC-UNESCO has an opportunity to normalise GEWE in its outward facing programmes and the Secretariat.

There is also opportunity to show leadership by broadening its focus beyond GEWE issues to consider intersectionality. In ocean science, women belonging to marginalized groups, including people of colour and LGBTQ+ individuals face heightened obstacles in the sciences. There may be a small number of women in ocean science, but there is an even smaller number of women persons of colour. GEWE needs to be woven throughout the Ocean Decade and the Secretariat need to make it fundamental. There is a need to speak to this thematic area during the launch of the Ocean Decade and to flag its importance to Member States. Additionally, there is a need for more specific targets and timelines for it to be achievable.

The current IOC-UNESCO Gender Focal Point, for example, only has a very small percentage of time allocated to GEWE work. Hence, there is a need for IOC-UNESCO Member States to provide more resources to IOC-UNESCO for the GEWE activities mentioned above to ensure that GEWE is a true priority area of focus for IOC-UNESCO and UNESCO.

How appropriate are current efforts for monitoring and evaluation of IOC-UNESCO's results and way of working?

- The UNESCO reporting framework is not always suitable or easy to complete for IOC-UNESCO staff.
- Opportunities for internal learning are limited.
- The UN Decade of Ocean Science is an important opportunity, but the absence of a clearly defined results framework could jeopardize its success

IOC-UNESCO is required to report results on a number of frameworks. As UN custodian agency for 2030 Agenda target indicators 14.3.1 and 14.a.1 of SDG 14, IOC-UNESCO is required to report on ocean acidification and ocean science capacity respectively. Further voluntary commitments to SDG 14 are being facilitated by the nine Communities of Ocean Action established by UN DESA. IOC-UNESCO is co-leading one of these (Ocean Science and Capacity Development). Increased IOC-UNESCO leadership in the context of the Communities of Action is seen as desirable by UNDESA. Additionally, IOC-UNESCO is required to report to both UNESCO and IOC-UNESCO'S Governing Bodies, as well as to the UN General Assembly on the implementation of the Ocean Decade.

IOC-UNESCO's core reporting process comprises a six-monthly report submitted by the Executive Secretary of IOC-UNESCO to the Executive Board of UNESCO (in Fall and Spring). This provides input to a yearly strategic assessment in programme implementation reports (PIR) towards the achievement of biennial targets. The related workplans are developed in light of the current IOC-UNESCO 4-year programme and associated biennial budget as part of UNESCO's C/5 planning process.

These in turn are developed in the wider context of IOC-UNESCO's Medium-Term Strategy, as part of the UNESCO C/4 planning process, the current version of which, 2014-2021, is about to be replaced by a new Medium-Term Strategy (2022-2029) with associated Programme and Budget for the period 2022-2025. This reporting process, supplemented with some additional detail such as reporting by function, is replicated for IOC-UNESCO Governing Bodies as part of the statutory Executive Secretary reporting process.

There is close alignment between IOC's results framework and the UNESCO C/5 results framework and the respective reporting cycles. This alignment will be further reinforced for the future 41 C/5 and facilitate the development of joint work and addressing complex climate change and other interrelated global challenges from an intersectoral perspective.

Several interviewees, however, also noted that IOC-UNESCO's dual governance is increasing the time dedicated to reporting responsibilities for its staff. This is set within a context in which the Secretariat is already severely time constrained. The small number of staff within the IOC-UNESCO Secretariat juggle projects and programmes, staff, budget, planning, reporting, and dual IOC-UNESCO reporting lines. IOC-UNESCO has succeeded in some streamlining of reporting processes following the 2016 External Audit recommendations, which is a work in progress as confirmed by discussions with MOPAN auditors.

The Programme Implementation Report (PIR) is produced once a year, and intended to enable a strategic assessment of progress towards the achievement of biennial targets, including an analysis of challenges encountered and remedial actions. IOC interviewees indicated that the six-monthly online progress report tends to focus on outputs rather than outcomes, with little analysis of what has worked and what has not. This approach is seen as time consuming with limited practical use. Further, IOC-UNESCO has not yet found the time or resources to design a more effective and meaningful set of indicators – in particular, ones better aligned with the SDGs. Evidence-based analytical reporting is still an aspiration rather than a reality, primarily due to time restraints. However, in addition to the PIR process, IOC-UNESCO also contributes to the UNESCO Strategic Results Report (SRR) once every four years. This more strategic assessment of progress serves as a basis for strategic decision making and lesson-learning. Finally, although IOC-UNESCO allocates 3% of its budget to M&E, there are untapped opportunities to liaise more with UNESCO field offices, to pool the evaluation budgets of smaller projects to fund larger, over-arching evaluations and/or to fund evaluations jointly with other UN agencies to strengthen monitoring and evaluation capacities and capitalize on joint resources.

IOC-UNESCO has yet to develop a results framework for the UN Ocean Decade, although a dedicated Working Group on Monitoring and Evaluation has been set up to achieve this. While the Decade has articulated a number of high-level scientific outcomes, not all of these are specific enough to be capable of measurement.

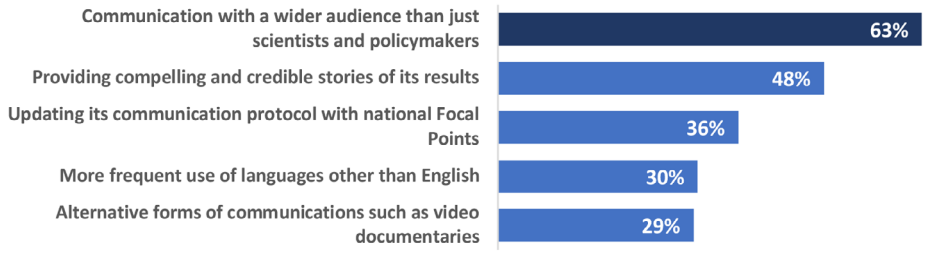
What lessons can be identified for IOC-UNESCO's current visibility and communication tools, measures and strategy?

- IOC-UNESCO lacks a recognizable brand and its visibility within the UN System, Member States and wider public is rather limited.
- Much of IOC-UNESCO's work is technical, which can be complex to communicate externally.
- IOC-UNESCO struggles to communicate the links between ocean science and societal benefits.
- IOC-UNESCO is not always fully recognized for its contributions not least as a result of inadequate communication
- Other organizations are viewed as better at "storytelling", producing engaging reports.
- The Ocean Decade is an opportunity to raise the profile of the oceans and the profile of the Commission itself.

Within the UN System, IOC-UNESCO's work is sometimes "invisible". The Commission is not always credited for its work, even when its role has been instrumental in pushing ocean science forward. Stakeholders felt that there was not enough recognition of IOC-UNESCO's work within the context of international frameworks such as UNFCCC, or even in reports published by other UN agencies. Meteorologists do not always recognize the importance IOC-UNESCO's work to climate forecasting, despite considerable proportions of data emanating from ocean measurement (e.g., via GOOS). Communicating with and

educating the public is another important priority for IOC-UNESCO. Some 63% (104/165) of survey respondents indicated that communicating with a wider audience than just scientists and policymakers would improve IOC-UNESCO's communications (Figure 9).

Figure 9: Improving Communications



Stakeholders, around 25% of interviewees, expressed a need for IOC-UNESCO to package its science in a way that is "digestible". Suggestions from interviewees included that IOC-UNESCO might consider using the services of a specialist science communication agency to strengthen IOC-UNESCO scientists' ability to communicate their technical knowledge. Paired with a stronger national representation to IOC-UNESCO, there is the potential to raise the profile of the Commission significantly.

Whilst IOC-UNESCO's communications were judged as "moderately strong" in the survey, some 48% (80/165) of survey respondents indicated that providing compelling and credible stories of IOC-UNESCO's results is a priority for improving its communications (Figure 8). The "Big Five" of UN-Oceans[32] have more resources for communications than IOC-UNESCO. Nevertheless, organizations such as the International Council of Science, similar to IOC-UNESCO in scope and size, still find it easier to communicate stories, drawing on a network of scientists that are really engaged and willing and able to champion their work. The "Big Five" of UN-Oceans also produce annual reports that technical and non-technical audiences alike find engaging. IOC-UNESCO does not produce a snapshot "State of the Ocean" report that the wider UN System and the public can engage with. The World Ocean Assessment (which IOC-UNESCO contributes to) is seen by external interviewees as a report by scientists, for scientists, with limited entry points for engagement for wider audiences. IOC-UNESCO's own Global Ocean Science Report (GOSR) is viewed by both internal and external interviewees alike as a "technical" report pitched primarily at senior decision makers instead of the public, and even amongst this audience there is a sense that the report is only of narrow interest.

However, given IOC-UNESCO's current resourcing situation, it is difficult for the Commission to play both the role of expert in ocean science and expert in communications. Close to 10% of interviewees felt that IOC-UNESCO should seek out strategic partnerships with organizations that are successful at communicating the value of ocean science to non-technical audiences to resolve this tension. Partners can advocate on IOC-UNESCO's behalf, raising the profile of the Commission and communicating the importance of the oceans simultaneously. One possible solution is to pool communications with other UN-Oceans organizations to maximise IOC-UNESCO's visibility. IOC-UNESCO has already benefitted from its partnership with UNDRR in this regard.[33]

The Decade is fundamental to the future profile of the Commission. Through the Decade the public can increase pressure on Governments and corporations to do better and IOC-UNESCO should position itself as the first port of call for solutions. According to IOC-UNESCO's Communications Team, opportunities for IOC-UNESCO to appear in the media and forge new partnerships have already increased dramatically because of the Decade. External organizations are beginning to see IOC-UNESCO as an "active" organization with a real identity. Its mandate is now more recognizable across the UN System than ever before.

32 FAO, IMO, UNDP, UNEP and WMO

33 The UNDRR Secretariat indicated that advocacy is central to its work, partnering with other organizations to tell stories of success and putting them under the spotlight. UNDRR therefore commissioned a dozen short films which highlight the role of IOC-UNESCO and the Tsunami Ready Programme for disaster risk reduction. These films demonstrate the benefit that the Tsunami Ready Programme has on coastal communities and raise the profile of IOC-UNESCO's work in the tsunami preparedness space. Given how crowded the ocean space is within the UN System, IOC-UNESCO should seek to collaborate with other UN System organizations (including UNESCO) to share the little resources there are and mutually promote their brands.

To what extent does IOC-UNESCO ensure sustainability of its work, including through development and a targeted resource mobilisation strategy and the maintenance of strategic partnerships?

- Resource constraints have made IOC-UNESCO more opportunistic than strategic because it capitalizes on extrabudgetary funding opportunities as and when they arise.
- IOC-UNESCO's activities increased, but its budget has not kept pace with its new role(s).
- IOC-UNESCO lacks a strategy to connect with the private and non-profit sectors.
- Donors want a more coherent "narrative" and workplan to identify collaboration opportunities.
- IOC-UNESCO and UNESCO have an opportunity to explore mutually beneficial ways of promoting the cultural, educational, and scientific dimensions of the Oceans.

The relationship between UNESCO and IOC-UNESCO and the result that this can have on IOC-UNESCO's financial situation is often cited as one of the most important internal issues faced by the Commission today. Although IOC-UNESCO has "functional autonomy" within UNESCO, it does not have financial autonomy. In particular, although all of UNESCO's Sectors were hit by the United States' withdrawal, IOC-UNESCO has felt it acutely. This funding gap has not yet been filled with other donations to the Commission, nor has it been addressed by finding a solution to enable the United States to support IOC-UNESCO again (e.g., via Article 10.4 of IOC-UNESCO Statutes).

Without financial independence from UNESCO, IOC-UNESCO is caught in its nominal "Zero Budget Growth" scenario. UNESCO and IOC-UNESCO interviews indicated that this means that IOC-UNESCO must increasingly seek extrabudgetary funding from its Member States or third parties in order to address pressing ocean issues. Several of IOC-UNESCO's activities are now funded overwhelmingly through extrabudgetary sources, with these funding streams in turn dependent on just a handful of donors – for instance, Flanders and Norway. The International Oceanographic Data and Information Exchange (IODE) is but one example of an IOC-UNESCO initiative funded primarily through extrabudgetary mechanisms.

One of the chief risks on IOC-UNESCO's horizon is that its current resourcing situation is not well-aligned with the number of initiatives that it is now involved in. Whilst the Ocean Decade is viewed as an opportunity by many, several other informants raised concerns about IOC-UNESCO's ability to adequately resource it. Some 15% of interviewees, primarily internal, said something to this effect. There is thus a need for the IOC-UNESCO to strike a delicate balance for the Decade to turn it into a "win-win" endeavour. Given the increased funding that the Ocean Decade requires, its success is likely to rely on the extent to which IOC-UNESCO partners with other UN System organizations.

Box 3: Blue Carbon Case Study

IOC-UNESCO is a coordinator of the Blue Carbon Initiative (BCI) along with Conservation International (CI) and the International Union for Conservation of Nature (IUCN). The BCI is a global program working to mitigate climate change through the restoration and sustainable use of coastal and marine ecosystems, particularly mangroves, tidal marshes and seagrasses.

These ecosystems provide benefits and services that are essential for climate change adaptation along coasts globally including services that are directly relevant to the nationally determined contributions (NDCs) of the Parties to the Paris Agreement[1]. For example, the average annual carbon sequestration rate for mangroves averages between 6 to 8 Mg CO_2e/ha (tons of CO_2 equivalent per hectare) i.e., two to four times greater than global rates observed in mature tropical forests. Yet up to 67% and at least 35% and 29% of the global coverage of mangroves tidal marshes and seagrass meadows respectively have been lost. If these trends continue at current rates, a further 30–40% of tidal marshes and seagrasses and nearly all unprotected mangroves could be lost in the next 100 years.[2]

The Initiative, which includes Science and Policy working groups, brings together governments, research institutions, non-governmental organizations and communities from around the world. Its objectives are:

- Developing management approaches, financial incentives and policy mechanisms for ensuring the conservation, restoration and sustainable use of coastal blue carbon ecosystems;
- Engaging local, national, and international governments in order to promote policies that support coastal blue carbon conservation, management and financing;
- Developing comprehensive methods for assessing blue carbon stocks and emissions;
- Implementing projects around the world that demonstrate the feasibility of blue carbon accounting, management and incentive agreements; and
- Supporting scientific research into the role of coastal blue carbon ecosystems for climate change mitigation.

1 IOC-UNESCO-XXX/3 Paris, November 2019.
2 The Initiative — The Blue Carbon Initiative

Progress towards the sustainable management of coastal ecosystems requires working in partnership with others including IOC-UNESCO's partners in the Blue Carbon Initiative as well as philanthropic foundations and the private sector. IOC-UNESCO's comparative advantage lies in the aspect of observation and measurement, as also strongly underlined by one highly experienced observer. For example, IOC-UNESCO has developed a methodology to measure blue carbon storage to assist national reporting to the UNFCCC.[1] More broadly, according to IOC-UNESCO's own results framework, IOC-UNESCO helped enable 91 Member States (of which 24 from Africa and 13 SIDS) to integrate best practices, standards and methodologies to observe ocean acidification and blue carbon ecosystems during 2018-19. However, other organizations, for example UNEP, are found to be better placed to influence decision making at senior levels. Inevitably, this affects IOC-UNESCO's visibility at the level of senior policy makers. For example, two countries interviewed, with significant Blue Carbon programmes, were unaware of IOC-UNESCO's contribution in this space. One senior decision maker expressed disappointment that IOC-UNESCO was not also able to help with practical support. Another expert interviewed felt that Blue Carbon, which is a relatively new yet increasingly crowded space, could be an example of an issue in which IOC-UNESCO should not be involved.

1 IOC-UNESCO/EC-53/3.1(1)

Given IOC-UNESCO's current resource situation, 15% of interviewees indicated a need to look for funding beyond UNESCO and its Member States. IOC-UNESCO connects well with scientific communities that it is used to engaging, but less so with the private and non-profit sectors. Part of the reason is that IOC-UNESCO lacks a dedicated Point of Contact for connecting with third parties and no clear strategy to shape such engagement.

The result is that their requests can often seem vague. When IOC-UNESCO approaches the private and non-profit sectors for funding, it should be articulating the opportunities for engaging with these partners more clearly. Donors are not often interested in providing non-specific core funding to organizations such as IOC-UNESCO. One private foundation suggested that IOC-UNESCO could benefit from a "shopping list" of projects that fall under the pillars of the Ocean Decade, with KPIs clearly identified and the amount of funding required clearly outlined from outset. This corresponds to the approach that is currently suggested in UNESCO's structured financing dialogue intended for closing the funding gaps in UNESCO's new integrated budgetary framework, but which is not yet sufficiently communicated across potential funding partners.[34]

Although IOC-UNESCO has previously had trouble connecting with third-party funding sources, there are clear signs that they are trying to improve within the context of the Ocean Decade. IOC-UNESCO, for instance, has initiated an alliance of private sector and philanthropic organizations through the Ocean Decade Alliance. There are also clear examples of partnerships with the private sector that have worked well for IOC-UNESCO in the past, such as those with SUEZ, and PRADA Group. IOC-UNESCO's value within the ocean scientific community is clear, but there are only a limited number of donors that are active in this space. For IOC-UNESCO to raise funding it clearly needs to look beyond the traditional donors and funding partners that are already aware of what the Commission does.

IOC-UNESCO should be taking advantage of the services that UNESCO itself can provide especially within the context of the under-resourcing that IOC-UNESCO faces. IOC-UNESCO needs to better capitalise on its affiliation with UNESCO and UNESCO's brand to elevate its position within the UN System, and to increase its visibility and opportunities for third-party funding, including in the framework of UNESCO's Structured Financing Dialogue initiatives and events. The results of the recent UNESCO Director-General Questionnaire addressed to Ministries in charge of relations to UNESCO in Member States clearly indicated an increased call for UNESCO to concentrate its efforts and resources on SDG 13 (Climate Change) and SDG 14 (Life Below Water) during the 2022-2029 period, with some 79% of Member States indicating that IOC-UNESCO has a highly strategic role and contribution for the achievement of these SDGs.[35]

34 See: Review of the frequency and modalities of the UNESCO Structured Financing Dialogue

35 See page 21 of the Preliminary proposals on UNESCO's Draft Medium-Term Strategy for 2022-2029 (41 C/4) and Draft Programme and Budget for 2022-2025 (41 C/5) resulting from a series of consultations organized by the UNESCO Director-General as part of the preparatory process for the 41 C/4 and 41 C/5.

Conclusions

IOC-UNESCO is the world's central repository of oceanographic data and knowledge. Its ocean observing, data and information systems – such as IODE, GOOS, OBIS, ODIS, and Tsunami EWSs – as well as its coordination and facilitation of access to technical experts across the globe are systemically important services and vital contributions to key UN Frameworks notably UNFCCC, Agenda 2030, Sendai and CBD. IOC-UNESCO is also the custodian of the indicators for SDG 14.3 on Ocean Acidification and SDG 14.a on Marine Scientific Research within the context of the 2030 Agenda for Sustainable Development. Indeed, its Global Ocean Acidification Observing Network (GOA-ON) has provided technical advice and held dedicated expert meetings for the development of the indicator for SDG 14.3. The IOC-UNESCOs Global Ocean Science Report (GOSR) is recognised as the main mechanism to measure progress towards the achievement of SDG 14.a. The increasing relevance of ocean science within UNESCO was also confirmed by Member States' engagement in discussions around the 41 C/4 Medium Term Strategy.

IOC-UNESCO is thus well positioned to provide access to the data, information and science needed by the wider UN family and extended oceanographic community at large. A neutral platform, bringing Member States together and fostering exchanges between governments and scientists, IOC-UNESCO's impact is, however, sometimes constrained by Member State reluctance to share data. Greater collaboration with and among private sector owners of data could also strengthen IOC-UNESCO's contribution.

Beyond counting and sharing data and information, IOC-UNESCO has also made some important contributions to influencing policy itself, most notably in the area of Marine Spatial Planning. More generally, however, IOC-UNESCO has struggled to engage with senior policy makers. This reflects the lack of an obvious departmental counterpart at the national level in most countries, the uneven profile of Member State representation in IOC-UNESCO governance bodies as well as the inherent challenge of ensuring science-based policy making. IOC-UNESCO has had success engaging with policy makers via existing regional organizations, but the examples of this type of engagement are limited.

IOC-UNESCO is, in principle, well-positioned to meet the capacity needs of its Member States. Capacity Development is an unambiguous priority for many of IOC-UNESCO's Member States, but particularly for SIDS and LDCs. The GOSR, as well as the biannual Capacity Development Needs Survey, identify existing capacities and needs and priorities, and IOC-UNESCO's Regional Training Centres together with the Regional Sub-Commissions can act as efficient delivery mechanisms. In practice, however, IOC-UNESCO's Capacity Development programme is chronically resource-strapped and available resources do not enable the coherent, sustainable, needs-based and integrated Capacity Development actions that are needed for impact in the enabling environment -a pre-requisite for the sustainability of its work. IOC-UNESCO's reach among Pacific SIDS is also limited. Correcting this will require collaboration with Member States and increased coordination and collaboration of mutually reinforcing efforts of other actors.

Although progress is being made in GEWE in the field of ocean science, IOC-UNESCO currently lacks a clear vision and corresponding Theory of Change and action plan to substantively address GEWE. Data collection is insufficient to cement IOC-UNESCO's critical leadership role. There is a dearth of women in senior leadership positions in IOC-UNESCO itself.

The promulgation of the UN Decade and decision by UNGA to entrust IOC-UNESCO with its coordination are an obvious signal of confidence by the world's community of nation states in IOC-UNESCO. A triumph of strategic imagination, the Decade is a unique opportunity to accelerate the transition to sustainable management of the ocean which takes into account the need for climate change mitigation and adaptation, environmental health including biodiversity, and sustainable supply of resources including food. It is also an opportunity for IOC-UNESCO to restate its relevance to the members of UN Oceans, to policy makers and to the world at large, to develop a narrative of its benefit to society and to increase its visibility to the wider public which has been limited. It also offers the chance to bring UN agencies, countries and organizations together in support of a common ocean agenda.

However IOC-UNESCO faces many challenges. IOC-UNESCO's increased range of involvements have stretched the limits of the Secretariat's resource capacity. This has encouraged an opportunistic approach to fund raising, endangering the sustainability of IOC-UNESCO's work. The current level of resources needed to make a success of a globally important opportunity such as the Decade are lacking and clearly place its success in jeopardy. In addition, there has been a blurring of lines between IOC-UNESCO and some other UN agencies which are also becoming active in the same ocean science space as IOC-UNESCO. This risks undermining cooperation among members of UN Oceans and encouraging inefficient competition. In this context where leadership and adequate resourcing are at a premium, there is a need to redefine IOC-UNESCO's current organizational position within UNESCO to ensure it is supportive of the sort of resourcing and leadership needed to deliver sustainable management of the ocean.

Recommendations

This section provides a set of strategic recommendations drawn from the findings and conclusions reached through the evaluation process. The recommendations have been developed by the evaluation team and have been discussed during the validation workshop with the evaluation reference group members, further streamlined and validated through several review iterations. Some of these recommendations build on processes that have already been initiated by IOC-UNESCO or were suggested by stakeholders. Therefore, the evaluation sought to contribute to areas that are key for the strategic positioning of IOC-UNESCO in the context of 2030 Agenda and for the success of the upcoming Ocean Decade.

Recommendation 1 (High Priority). To IOC-UNESCO Secretariat and UNESCO Secretariat:

By September 2022 follow up on the request of the IOC-UNESCO 30th Assembly by estimating the necessary resources and accelerating the application of provisions of Article 10.4 of the IOC-UNESCO Statutes to effectively operate the IOC at an optimal level, as well as to determine the most appropriate organizational setting in view of IOC's envisaged global role in science-based ocean management and leading the UN Ocean Decade.

Suggested action:

- propose an appropriate mechanism, based on Article 10.4, to bring in additional resources
- increase visibility of IOC-UNESCO funding needs in the context of upcoming UNESCO Structured Financing Dialogue initiatives and events.

Recommendation 2 (Medium Priority). To IOC-UNESCO Secretariat:

By June 2022 develop in partnership with other agencies a Results Framework for the United Nations Decade of Ocean Science for Sustainable Development, clearly identifying objectives, intermediate objectives, indicators, and indicative owners across the UN System and wider in order to monitor and evaluate progress against the Decade's objectives.

Recommendation 3 (Medium Priority). To IOC-UNESCO Secretariat and UNESCO Senior Management:

By June 2022 determine how UNESCO can support the Decade.

Suggested actions:

- advocacy work to increase political support at the national and regional levels.
- establish a well-staffed Decade Coordination Unit that as the leadership capacity to engage and mobilize external partners.
- explore further mainstreaming oceans across UNESCO's Cultural, Education, and Science sectors, including potentially raising it to the level of a thematic priority.

Recommendation 4 (High Priority). To IOC-UNESCO Secretariat:

By June 2024 consider options for further exploiting IOC-UNESCO's data and knowledge base.

Suggested actions:

- produce an annual State of the Ocean Report aimed at the wider public in order to increase the Commission's visibility, demonstrate the value of its ocean science, and attract more funding.
- under the ambit of GOOS and in partnership with UNEP, WMO and ICSU, develop a Global Oceans Forecast Model to produce internationally authoritative projections of Essential Ocean Variables and other key ocean variables.

Recommendation 5 (High Priority). To IOC-UNESCO Secretariat:

By June 2022 explore means of attracting additional senior policy engagement in the work of IOC-UNESCO.

Suggested actions:

- explore partnerships with high-profile *Goodwill Ocean Ambassadors* to champion the IOC-UNESCOC's work and motivate more political action in priority areas identified in the State of the Ocean report.
- establish a regular OceanScience/Policy forum, ideally at ministerial level (potentially building on the model of the Clean Energy Ministerial Forum), providing a platform for collaboration and promoting policies, programs and partnership that encourage transition to the sustainable ocean economy and organized e.g., in tandem with IOC-UNESCO Assemblies.

Recommendation 6 (High Priority). To IOC-UNESCO Secretariat in collaboration with UNESCO's Gender Equality Division:

By June 2022 assume a leadership role in the area of gender equality and women's empowerment in marine science, supporting its existing data efforts such as the Global Ocean Science Report with dedicated action.

Suggested actions:

- develop a gender strategy to adapt the UNESCO Global Priority Gender Equality to IOC-UNESCO's Vision and Leadership in the area of gender equality in marine science, subject to adequate additional resourcing provided by UNESCO and endorsement by IOC-UNESCO Assembly in 2023.
- institute a Sylvia Earle Annual Prize for most significant contribution to protection and/or promotion of the oceans by a woman, using the prize as an opportunity to raise the issue of GEWE in marine science on an international stage.
- set an explicit target of increasing the share of women in leadership positions in IOC-UNESCO Secretariat to 50% by 2030.

Annexes

Annex A: Terms of Reference

Annex B: Judgements on ToC Assumptions

Annex C: Bibliography

Annex D: Interview Respondents

Annex E: Flagship Programmes

Annex F: Mapping the Essential Ocean Variables (EOVs) against the High Level Objectives (HLOs)

Annex G: Evaluation Team Biodata

TECHNICAL ANNEXES: AVAILABLE UPON REQUEST AT IOS@UNESCO.ORG

Annex H: Methodology

Annex I: Evaluation Matrix

Annex J: Interview and Case Study Protocols

Annex K: Aggregated Survey Responses

Annex A: Terms of Reference

Evaluation of the Intergovernmental Oceanographic Commission's (IOC's) Strategic Positioning

1. Background and context of IOC

Created in 1960, the Intergovernmental Oceanographic Commission promotes international cooperation and coordinates programmes in research, services and capacity-building, to learn more about the nature and resources of the ocean and coastal areas and to apply that knowledge for the improvement of management, sustainable development, the protection of the marine environment, and the decision-making processes of its Member States.

The IOC is a body with functional autonomy within UNESCO that works within the framework of the budget adopted by its Assembly and the General Conference of UNESCO. Membership is open to any Member State of any one of the organizations of the United Nations system, and the Commission currently counts 150 Member States.[36] The Commission is governed by the Assembly (all Member States who meet every two years) and the Executive Council (40 Member States holding two meetings between Assembly sessions), with ongoing support provided by the Secretariat located at UNESCO HQ in Paris as well as regional and technical subsidiary bodies. The previous biennium 2018/19 saw the IOC with an overall operational budget of around USD 20 million, overseen by more than 25 personnel. Roughly 56% of funding is from voluntary contributions, with the remainder coming from the Regular Programme Budget.

Protection of ocean health and resilience to ocean- and climate-related hazards, pursued by the Commission since its creation in 1960, have become more important than ever for people's wellbeing around the globe and thus significantly influence the international development agenda. In December 2017, based on a proposal of the IOC Member States, the United Nations General Assembly (UNGA) formally proclaimed the **'United Nations Decade of Ocean Science for Sustainable Development (2021-2030)'** hence recognised the role of the ocean science in delivering knowledge and solutions to advance the sustainable development agenda. This General Assembly decision tasked IOC to lead the preparation of the Decade implementation plan. Since 2018, IOC has engaged UN and IOC Member States, UN partners, key civil society stakeholders, philanthropy and the private sector in regional and global consultations to develop the ocean science agenda and underpinning partnerships that the Decade sets out.

The IOC contributed to the adoption of a stand-alone **Sustainable Development Goal (SDG 14)** on Oceans, and the UN identified the IOC as the "custodian agency" for two SDG 14 targets focused on mitigation of ocean acidification and developing marine science capacity. The IOC also contributes to reporting on targets focused on preventing ocean pollution and science-based management of marine and coastal ecosystems.[37] The IOC Global Ocean Science Report, a flagship report published every three to four years, measures progress towards SDG Target 14.a, and provides the baseline against which to assess progress in the building of the needed ocean science infrastructure, human resources, and the generation of knowledge through scientific research and production. Beyond SDG 14, several of the SDGs are in some way interlinked with ocean health and protection, and therefore open additional avenues for the work of IOC to benefit society as a whole (e.g. SDG 2 on food security from the ocean, SDG 4 on education/ocean literacy, SDG 8 on sustainable ocean economic growth, SDG 11on resilient coastal cities, and SDG 13 on climate change).

IOC facilitates the development of ocean sciences, observations and capacity development to monitor the ocean's major role in the climate system and predict ocean changes. It lays the groundwork to design more efficient climate adaptation and mitigation strategies. IOC focuses on the most damaging impacts, such as ocean acidification and temperature increase, resulting in coral bleaching, sea-level rise, deoxygenation, variations in storminess and changes in marine biodiversity, as well as potential solutions in terms of climate mitigation and coastal adaptation planning.

Areas of intervention for the IOC include the Global Ocean Observing System (GOOS), which has been instrumental for the development and coordination of ocean observations around the world. In terms of supporting ocean management, IOC is the UN lead in the development of technical guidance related to marine spatial planning. Provision of early warning services for ocean hazards (tsunami, sea ice, waves, storm surges, and harmful algal blooms) is another core area of work of IOC. Similarly, capacity building is an essential component of IOC's work, and activities are carried out under the Capacity Development Strategy (2015-2021).

36 The IOC Statutes state: "The Commission will collaborate with international organizations concerned with the work of the Commission, and especially with those organizations of the United Nations system which are willing and prepared to contribute to the purpose and functions of the Commission and/or to seek advice and cooperation in the field of ocean and coastal area scientific research, related services and capacity-building.'

37 It is one of the four UN entities explicitly referred to in the targets, along with ILO, UNFCCC and WTO (target 10.a refers to the IOC Criteria and Guidelines for the transfer of marine technology).

Finally, IOC contributes through its programme to the development of global assessments, such as the World Ocean Assessment-2 (WOA-2), the Assessment Reports and Special Reports of the IPCC, and the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES). Oceanographic Data collected by countries and IOC programmes are managed by its International Oceanographic Data and Information Exchange (IODE), the only framework that deals exclusively with international oceanographic data exchange, and the Ocean Biodiversity Information System (OBIS) – the world's leading database on ocean biodiversity.

In this biennium 2020-2021, embarking on the Decade while also celebrating its 60th anniversary, IOC is at a crossroads to **'rethink its role in crosscutting issues that arise from the magnitude of ocean-related issues, while maintaining and reconfirming the legitimacy of its mandate'.** With the role of the ocean increasingly crucial as a human life's supporting system, the IOC's challenge in the coming years will be to ensure it is optimally strategically positioned and able to deliver on its core mandate and results across the Agenda 2030 and the UN Decade of Ocean Science for Sustainable Development (2021-2030).

2. Purpose and scope

The shift in global attention, reflecting new priorities and related international environmental governance, represent an opportunity for the IOC to reflect on its current strategy, in particular its relevance and impact in an area with increasing importance and number of actors. The main purpose of the evaluation is to generate findings, lessons learned and recommendations with the aim to support the strategic positioning of IOC within the system of national and international actors in the ocean community landscape. The evaluation will assess the Commission's role and comparative strengths, its contributions to international scientific cooperation, capacity-development and science-policy interface, culminating in critical decision- and policy making. The evaluation should also focus on the contribution and engagement of IOC Member States in the development and implementation of IOC priorities.

The evaluation will also be forward-looking, adopting a transparent and consultative approach to gather evidence regarding the relevance, coherence, effectiveness and sustainability of the IOC's current work and potential future strategic direction. In addition to an assessment of the IOC's comparative strengths, the evaluation will identify results achieved and lessons learned in the areas defined in the IOC's High-Level Objectives, its contributions to UNESCO's Strategic Objectives 4 and 5[38], as well as the 2030 Agenda for Sustainable Development Goal 14 on Life under Water[39], and the UN Decade of Ocean Science for Sustainable Development.[40]

The evaluation will cover all work carried out by the IOC since 2016 through its functions and will also focus on the IOC's strategic position and its comparative strengths in the ecosystem of ocean science actors, within the UN and beyond, identify results achieved within three biennia (38 C/5, 39 C/5 and up to the current 40 C/5), as covered by the 37 C/4 Medium Term Strategy but also looking into the draft IOC MTS for 2022-2029, effectiveness in the focus and mainstreaming of UNESCO's global priorities Gender Equality and Africa, of inclusion in particular of disadvantaged groups, as well as in addressing the needs of SIDS as a priority target group.

The evaluation aims to support the IOC Secretariat, UNESCO Senior Management, Member States and national beneficiaries to better target, focus and coordinate their work and to support strategic decision-making. The evaluation will inform Member States on the development of the new IOC Medium-Term Strategy (2022-2029).

The final evaluation report will be submitted to the Secretariat of the IOC. The evaluation team will present the evaluation findings at the 31st session of the IOC Assembly, tentative dates 14-25 June 2021.

38 UNESCO Medium Term Strategy (MTS) 2014-21 Strategic Objective 4: Strengthening science, technology and innovation systems and policies – nationally, regionally and globally. Strategic Objective 5: Promoting international scientific cooperation on critical challenges to sustainable development.

39 Sustainably use the oceans, seas and marine resources. https://www.un.org/sustainabledevelopment/oceans/

40 (www.oceandecade.org)

3. Evaluation objectives and questions

The evaluation will aim to achieve the following four objectives:

i. Assess the strategic positioning of the IOC within the UN system and the broader landscape of ocean-related actors and programmes, taking into account relevant enabling policy frameworks to which the work of the Commission responds;

ii. Identify the effectiveness of the Secretariat and overall IOC's contribution to Member States, including through regional delivery of IOC support, towards defining national ocean science agendas, the enhancement of national capacities in ocean science, and the transfer of the findings of ocean science onto applications for management and a sustainable blue economy;

iii. Review the engagement of IOC Member States in overall IOC governance mechanisms, and support to the Secretariat, as well as in the design and delivery of IOC actions and highlight effective models for national coordination and partnerships; and

iv. Assess different aspects of sustainability of the IOC's activities.

The evaluation will assess the IOC's work overall with a deeper analysis of delivery in the areas of ocean ecosystems, early warning systems, climate resilience and emerging-issue knowledge, with a focus on the following key dimensions:

1. To what extent is the IOC aligned with the UNESCO's Expected Results Framework, the Agenda 2030 including its Sustainable Development Goal 14 on Life Under Water, and finally the objectives of the UN Decade of Ocean Science for Sustainable Development?

2. To what extent is the IOC's current strategic positioning vis-à-vis relevant UN and other international partners as well as relevant policy processes and frameworks appropriate and coherent? How well is the IOC positioned to leverage its comparative advantage for the upcoming Decade of the Ocean and to continue playing and central and coordinating role therein? What are the IOC programmes/products that are of UN-wide relevance?

3. What results, intended or unintended, have been achieved in the areas of the IOC's High-Level Objectives, including the Global Ocean Science Report? What outcomes can be observed in relation to gender equality, inclusion of disadvantaged groups and in the area of Priority Africa? What are the key achievements and challenges for IOC's work?

4. To what extent has the IOC contributed to capacity development for Member States at the individual, institutional and political levels?

5. To what extent does IOC's work contribute to addressing the policy demands of relevant processes and frameworks such as the Agenda 2030, UNFCCC and its Paris Agreement, the Convention on Biological Diversity, and the Sendai Framework?

6. What lessons can be identified for the IOC's current visibility and communication tools, measures and strategy?

7. How appropriate are current efforts for monitoring and evaluation of IOC results and way of working?

8. To what extent does the IOC ensure sustainability of its work, including through development and a targeted resource mobilisation strategy and the maintenance of strategic partnerships? In this respect, what type of partnerships should be pursued such as with other non-governmental ocean stakeholders?

These key dimensions are indicative and sub-questions will be further elaborated during the first phase of the evaluation during the development of the evaluation matrix.

4. Methodology

The evaluation will conduct a mix of primary and secondary data collection and analysis to answer the main lines of enquiry for the evaluation. The methodology will be detailed by evaluation question and will be distributed along the lines of the collective expertise in the evaluation team. The evaluation team must include gender and culturally sensitive expertise and ensure that gender equality, inclusion, diversity and respect for human rights are mainstreamed throughout the data collection and analysis processes.

An adequate mix of primary and secondary data sources should be privileged, including big data sources when possible. The evaluation team may consider developing surveys targeting specific stakeholders to harvest additional data to inform their work.

The evaluation team will carry out scoping interviews and desk research, which will be followed by the development of a preliminary Theory of Change during a digital working session with the evaluation reference group including select evaluation stakeholders and programme officers who can inform and discuss the TOC to model the IOC's working mechanism and related pathways to results. The evaluation team will then proceed with the data collection process through face to face and remote interviews, and as possible including physical field visits. Key informant interviews, desk review, and a survey of programme and management staff, external stakeholders and partners, as well as of National Commissions and Permanent Delegations, is envisioned. The data collection and analysis process may be modified or enhanced over the course of the evaluation in consultation with the evaluation reference group.

Desk Review of strategies, white papers, policies, academic resources, and project documents will be required, in addition to a strategic analysis of the ecosystem of actors in the field of international ocean resource management. If possible, travel to select areas will be planned for the end of 2020, if sanitary conditions permit, to carry out key informant interviews in person. If this is not possible, the semi-structured interviews will be carried out remotely, with enhanced support from the IOC Secretariat to identify relevant internal and external partners.

Analysis and validation workshops will be planned and agreed during the inception phase at several points during the evaluation involving relevant members of the reference group and other stakeholders:

i. After the first desk review phase and before submission of the inception report, to take stock of the Theory of Change, refine the evaluation questions and matrix, and begin to test data collection tools including qualitative data analysis software, survey questions, interview protocol, data management processes

ii. ii. At the end of any (remote) field mission that is carried out,

iii. iii. At the end of any digital data collection and analysis, including usage of large-scale analysis. software and survey analysis.

In addition, a triangulation and validation workshop with the Evaluation Reference Group will be conducted following completion of the data collection and analysis processes.

The evaluation will follow the UNEG Norms and Standards, Guidance for Gender and Human Rights, and ethical standards, throughout the evaluation process.

5. Roles and responsibilities

The evaluation will be managed by UNESCO's Internal Oversight Service (IOS) Evaluation Office and conducted with the support of and input from a team of two to three external consultants.

The consultants are expected to contribute specific expertise in Ocean Policy in order to strengthen the technical quality of the data collection. They are further expected to contribute senior evaluation expertise to the evaluation design, approach and analysis. The external consultants will under the guidance of the IOS Evaluation Office be responsible for developing a methodology, for the collection of data and the analysis, including fieldwork (as applicable), as well as for drafting the evaluation report in English and for producing other communication deliverables (as specified below). The indicative distribution of roles and responsibilities of the team members is outlined in the Annex 1 and will be further specified and agreed upon in the Inception Report once the external consultants have been selected.

The workload for each external expert is estimated between 25 and 40 professional working days depending on the composition of the team and on his or her role in the team.

An Evaluation Reference Group will be established to guide the evaluation process and ensure the quality of the process and the associated deliverables. The group will be chaired by the IOS Evaluation Office and include indicatively representatives from the following entities/personalities:

- An IOC Officer – Current and past Chairs
- A member of the Decade Executive Planning Group
- A Regional Subsidiary Body Chair
- A Technical Subsidiary Body Chair
- A UN Ocean agency
- DG MARE/Blue economy expert and main partner in MSP roadmap.
- Other UNESCO sectors/programmes: such as ED, SC, WHC
- The Bureau of Strategic Planning
- The Gender Equality Division
- The Sector for Priority Africa and External Relations
- A representative from the private Sector

6. Qualifications of experts for the evaluation team

Given the specific and technical nature of the evaluation, an evaluation team consisting of **senior expertise in the areas of ocean science/policy and in the area of evaluation is necessary.** The recommended composition of the external evaluation team includes two to three core members: one senior evaluator and possibly a junior level evaluator/researcher, and once ocean policy expert. Note that alternative team compositions will also be considered.

Firms proposing teams that include the following expertise, as well as individual senior experts in either ocean policy, or evaluation are invited to apply. Proposals from teams must collectively include the following qualifications:

Expert in ocean management, ocean economy, policy:

- Advanced university degree in environmental studies, ocean management, economics, political sciences, international relations or legal studies
- Expertise, strong understanding and knowledge of ocean policy, management, UN System, sustainability agenda (demonstrated with examples of previous work, such as evaluations, research, publications, etc. on the subject area)
- Minimum 7 years evaluation experience

Expert in evaluation:

- Advanced university degree in areas relevant to the field of evaluation, such as climate change, marine biology, ocean science management, or related field; or advanced university degree in sociology,
- Senior professional experience of at least 10 years in project and/or programme evaluation, some of which relevant to the field of evaluation such as ocean policy and/or climate change
- Knowledge of and experience of at least 10 years in applying qualitative and quantitative data analysis techniques and RBM principles
- Expertise, strong knowledge and understanding of the areas in the IOC's mandate: healthy ocean ecosystems, advanced knowledge on ocean sciences, climate domain, etc. (demonstrated with examples of previous work such as evaluations, research, publications, etc. on the subject area)

Furthermore, all experts are required to have:

- No previous involvement in the design and/or implementation of IOCs/UNESCO activities under review (occasional attendance of events or meetings may be accepted);
- Excellent communication, and excellent drafting skills in English (as demonstrated in the proposal for this evaluation and through examples of previous publications submitted)
- Excellent analytical skills

It is desirable that at least one of the external experts(s) possess the following:

- Expertise in climate change
- Expertise in data systems and /or observation/technological innovations:
- Advanced university degree in oceanography, data sciences, IT, or related field
- Advanced knowledge and experience in data collection and analysis, in particular data systems related to early-warning, risk management, big data, IT, communications
- Minimum of 7 years' work experience in data systems, IT and communications

- Knowledge of the role of the UN and its regulations and functioning;
- Understanding and application of UN mandates in Human Rights and Gender Equality (for example through certification, training, examples of assignments);
- Experience with assignments for the UN;
- Other language skills, particularly Spanish and French, and other official UN languages (Arabic, Russian, and Chinese) will be considered an advantage.

Verification of these qualifications will be based on the provided curriculum vitae. Candidates are also encouraged to include in their proposals web links or examples of other references such as research papers or articles that demonstrate their familiarity with the field of IOC.

Attention will be paid to establish an evaluation team that is gender- balanced and of geographically and culturally diverse backgrounds.

7. Deliverables and schedule

The evaluation will be conducted between November 2020 and May 2021.

Deliverables

Inception report: An inception report containing the Theory of Change of the IOC (based on the desk study and preliminary interviews), an evaluation plan with a detailed timeline, detailed methodology including an evaluation matrix (with a full list of evaluation questions and subsequent methods for data collection), a stakeholder analysis and a list of documents.

Reports and communication products: potential case studies (to be confirmed), standalone data analysis reports/case studies, to be determined during the first evaluation phase, communications products such as infographics, evaluation briefs, videos. .

Draft evaluation report: The draft evaluation report should be written in English, be comprised of no more than 30 pages (excluding annexes) and follow the IOS Evaluation Office template (to be shared).

Final evaluation report: The final evaluation report should incorporate comments provided by the Evaluation Reference Group without exceeding 30 pages (excluding Annexes). In addition, it should also include an Executive Summary and Annexes. The final report must comply with the UNEG Evaluation Norms and Standards and will be assessed against the UNEG Quality Checklist for Evaluation Reports by an external reviewer. The evaluation will refer to the UNEG Guidance on Integrating Human Rights and Gender Equality in Evaluation.

Schedule

Activity / Deliverable	Date
Finalization of Terms of Reference	August 2020
Call for Proposals and Selection of Consultant(s)	September/October 2020
Launch of Evaluation	November 2020
Inception Report with Methodology and Responsibilities	November 2020
Data Collection and Analysis	December 2020 – January 2021
Deliverables by External Experts	Early February 2021
Draft Evaluation Report + Communication products	Early March
Stakeholder workshop	Late March
Final Evaluation Report	April 2021
Presentation of the report to the statutory/ governing bodies	31st session of the IOC Assembly – tentative dates 14-21 June 2021

Annex: Indicative responsibilities of the evaluation team members

General responsibilities of the external evaluation team members include:

Under the overall guidance of the Evaluation Manger from IOS, the evaluation team members will undertake the assessment of the IOC's strategic positioning and contributions to results for Member States. The consultants shall contribute to data collection and analysis as well as make strategic level conclusions and recommendations. The external evaluation team must consist of at least one senior evaluator and one ocean sciences expert.

Specifically, each consultant will:

- Review all relevant documentation, especially documents provided by IOS, including project documents, log-frames, projects progress and final reports and other relevant literature;
- Contribute to the overall design of the evaluation and the preparation of evaluation tools, including theory of change, questionnaires, digital data collection and analysis methods, interview protocol, and focus group guides as appropriate;
- Participate and contribute to teamwork and analysis as appropriate, including team discussions to share findings and frame analysis;
- Participate in the collection of primary data through, inter alia, interviews and meetings (face-to-face or virtual), with IOC concerned officers and stakeholders including UNESCO staff, coordination and implementation partners, programme participants and non-participants as appropriate;
- Ensure that all the primary and secondary data collected are recorded and shared with IOS during the evaluation process (submitting written notes/summaries of meetings, interviews and focus groups), and organized in a structured format following the key evaluation questions, based on which triangulation of all the findings are ensured;
- Participate in ET working sessions and contribute to the analysis of the data to produce evaluation findings and recommendations. Ensure that all the findings are sufficiently validated, to reach preliminary conclusions that answer all evaluation issues and questions, and provide preliminary recommendations in line with findings and conclusions;
- Contribute to the development of strategic communication products for the evaluation
- Draft a case study/analytical paper on a topic relevant for the evaluation (to be agreed during the inception phase);
- Contribute and participate in the presentation of evaluation findings to key stakeholders during all planned debriefing sessions, as required;
- The lead evaluator is responsible for drafting the final report, including incorporating written contributions (specific reports) and in integrating comments on the draft report received from stakeholders;
- Other tasks, as required (to be agreed during the inception phase).

Annex B: Judgements on ToC Assumptions

Pathway	Direction	Assumption	Degree of Validation
Outputs-Intermediate Outcomes	**Demand**	MS's and oceanographers buy into IOC-UNESCO's coordinating role	Very strong
	Supply	IOC-UNESCO has sufficient budget	Very weak
	Supply	IOC-UNESCO stakeholder engagement is effective	Moderately strong
Intermediate Outcomes (Capacity)	**Demand**	Capacity deficits impede scientific cooperation	Strong
	Demand	Capacity deficits reduce effectiveness of systems and policies	Strong
	Supply	IOC-UNESCO can in practice identify capacity needs and address them	Moderately strong
Intermediate Outcomes-Outcomes (Ocean Research)	**Demand**	Knowledge uptake is possible	Not validated
	Demand	National and regional bodies collaborate together	Moderately strong
	Supply	IOC-UNESCO has the capacity and credibility to coordinate international research agenda	Strong
Intermediate Outcomes-Outcomes (Ocean Observations)	**Demand**	National stakeholders have sufficient capacity, resources etc.	Weak
	Demand	Data is integrated into national/ regional systems	Moderately strong
	Supply	Databases are relevant.	Very strong
	Supply	Data are findable, accessible, interoperable, reusable (FAIR)	Moderately strong
Intermediate Outcomes-Outcomes (Early Warning)	**Demand**	At risk MS's value EWS's	Very strong
	Demand	MS's prepared to cooperate with fellow MS's	Strong
	Demand	Communities able to respond to EW signals	Moderately strong
	Supply	IOC-UNESCO has technical expertise to optimise international EWS's	Very strong
	Supply	IOC-UNESCO is able to operationalise, sufficient resources etc	Strong
Outcomes-Impacts	**Demand**	Political environment is conducive to policymakers making use of research	Weak
	Demand	Policymakers are open to research that may challenge ideology, risk appetite, etc.	Not validated
	Demand	Planners, investors, and other users require IOC-UNESCO data to make progress	Strong
	Demand	Transnational cooperation is needed for sustainable development	Very strong
	Demand	Global agency to use data and address tragedy of the commons exists	Not validated
	Supply	IOC-UNESCO's research agenda is aligned with global and national policy agendas	Strong
	Supply	IOC-UNESCO's research is high-quality, well-financed, and user friendly	Moderately strong
	Supply	IOC-UNESCO has the capacity and credibility to set standards and ensure cooperation	Strong
	N/A	UNESCO and others provide resources	Weak
	N/A	Collaboration is effective	Moderately weak
	N/A	Work of other organizations complements that of IOC-UNESCO	Moderately strong

Annex C: Bibliography

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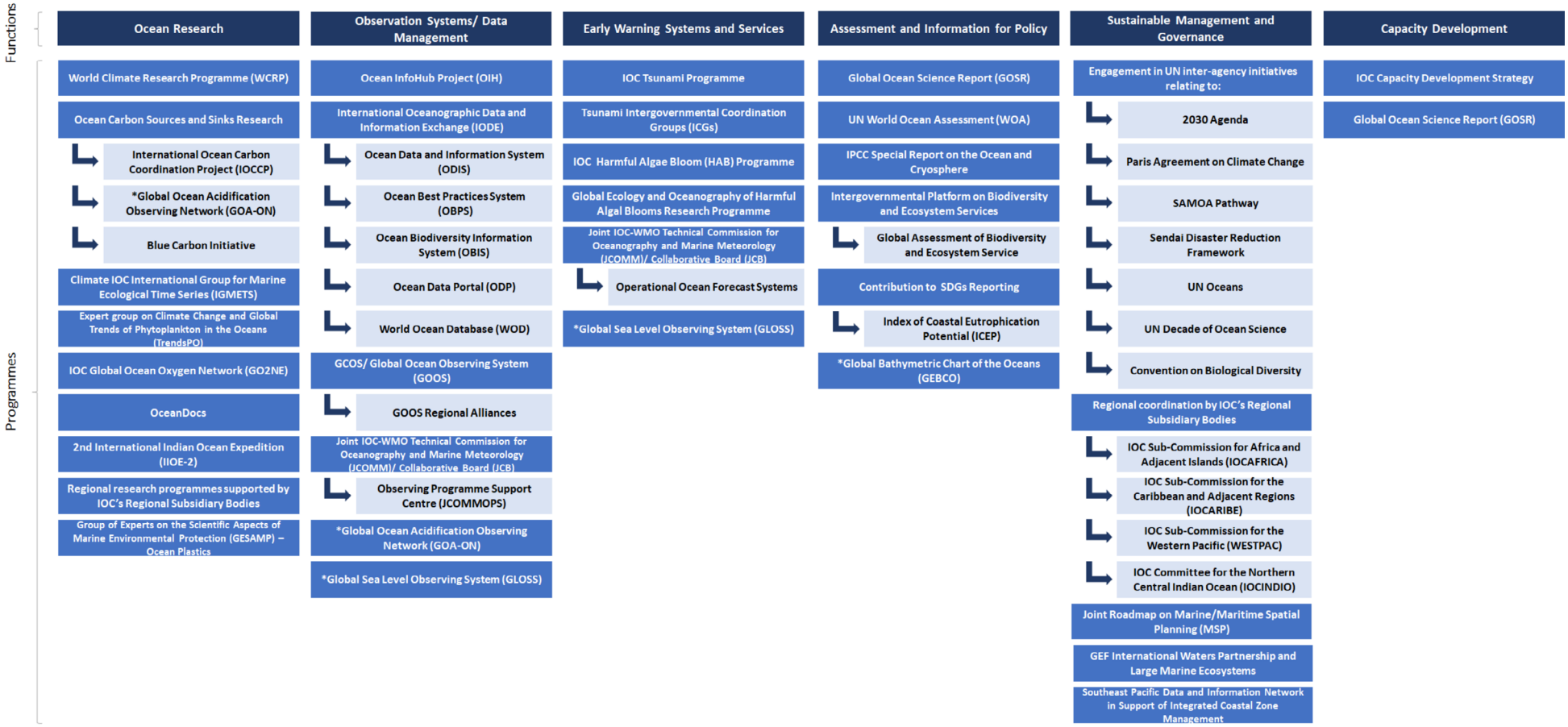
Annex D: Interview Respondents

Name	Role	Country
Blue Carbon		
Haydée Rodriguez	Vice Minister for Water and the Ocean, Costa Rica	Costa Rica
Izhaar Ali	Ocean Officer, Climate Change and International Cooperation Division	Fiji
Jeanette Mani	Climate Change Mitigation Specialist, Climate Change and International Cooperation Division	Fiji
Sofia Cortes Mesen	Technical Officer, Viceministry of Water and Ocean Affairs	Costa Rica
Blue Economy		
Ernesto Donayre Benavente	Logistics Section, Peruvian Navy	Peru
Kai Trümpler	Head of the Spatial Planning Division, Maritime and Hydrographic Agency (BSH)	Germany
Rezah Badal	Director General, Prime Minister's Office, Continental Shelf	Mauritius
Business Community/ Private Foundations		
David Millar	Government Accounts Director, FUGRO	N/A
Erik Giercksky	Head, UN Global Compact Business Action Platform for Ocean	N/A
Jyotika Virmani	Executive Director, Schmidt Ocean Institute	N/A
Nina Jensen	Director, REV Oceans	N/A
Donors		
Andrea White	Senior Science Advisor, Fisheries and Oceans Canada	Canada
Felix Leinemann	Head of Unit, Blue Economy Sectors, Aquaculture and Maritime Spatial Planning at European Commission	EU
Kentaro Ando	Supervisory Research Scientist, JAMSTEC	Japan
Louise Wicks	Manager International Relations, Bureau of Meteorology	Australia
Osamu Miyaki	Coordinator, JAMSTEC	Japan
Peter Haugan	Programme Director, Institute of Marine Research	Norway
Takeshi Kawano	Executive Director, JAMSTEC	Japan
IOC-UNESCO HQ and Regional Sub-Commissions/ Committees		
Albert Fischer	Head, Ocean Observations and Services Section	N/A
Alison Brome	Programme Officer for Coastal Hazards, Tsunami Unit	N/A
Alison Clausen	Programme Specialist, Marine Policy and Regional Coordination Section	N/A
Ardito Kodijat	Head of the Indian Ocean Tsunami Information Centre, UNESCO Office Jakarta	N/A
Bernardo Aliaga	Head, Tsunami Unit	N/A

Name	Role	Country
Cesar Toro	IOC-UNESCO Secretary, IOC-UNESCOARIBE	N/A
Denis Chang Seng	Programme Specialist, Ocean Observation & Services Section /Tsunami Unit	N/A
Emma Heslop	Programme Specialist, GOOS & JCOMM Observations Coordination Group	N/A
Henrik Enevoldsen	Programme Specialist, Ocean Science Section	N/A
Julian Barbiere	Head, Marine Policy and Regional Coordination Section	N/A
Kirsten Isensee	Programme Specialist, Ocean Science Section	N/A
Maeva Tesan	Communication Officer, IOC-UNESCO	N/A
Mika Odido	IOC-UNESCO Coordinator, IOC-UNESCO-AFRICA	N/A
Nora Gale	Acting Head, IOTWMS Secretariat	N/A
Salvatore Arico	Head, Ocean Science Section	N/A
Vinicius Lindoso	Digital Communications/ Web Editor, IOC-UNESCO	N/A
Vladimir Ryabinin	Executive Director	N/A
Vo Si Tuan	Chair, IOC-UNESCO-WESTPAC	N/A
Wenxi Zhu	Head, IOC-UNESCO-WESTPAC	N/A
Key Project Partners		
Edward Hill	GOOS - Executive Director, National Oceanography Centre (Natural Environment Research Council)	N/A
Francisco Hernandez	IODE - Datacentre Manager, Vlaams Instituut voor de Zee	N/A
Ingela Isaksson	MSP - Project Manager, Swedish Agency for Marine and Water Management	Sweden
Joanna Smith	MSP - Director Ocean Planning and Mapping, Nature Conservancy	N/A
Linwood Pendleton	IODE - Senior Vice-President, Science at the Centre for the 4th Industrial Revolution	N/A
Lora Flemming	OSS - Director, European Centre for Environment and Human Health	N/A
Patricia Miloslavich	OSS - Executive Director, Scientific Committee on Oceanic Research (SCOR)	N/A
Pier Luigi Buttigieg	IODE - Senior Data Scientist, GEOMAR	N/A
Pierre Bahurel	GOOS - CEO, Mercator Ocean	N/A
Rahanna Juman	MSP - Head, Environmental Research Program at the Institute of Marine Affairs	Trinidad & Tobago
Toste Tanhua	GOOS - Chemical Oceanographer, GEOMAR	N/A
Yutaka Michida	IODE - Professor, University of Tokyo	N/A
Željka Škaričić	MSP - Director, UNEP Mediterranean Action Plan Priority Actions Programme	N/A

Name	Role	Country
Member States		
Alexander Postnov	Focal Point, Russian Federation	Russian Federation
Ariel Troisi	Chair of IOC-UNESCO/ Focal Point, Argentina	Argentina
Bronte Tilbrook	Senior Research Scientist (Oceans and Atmosphere), CSIRO	Australia
Craig McClean	Focal Point, United States	United States
Fangli Qiao	First Institute of Oceanography, Ministry of Natural Resources	China
Gert Vereet	Focal Point, Belgium	Belgium
Sheila Heymans	Executive Director, European Marine Board	Belgium
Ocean-Focused NGOs		
Fabien Cousteau	President, Fabien Cousteau Ocean Learning Center	N/A
Mark Spalding	Director, Ocean Foundation	N/A
UN Family		
Andrew Hudson	Head, Water & Ocean Governance Programme, Global Environmental Finance Unit (UNDP)	N/A
Marie Bourrel-McKinnon	Senior Policy Officer, ISA	N/A
Mathias Jonas	Secretary-General, IHO	N/A
Michael Lodge	Secretary-General, ISA	N/A
Peter Thomson	UN Special Envoy for the Oceans	N/A
Vladimir Jares	Deputy Director, UNDOALOS	N/A
Wenjian Zhang	Assistant Secretary-General, WMO	N/A
UN Framework Secretariats		
Denis McClean	Head of Comms, UNDRR	N/A
Joanna Post	Programme Officer, UNFCCC	N/A
Joe Appiot	Coordinator for Marine, Coastal and Island Biodiversity, CBD	N/A
Madhushree Chatterjee	Natural Resources & Interlinkages Branch, DSDGs	N/A
Stephanie Speck	Chief: Comms, Knowledge Management & ICT - UNDRR	N/A
UNESCO HQ		
Miguel Clusener-Godt	Director, Division of Ecological and Earth Sciences	N/A
Peggy Oti-Boateng	Director, Division of Science Policy and Capacity-Building	N/A
Shamila Nair-Bedouelle	Assistant Director-General, Natural Sciences	N/A

Annex E: Flagship Programmes



Annex F: Mapping the Essential Ocean Variables (EOVs) against the HLOs

IOC-UNESCO plays an instrumental role in the Global Ocean Observing System GOOS. GOOS exert panels have defined 31 Essential Ocean Variables (EOV) to establish relevant and feasible indicators for global ocean observation across the complete range of ocean science disciplines. These indicators can be directly linked to IOC-UNESCO's organisational brief. This matrix maps the respective contribution of each EOV to addressing IOC-UNESCO's high-level objectives by using a three-level ranking of low (light-blue), medium (mid-blue), and high (dark-blue).

High Level Objectives **EOV**	Healthy ocean ecosystems	Early warning for ocean hazard	Resiliency to climate change and variability	Enhanced knowledge of emerging issues
PHYSICS				
Sea state				
Ocean surface stress				
Sea ice				
Sea surface height				
Sea surface temperature				
Subsurface temperature				
Surface currents				
Subsurface currents				
Sea surface salinity				
Subsurface salinity				
Ocean surface heat flux				
BIOGEOCHEMISTRY				
Oxygen				
Nutrients				
Inorganic carbon				
Transient tracers				
Particulate matter				
Nitrous oxide				
Stable carbon isotopes				
Dissolved organic carbon				

BIOLOGY AND ECOSYSTEMS				
Phytoplankton biomass and diversity				
Zooplankton biomass and diversity				
Fish abundance and distribution				
Marine turtles, birds, mammals abundance and distribution				
Hard coral cover and composition				
Seagrass cover and composition				
Macroalgal canopy cover and composition				
Mangrove cover and composition				
Microbe biomass and diversity (emerging)				
Invertebrate abundance and distribution (emerging)				

CROSS-DISCIPLINARY				
Ocean colour				
Ocean Sound				

Annex G - Evaluation Team Biodata

Dr. Marc Stephens - team leader and lead evaluator. Marc is a director of OpenCities (www.opencities.co.uk) and specialises in strategy, organizational reviews and institutional change in the field of sustainable development. He has undertaken strategic and organizational reviews of a wide range of UN and other multilateral organizations (including in the marine and maritime space), governments and global NGOs such as CARE International and the World Resources Institute. He worked as an external consultant with McKinsey & Co (UAE and Rome offices) as well as the London Development Agency as an executive director, the Bank of England (where he led the team responsible for the Bank's global forecast model) and the World Bank (working mostly in francophone and lusophone Africa). Marc has an MSc in Climate Change Management (Birkbeck College, distinction), a Ph.D. in economics (NYU) and is a qualified lawyer. He has been a board member of WRAP (the Waste Resource Action Programme www.wrap.org.uk) for 4 years, the UK's foremost waste reduction and circular economy organization.

Dr. Paul Elsner - ocean data and policy expert. Dr. Paul Elsner is an experienced academic who teaches and researches at the interface of spatial data science and ocean management. Recent examples of his work are the assessment of offshore wind energy potential for the African continent and on the need for marine spatial planning on the high seas. Paul's expertise in Data Science and Marine Affairs is recognised by a number of international organizations. This includes the United Nations Committee of Experts on Global Geospatial Information Management (UN-GGIM) and the International Hydrographic Organization (IHO). In February 2020 he was invited to their joint meeting of the UN-GGIM Working Group on Marine Geospatial Information and the IHO Marine Spatial Data Infrastructures Working Group where he presented on marine spatial planning and marine data policy. Paul also collaborates with the World Bank, the Global Wind Energy Council, and the South African government to develop energy policy initiatives for offshore wind developments. Dr. Elsner was educated in Germany (University of Hamburg), Canada (Master of Marine Management, Dalhousie University) and the UK where he holds an MPhil in GIS & Remote Sensing and a Ph.D. from the University of Cambridge. He has developed and led a range of postgraduate programmes at Birkbeck College, University of London, including the MSc in Geographic Information Science and the MSc in Business Strategy & the Environment. Currently, he is Course Director of Birkbeck's MSc in Climate Change.

Mr. George Beardon - researcher. George is a consultant at OpenCities Ltd (www.opencities.co.uk). He is an economist with a passion for social justice and fostering a fairer, more compassionate society. Recent experience includes strategic evaluations and reviews of the International Maritime Organization, the International Seabed Authority and the World Resources Institute. He has additional background in regional and national socio-economic profiling and impact assessment in the UK; Geographical Information System (GIS) data mapping; econometric analysis; and, primary research methods such as Randomised Control Trials (RCTs) and natural experiments. He has a First Class Honours in Economics from the University of Bristol and a Master's in Behavioural Economics received from the University of Amsterdam.

Dr. Nathanial Matthews - ocean policy and partnerships. Dr. Nathanial Matthews has overseen over US$55 million of investments in climate change adaptation and mitigation including significant investments to reduce ocean risk and build coastal resilience including supporting mangrove restoration across Sri Lanka with the Government of Sri Lanka and disaster risk reduction strategies and investments in nature based solutions on coasts of the Philippines, Bangladesh and Vietnam. In 2019, Dr. Matthews joined the leadership team of the newly formed Ocean Risk and Resilience Action Alliance (ORRAA) that received support at the G7 Leaders Summit by all the G7 countries and was launched at the 2019 United Nations Climate Action Summit. ORRAA is a multi-sector collaboration designed to drive $500 million of investment into coastal natural capital by 2030. It will do so by pioneering ground-breaking finance products that incentivise blended finance and private investment into the regions and communities that need it most. ORRAA is led by GRP, Ocean Unite and AXA, with funding support from the Government of Canada. Its members include NGOs like WWF, TNC and Rare, the IDB and companies like Willis Towers Watson, Bank of America and SwissRe. As part of his role with ORRAA, Dr. Matthews directs the first set of ORRAA projects including work on: IUU fishing, mangrove insurance, coral reef insurance, an Ocean Risk Index, an Ocean Resilience Innovation Challenge, research on the acceleration of the blue economy and the gender dimension of ocean risk exposure in SIDS and LDCs. Dr. Matthews has been a regular invited speaker on ocean and coastal issues at the UNFCCC CoP, the World Economic Forum's Sustainable Development Summit and Ocean2020. He also sits on numerous advisory boards and expert working groups linked to ocean issues including the Global Commission on Adaptation's Water Action Track and the UNEP FI Sustainable Blue Economy Finance Initiative expert working group. He has over 60 scientific publications covering climate change and natural resource use and is an IPBES Lead Author and an IPCC Expert Reviewer.

Technical Annexes: Available upon request at ios@unesco.org

Annex H - Methodology

Annex I - Evaluation Matrix

Annex J - Interview and Case Study Protocols

Annex K - Aggregated Survey Responses


INTERNAL
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SERVICE