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INFORMATION DOCUMENT

IOC POTENTIAL CONTRIBUTION TO A NEW INTERNATIONAL INSTRUMENT UNDER UNCLOS ON THE CONSERVATION AND SUSTAINABLE USE OF MARINE BIOLOGICAL DIVERSITY OF AREAS BEYOND NATIONAL JURISDICTION

Summary

In preparation for a new legally-binding instrument under UNCLOS to conserve and sustainably use marine Biodiversity of areas Beyond National Jurisdiction (BBNJ), this document: (i) highlights areas of synergies amongst the elements identified under the BBNJ negotiations and IOC objectives; (ii) refers to the specific competencies of IOC in this area; and (iii) illustrates the experiences of IOC on the basis of concrete examples.

IOC could support BBNJ by providing: (i) a global data sharing platform and data clearing house mechanism for marine biodiversity data in all ocean basins, including areas beyond national jurisdiction; (ii) a mechanism for international cooperation in marine scientific research, coordination in global ocean observation, and development of standards, manual and guidelines and codes of conduct in marine scientific research and data sharing protocols; and (iii) a global network of regional centres to enhance capacity, by training the next generation of scientists and area managers in applying international standards and best practices.

Background

The UN General Assembly (Resolution 69/292) decided to establish, prior to holding an intergovernmental conference in 2018, a preparatory committee (PrepCom) to make substantive recommendations to the UNGA on the elements of a draft text of an international legally-binding instrument under the United Nations Convention on the Law of the Sea (UNCLOS) on the conservation and sustainable use of marine biological diversity of areas beyond national jurisdiction (BBNJ). Prepcom is open to all States Members of the United Nations, members of specialized agencies and parties to the UNCLOS Convention, with others invited as observers in accordance with past practice of the United Nations.

Negotiations shall address the topics identified in the package agreed in 2011, namely the conservation and sustainable use of marine biological diversity of areas beyond national jurisdiction, in particular, together and as a whole, marine genetic resources. Questions on the sharing of benefits, measures such as area-based management tools, including marine protected areas, environmental impact assessments and capacity-building and the transfer of marine technology will be part of the discussion. PrepCom is scheduled to meet during 10 working days in 2016 and in 2017 and will report to the UNGA on its progress by the end of 2017.

The first PrepCom meeting (28 March–8 April 2016) was conducted in a spirit of transparency and willingness to reach consensus on a new Treaty. While discussions on the scope thereof still need further discussion, there was a strong plea for building on, and not undermining, existing instruments and bodies and applying a pragmatic approach to benefit-sharing. In this view, many delegations highlighted the importance of science and further investments in R&D and international scientific collaboration, to improve the generation and sharing of knowledge. The best-available scientific information should form the basis for management decisions and conservation policies. PrepCom also recognized the need for a fund and the establishment of a global network of training centres to ensure development of capacity globally.

Member States further highlighted the importance to strengthen developing nations' capacity in marine science and technology, so that this new agreement under UNCLOS can be truly universal and inclusive. In this respect, the majority of States referred to the *IOC Criteria and Guidelines for the Transfer of Marine Technology* (IOC/INF-1203, 2005) as a guiding principle, recognizing marine technology includes more than physical infrastructure, but also access to data and information, manuals, guides, standards and best practices. Several States pointed to the mandate of the IOC of UNESCO as a clearing-house for transfer of marine technology, mentioning IOC's work in training and capacity development as well as the Ocean Biogeographic Information System as an effective global platform, involving a network of national authorities, for the sharing of research data and information.

Negotiations at the PrepCom touch on several areas of competency of the IOC especially those related to marine scientific research, capacity development and transfer of marine technology.

What is at stake for IOC?

Without pre-empting the results of the current negotiations, the objectives of a new instrument should be well in line with those of IOC. However, it is important to realize that IOC has currently no mandate to regulate or control any activities at sea and its resolutions have no binding character. This does not mean however that IOC cannot play a supporting role. There are many global and intergovernmental programmes under IOC that could immediately contribute to the BBNJ process without too much stretching of efforts or resources. In addition, IOC's mandate spans all ocean basins, including areas beyond national jurisdiction (ABNJ), which qualifies the Commission on the ground of geographic competency.

Not recognizing IOC's competencies and strengths in BBNJ risks undermining the organization and the many programmes supported by its Member States. The outcomes of discussions on BBNJ

will undeniably have an impact on the future of IOC. If IOC is called upon to play a role in the future legally-binding instrument, it would help strengthening existing programmes and building up more resources to improve and adapt to deliver specific services for BBNJ. If not, parallel activities will lead to increased fragmentation and less inter-operability leading to confusion, frustration and waste of resources.

Objectives of IOC

The IOC was created in 1960 to promote international cooperation and to coordinate programmes in research, services and capacity building, in order to generate knowledge 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. It is at the heart of IOC's vision that scientific understanding and systematic observations of the ocean should underpin sustainable development and global governance for a healthy ocean.

Based on IOC's Medium-Term Strategy 2014-2021[1] and UNESCO resolutions 37 C/5.21[2] and 38 C/5.17[3], UNESCO's 5th strategic objective and 3rd main line of action are well in line with BBNJ's objectives (see box).

UNESCO Strategic objective 5: Promoting international scientific cooperation on critical challenges to sustainable development

… (ii) promote the generation and sharing of knowledge in relation to natural resources, and capacity building through international scientific collaboration for the protection and sustainable management of the ocean and coasts, terrestrial ecosystems, biodiversity, freshwater security and the rational management of the Earth's geological resources. Implementation will include, inter alia, the coordination of monitoring activities, the production of scientific assessments, catalyzing international collaborative projects, capacity-building, and the designation of site-specific examples of sustainable development. The promotion of disaster risk reduction related to natural hazards will be pursued, in particular through building capacity in early warning systems and assessments for tsunamis and other ocean-related hazards, floods and landslides to reduce risks and enhance preparedness and resilience.

UNESCO's Main line of action 3: Promoting knowledge and capacity for protecting and sustainably managing the ocean and coasts

- Scientific understanding of ocean and coastal processes bolstered and used by Member States to improve the management of the human relationship with the ocean;
- Risks and impacts of ocean-related hazard reduced, climate change adaptation and mitigation measures taken, and policies for healthy ocean ecosystems developed and implemented by Member States;
- Member States' institutional capacities reinforced to protect and sustainably manage ocean and coastal resources.

Relevant competencies of IOC

IOC is a competent international organization under the UN Convention on the Law of the Sea (UNCLOS) for Marine Scientific Research (MSR) under Part XIII and Capacity Development (CD)

[1] http://unesdoc.unesco.org/images/0022/002282/228221m.pdf
[2] http://unesdoc.unesco.org/images/0022/002261/226162e.pdf
[3] http://unesdoc.unesco.org/images/0024/002433/243325e.pdf

and Transfer of Marine Technology (TMT) under Part XIV. This is also reflected in the functions of IOC, defined in the IOC Statutes[4] (Article 3c):

> *"respond, as a competent international organization, to the requirements deriving from the United Nations Convention on the Law of the Sea (UNCLOS), the United Nations Conference on Environment and Development (UNCED), and other international instruments relevant to marine scientific research, related services and capacity-building".*

Marine Scientific Research

The IOC is the primary international organization responsible for marine science in the UN system, as also recognized by UNCLOS (Annex 8 article 2)[5]. In the context of a new UNCLOS implementing agreement on BBNJ, Marine Scientific Research is likely going to be discussed as an activity related to accessing marine genetic resources, such as the collection, storage, and curation of biological samples, for which standards, guidelines and codes of conduct are necessary, as well as in terms of providing baselines and scientific evidence to support area-based management, such as the establishment of a network of marine protected areas, and environmental impact assessments.

Some States called for a technical and scientific body to support the new BBNJ instrument, referring as an example to the Subsidiary Body on Scientific, Technical and Technological Advice (SBSTTA) of the Convention on Biological Diversity (CBD). The IOC Executive Council at its 41st session (2008)[6] underlined the importance of ensuring proper co-ordination between the IOC Secretariat and the Secretariat of the CBD, taking into account IOC's competence and priorities.

The UK National Commission for UNESCO, in its evaluation of IOC's role in global marine science and oceanography[7], highlighted IOC's position in the UN system with a specific coordinating role for science advice and data and information sharing. In relation to ABNJ, in particular, the UK encouraged IOC to cooperate with NGOs and industry, where it can have a role as an 'honest broker'.

At the first PrepCom, some States called for open-access to research data. Timely, free and unrestricted international exchange of oceanographic data will be essential for the preservation of life, the mitigation of human-induced changes in the marine and coastal environment, as well as for the advancement of scientific understanding that makes this possible.

The International Oceanographic Data and Information Exchange (IODE) programme, established in 1961, enhances marine research, exploitation and development by facilitating the exchange of oceanographic data and information between participating Member States and by meeting the needs of users for data and information products.

The objectives of IODE are:

- to facilitate and promote the exchange of all marine data and information including metadata, products and information in real-time, near real time and delayed mode;
- to ensure the long-term archival, management and services of all marine data and information;
- to promote the use of international standards, and develop or help in the development of standards and methods for the global exchange of marine data and information, using the most appropriate information management and information technology;

[4] http://unesdoc.unesco.org/images/0012/001243/124367m.pdf
[5] http://www.un.org/depts/los/convention_agreements/texts/unclos/annex8.htm
[6] http://unesdoc.unesco.org/images/0017/001798/179861e.pdf
[7] http://www.unesco.org.uk/wp-content/uploads/2015/03/IOC-Policy-Brief.pdf

- to assist Member States to acquire the necessary capacity to manage marine data and information and become partners in the IODE network; and
- to support international scientific and operational marine programmes of IOC and WMO and their sponsor organizations with advice and data management services.

Capacity Development and Transfer of Marine Technology

There is general agreement in the PrepCom that Capacity Development (CD) and Transfer of Marine Technology (TMT) are essential to ensure universal and equitable participation of all States in a new BBNJ implementing agreement.

Of relevance is the IOC's Capacity Development Strategy 2015-2021[8] (IOC/INF-1332), which calls for:

> *"investing in people and the institutions of which they are part, enhancing access to scientific tools and methodologies, reinforcing IOC's capabilities to provide services to Member States, enhancing the communication between scientific and policy makers' communities, expanding ocean literacy in civil society and mobilizing resources to accomplish these goals.*

The new IOC Capacity Development website[9] acts as a gateway to the many (not only IOC) capacity building activities around the world, which could lead to improved coordination and cooperation.

Transfer of Marine Technology is often considered as a tool to support Capacity Development. A reference and guiding document, developed by the IOC Advisory Body of Experts of the Law of the Sea (IOC/ABE-LOS) is the *IOC Criteria and Guidelines on the Transfer of Marine Technology* (CGTMT)"[10] (2003). Since then, the CGTMT has been referenced in many UNGA resolutions (from A/RES/65 to A/RES/70), in the Rio+20 outcome document *The future we want* as well as in the 2030 Sustainable Development Goal 14[11]:

> *"to increase scientific knowledge, develop research capacity and transfer marine technology, taking into account the Intergovernmental Oceanographic Commission Criteria and Guidelines on the Transfer of Marine Technology, in order to improve ocean health and to enhance the contribution of marine biodiversity to the development of developing countries, in particular small island developing States and least developed countries".*

According to the CGTMT guidelines, the IOC (in collaboration with others) is mandated to implement a clearing-house mechanism for TMT. A key point is that the scope of TMT includes both physical (infrastructure) as well as numerical elements (data, knowledge), i.e.:

- *Information and data on marine sciences*
- *Manuals, guidelines, criteria, standards, reference materials*
- *Sampling and methodology equipment*
- *Observation facilities and equipment*
- *Equipment for in situ and laboratory observations, analysis and experimentation*
- *Computer and computer software, models and modeling techniques*
- *Expertise, knowledge, skills, know-how and analytical methods.*

While so far Member States have not been using IOC as a clearing-house for the transfer of physical infrastructure, the IOC has been successful in the transfer of research data, scientific

[8] http://unesdoc.unesco.org/images/0024/002440/244047m.pdf
[9] http://www.ioc-cd.org
[10] http://unesdoc.unesco.org/images/0013/001391/139193m.pdf
[11] http://www.un.org/sustainabledevelopment/oceans/

information and knowledge, as illustrated in the IOC brochure on TMT – Knowledge sharing and capacity development for sustainable ocean and coastal management (2015)[12].

In addition, article 276 of part XIV of UNCLOS encourages the establishment of regional centres, in order to stimulate and advance the conduct of marine scientific research, particularly by developing States, and to foster the transfer of marine technology. This call was reiterated in the outcome document of the Third International Conference on Small Island Developing States (SIDS) held in Samoa in September 2014. In 2002, the UN General Assembly (A/RES/57/141 paragraph 25), called upon IOC to act as the focal point to strengthen existing centres and to establish, where appropriate, such regional centres.

Examples of IOC initiatives in support of BBNJ

In general, the new agreement could strengthen a mechanism of benefit sharing through: enhanced international research coordination and cooperation; open-access to data, samples and knowledge; targeted training and sharing of expertise, manuals, guidelines and best practices, such as in deploying new observation technologies in ABNJ; research data management, taxonomy and species identification; marine spatial planning, ecosystem-based management, the development of marine conservation policies, amongst others.

The following information serves as an illustration of key IOC functions that are relevant to the BBNJ process:

Promoting international research coordination and cooperation

IOC's ocean science programme, often in collaboration with SCOR and ICES, runs several scientific expert working groups on relevant and emerging topics such as to investigate Climate Change and Global Trends of Phytoplankton in the Ocean (TrendsPO) (IOC/EC-XLIX/2 Annex 6).

IOC coordinates the Second International Indian Ocean Expedition (IIOE-2) 2015–2020, in co-sponsorship with the Scientific Committee on Oceanic Research (SCOR) and the Indian Ocean Global Ocean Observing System (IOGOOS), as formalized in IOC Resolution XXVII-1.

The Global Ocean Observing System (GOOS), established in 1991 by IOC Resolution XVI-8[13], is a system of programmes, co-sponsored by the World Meteorological Organization (WMO), the UN Environment Programme (UNEP) and the International council for Science (ICSU), that aims to build a coordinated, integrated and sustained global system for observations, modelling and analysis of marine and ocean variables to support operational ocean services worldwide, including the provision of accurate descriptions of the present state of the ocean, including living resources; continuous forecasts of the future conditions of the sea for as far ahead as possible, and to form the basis for forecasts of climate change. Building on the success of GOOS for the physical ocean environment —with the Global Climate Observing System (GCOS) providing the information for regular IPCC reports—, GOOS has expanded to include biogeochemistry and biology & ecosystems in order to address new emerging societal requirements related to ocean health. These will also contribute to support reporting and assessments under the UN World Ocean Assessment, the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES), the Sustainable Development Goals (SDG) and the biodiversity Aichi targets of the Convention on Biological Diversity (CBD). The goal of the Biology and Ecosystems' Panel is to implement a mature observing programme of at least one (or a set of) biological/ecosystem EOV(s) by 2019.

The Data Buoy and Cooperation Panel (DBCP)[14] maintains and coordinates all components of a network of over 1,250 drifting buoys and 400 moored buoys, which provides measurements

[12] http://unesdoc.unesco.org/images/0023/002325/232586e.pdf
[13] http://unesdoc.unesco.org/images/0008/000886/088628eb.pdf
[14] http://www.jcommops.org/dbcp/

such as sea-surface temperature, surface current velocity, air temperature and wind speed and direction.

Facilitating open-access to research data, samples and knowledge

Several States at the PrepCom called for open access to research data, samples and knowledge and the need for a data-sharing and clearing-house facility. A data clearing house provides data curation services, offering data in a user-friendly, standardized, quality controlled and integrated manner, serving the needs of its users. To prevent the loss of unique and expensive research data, especially publicly funded, data should be archived in recognized long-term data centres.

With regards to open-access to data, the principle of open-access to data generated under IOC programmes is defined in the *IOC Oceanographic Data Exchange Policy*[15], adopted by IOC Resolution XXII-6 (2003)[16]. Also in 2004, the OECD published its *Declaration on Access to Research Data from Public Funding*, - C(2004)31/REV1[17], which has been endorsed by the International Council for Science (ICSU).

Data sharing and clearing house facility

The IOC Committee on IODE is composed of the national coordinators in data and information management and governs the IODE programme and related projects. IODE has developed a network of over 80 National Oceanographic Data Centres, which mission is to provide access and stewardship for the national resource of oceanographic data. This effort requires the gathering, quality control, processing, summarization, dissemination, and preservation of data generated by national and international agencies.

The Ocean Biogeographic Information System (OBIS)[18], a project of IODE, serves as a global data sharing platform and clearing house for marine biodiversity (biogeographic and biometric) data in all ocean basins including in ABNJ. OBIS is also connected to the Biology and Ecosystem panel of the Global Ocean Observing System (GOOS BioEco) as well as to the Marine Biodiversity Observation Networks of the Group on Earth Observations (GEOBON-MBON).

OBIS currently integrates over 1,900 databases from 500 institutions in 56 countries (April 2016), which are connected through 20 national, regional or thematic nodes that act as data curation centres. OBIS provides open access to 46 million observations of 115,000 marine species and grows at a rate of 3 million records per year.

For ABNJ, OBIS holds 3 million observations of nearly 19,000 marine species of which 3,500 species are exclusively occurring in ABNJ. These data are integrated from 491 datasets provided by 210 institutions from 30 different countries.

OBIS holds data from all kinds of marine species including non-commercial and non-target fishing species, which allows a holistic (ecosystem) approach to measure impacts of activities in ABNJ. Over 100 scientific publications per year cite OBIS. The recent UNGA resolution A/RES/70/254[19] notes with appreciation the contribution of OBIS to marine scientific research.

OBIS promotes international cooperation, provides equitable access to data and benefits globally, enhances scientific understanding and knowledge generation and provides important baselines for marine biodiversity monitoring and assessment. The OBIS secretariat is hosted at the UNESCO/IOC project office for IODE in Ostend (Belgium) and provides training and technical

[15] http://www.iode.org/policy
[16] http://unesdoc.unesco.org/images/0013/001314/131400e.pdf
[17] http://acts.oecd.org/Instruments/ShowInstrumentView.aspx?InstrumentID=157
[18] http://www.iobis.org
[19] http://daccess-ods.un.org/access.nsf/Get?Open&DS=A/RES/70/235&Lang=E (para. 254)

assistance, guides new data standards and technical developments, and encourages international cooperation to foster the group benefits of the network.

OBIS contributes to several international processes, such as: CBD's Ecologically or Biologically Significant Areas (EBSA), CBD's Sustainable Ocean Initiative (SOI), FAO's Vulnerable Marine Ecosystems, the Biodiversity Observation Network of GEO. OBIS is a data core component of GEOSS; is an affiliate of GBIF; and provides baseline data for ocean assessments, such as the UN World Ocean Assessment, GEF's transboundary water assessment, and is listed as a key data source by IPBES.

In May 2013, technical experts at the UN Ad Hoc Open-ended Informal Working Group on BBNJ recognized IOC as an appropriate mechanism for data and information sharing in ABNJ[20]. The Deep Ocean Stewardship Initiative (DOSI) published a call in June 2014, signed by 85 deep-sea scientists and 14 international initiatives, to develop an international field programme in ABNJ and a coordinated data repository in conjunction with the International Seabed Authority and OBIS. Mengerink et al. (2014)[21] called for a funding mechanism as part of a benefit-sharing regime in ABNJ to support scientific research and information generation including support for a global deep-ocean data repository, such as OBIS.

Development and sharing of expertise, manuals, guidelines and best practices

IOC provides a forum for scientists and governments to develop standards, guidelines, codes of conduct and best practices in e.g. marine scientific research, data management and marine spatial planning.

An example are the guidelines regarding the Deployment of Profiling Floats in the High Seas within the Framework of the Argo Programme, adopted by Resolution EC-XLI.4[22] (2008), as an implementation of IOC Resolution XX-6[23].

IODE is the international platform for the development and promotion of standards and methods for the global exchange of marine data and information[24]. IODE also manages the OceanDataPractices[25] (ODPr) repository containing a wide variety of "best practice" manuals and guides related to oceanographic data and information management. It aims at enabling research groups that wish to start a new research project and wish to prepare a data management plan to search and find methodologies that have been used successfully by other projects.

IOC has lead the conceptual development of Marine Spatial Planning (MSP)[26], through its publication *Marine Spatial Planning: A step-by-step approach toward ecosystem-based management*[27] (IOC Manuals and Guides, 53; 2009) and *A Handbook for Measuring the Progress and Outcomes of Integrated Coastal and Ocean Management*[28] (IOC Manuals and Guides, 46; 2006).

Having first defined the main principles of MSP in 2009, for the last 10 years, IOC has documented progress in implementation of MSP at regional and national level through its IOC Manuals and Guides, 70[29], *A Guide to Evaluating Marine Spatial Plans*. The identified best practices could also be applied in the ABNJ context. Through its capacity development activities, IOC is

[20] http://daccess-ods.un.org/access.nsf/Get?Open&DS=A/AC.276/6&Lang=E (para. 128)
[21] Mengerink et al. (2014) A Call for Deep-Ocean Stewardship. *Science*. 344(6185):696-698
[22] http://unesdoc.unesco.org/images/0017/001798/179861e.pdf
[23] http://unesdoc.unesco.org/images/0011/001198/119813eo.pdf
[24] http://www.oceandatastandards.org/
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[28] http://unesdoc.unesco.org/images/0014/001473/147313e.pdf
[29] http://www.unesco-ioc-marinesp.be

training the next generation of MSP managers and experts, hereby enlarging its network of MSP practitioners. Examples are: (i) a hands-on exercise using OBIS and GIS in Marine Spatial Planning[30], available in English and Spanish, which has been taught at several CBD Sustainable Ocean Initiative regional workshops; or (ii) the UNEP-CAR/RCU (UNEP Caribbean/Regional Coordination Unit) Training of Trainers in Marine Protected Areas Management programme.

Capacity building through a network of regional centres

IODE's technical training programme called OceanTeacher[31] started in 2005 with an initial focus on oceanographic data and information management, and gradually started adding courses on all IOC activities such as operational oceanography, marine spatial planning, tsunami warning, taxonomy of harmful algal species, science and spatial data analysis. More than 1,000 graduate students and professionals from 120 countries have been trained so far. The UN General Assembly (A/RES/70/34)[32] expressed its appreciation to OceanTeacher and especially its expansion to a so called OceanTeacher Global Academy (OTGA) through the establishment of a network of Regional Training Centres (RTCs) in Latin America, Africa, Indian Ocean and Western Pacific, all of which will be connected through a common OceanTeacher Learning Management System (Moodle) and will use a multilingual approach to scientific and technical training. The advantage of Moodle is that the OceanTeacher online platform can act as a distributed system allowing other organizations to maintain and control the training content locally, and share it through the Moodle system.

The UNESCO/IOC Regional Network of Training and Research Centres on Marine Science, initiated by the IOC Sub-Commission for the Western Pacific (WESTPAC)[33], aims to improve regional capability and capacity in marine science in a sustainable and systematic manner, through the establishment of IOC Regional Training and Research Centres (RTCs) in national oceanographic institutes or universities, and regular provision in these Centres of training and research opportunities on their domains of focus to young scientists mainly from developing countries within and outside the region. These RTCs and their focus may vary from one to another as they are established based on regional priority interests and specialization of host national institutions. The overall goal of this project is to help advance marine science capacity in Asia and the Pacific through the transfer of technology. IOC has established the first Regional Training and Research Centres on Ocean Dynamics and Climate (First Institute of Oceanography, State Oceanic Administration of China, Qingdao, China), with regular trainings provided annually on ocean and climate models. Other RTCs are under development.

Other important training centres are those of POGO-SCOR, UN-Nippon Foundation, World Maritime University of IMO, International Ocean Institute, and regional centres of excellence such as those in the Partnerships in Environmental Management for the Seas of East Asia (PEMSEA).

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[32] http://daccess-ods.un.org/access.nsf/Get?Open&DS=A/RES/70/235&Lang=E (para. 34)
[33] http://iocwestpac.org/capacity-development/49.html