Item 4.3 of the Revised Provisional Agenda

CONTRIBUTIONS TO THE UN DECADE BY IOC’S IODE PROGRAMME AND RELATED CAPACITY DEVELOPMENT ACTIVITIES

Summary

This document is pursuant to IOC Assembly decisions IOC-XXX/7.2.2 and IOC-XXX/11.1.

At its 30th session, the IOC Assembly endorsed the IOC Ocean Data and Information System (ODIS) presented in document IOC-XXX/2 Annex 6: Concept, Implementation Plan and Cost Benefit Analysis. Through decision IOC-XXX/7.2.2, the IOC Committee on International Oceanographic Data and Information Exchange was invited to prepare a fully detailed and costed project proposal for (ODIS) for submission to the IOC Executive Council at its 53rd session. In addition, the Assembly entrusted the IOC Group of Experts on Capacity Development through decision IOC-XXX/11.1 to prepare a detailed and costed proposal for the development of an IOC Clearing-House Mechanism (CHM) for the Transfer of Marine Technology. The perception of the project included the possibility of expanding the IOC CHM functionalities to serve other requirements such as those emerging from the ongoing negotiations on an international legally binding instrument on the conservation and sustainable use of marine biological diversity beyond areas of national jurisdiction (BBNJ).

This document proposes to combine the two projects into one ODIS/OIH Project that will deliver an integrated ocean data and information system and a new global architecture that enables equitable participation of user communities towards the objectives defined for the UN Decade of Ocean Science for Sustainable Development (2021–2030).

Financial and administrative implications: see paragraphs 18-24 and the documented proposal for the five-year ODIS/OIH Project ODIS/OIH Project in the addendum to this document.


1. Data, information, and knowledge (when digitized: “digital resources”) management is a central issue for the Decade and one that has been raised consistently in stakeholder discussions throughout the preparatory phase (2018–2020). The vision for data, information, and knowledge management throughout the Decade is that stakeholders will be supported by, and will contribute to, a collective, multidisciplinary digital representation of the world’s ocean. Through the Decade, the ocean data community will work to construct a shared digital representation of the ocean’s socio-ecological system, viewable from multiple perspectives and through multiple interfaces tailored to stakeholder needs and capacities (i.e. 'a digital twin of the ocean').

2. The challenge: the Decade will require an openly accessible, usable, and responsive digital management framework that provides a diverse community of stakeholders with the information needed to build a sustainable future. This includes digital resources that support a holistic understanding of marine social-ecological systems and includes historical data, contemporary data (including real-time data streams), and modelled data to help predict future ocean conditions. Existing barriers—including data fragmentation, compartmentalization of data, lack of data sharing, hidden or underexploited datasets—need to be overcome in the design and development of the system.

3. The data and information system must support scientists, planners, decision-makers at all levels, businesses, citizens, and other stakeholders in accessing and using information products and services tailored to their needs. Rather than accessing and utilizing raw data, many stakeholders will interact with dashboards, decision-support tools, and other interfaces built upon trusted and scientifically sound data. This requires that software developers have access to easily reusable and harmonized data sources and that the provenance of the data, as well as clear documentation of each processing step it was subject to, is easily and accurately traceable. This ambitious goal will require input from a distributed, but closely coordinated, community of contributors and users, such that the system can support wide-ranging innovation and applications.

4. Much of the required capability to build a coordinated digital ecosystem for the oceans is available: many actors, from national infrastructures to small enterprises and research initiatives, have created immense capacity to gather, manage, integrate, analyse, communicate, and act on complex marine data. However, efforts to rally, focus, align, and combine efforts across all sectors, i.e. academic, philanthropic, industrial, and governmental, must be increased.

5. The capacity development (CD) is an important element of the Decade’s vision. CD is not only an essential tenet of the Decade but has direct consequences on its digital strategies. The Decade has the ultimate aim of achieving evenly distributed capacity across the globe, across generations, and across genders and thus reverse existing asymmetries in knowledge, skills and access to technology. Importantly, capacity development efforts must focus not only on capacity to conduct science, but also on capacity for all stakeholders to understand the societal relevance of science and to use science to make more informed decisions for sustainable development. In the vision of the Decade, capacity development efforts should aim at not only scientists, but also the end-users of knowledge such as governments and policy-makers.

6. The ODIS/Ocean InfoHub combined initiative will build a new approach to access to and use of the ocean data and information resources as well as a new global architecture to enable equitable participation of user communities across all sectors participating in the UN Ocean Decade.

Background for an expanded project

7. Pursuant to IOC Assembly decisions IOC-XXX/7.2.2 and IOC-XXX/11.1, a proposal for the development of the IOC Ocean InfoHub (OIH) (powered by a proof-of-concept ODIS architecture) was submitted to the Government of Flanders (Kingdom of Belgium) within the framework of the
Flanders-UNESCO Trust Fund for Science (FUST) and was approved at the end of 2019 as a three-year project (2020–2022) starting in April 2020. With the funding made available, the project will be able to develop the OIH in three regions: Latin America (IOCARIBE and additional LAC Member States), Africa and Pacific SIDS.

8. In this new initiative, the Ocean InfoHub Project will: (i) establish and anchor a network of regional and thematic nodes that will contribute to the transfer of marine technology (TMT) by enhancing shared scientific and technical capacities to render a wide range of data and information products and services; (ii) develop a proof-of-concept for an underlying Ocean Data and Information System architecture (ODIS-Arch) to enable scalable development of the global Ocean InfoHub and interoperability with local, regional and thematic data and information infrastructures; and (iii) promote and foster awareness and collaboration with established organizations and systems providing enabling support to the marine community, connecting contributors and users with the resources to support their efforts.

9. Within the proposed new initiative, OIH will create an ecosystem wherein stakeholders can provide, discover and use diverse content and services in a coherent and easily implementable manner. The project will thus promote closer interaction across regions and themes, leading to improved mutual understanding and collaboration as well as to strengthening of inter-, multi- and transdisciplinary science, technology and innovation systems and policies. The proof-of-concept for an underlying Ocean Data and Information System reference architecture (ODIS-Arch) will be applicable for the UN Decade of Ocean Science for Sustainable Development. It will build the foundations for a totally new IOC Ocean Data and Information System (ODIS).

10. In contrast to many existing systems for capacity transfer, the Ocean InfoHub will facilitate the transfer of valuable insight from groups that are typically seen as only recipients of data, information and knowledge products. The Ocean InfoHub will implement technologies to allow also indigenous groups to transfer their local knowledge such that it will impact networked information systems. During its course, the project will seek out and welcome partners who can contribute this kind of information, acknowledging and respecting indigenous ownership rights.

11. The project will also focus on early career scientists, prioritizing the transfer of content types of special use to them (travel/study grants, training and education opportunities, mentoring) as well as encouraging them to contribute content.

12. Attention will also be given to remedying gender disparity by enhanced focus on opportunities for women and girls. Leveraged activities in training, internships and mentoring initiatives will promote and encourage participation of women, particularly in scientific and technical disciplines and careers where women are currently underrepresented. In addition, project governance policy will strive to ensure gender balance and diversity in steering and advisory groups, and all other areas of project management.

13. At the early stage of planning, it became clear that the IOC Ocean InfoHub could be expanded to cover the needs of the UN Decade through a comprehensive collaborative effort and further regional expansion. In March 2020, member organizations of the UN-Oceans (inter-agency mechanism that seeks to enhance the coordination, coherence and effectiveness of competent organizations of the United Nations system and the International Seabed Authority) have been invited to submit descriptions of their online ocean-related products and services to ODIS Catalogue of Sources (ODISCat, http://catalogue.odis.org). This provides a first attempt at a “global map” of online data and information resources across the UN.

14. In addition, the first “Workshop on data sharing between UN agencies as a contribution to the UN Decade of Ocean Science for Sustainable Development” was held on 20 April 2020 as an online meeting. Participating UN agencies included FAO, IOC, ISA, UNDP, UNEP, UN ESCAP, UNFCCC, UN statistics, WCMC and WMO. The meeting decided to establish working groups to deal with
specific issues that will further close collaboration between the agencies on data sharing and interoperability, serving the needs of the UN Decade.

15. This effort will be further expanded in 2020–2022 to include non-UN IGOs, NGOs and the private sector. In addition, collaboration is being established with, *inter alia*, REVOcean and its Ocean Data Foundation to jointly develop user products and services based on the World Ocean Database/World Ocean Atlas among others.

Outlines of the Five-year costed proposal for the combined IOC Ocean Data and Information System and Ocean InfoHub (ODIS/OIH) Project

16. The infrastructure needs of the Decade and its long-term vision transcend the combined requirements of both ODIS and OIH projects. The proposed combined ODIS/OIH Project will deliver an integrated ocean data and information system based on the Ocean InfoHub networked data/information collection and delivery system. ODIS/OIH will deliver on global data and information needs but will also address the specific outputs defined in the IOC Capacity Development Strategy and deliver on the CHM/TMT, part of which will contribute to the BBNJ.

17. It is noted that the proposed combined ODIS/OIH Project builds on the foundations laid down by the IOC Ocean InfoHub Project funded by FUST. Ocean InfoHub is currently a 3-year project (2020–2022) designed to initially cover three regions (LAC, Africa, Pacific SIDS) with a focus on activities within the IOC mandate. The costed proposal for the combined ODIS/OIH Project provides a budget for the four existing IOC regional subsidiary bodies: IOCARIBE (with LAC extension), IOCAFIRICA, IOCINDIO, WESTPAC as well as other groups of countries that are currently not covered by a regional subsidiary body, i.e. IOC Group I Member States, IOC Group II Member States, IOC Group IV (Member States not included in IOCINDIO or WESTPAC), and Pacific SIDS. The calculations below are based on an optimal budget to stimulate the sustainability of the project on the long run.

Financial and administrative implications

18. The costing calculations for all the eight regional nodes of the ODIS/OIH Project are based on the original Ocean InfoHub costing for three regional nodes (LAC, Africa, Pacific SIDS). The proposed ODIS/OIH will use a work package structure similar to that of the IOC Ocean InfoHub project 2020–2022.

19. Calculations show that the total cost of the ODIS/OIH programme/project over a five-year period will be **US$ 37,184,000**, i.e. 4,648,000 per node.

20. At the level of each node the costing per year will be: *(in US$)*

| Operational cost per regional cost/year: | 672,000 |
| Contribution to common costs/year: | 200,750 |
| **Total cost per node per year** | **872,750** |

21. It is expected that regions will mobilize the necessary funds themselves (regions covered by IOC regional subsidiary bodies will use their existing governance mechanism while other regions will need to develop the necessary mechanism) and will contribute to a global “fund” to provide the common services required by the network of ‘regional’ nodes and the technology required to operate the global network (common costs referred to above). It is noted that the above operational costing includes staffing. Member States may therefore wish to provide staffing to their ‘regional’ node or to host the regional node infrastructure as an in-kind contribution.

22. A fully detailed document on the proposed ODIS/OIH Project showing a breakdown of costs is provided as an addendum to this document (Five-year costed proposal for the combined ODIS/OIH Project).
The IOC Committee on International Oceanographic Data and Information Exchange at its 26th session in February 2021 will be expected to plan (in close collaboration with the IOC Group of Experts on Capacity Development) and to start activities related to the ODIS/OIH Project within its 2021–2023 and 2023–2025 work plans, including the preparatory coordination, needs assessments and preparation of specifications of required technology development.

Financial implications of these preparatory activities will be reflected in the draft decision prepared by IODE at its 26th session in February 2021.

Proposed decision

In light of the foregoing, the IOC Executive Council may wish to consider Dec. EC-53/4.3 in the Action Paper (document IOC/EC-53/AP).