Task Teams of the IOC Group of Experts Capacity Development

Capacity Development requirements of Member States and implementation of a Clearing House Mechanism for the Transfer of Marine Technology

First Joint Meeting
Paris, France
13–14 March 2019
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VI. SURVEY RESULTS
1. OPENING OF THE MEETING

1.1 ADOPTION OF AGENDA AND TIMETABLE

This agenda item was introduced by Ms Francesca Santoro, IOC Secretariat. She explained that the meeting would review the results of the online survey implemented by the Task Team to identify Capacity Development requirements of Member States in relation to the IOC CD Strategy, focusing on SIDS and LDCs (TT-MSREQ), and Task Team on the implementation of a Clearing House Mechanism (CHM) for the Transfer of Marine Technology CHM/TMT “portal” and related activities, and to define the recommendations that would be submitted to the IOC Group of Experts on Capacity Development (GE-CD) in preparation for the 30th session of the IOC Assembly in June/July 2019. She then referred to the event webpage for the Provisional Timetable of the meeting: (http://www.ioc-unesco.org/index.php?option=com_oe&task=viewEventRecord&eventID=2417)

The Group adopted the Agenda and Timetable for the meeting.

2. SETTING THE SCENE

The TT-MSREQ chair Ms Pauhla McGrane, and the TT-CHM/TMT chair Ms Ann-Katrien Lescrauwaet took the floor and introduced Mr Ariel Troisi, Chair of the GE-CD. Mr Troisi gave a presentation to set the scene for the meeting.

He referred to documents IOC Capacity Development Strategy 2015-2021 (IOC/INF-1332) and IOC Criteria and Guidelines on the Transfer of Marine Technology (IOC/INF-1203).

Mr Troisi recalled that Capacity Development is a key component of all IOC programmes. He recalled the adoption by the IOC Assembly in 2015 of IOC Resolution XXVIII-2 on the IOC Capacity Development Strategy, noting the Vision Statement of IOC’s CD Strategy:

[...]

Through international cooperation, IOC aspires to help its Member States to collectively achieve the IOC’S high-level objectives (HLOs), with particular attention to ensuring that all Member States have the capacity to meet them.

And the Mission Statement:

The IOC will undertake relevant actions to assist Member States with developing and sustaining the necessary capacity to undertake activities necessary to achieve the IOC vision at the national level as well as at the international cooperation level.

He also recalled that the IOC GE-CD was established during the 29th session of the IOC Assembly, through the adoption of Decision IOC-XXIX/10.1. The main objectives of the GE-CD are to assist the global and regional programmes with the implementation of capacity development (CD) needs assessments, the development of related work plans, mobilization of resources, and provide advice on relevant methods and tools to deliver CD.

The Group is also tasked with advising the Assembly on, and starting implementation of, the Clearing House Mechanism for the Transfer of Marine Technology (CHM/TMT) as requested by the IOC Criteria and Guidelines on the Transfer of Marine Technology (IOC/INF-1203), making use, to the largest extent possible, of existing data and information systems already available at IOC.

In July 2017 IOC Circular Letter 2680 (CL-2680) was issued, inviting Member States, as well as IOC scientific, technical and regional subsidiary bodies to nominate members to the group.
The current membership of the IOC Group of Experts in Capacity Development is available to view online. 
(http://ioc-cd.org/index.php?option=com_oe&task=viewGroupRecord&groupId=372)

The First Session of the IOC Group of Experts on Capacity Development was held in Paris between 21-23 March 2018. The meeting was attended by 41 participants including members of the Group of Experts, representatives of partner projects and organizations involved in CD activities, and members of the IOC Secretariat.

The meeting reviewed progress made since the adoption of the IOC CD Strategy and its Implementation Plan (IOC/INF-1332 and IOC-XXIX/2 Annex 17). Representatives of the four regions and IOC global programmes were invited to present on the updated IOC Gap Analyses, along with progress made since the adoption of the IOC CD Strategy. Presentations were also provided by representatives from partner organisations, specifically related to relevant projects and methodologies.

In addition, the meeting split into three regional sub-groups (IOCAFRIA, IOCARIBE, WESTPAC) and one special group on the planned Clearing House Mechanism for the Transfer of Marine Technology (CHM/TMT). The 3 regional sub-groups discussed priority needs and ways in which the global programmes can assist the regions, as well as common use of existing IOC methods and tools that can contribute to developing capacity.

Given that the Gap Analysis was filled by the global and regional programmes, the importance of capturing the needs of SIDS, LDCs and the Member States that are currently not member of any of the 3 Sub-Commissions and IOCINDIO Regional Committee was considered as a priority follow-up action, in order to address the CD needs of all IOC Member States. The GE CD therefore decided to establish the following two inter-sessional Task Teams:

1. Task Team on Implementation of a CHM/TMT portal (TT CHM/TMT) and related activities, to further seek answers on the questions and issues formulated by the sessional working group on CHM/TMT and taking into account the Decade preparations. The Task Team will develop the scoping and needs assessment for the CHM (which should be developed, as much as possible, using existing information systems and sources), and (if possible) develop a proof of concept to be demonstrated at IOC-XXX.

2. Task Team to Identify CD requirements of Member States (TT MSREQ) in relation to the IOC CD strategy (taking into account the work already done and focusing on SIDS, LDCs and the Member States that are currently not member of any of the 3 sub-commissions and IOCINDIO and Black Sea regional committees) and taking into account the Decade preparations.

Mr Troisi explained that the first activity of the TTs was to jointly develop, an online survey (see Annex V).

The survey was open to all stakeholders including IOC National Focal Points (NFPs), representatives of institutes and regional programmes. Mr Troisi also recalled that Capacity Development is relevant for other IOC internal processes such as the Global Ocean Science Report (GOSR). He also stressed that while GOSR analyses Member States capabilities on ocean science, the work of the TT is to assess their needs, and these, of course, have to be combined to develop the CD work plans. He also mentioned that CD is an essential element of the UN Decade of Ocean Science for Sustainable Development, as well as central to other international processes such as the Intergovernmental Conference on an international legally binding instrument under the United Nations Convention on the Law of the Sea on the conservation and sustainable use of marine biological diversity of areas beyond national jurisdiction (BBNJ), and the World Ocean Assessment (Regular Process). He recalled the recently organized Multi-Stakeholder dialogue and capacity-building partnership event organized in New York on 24–25 January 2019, where the CD activities, including the TT-
MSREQ and the TT-CHM/TMT survey were presented. Mr Troisi presented the main outcomes of the survey highlighting that overall 49 responses were received, all IOC Regional Sub-Commissions (IOCAFRICA, IOCARIBE, and WESTPAC), and the IOC Regional Committee for the Central Indian Ocean (IOCINDIO) were represented, and that the results of the survey will be essential to define their priorities to be included in their CD work plans. Mr Troisi concluded his presentation by saying that the results of the survey will provide information on what are the CD activities that the regions are already working on, as well as will provide the background information to prepare the draft decision for the next session of the IOC Assembly.

Mr Evans noticed that the survey considers mainly the IOC processes, and that other international processes where CD is relevant (e.g. BBNJ, SDG14) are not considered. Considering that we will want to promote the role of the IOC CHM/TMT in those processes, and in case the survey will be repeated in the future, it might be useful to include questions related to those processes.

Mr Pissierssens, IOC Capacity Development Coordinator, responded by reiterating that the task for these TTs is to look at the IOC CD strategy implementation plan, and then to fulfil the requirements of Member States. We might consider what other partnerships with other agencies or processes we will want to establish in the future.

Mr Watanabe noticed that the survey seems inconclusive as all activities seem important, however Mr Troisi noticed that it will be relevant to see how the CD needs differ from region to region.

Ms Lescrauwaet stressed that the two TTs are working together for the analysis of the results in order to present a coherent picture of both the CD needs and how the CHM/TMT can be instrumental in supporting MSs to fulfil those needs.

3. Task Teams Progress: joint activities

3.1 JOINT SURVEY: ANALYSIS AND RESULTS

This agenda item was introduced by Ms McGrane. She introduced the terms of reference (TOR) of the TT-MSREQ. The TORs for the task team, established to identify Member States CD Requirements (TT MS REQ) as outlined in the GE meeting report, stated that: “The Group agreed to start work to identify CD requirements of Member States in relation to the IOC CD strategy (taking into account the work already done and focusing on SIDS, LDCs and the Member States that are currently not member of any of the 3 sub-commissions and IOCINDIO and Black Sea regional committees) and taking into account the Decade preparations”.

Ms McGrane explained that the SIDS are a distinct group of developing countries facing specific social, economic and environmental vulnerabilities. SIDS were first recognized as a special case both for their environment and development at the United Nations Conference on Environment and Development (UNCED), also known as the Earth Summit, held in Rio de Janeiro, Brazil (3–14 June 1992). This recognition was made specifically in the context of Agenda 21.

The United Nations Office of the High Representative for the Least Developed Countries, Landlocked Developing Countries and Small Island Developing States (UN-OHRLLS) which represents this group, currently lists 58 Small Island Developing States. SIDS currently consist of 38 UN Member States and 20 non-UN Member States which are not self-governing or non-independent territories, but which are members of UN regional commissions.

Three geographical regions have been identified for the location of SIDS, namely, the Caribbean, the Pacific, and the Atlantic, Indian Ocean, Mediterranean and South China Sea (AIMS). Each of these regions has regional bodies to which the respective SIDS may belong.
for purposes of regional cooperation. These are the Caribbean Community (CARICOM), the
Pacific Islands Forum (PIF) and the Indian Ocean Commission (IOC).

There are also sub-regional organizations for similar purposes. In addition, most (but not all)
SIDS are members of the Alliance of Small Island States (AOSIS), which performs lobbying
and negotiating functions for the SIDS within the United Nations system. In 2014, the
international community met in Apia, Samoa (1–4 September) for the Third International
Conference on Small Island Developing States the outcome of which was the SIDS
Accelerated Modalities of Action Pathway, commonly known as the SAMOA Pathway.

In the IOC context, the South Pacific SIDS (P-SIDS) represent a key group who, despite efforts,
are not currently well represented in the IOC and whose capacity development requirements
are not being addressed. The P-SIDS consist of 22 small island countries and territories in the
South Pacific, 14 of which are independent states. Four of these are included under WESTPAC
including Fiji, Solomon Islands, Samoa, Tonga. 10 countries are members of IOC. The four
who are also listed as WESTPAC members joined prior to 1982, the six who are not listed
joined IOC in the last 10 years. This suggests that P-SIDS are interested in IOC and there
probably needs to be a process to reach out to the 6 new members, the 4 countries who are
not members and the 8 territories administered by France, UK and USA.

Fortunately, the P-SIDS do have good regional collaboration: South Pacific Commission (the
main science agency); SPREP (a regional seas program); University of the South Pacific
(SPC-regional university with campuses in 12 countries). They are also organized through
various fisheries organizations especially for tuna (e.g. FFA) and regionally under the Pacific
Oceanscape program and the Marine Sector Working Group which like many of the other
groupings include Australia and New Zealand.

Least Developed Countries (LDCs) are defined as low-income countries confronting severe
structural impediments to sustainable development. LDCs are highly vulnerable to economic
and environmental shocks and have low levels of human assets. As of November 2018,
47 countries are classified as LDCs, of which 9 are also classified as SIDS. This list is reviewed
every three years by the Committee for Development (CDP), which also produces a triannual
economic overview of individual countries. Of the 47 countries classified as LDCs, 27 are IOC
Member States.

Ms McGrane introduced also the membership of the TT (see Annex IV) and illustrated the TT
work plan which consists of three phases, the first one dedicated to develop and circulate the
survey, the second one to analyze the results and identify the CD needs and areas of priority,
and the third one to provide input to the corresponding IOC Regional Sub-Commission and
Committee.

Ms McGrane continued by presenting both the online survey structure and the process of
promoting it to Member States. The online survey was jointly developed by the two task teams.
It was launched on the 5th October 2018 and remained open until 14th February 2019. IOC
Member States were invited to contribute to the survey via Circular Letter 2738 (Annex IV).
The CL also invited Member States to designate an IOC National Focal Point in Capacity
Development to enable more effective communication with the IOC on CD and CHM issues
and to assist with the future implementation of the IOC CD Strategy by member states. The
survey was open to all stakeholders including IOC NFPs, representatives of institutes and
regional programmes.

The survey consisted of three main sections including:

A. Personal Information (Q1-Q3)
B. Capacity Development (CD) Needs Assessment Survey (Q4-Q14)
C. Clearing House Mechanism (CHM) Survey (Q15-Q21)
The CD Needs Assessment survey consisted of 11 questions focused on capacity development and based largely on the IOC CD Strategy framework of 6 outputs and 13 activities (Annex VI). This was done in order to be able to match the CD requirements of individual countries, particularly SIDS and LDCs, with previous submissions from the regional commissions and global programmes.

The survey was actively promoted through a number of channels including direct contact with:

- IOC Focal Points of all member states, including SIDS and LDCs
- Focal Points of the Intergovernmental Coordination Group for the Pacific Tsunami Warning and Mitigation System (PTWS) and the Intergovernmental Coordination Group for the Tsunami and Other Coastal Hazards Warning System for the Caribbean and Adjacent Regions (ICG/CARIBE EWS)
- Representative bodies for the Pacific Islands e.g. Pacific Regional Environmental Programme (SPREP), Pacific Islands Forum Secretariat (PIFS) and Pacific Community (SPC)

In addition, the survey was announced at regional meetings and conferences to encourage contributions, particularly from SIDS and LDCs not members of IOC Regional Bodies. Initial results were presented at the IODE Conference in Japan (Tokyo, 20-22 February 2019). The full results will be presented at the 30th session of the IOC Assembly, which will be used to inform the IOC CD Strategy implementation plan and the future development of the TMT/CHM.

Ms McGrane then presented some key results. In total, 49 IOC member states, or just over 30% of the 149 IOC member states, responded to the survey.

Initial findings show that:

- Over 80% of respondents are members of IOC regional sub-commissions (IOCAFRICA, WESTPAC, IOCARIBE) or committees (IOCINDIO) with 18% of countries not part of any IOC regional groups.
- A total of 58% of submissions were made by designated IOC National Contact Points in Capacity Development, appointed for the purposes of the survey and for future engagement with the IOC on CD and CHM related matters
- Of the total number of countries that responded, 39% are classified as Small Island Developing States (SIDS) and Least Developed Countries (LDCs), with SIDS accounting for 23% and LDCs accounting for 12%.
- Just 3% were classified as both SIDS and LDCs.

Given that, a key focus of the survey was to specifically assess the capacity needs requirements of SIDS and LDCs, these results have been separated out to enable comparisons with the overall results. The sample size for the overall group is therefore a maximum of 49 responses and a maximum of 19 responses for the SIDS and LDCs group. Due to problems in analyzing the survey data from Survey Monkey it was not possible to analyze the results according to regional sub-commissions. Considering the relevance of presenting the results showing the priorities for the IOC Sub-Commissions and Committee in order to help them develop their CD work plans taking them into account, Mr Pissierssens offered to work on this type analysis during the meeting in order to have the possibility to present it during the meeting itself.

Ms McGrane concluded her presentation by identifying some issues for discussion, in particular related to how to better reach out to SIDS, and particularly to P-SIDS, and LDCs, how to best interact with CD focused global processes (e.g. BBNJ, FAO, Global Ocean Forum). The discussion then focused on the survey itself, and its design. Although the survey could be considered basic the decision to keep it concise was taken in the planning phase to encourage more countries to participate. 30% of Member States taking part in the survey is considered a
good result also when compared with other IOC surveys. It was suggested that the survey
could be repeated in 2 years time in order to include more details, and to capture what countries
are already doing in terms of CD. It would be important to capture, as well, who is providing
support in delivering the CD strategy. This is particularly relevant in consideration of the UN
Decade of Ocean Science. It would be important to identify other organizations that could
provide support, i.e. philanthropies.

Another issue mentioned was that multiple responses were received from some countries, and
this is because it was decided to open the survey not only to focal points but also to other
stakeholders. Another important element is one of language. It was suggested, also taking into
account what was done for the GOSR, that in the next cycle the survey should be available at
least in English, French and Spanish.

Another aspect is related to the need of clarifying the meaning of the terminology used to avoid
possible misinterpretations. It was suggested to look at the Tsunami Glossary that is a living
document, regularly updated, which includes the definition of technical terms, and information
on the global intergovernmental coordination groups for tsunami warning and mitigation.

Following this discussion Ms Lescrauwaet introduced the work of the TT-TMT/CHM, and she
presented the TOR of the TT:

“based on the Recommendations of the GE-CD, to develop the scoping and needs
assessment of the CHM (which should be developed, as much as possible, using
existing information systems and sources), and (if possible) develop a proof of
concept to be demonstrated at IOC-XXX”.

She then presented the TT membership (Annex III).

She then referred to part IXV of UNCLOS-CGTMT that defines marine technology as including
information, data, knowledge, equipment, infrastructure and expertise. She then introduced
the concept of CHM, and its objective.

The IOC CGTMT does not include a detailed definition of a CHM. According to the IOC
CGTMT, the primary objective of the CHM is to transfer MT to “developing States, particularly
landlocked and geographically disadvantaged States as well as other developing States which
have not been able to establish or develop their own capabilities in marine sciences, scientific
research, observations of the oceans and coastal areas, and related technology, or to develop
the infrastructure needed to achieve such ends”. Following the IOC CGTMT concept (2003),
CHM should: “..provide interested users in Members States with direct and rapid access to
relevant sources of information, practical expertise in the transfer of marine technology, as well
as facilitate effective scientific, technical and financial cooperation to that end (IOC CGTMT)”.
The CHM should “become the primary information repository to support the international
conventions and agreements and at the same time provide a platform to share information,
build partnerships and forge collaboration for the growth and transfer of marine technology in
developing countries (IOC 2017).

Hence, the CHM should fulfil both functions of providing information and facilitating technical
and scientific cooperation.

Ms Lescrauwaet, furthermore, introduced the guiding principles, processes and framework for
the development of the CHM/TMT according to previous IOC reports. These are:
- Part XIV of UNCLOS as overarching framework;
- The UN Decade of Ocean Science for a Sustainable Development (2030 Agenda);
- 2030 Agenda and the Sustainable Development Goals, in particular SDG14 but also
  transversally connected with nearly all SDGs;
The Global Ocean Science Report (GOSR) including the underlying information and data (metrics).

In particular, she stressed the characteristics that the CHM/TMT should be responsive to Member States’ requests, include two levels: top down and bottom-up, raise awareness about existing initiatives, identify needs and gaps where new initiatives could be established, and incentivise and empower stakeholders including industry, NGOs and others, to invest.

Ms Lescrauwaet then presented a definition of the term. The term ‘Clearing-house’ or ‘Clearing-house mechanism’ may create confusion as it originally referred to a financial mechanism in banking. In context of CD and TMT, CHM refers to a structure whose objective is to match demand and supply, collecting and distributing information and/or provide assistance. In practice, it is an online portal that develops functionalities to match specific demands for TMT to the existing offer.

As previously presented by Ms McGrane a joint online survey was developed by the two TTs. The second part of the survey aimed at understanding the needs of Member States in relation to the TMT/CHM, and in particular what information it should include, what is considered marine technology for the purposes of the IOC CGTMT, what is the best model for the TMT/CHM, indication of other portals that Member States consider best practice, what contribution Member States would give to the CHM/TMT and what are their needs.

She then presented the overall results which indicate that the most important information to be included in the CHM/TMT are ‘universities and other organisations offering study grants and facilities in marine science’, ‘opportunities for participation in projects or initiatives’, and workshops, seminars and training courses at global, regional and sub-regional level, in particular those offering financial support'. Furthermore, SIDS and LDCs in particular assigned a higher score to all marine technologies compared to the overall responses, and assigned particularly higher attention to ‘Online blended learning, ocean-related courses and MOOCs’, compared to overall responses. Although online or blended courses were not included in the initial criteria and guidelines for TMT, it is to be noticed that those guidelines were published in 2005, and that at the time those kind of courses were not much developed yet. Mr Lescrauwaet, then presented the preferences of Member States in relation to the preferred model for the TMT/CHM. A hybrid model of a central portal integrating regional and thematic portals is broadly preferred. This requires interoperability between the central portal services and the integrated web sources. When analysing the differences between SIDS and LDCs and other Member States the first group expressed a clear preference for a central portal, and also the need for a community platform. Finally she concluded by showing that overall, 35 % of respondents think the proposed CHM will be essential to further developing ocean science capacity in their country (score 10/10). 75% score its importance above or equal to 8/10.

Considering the responses from SIDS-LDC, a similar score is assigned for 8/10 and above (72%), however, up to 50% of respondents from SIDS-LDC value the CHM as ‘essential’ (score 10/10) to further developing ocean science capacity in their country.

Mr Troisi said that he noticed during the last meetings related to the new legal instruments for BBNJ, a strong interest in the recent progress, in particular the survey and the initiation of the development of a CHM/TMT, happening at the IOC. While there are some other issues that are more controversial, that is a clear agreement on the need and on the importance of the CHM/TMT in this context.

After this presentation, Mr Pissierssens showed the outcome of analysis of the survey results aggregated per Regional Sub-Commission, and within each Regional Sub-Commission per SIDS, LDCs and non-SIDS and non-LDCs. In order to present the survey results at the meetings of the Regional Sub-Commissions it was decided to make a table with the top three priorities for each of the survey questions (Annex VII). One interesting outcome was to notice
that the IOCARIBE SIDS expressed the need of having an Ocean Teacher Global Academy Regional Training Centre, although there is one already established at INVEMAR (Colombia). However, this RTC delivers courses in Spanish while the majority of the CARIBE SIDS are English-speaking countries. This showed the importance of looking carefully at the results aggregated in this way.

It was also noted that, if the survey will be repeated in the future, the National Coordinator(s) for CD, if nominated, should be the one(s) to respond after having consulted all the interested parties in their respective countries.

After all the presentations, the discussions on next steps started. It was decided that the report on this meeting, including the results of the survey, should be submitted to the thirtieth session of the IOC Assembly in June/July 2019. Furthermore, these results should be used by the regional sub-commission to develop their CD work plans. As a result of this meeting a draft decision on Capacity Development would need to be prepared, to be submitted to the Assembly.

It was further noted that obtaining responses from the SIDS, and in particular by the P-SIDS, had been a challenge. The meeting suggested to organize a dedicated meeting for P-SIDS, inviting also the other relevant organizations, active in the region.

4. **TT CHM/tmt**

4.1 TRANSFER OF MARINE TECHNOLOGY:
THE PILOT OF THE CHM FOR LAC

Mr Julian Pizzarro introduced this item. He explained that following the suggestion of the Task Team on the Clearinghouse mechanism, a pilot CHM was developed for the Latin America and Caribbean region by INVEMAR, in the context of the Caribbean Marine Atlas (CMA-II) project. 

The pilot “Clearing-House Mechanism LAC) (http://portete.invemar.org.co/chm) is a hybrid model, with a centralized portal that provides access to information sources identified by the users as most relevant (Databases on Training and Education resources, List of experts, Research vessels,..) and integrated from a number of existing web sources developed and maintained under IOC (OceanExpert, Ocean Teacher Global Academy, ODISCat,...) (Figure 1).

He then illustrated the technical development of the CHM-LAC that is based on a harvesting engine that feeds information into a database (NoSQL) which is then queried by the API web service to generate information for the user (mobile or PC). The harvesting engine `scrapes` the information from a set of web resources that include API webservice, html information, documents and spreadsheets that are accessible through the internet (Figure 2).
Figure 1. Concept of the Central Portal CHM for the LAC region, integrating existing web resources currently developed under IOC.

Figure 2. Diagram of the CHM-LAC harvesting and processing of data and information.

This architecture of the CHM-LAC (Figure 3) allows the following features:

- Thematic search
- Thematic explorer
- Detailed list of information by theme
Specific filter for each thematic search
Multiple language selection
Get information in different ways
Expose web service for interoperability
Access from mobile and web browser

Mr Pizzarro then showed the data source and mechanism of harvesting the information for each of the themes. In all cases, the information is taken from existing IOC databases, and the mechanism is webspaping. The only exception is for ‘Vessels’ where the information is taken from an spreadsheet provided by the IOCARIBE secretariat. In this case, in contrast with the other themes, the real data and not the metadata are uploaded in the platform.

Mr Pizzarro explained that there are two ways of developing a platform like this one:
1. getting all the information and importing all the data, this means not trusting the continuity of the data provider;
2. if there is trust in the provider the information present in the platform is the metadata, and in this way there is no need of importing a high volume of data.

The only issue in the second case would be linked to gaps in the information coming from the provider, but in this case there is specific technique to verify if the provider is active or not, and in this second case to notify the provider that the platform is not receiving the information.

Mr Pizzarro concluded his presentation by illustrating some possible next steps:
- Create administration interfaces
- Discover and harvest new data source(s) by theme(s)
- Design and validate statistics/reports interface
- Develop the CSW client to get geospatial data
- Validate the pilot project with the GE-CD and the TT-CHM/TMT

During the discussions, Mr Evans asked how to facilitate the search of information by the users. In particular, a scenario was imagined in which a potential user not only needs to look for
specific document or expert, but has a more articulated information need linking two or three thematics, such as experts, vessels, and existing research projects.

Mr Pizzarro replied that such search strategies are possible either through a human brokerage component or through Artificial Intelligence (AI). This type of search has not been implemented for the moment in this pilot CHM. Mr Evans mentioned as well that the CHM should make it possible to see what cruises are planned to pass in a specific place to find out if one can get a berth as a scientist. Mr Watanabe explained however that, in some cases, research institutions organizing oceanographic cruises do not make available the cruise planning in advance to allow for such brokerage, in which case the requests would have to be sent in order to be included in a waiting list for a suitable opportunity.

The discussion then focused on the differences between ODISCat (http://catalogue.odis.org) and the CHM. Mr Pissierssens explained that ODISCat is the first “product” to be developed within the framework of the IOC Ocean Data and Information system (ODIS).

The ODIS "Catalogue of Sources" aims to be an online browsable and searchable catalogue of existing ocean related web-based sources/systems of data and information as well as products and services. It aims at providing a reasonably complete overview of the online products and services developed and maintained by IOC Member States and this across all IOC programmes.

He continued by explaining that the future ODIS will be like a department store with different shops where ODISCat is the first shop. With the CHM LAC as the first regional prototype (proof-of-concept) further developments will better integrate and link the CHM LAC and ODISCat.

4.2 STATUS AND FEEDBACK ON REPORT ON CHM/TMT

Ms Lescrauwaet presented her analysis and review on existing CHM examples and on portals and platforms that are considered best practices. She informed the meeting that during the period June 2018-February 2019, several experts were consulted regarding current and future CHM developments in relevant global/regional processes and the features, format, requirements of the CHM.

Moreover, she listed the relevant global processes that actually consider and/or discuss the development of a CHM for capacity building or capacity development in the context of transfer of marine technology and/or technical and scientific cooperation:

- The UN Decade of Ocean Science for Sustainable Development (Decade Roadmap)
- The Intergovernmental Conference (IGC) on an international legally binding instrument under the United Nations Convention on the Law of the Sea on the conservation and sustainable use of marine biological diversity of areas beyond national jurisdiction (BBNJ) (conference summaries and President’s aid to negotiations document)
- The UN Convention on Biological Diversity – Clearinghouse mechanism for scientific and technical cooperation (marine and non-marine) – CHM online and operational
- The IOC Global Ocean Science Report-I and II (Standard reporting on capacity development needs and tools)

She also explained that most of these initiatives for the ocean and marine realm are still under discussion or in early stages of conceptual development. With regards to the possible functions

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1 UN Decade of Ocean Science (Julian Barbière), Global Ocean Science Report (Kirsten Isensee), Ocean Teacher Global Academy (Claudia Delgado), BBNJ-IGC on ILBI (Antoine Missonne, John Brincat), CBD secretariat (Han DeKoeijer), BioBridge Initiative (Camille Ponziani and Erie Tamale), EMODnet (Jan-Bart Calewaert), EurOcean (Ned Dwyer and Tina Mertens), Marine Training (Ann Vanreusel and Tim Deprez), Marine Regions (Simon Claus)
for a Clearinghouse mechanism under the ILBI-BBNJ, the IGC-1 (September 2018) suggested to draw from the following existing mechanisms: the Biosafety Clearinghouse under the Cartagena Protocol on Biosafety; the Ad Hoc Report of the IOC of UNESCO to the Preparatory Committee established by General Assembly resolution 69/292. As to the types and modalities for ‘capacity-building and TMT’, the IGC-1 suggested to draw, inter alia, from the IOC CGTMT and the annex III to the UNCLOS.

She then illustrated the list of existing platforms and CHMs that contribute to or fulfil Capacity Development Processes and Transfer of Marine Technology (Table 1).

<table>
<thead>
<tr>
<th>TITLE and Hosting institution</th>
<th>POLICY FRAMEWORK</th>
<th>MODEL</th>
<th>LINK</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>GLOBAL</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sustainable Development Explorer (SDG14) - United Nations University UNU</td>
<td>United Nations Sustainable Development Goals (SDG) Agenda 2030</td>
<td>Central Portal, platform offering information on Projects, Experts and Expertise, Articles</td>
<td><a href="https://unu.edu/explorer/sustainable-development-goal-14">https://unu.edu/explorer/sustainable-development-goal-14</a></td>
</tr>
<tr>
<td>UNFCCC CB Portal -UNFCCC Secretariat</td>
<td>United Nations Framework Convention on Climate Change</td>
<td>Central Portal, allow for interactive search and submitting information</td>
<td><a href="http://unfccc.int/capacitybuilding/activities.html">http://unfccc.int/capacitybuilding/activities.html</a></td>
</tr>
<tr>
<td>CBD CHM</td>
<td>United Nations Convention on Biological Diversity - CBD</td>
<td>Central Portal, allowing to submit information, with deep links to national CHM or portals</td>
<td><a href="https://chm.cbd.int">https://chm.cbd.int</a></td>
</tr>
<tr>
<td>ABS CHM – CBD Secretariat</td>
<td>CBD - Nagoya Protocol on Access and benefit Sharing</td>
<td>Central portal allowing to submit information, with deep links to national CHM or portals with links to national CHM or portals</td>
<td><a href="http://absch.cbd.int">http://absch.cbd.int</a></td>
</tr>
<tr>
<td>IPBES CB – IPBES Secretariat</td>
<td>CBD</td>
<td>Central portal with frequent updates from the secretariat, allowing to register capacity building needs</td>
<td><a href="https://www.ipbes.net">https://www.ipbes.net</a></td>
</tr>
<tr>
<td>BioBridge Initiative – CBD Secretariat</td>
<td>CBD</td>
<td>Central Portal, allowing to submit information on capacity building offers and needs, and includes the purposeful matchmaking in support of scientific and technical cooperation</td>
<td><a href="https://www.cbd.int/biobridge/about">https://www.cbd.int/biobridge/about</a></td>
</tr>
<tr>
<td>BBNJ – ILBI, Biodiversity of Areas Beyond National Jurisdiction International Legal Binding Instrument</td>
<td>United Nations Convention on the Law of the Sea UNCLOS</td>
<td>To be defined – the President’s aid to negotiations section V. Clearing House Mechanism (p.68) refers to IOC CHM on TMT and the IOC CGTMT (p.69)</td>
<td>n/a</td>
</tr>
<tr>
<td>IOC CHM on TMT</td>
<td>IOC Capacity Development Strategy</td>
<td>To be defined – referring to GCTMT</td>
<td>n/a</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>REGIONAL – SEA BASIN SCALE – REGIONAL SEAS CONVENTIONS</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Marine Knowledge Gate- EurOcean</td>
<td>Marine Knowledge 2020; European Framework Programmes</td>
</tr>
<tr>
<td>Marine research infrastructures database - EurOcean</td>
<td>Research vessels, satellites, data systems/providers, land based facilities</td>
</tr>
</tbody>
</table>
Ms Lescrauwaet then presented some of the conclusions from the consultations with existing initiatives and platforms. She started by presenting the CHM’s added value and benefits. Considering that expertise in managing information and technology may vary enormously from country to country a CHM can help ensuring that all governments (parties, stakeholders,..) have access to the information and technology they need. A CHM serves to promote and facilitate technical and scientific cooperation within and between countries, to develop a global mechanism for exchanging and integrating information and a human and technological network. Furthermore, it provides a ‘quality label’ reference for transparent, accountable, traceable information, issued by a common regulating body and following agreed quality standards, and, finally, support informed decision-making. As such, a CHM is created for the mutual benefit of all its participants and aims to create a level playing field and equal access to technology and information. Moreover, she highlighted that there is diversity in definitions, understanding and implementation of a CHM. A diversity of models, formats, operational systems and functionalities are in place to implement CHM for TMT. In spite of this diversity in models and functionalities, broad agreement and consensus seems to be available on some aspects of developing a CHM.

CHMs are efficient tools for TMT, provided they have a clear mandate/purpose, they fulfil a set of previously agreed objective(s) and serve clear target group(s), they are ‘Needs driven’, they have a clear purpose (e.g. publish existing opportunities, calls and funding opportunities), they coordinate CD efforts at regional/global level and articulate country needs, and finally, they offer matchmaking services. 

Furthermore, CHM objectives can be developed in an incremental way through a stepwise implementation of different components and services. This process needs clearly identified target users and different components and services may target different users. Finally it needs to be user-friendly, easy access, use clear and unambiguous semantics and terms. Ms Lescrauwaet referred then to the results of the survey where some of the concerns voiced by the respondents were related to the need of considering as a priority the user-friendliness in sharing of information on existing opportunities and available resources. Moreover, the respondents said that before establishing a CHM, there is strong need to clarify what are the benefits of CHM. There are tendencies from stakeholders, even at national level, to think that new instruments will lead to increase of expenditures that may draw away resources from the main object, being research. Ms Lescrauwaet continued by presenting the results of her review by explaining that the concept of CHM may take different shapes (table 2).

The models most encountered are

- A centralized portal in which the information is actively collected by a supporting secretariat from different providers and then processed and offered in a standardized manner to users, by the central service.
- A decentralized model that is nurtured by a network of national nodes or regional or thematic portals.
- Some models represent a hybrid of both in which a centralized service (secretariat) develops and maintains a central portal through which information is provided by regional

<table>
<thead>
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<th>MODEL</th>
<th>LINK</th>
</tr>
</thead>
<tbody>
<tr>
<td>Marine Training Portal - EMBRC</td>
<td>European Strategic Framework for Research Infrastructure ESFRI</td>
<td>Central Portal, offering training opportunities, events and materials, frequent updates from secretariat</td>
<td><a href="http://www.marinetrai">http://www.marinetrai</a> ning.org</td>
</tr>
</tbody>
</table>
or thematic portals/websources that collect data and information according to a set of previously agreed standards in which the collecting and processing is done.

From a technical point of view, the main issue is that of interoperability.

<table>
<thead>
<tr>
<th>Design and Development</th>
<th>Centralized model</th>
<th>Distributed model</th>
<th>Hybrid model</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interoperability</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Driven by demand</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Deep-links to regional/sectoral CHM portals</td>
<td></td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Data and information harvested</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Homogeneous functionalities and services</td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Homogeneous architecture</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>High volume of data ingestion</td>
<td>X</td>
<td></td>
<td></td>
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<tr>
<td>Highest Initial development effort</td>
<td></td>
<td></td>
<td>X</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Maintenance</th>
<th>Centralized model</th>
<th>Distributed model</th>
<th>Hybrid model</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cost of maintenance is shared</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Less delay in data updates</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Major and continuous efforts in updating information</td>
<td></td>
<td>X</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Governance</th>
<th>Centralized model</th>
<th>Distributed model</th>
<th>Hybrid model</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regional portals</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Supports Global Ocean community</td>
<td>X</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Ownership Overall, 35 % of respondents think the proposed CHM will be essential (score 10/10) to further developing ocean science capacity in their country. 75% score its importance above or equal to 8/10 (fig. 7).</td>
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</tr>
</tbody>
</table>

Considering the responses from SIDS-LDC, a similar score is assigned for 8/10 and above (72%), however, up to 50% of respondents from SIDS-LDC value the CHM as ‘essential’ (score 10/10) to further developing ocean science capacity in their country. and visibility

| Table 2. Comparison table of different CHM models (reviewed during the meeting with Mr Pizzarro) |  |  |  |
Many CHM or web-based platforms keep track of the offer and existing resources in (marine) technology. Fewer provide the possibility to register capacity development needs (e.g. IPBES). Very few CHM or web-based platforms seem to offer effective matchmaking services. Finally, a number of items require further discussion mainly in relation to the alignment with other initiatives (e.g. BBNJ-ILBI, UN Decade of Ocean Science, GOSR…), to define the target users and focus area of CHM-TMT, and how to get contributions for the CHM (include as a mandatory requirement or based on voluntary agreements). It was then highlighted that one important component of the CHM is the human brokerage, i.e. a secretariat that matches demand and offer, and that facilitates community engagement tools. The establishment of a secretariat clearly opens the discussion on the needed financial and human resources. Ms Lescrauwaet concluded this first part of the presentation by explaining that based on the insights and conclusions above, the TT-TMT-CHM proposes the following broad outlines for the design and implementation a CHM – TMT. First, it is proposed to follow a stepwise process of implementation of the CHM-TMT (fig. 4):

1. Establish CHM/TMT secretariat/ technical services;
2. Agree on models for collaboration for integrating sources and providers, governance model;
3. Design, develop and implement technical tools for harvesting web resources, starting with existing, identified resources both at global and regional and national scale, and making use of experiences (e.g. pilot CHM for LAC);
4. Develop CHM/TMT user interface web platform, starting with interactive search function from existing resources;
5. Evaluate need and identify best-practice models/formats for CHM/TMT community building tools: the development of the suite of tools should also be stepwise and needs-driven, and based on specific contributions from the MS and/or users’ community;
6. Evaluate need and identify best-practice model for implementation of a CHM/TMT Help Desk matchmaking service, based on matching demand and offer, from a range of resources and providers including those identified in step 1;

**Figure 4.** Main (potential) components of CHM-TMT including matchmaking services

The participants suggested that a new graph should be developed that describes the central portal, and its links to the regional hubs. The regional hubs will collect the information related to their respective regions and during the meetings of the IOC regional subsidiary bodies it should be asked if any of the Member States is willing to host the regional hub following the
example of the CHM LAC. The question of the high seas was raised. The central hub could contain the information on the high seas, or develop a thematic hub about it.

Ms Lescrauwaet also presented the Bio-Bridge Initiative (BBI) platform as the only example found in her review of a CHM that includes a human brokerage component. The Bio-Bridge web platform is a tool for facilitating technical and scientific cooperation. The platform is an integral part of the CHM to the CBD and is aligned with the Web Strategy for the Convention and its Protocols. The clearing-house mechanism is the main repository for any databases and case studies of relevance to the implementation of the Convention and its Protocols. The Bio-Bridge web platform links to these resources, providing a list of curated resources that are specifically relevant to technical and scientific cooperation. The web platform:

- Allows countries and relevant organizations to submit requests for assistance and offers of assistance online and announce existing opportunities;
- Facilitates access to a wide range of knowledge assets and curated resources;
- Supports communication and awareness raising efforts;
- Supports online discussion forums for knowledge sharing and exchange;

![SUBMIT INFORMATION](image)

![SEARCH INFORMATION](image)

**Figure 5. User’s interface of the Bio-Bridge Web Platform**

She also informed the participants that as a result of her discussion with BBI she found that BBI developed the services in-house with its own IT staff. The work effort was budgeted at approximately 6 months of development time. Moreover, to be adequately resourced BBI suggested a team of 5 minimum (a Programme Manager, an Operations Manager, someone responsible for the Help Desk requests and data input, an IT resource and a Communications Officer).

The discussion continued on the fact that the CHM is a very important tool for Member States to advertise and submit opportunities to create collaborations and partnerships, and in addition to web scraping there must be a possibility to manually enter and submit relevant information. The discussion continued on the need to allocate proper human and financial resources. Currently, there is no IOC staff dedicated to it. Mr Nolan brought the example of the Atlantic Seabed Mapping project, where a staff member is dedicated to inform about available berths on oceanographic cruises to maximize the opportunities to match this offer.
5. Conclusions and next steps

5.1 CONCLUSIONS FROM TASK TEAMS WORK

Mr Troisi, as chair of the GE-CD, took the floor to discuss how to prepare the input of the group to the next Assembly, taking into consideration the discussion and the work of the two TTs. In particular, for what regards the CHM, and the pilot for LAC, there is a need to develop a proper plan of action for the central node and regional node(s), with a cost-benefit analysis. Member States will have to be put in the position of deciding on next steps. The CHM development requires the writing of a dedicated project document (and proposal). It was proposed that the Assembly could task the GE-CD to draft the TORs and develop the cost benefit analysis to be presented at the next session of the IOC Executive Council.

IOCARIBE can continue the work on the pilot, but there is a need to have a clear plan on how to move from the pilot to the actual CHM. INVEMAR will produce a set of guidelines on how to develop the CHM from their lessons learned.

IOCARIBE should be requested to adopt the pilot CHM as its own project. Although there are some LAC that are not part of IOCARIBE, they should be invited to participate in this pilot project.

Mr Pizzarro noted that it was relatively easy to identify the service providers for IOCARIBE Member States but it might be complicated in the case of non-Member States. It was suggested that other organizations active in the region, such as the Permanent Commission for the South Pacific (CPPS) could be invited to participate.

Regarding the next steps for the TTs the GE-CD can adjust the role and tasks of the TTs based on the work already done. One specific task could be to support the regional subsidiary bodies in their work of implementing the recommendations formulated in this meeting. A decision will also have to be taken on the next cycle of the survey, on its format and content.

5.2 PREPARATION FOR IOC-XXX ASSEMBLY

Mr Pissierssens informed that the report of this meeting should be finalized for the Assembly. It will be an information document, so the deadline for submission is 15th May. The TTs should review the report, which should also be submitted to the GE-CD.

5.3 COMMITMENTS AND AGREEMENTS TAKEN

1.) The discussion held during this meeting led to the formulation of a set of recommendations to be submitted to the next session of the IOC Assembly in the form of a draft decision to be included in the Action Paper

2.) Ensure coordination of the work of the GE and its TTs with GOSR and CD aspects of the UN Decade of Ocean Science

3.) Repeat the CD survey biannually, possibly including CD implementation impact monitoring/metrics, also taking into account other methods such as regional reviews, science conferences etc.

4.) Identify CD efforts of other organizations and seek complementary cooperation

5.) Link with other global, regional and national processes and strengthen the relationships with philanthropic, private partnerships and other regional organizations
6.) Urge Member States to nominate IOC National Focal Points for Capacity Development who will be responsible for the coordination of their country’s participation in IOC’s CD activities

7.) Encourage the regional subsidiary bodies as well as regional components of global programmes to promote contributions to the biannual survey

8.) Organize a regional conference on CD requirements of Pacific SIDS involving IOC Member States as well as other stakeholders active in the region

9.) Present the report of the survey to IOC regional subsidiary bodies as well as global programmes inviting them to consider the results when drafting their CD work plans and activities

10.) Match CD activities of global and regional bodies with needs of MS and summarize high level results using infographics.

11.) Survey results suggest MS preference for hybrid model with central portal linking to regional and thematic web resources on the basis of interoperability-human brokerage element to be further investigated.

12.) Recommend continued development of regional prototypes using the LAC prototype as an example, as well as establish a global secretariat.

6. CLOSE OF THE MEETING

The two TT chairs, Ms McGrane and Ms Lescrauwaet closed the meeting by thanking the participants, the Secretariat and the GE-CD chair, Mr Troisi for their contributions.
ANNEX I

AGENDA

1. OPENING OF THE MEETING

2. SETTING THE SCENE
   2.1 THE IOC GROUP OF EXPERTS (GOE) ON CAPACITY DEVELOPMENT (CD) IN THE CONTEXT OF THE IOC CD STRATEGY
   2.2 REFLECTION ON THE FIRST MEETING OF THE GOE
   2.3 PURPOSE AND EXPECTED OUTCOMES OF THE ESTABLISHED TASK TEAMS
   2.4 CAPACITY DEVELOPMENT IN OTHER INTERNATIONAL PROCESSES

3. TASK TEAMS PROGRESS: JOINT ACTIVITIES
   3.1 JOINT SURVEY: ANALYSIS AND RESULTS

4. TT MSREQ PROGRESS
   4.1 DISCUSSION AND CONCLUSIONS

5. TT TMT-CHM PROGRESS
   5.1 STATUS AND FEEDBACK ON REPORT
   5.2 TRANSFER OF MARINE TECHNOLOGY: THE PILOT OF THE CHM FOR LAC
   5.3 DISCUSSION AND CONCLUSIONS

6. TASK TEAMS EDITORIAL WORK

7. TASK TEAMS REPORT
   7.1 NEXT STEPS AND GUIDANCE FOR THE UPCOMING MEETINGS OF THE IOC REGIONAL SUB-COMMISSIONS

8. CONCLUSIONS AND NEXT STEPS
   8.1 CONCLUSIONS FROM TASK TEAMS WORK
   8.2 PREPARATION FOR IOC 30 GENERAL ASSEMBLY
   8.3 COMMITMENTS AND AGREEMENTS TAKEN

9. CLOSE OF MEETING
**LIST OF PARTICIPANTS**

### TT CHM/TMT

Ms Arame KEITA  
Head of Information and Documentation Unit  
Ministère de la Pêche et de l'Economie maritime.  
BP 17677  
Dakar Senegal  
Tel: +221 77 633 49 37  
Email: arame.keita@gmail.com

Dr Viktor KOMORIN  
Director  
Ukrainian Scientific Centre of Ecology of the Sea  
89, Frantsuzsky Blvd.  
Odessa Odessa oblast 65009  
Ukraine  
Tel: +380 4826 36622  
Email: vkomorin@gmail.com

Dr Ann-Katrien LESCRAUWAET  
International Liaison Officer  
International Affairs  
Vlaams Instituut voor de Zee  
Wandelaarkaai 7  
Oostende 8400  
Belgium  
Tel: +32475493452  
Email: annkatrien.lescrauwaet@vliz.be

Ms Allison REED  
US Department of State  
2201 C St NW  
Washington, DC United States of America  
Email: ReedAD@state.gov

MSc Ariel TROISI  
Head Oceanography  
Oceanography Department  
Servicio de Hidrografía Naval  
Avda. Montes de Oca 2124  
Buenos Aires C1270ABV  
Argentina  
Tel: +54 11 4301 3091  
Email: ahtroisi@gmail.com

### Mr Tatsuya WATANABE

Director for Deep Sea-Earth Scientific Research  
Research and Development  
Ministry of Education, Culture, Sports, Science and Technology, Kasumigaseki 3-2-2 Kasumigaseki  
Chiyoda-ku Tokyo 100-8959  
Japan  
Tel: +81 367344454  
Email: tat-wat@mext.go.jp

### TT CD requirements

Ms Lorraine BARROW  
Librarian  
Information Centre - Library  
Institute of Marine Affairs  
Hilltop Lane  
Chaguaras Trinidad Trinidad and Tobago  
Tel: +868 6344291  
Email: lbarrow@ima.gov.tt

Mr Alan EVANS  
Marine Science Policy Adviser  
International and Strategic Partnerships Office  
National Oceanography Centre, Southampton Waterfront Campus  
Southampton Hampshire SO14 3ZH  
United Kingdom of Great Britain and Northern Ireland  
Tel: +44(0)2380 596552  
Email: alje@noc.ac.uk

Dr Pauhla MCGRANE  
National Coordinator Strategic Marine Alliance for Research and Training  
Strategic Marine Alliance for Research and Training (SMART)  
Galway-Mayo Institute of Technology  
GMIT Galway Campus Dublin Road  
Galway Ireland H91 T8NW  
Ireland  
Email: pauhla.mcgrane@gmit.ie
Annex II – page 2

Dr Glenn NOLAN
Director
EuroGOOS AISBL
Avenue Louise 231
Brussel 1050
Belgium
Email: glenn.nolan@eurogoos.eu

Secretariat

Dr Kirsten ISENSEE
Project Specialist - Ocean Carbon Sources and Sinks
Ocean Science Section
Intergovernmental Oceanographic Commission of UNESCO
7, place de Fontenoy
Paris cedex 07 75732
France
Tel: +33 (0)1 45681814
Email: k.isensee@unesco.org

Mr Peter PISSIERSENS
Head, IOC Project Office for IODE, Oostende, Belgium and IOC capacity development coordinator

UNESCO / IOC Project Office for IODE
Wandelaarkaai 7
Oostende 8400
Belgium
Tel: +32 59340158
Email: p.pissierssens@unesco.org

Dr Francesca SANTORO
UNESCO / IOC Project Office for IODE
Wandelaarkaai 7
Oostende 8400
Belgium
Tel: +33 (0) 1 45683952
Email: f.santoro@unesco.org

Invited expert

Mr Julian PIZARRO
Instituto de Investigaciones Marinas y Costeras José Benito Vives de Andreis
Calle 25 No. 2-55, Playa Salguero, Rodadero
Santa Marta D.T.C.H. Magdalena
Colombia
Email: julian.pizarro@invemar.org.co
ANNEX III

TT MEMBERSHIP

**TT-CHM/TMT**

Ms. Ann-Katrien LESCRAUWAET (Chair)
International Liaison Officer
International Affairs
Vlaams Instituut voor de Zee
Wandelaarkaai 7
Oostende 8400
Belgium
Email: annkatrien.lescrauwaet@vliz.be

Mr. Werner EKAU
Head of Department
International Ocean Institute Center
Germany
c/o Leibniz Center for Tropical Marine Ecology
Fahrenheitstr. 6
Bremen 28359
Germany
Email: wekau@zmt-bremen.de

Ms. Harriet HARDEN-DAVIES
Australian National Centre for Ocean Resources and Security
University of Wollongong
School of Law, University of Wollongong,
Wollongong, NSW 2500 Australia
Wollongong NSW 2500
Australia
Email: h.r.hardendavies@googlemail.com

Ms. Arame KEITA
Head of Information and Documentation Unit
Ministère de la Pêche et de l’Economie maritime.
BP 17677
Dakar Senegal
Email: arame.keita@gmail.com

Mr. Viktor KOMORIN
Director
Ukrainian Scientific Centre of Ecology of the Sea
89, Frantsuzsky Blvd.
Odessa Odessa oblast 65009
Ukraine
Email: vkomorin@gmail.com

**Ms. Pauhla MCGRANE**
National Coordinator Strategic Marine Alliance for Research and Training
Strategic Marine Alliance for Research and Training (SMART)
Galway-Mayo Institute of Technology
GMIT Galway Campus Dublin Road
Galway Ireland H91 T8NW
Ireland
Email: pauhla.mcgrane@gmit.ie

**Ms. Allison REED**
US Department of State
2201 C St NW
Washington, DC United States of America
Email: ReedAD@state.gov

**Mr. Ariel TROISI**
Head Oceanography
Oceanography Department
Servicio de Hidrografía Naval
Avda. Montes de Oca 2124
Buenos Aires C1270ABV
Argentina
Email: ahtroisi@gmail.com

**Mr. Tatsuya WATANABE**
Director for Deep Sea-Earth Scientific Research
Research and Development
Ministry of Education, Culture, Sports, Science and Technology, Kasumigaseki
3-2-2 Kasumigaseki
Chiyoda-ku Tokyo 100-8959
Japan
Email: tat-wat@mext.go.jp

**Ms. Xuan ZHU**
Researcher
Marine Environment and Resources Research Division
China Institute for Marine Affairs
No. 3 Maguanying Jiayuan, Fengtai District, Beijing
Beijing 100161
China
Email: zhuxuan@cimamnr.org.cn
Ms. Pauhla MCGRANE (Chair)
National Coordinator Strategic Marine Alliance for Research and Training
Strategic Marine Alliance for Research and Training (SMART)
Galway-Mayo Institute of Technology
GMIT Galway Campus Dublin Road
Galway Ireland H91 T8NW
Ireland
Email: pauhla.mcgrane@gmit.ie

Ms. Lorraine BARROW
Librarian
Information Centre - Library
Institute of Marine Affairs
Hilltop Lane
Chaguaramas Trinidad Trinidad and Tobago
Email: lbarrow@ima.gov.tt

Mr. Nic BAX
CSIRO Oceans and Atmosphere (Hobart)
GPO Box 1538
Hobart TAS 7001
Australia
Email: Nic.Bax@csiro.au

Mr. Alan EVANS
Marine Science Policy Adviser
International and Strategic Partnerships Office
National Oceanography Centre,

Southampton
Waterfront Campus
Southampton Hampshire SO14 3ZH
United Kingdom of Great Britain and Northern Ireland
Email: alje@noc.ac.uk

Ms. Ann-Katrien LESCRAUWAET
International Liaison Officer
International Affairs
Vlaams Instituut voor de Zee
Wandelaarkaai 7
Oostende 8400
Belgium
Email: annkatrien.lescrauwaet@vliz.be

Mr. Glenn NOLAN
Director
EuroGOOS AISBL
Avenue Louise 231
Brussel 1050
Belgium
Email: glenn.nolan@eurogoos.eu

Mr. Andi Eka SAKYA
Principle Engineer
Badan Pengkajian dan Penerapan Teknologi, Agency for the Assessment & Application of Technology
JL. MH.Thamrin no 8
Pusat Jakarta 10340
Indonesia
Email: andi.eka.sakya@gmail.com
IOC Circular Letter No 2738
(Available in English only) 4 October 2018

To: IOC National Official Coordinating Bodies for Liaison with IOC
cc: Permanent Delegates / Observer Missions to UNESCO of IOC Member States
National Commissions for UNESCO of IOC Member States

Subject: IOC Capacity Development Needs Assessment Survey and Transfer of Marine Technology Clearing House Mechanism Needs Survey

Capacity Development (CD) is an essential tenet of IOC’s mission. It enables all Member States to participate in and benefit from ocean research and services that are vital to sustainable development and human welfare on the planet. The vision contained in the IOC Capacity Development Strategy 2015–2021 identifies capacity development as the primary catalyst through which IOC will achieve its four high level objectives in the current IOC Medium-Term Strategy.2021–2014

The Capacity Development Needs Assessment Survey is organised by the IOC Group of Experts on Capacity Development and is designed to assess the capacity development requirements of member countries, specifically Small Island Developing States (SIDS) and Least Developed Countries (LDCs), in order to contribute to the implementation plan (under development) of the Capacity Development Strategy of IOC.

In addition, a Clearing House Mechanism (CHM) is proposed as a tool ‘to provide interested users in Member States with direct and rapid access to relevant sources of information, practical expertise in the Transfer of Marine Technology (TMT), as well as to facilitate scientific, technical and financial cooperation to that end’. The overarching legal framework for this CHM is UNCLOS (Part XIV). Following the IOC Criteria and Guidelines on the TMT (CG TMT), marine technology refers to ‘instruments, equipment, vessels, processes and methodologies required to produce and use knowledge to improve the study and understanding of the nature and resources of the ocean and coastal areas’. In order to assist us in developing the CHM and assure all desired information is provided by the CHM, the survey includes a few questions on this as well.

In order to enable us to communicate effectively on the results of the survey, to assist with the implementation plan and its future implementation in Member States, it is recommended that you designate an “IOC CD focal point”. Information on the name, position, institution and email of the designated person should be emailed to Mr Peter Pissierssens, IOC capacity development coordinator (p.pissierssens@unesco.org). In addition, the designated person should register in the OceanExpert database (http://www.oceanexpert.net) if not already there and let us know when this has been done, preferably by 5th December 2018 at the very latest.

The survey should be filled online at: https://www.surveymonkey.com/r/IOC-CD2018. For ease of discussion with all relevant stakeholders in your country, a PDF version of the survey is also attached hereafter. Questions and requests for guidance should be directed to Mr Peter Pissierssens (p.pissierssens@unesco.org) and/or Ms Pauhla McGrane (Chairperson of the
Intersessional Task Team to identify CD requirements of SIDS and LDC Member States in relation to the IOC Capacity Development Strategy, pauhla.mcgrane1@gmail.com) and/or Ms Ann-Katrien Lescrauwaet (Chairperson of the Intersessional Task Team on implementation of a TMT/CHM portal, annkatrien.lescrauwaet@vliz.be).

We thank you in advance for taking the time to complete this survey. Your contribution will help us to better map CD needs worldwide and meet your country’s needs. This survey should take about 20 minutes to complete and is open until the 5th December 2018.

Yours sincerely,

[signed]

Vladimir Ryabinin,
Executive Secretary
ANNEX V

SURVEY STRUCTURE AND QUESTIONS

Section 1: Personal Information

1. Please provide some personal information on yourself (please note this information will only be used to follow up or clarify any suggestions you make):

Name
Institution
Country
Email Address
Your Position

2. If applicable, please indicate below which IOC Regional Sub-Commission or Committee your country is a member of

- IOC Sub-Commission for Africa and the Adjacent Island States (IOC/Africa)
- IOC Regional Committee for the Central Indian Ocean (IOC/INDIO)
- IOC Sub-Commission for the Western Pacific (WESTPAC)
- IOC Sub-Commission for the Caribbean and Adjacent Regions (IOC/ARIBE)

- None of the above

3. Are you replying as the designated national focal point on Capacity Development or in another capacity?

- National Focal Point for Capacity Development
- Another capacity

If you are replying in another capacity please specify:
Section 2: Capacity Development Needs Assessment

4. Please select the 5 most important capacity development needs in your country and rank on a scale of 1 to 5, with 5 indicating the most important.

<table>
<thead>
<tr>
<th>Capacity Development Need</th>
<th>1 (least important)</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5 (most important)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Higher education and academic courses in ocean science</td>
<td></td>
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<tr>
<td>Advanced professional development training (specific short courses, technical training etc.)</td>
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<tr>
<td>Qualified ocean science professionals</td>
<td></td>
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<tr>
<td>Research vessels and inshore boats</td>
<td></td>
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<td></td>
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<tr>
<td>Ocean observation equipment (buoys, AUVs, tide-gauges etc.)</td>
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<td></td>
<td></td>
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<tr>
<td>Remotely sensed satellite data</td>
<td></td>
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<tr>
<td>Laboratory equipment and facilities</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Ocean science sampling equipment and instrumentation</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Data access and management</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Digital infrastructure (computers, software etc.)</td>
<td></td>
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<td></td>
<td></td>
<td></td>
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<tr>
<td>Internet connectivity</td>
<td></td>
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<tr>
<td>Strengthened international partnerships and regional networks for collaboration</td>
<td></td>
<td></td>
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<tr>
<td>Development of national ocean research policy</td>
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<tr>
<td>Increased awareness, ocean literacy and public outreach</td>
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<tr>
<td>Gender equality</td>
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</tr>
</tbody>
</table>
5. In terms of developing capacity in human resources, how useful are the following for your country or region?

<table>
<thead>
<tr>
<th>Establishment</th>
<th>Essential</th>
<th>Very Useful</th>
<th>Of Some Use</th>
<th>Not Necessary</th>
<th>Already exists</th>
</tr>
</thead>
<tbody>
<tr>
<td>Establishment of consortia of higher education in your country or region</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Increased collaboration with UNESCO Chairs and IOC</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Support for organization of training courses, workshops and summer schools relevant to the IOC mandate</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Establishment of an internship/fellowship programme</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Access to on-board, research vessel-based training</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Establishment of a visiting lecturer programme</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Establishment of regional training (and research) centres relevant to the IOC mandate</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Establishment of a mentoring programme</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Development of IOC alumni networks</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Establishment of &quot;young scientist&quot; awards</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Promoting gender equality and participation of women in ocean science research</td>
<td>Essential</td>
<td>Very Useful</td>
<td>Of Some Use</td>
<td>Not Necessary</td>
<td>Already exists</td>
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</tr>
<tr>
<td>Sharing of training materials</td>
<td></td>
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<tr>
<td>Establishment of a travel grant “fund”</td>
<td></td>
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</tr>
</tbody>
</table>

Other suggestions?

6. In terms of increased access to physical infrastructure, how useful are the following for your country or region?

<table>
<thead>
<tr>
<th>Establishment and maintenance of a register of regional scientific research infrastructure (facilities, instruments, vessels) to facilitate access</th>
<th>Essential</th>
<th>Very Useful</th>
<th>Of Some Use</th>
<th>Not Necessary</th>
<th>Already exists</th>
</tr>
</thead>
<tbody>
<tr>
<td>Expanded access to regional scientific research infrastructure</td>
<td></td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

Other suggestions?
7. If applicable, how would you rate your country’s needs with regard to strengthening coordination with global, regional or sub-regional IOC communities and local networks?

<table>
<thead>
<tr>
<th>Improved staffing of secretariat of regional sub-commissions</th>
<th>Essential</th>
<th>Very Useful</th>
<th>Of Some Use</th>
<th>Not Necessary</th>
<th>Not sure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reinforced budgeting of regional sub-commissions</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Establishing an effective coordination and communication mechanism between the regional sub-commissions and the global programmes</td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

Other suggestions?

8. In terms of development of ocean research policies in support of sustainable development, how useful are the following for your country or region?

<table>
<thead>
<tr>
<th>Sharing of information on existing ocean research priorities among government and other organizations</th>
<th>Essential</th>
<th>Very Useful</th>
<th>Of Some Use</th>
<th>Not Necessary</th>
<th>Already exists</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assistance with the development of national marine science management procedures and national policies</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Other suggestions?
9. In terms of increasing visibility and awareness of ocean research in your country how useful are the following for your country or region?

<table>
<thead>
<tr>
<th>Support for development of effective public communication in ocean research institutions</th>
<th>Essential</th>
<th>Very Useful</th>
<th>Of Some Use</th>
<th>Not Necessary</th>
<th>Already exists</th>
</tr>
</thead>
<tbody>
<tr>
<td>Support for communicating ocean science research to policy makers</td>
<td></td>
<td></td>
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<tr>
<td>Development of an IOC ocean literacy 'community of practice' to share experience within and across regions</td>
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</tr>
</tbody>
</table>

Other suggestions?

<table>
<thead>
<tr>
<th>Assistance in fostering partnerships to increase in-kind support opportunities</th>
<th>Essential</th>
<th>Very Useful</th>
<th>Of Some Use</th>
<th>Not Necessary</th>
<th>Already exists</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assistance in financial resource mobilisation from Member States, Institutional and Private Sector Partners</td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

Other suggestions?

10. In terms of mobilising sustained (long-term) resources, how useful are the following for your country or region?

<table>
<thead>
<tr>
<th>Assistance in fostering partnerships to increase in-kind support opportunities</th>
<th>Essential</th>
<th>Very Useful</th>
<th>Of Some Use</th>
<th>Not Necessary</th>
<th>Already exists</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assistance in financial resource mobilisation from Member States, Institutional and Private Sector Partners</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

Other suggestions?
### 11. Which existing marine information portals are you aware of, that are in use in your country or region?

<table>
<thead>
<tr>
<th>Portal</th>
<th>Essential</th>
<th>Very Useful</th>
<th>Of Some Use</th>
<th>Not Necessary</th>
</tr>
</thead>
<tbody>
<tr>
<td>OceanExpert (<a href="https://www.oceanexpert.net">https://www.oceanexpert.net</a>)</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>OceanTeacher Global Academy (<a href="https://classroom.oceanteacher.org">https://classroom.oceanteacher.org</a>)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IOC Capacity Development Portal (<a href="http://www.ioc-cd.org">http://www.ioc-cd.org</a>)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ocean Literacy Portal (<a href="https://oceanliteracy.unesco.org">https://oceanliteracy.unesco.org</a>)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ocean Biogeographic Information Systems (OBIS) (<a href="http://www.iobis.org">http://www.iobis.org</a>)</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Global Ocean Observing System (GOOS) (<a href="http://www.goos.ocean.org">http://www.goos.ocean.org</a>)</td>
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<tr>
<td>Marine Training Platform (<a href="http://www.marinetraining.eu">http://www.marinetraining.eu</a>)</td>
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<tr>
<td>Ocean Training Partnership (<a href="http://www.oceantrainingpartnership.org">http://www.oceantrainingpartnership.org</a>)</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Partnership for Observation of the Global Ocean (POGO) (<a href="http://www.oceanpartners.org">http://www.oceanpartners.org</a>)</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>SeaDataNet (<a href="https://www.seadatanet.org">https://www.seadatanet.org</a>)</td>
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</tr>
</tbody>
</table>

Other examples:


### 12. What specific support can IOC global and regional programmes (GOOS, IODE, MPR etc.) provide to contribute to addressing your country’s CD requirements?


### 13. In terms of developing an overall Implementation Plan for the IOC CD Strategy, are there any other CD efforts and supports not previously mentioned which you would like to see included?


14. In the context of priority areas of research and development for the UN Decade of Ocean Science for Sustainable Development 2021-2030, please rank your countries top 5 priorities (on a scale of 1 to 5, with 5 indicating the most important).

<table>
<thead>
<tr>
<th>1 (least important)</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5 (most important)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Comprehensive map (digital atlas) of the ocean</td>
<td></td>
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<tr>
<td>A comprehensive ocean observing system</td>
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<tr>
<td>A quantitative understanding of ocean ecosystems and their functioning as the basis for their management and adaptation</td>
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</tr>
<tr>
<td>Data and information portal</td>
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<tr>
<td>Ocean dimension in an integrated multi-hazard warning system</td>
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</tr>
<tr>
<td>Ocean in earth-system observation, research and prediction, with engagement of social and human sciences and economic valuation</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Capacity development and accelerated technology transfer, training and education, ocean literacy</td>
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</tr>
</tbody>
</table>

Other suggestions?
Section 3: Clearing House Mechanism (CHM)

A Clearing House Mechanism (CHM) is proposed as a tool ‘to provide interested users in Member States with direct and rapid access to relevant sources of information, practical expertise in the Transfer of Marine Technology (TMT), as well as to facilitate scientific, technical and financial cooperation to that end’. The overarching legal framework for this CHM is UNCLOS (Part XIV). Following the IOC Criteria and Guidelines on the TMT (CG TMT), marine technology refers to ‘instruments, equipment, vessels, processes and methodologies required to produce and use knowledge to improve the study and understanding of the nature and resources of the ocean and coastal areas’. In order to inform the development of any future CHM, we would very much appreciate your opinion on the following.

15. What information should a Clearing House Mechanism include? Please give each item in the list below a score (on a scale of 1 to 5, with 5 indicating the most important and 1 the least important).

| list of governmental, non-governmental or private entities interested in participating as donors in the transfer of marine technology, including information on the contact focal points, fields of competence, items to be transferred | 1 (least important) | 2 | 3 | 4 | 5 (most important) |
| Opportunities for participation in projects or initiatives | 1 (least important) | 2 | 3 | 4 | 5 (most important) |
| Directory of marine research institutes offering laboratory facilities, equipment and opportunities for research and training | 1 (least important) | 2 | 3 | 4 | 5 (most important) |
| Offers of cruise studies at global, regional and sub-regional level | 1 (least important) | 2 | 3 | 4 | 5 (most important) |
| List of experts/specialists for scientific and technical assistance | 1 (least important) | 2 | 3 | 4 | 5 (most important) |
| Universities and other organisations offering study grants and facilities in marine science | 1 (least important) | 2 | 3 | 4 | 5 (most important) |
16. The following is a list of what is considered marine technology for purposes of the IOC’s Criteria and Guidelines for the Transfer of Marine Technology. Please rank on a scale of 1 to 5, with 5 indicating the most important and 1 the least important.

<table>
<thead>
<tr>
<th>1 (least important)</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5 (most important)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Information and data</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Manuals, guidelines, criteria, standards, reference materials</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Sampling and methodology equipment</td>
<td></td>
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<tr>
<td>Observation facilities and equipment</td>
<td></td>
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</tr>
<tr>
<td>Equipment for in situ and laboratory observations, analysis and experimentation</td>
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<tr>
<td>Computer and computer software, including models and modelling techniques</td>
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<td></td>
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</tr>
<tr>
<td>Online or blended learning, ocean-related courses and MOOCs</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Expertise, knowledge, skills, technical/scientific/legal know-how and analytical methods relating to marine scientific research and observation</td>
<td></td>
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</tr>
</tbody>
</table>
17. What is the best functional format for the Clearing House Mechanism?

- Online Central Portal
- Online central portal with a human brokerage element to actively connect demand to offer (and vice versa)
- Online central portal focused on moderated online discussion groups, networks and community forums for user-led connections and driven by demand
- Other not included above (please specify)?

- Only regional portals
- A hybrid model: online central portal with deep-links to regional/sectoral CHM portals
- A hybrid model: online central portal integrating the data and information harvested from regional/sectoral CHM portals (need for interoperability)

18. Can you recommend examples of useful, efficient, functional portals that you would consider ‘best practice’ (not necessarily on the marine environment)?


19. The Clearing House Mechanism will seek in-kind contributions from Member States and regional organisations such as those listed in Q15 and Q16. What contributions do you think your national or regional entities could offer to the Clearing House Mechanism?


20. With reference to Q15 and Q16 what requirements do you think your country would need from the Clearing House Mechanism?


21. Overall, on a scale of 1 to 10, how instrumental would the proposed Clearing House Mechanism be to further developing ocean science capacity in your country?

- 1 (Not Useful)
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10 (Essential)

22. SIDS

- Yes
- No
23. LDC

- [ ] Yes
- [ ] No
ANNEX VI

SURVEY RESULTS

In total, 49 IOC member states, or just over 30% of the 149 IOC member states, responded to the survey. Of the 49 respondents, 19 were from countries classified as SIDS and/or LDCs. In order to determine regional capacity development requirements, the results are presented according to the following IOC regional categories: IOCAFRICA (12 countries); IOCAFRICA LDCs (6 countries); IOCARIIBE (12 countries); IOCARIIBE SIDS (6 countries); WESTPAC (12 countries); WESTPAC SIDS (7 countries) and WESTPAC non-SIDS (4 countries). Due to the relatively small sample sizes care must therefore be taken when interpreting the results and making assumptions based on the data presented. Just one response was received from the IOCINDIO region which was not included for the purpose of this specific analysis. The data presented is based on the weighted average. Those that gave 5 as highest ranked and those that gave 4 were counted. To get a weighted average the number that gave a 5 was multiplied times 5 and added to the number that gave a 4 multiplied times 4.

Q1. If applicable, please indicate below which IOC Regional Sub-Commission or Committee your country is a member of (n=49).

Figure 1. Membership of respondents to IOC Regional Sub-Commissions or Committees (n=45).
Q2. Are you replying as the designated national focal point on Capacity Development or in another capacity?

![Figure 2. Designated capacity of individual submitting response (n=45).](image)

Q3. Classification of countries that responded according to whether they were SIDS, LDCs or both (n=49).

![Figure 3. Classification of countries that responded (n=19).](image)
### Q4. Please select the 5 most important capacity development needs in your country.

<table>
<thead>
<tr>
<th>Need</th>
<th>IOCAFRICA</th>
<th>IOCAFRI A LDC</th>
<th>IOCARIBE</th>
<th>IOCARIBE SIDS</th>
<th>WESTPAC</th>
<th>WESTPAC SIDS</th>
<th>WESTPAC non-SIDS</th>
<th>Overall</th>
</tr>
</thead>
<tbody>
<tr>
<td>Funding and investment in ocean science</td>
<td>32</td>
<td>23</td>
<td>41</td>
<td>24</td>
<td>47</td>
<td>14</td>
<td>28</td>
<td>248</td>
</tr>
<tr>
<td>Qualification of national ocean science professionals</td>
<td>36</td>
<td>27</td>
<td>34</td>
<td>24</td>
<td>46</td>
<td>19</td>
<td>26</td>
<td>222</td>
</tr>
<tr>
<td>Advanced professional development training (specific short courses, technical training etc.)</td>
<td>27</td>
<td>18</td>
<td>32</td>
<td>24</td>
<td>46</td>
<td>10</td>
<td>14</td>
<td>215</td>
</tr>
<tr>
<td>Data access and management</td>
<td>32</td>
<td>19</td>
<td>28</td>
<td>23</td>
<td>42</td>
<td>27</td>
<td>29</td>
<td>197</td>
</tr>
<tr>
<td>Ocean science sampling equipment and instrumentation</td>
<td>38</td>
<td>19</td>
<td>35</td>
<td>22</td>
<td>40</td>
<td>26</td>
<td>14</td>
<td>194</td>
</tr>
<tr>
<td>Ocean observation equipment (buoys, AUVs, tide-gauges etc.)</td>
<td>34</td>
<td>28</td>
<td>26</td>
<td>37</td>
<td>23</td>
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<tr>
<td>Higher education academic courses in ocean science</td>
<td>33</td>
<td>24</td>
<td>34</td>
<td>19</td>
<td>38</td>
<td>25</td>
<td>13</td>
<td>190</td>
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<tr>
<td>Development of national ocean research policy</td>
<td>32</td>
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<td>39</td>
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<td>24</td>
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<td>177</td>
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<tr>
<td>Laboratory equipment and facilities</td>
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<td>15</td>
<td>27</td>
<td>14</td>
<td>46</td>
<td>27</td>
<td>18</td>
<td>165</td>
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<tr>
<td>Research vessels and inshore boats</td>
<td>29</td>
<td>19</td>
<td>32</td>
<td>22</td>
<td>31</td>
<td>17</td>
<td>20</td>
<td>164</td>
</tr>
<tr>
<td>Increased awareness, ocean literacy and public outreach</td>
<td>23</td>
<td>23</td>
<td>31</td>
<td>21</td>
<td>42</td>
<td>28</td>
<td>29</td>
<td>191</td>
</tr>
<tr>
<td>Digital infrastructure (computers, software etc.)</td>
<td>17</td>
<td>17</td>
<td>22</td>
<td>13</td>
<td>35</td>
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<td>27</td>
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<td>Internet connectivity</td>
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<td>0</td>
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<td>19</td>
<td>23</td>
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<tr>
<td>Gender equality</td>
<td>17</td>
<td>12</td>
<td>18</td>
<td>4</td>
<td>33</td>
<td>25</td>
<td>15</td>
<td>124</td>
</tr>
</tbody>
</table>

### Q5. In terms of developing capacity in human resources, how useful are the following for your country or region?

<table>
<thead>
<tr>
<th>Need</th>
<th>IOCAFRICA</th>
<th>IOCAFRI A LDC</th>
<th>IOCARIBE</th>
<th>IOCARIBE SIDS</th>
<th>WESTPAC</th>
<th>WESTPAC SIDS</th>
<th>WESTPAC non-SIDS</th>
<th>Overall</th>
</tr>
</thead>
<tbody>
<tr>
<td>Support for organisation of training courses, workshops and summer schools relevant to the IOC mandate</td>
<td>46</td>
<td>24</td>
<td>50</td>
<td>20</td>
<td>44</td>
<td>22</td>
<td>17</td>
<td>258</td>
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<tr>
<td>Establishment of an internship/fellowship programme</td>
<td>46</td>
<td>25</td>
<td>45</td>
<td>28</td>
<td>44</td>
<td>26</td>
<td>16</td>
<td>234</td>
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<td>Establishment of a travel grant “Fund”</td>
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<td>23</td>
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<td>26</td>
<td>19</td>
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<tr>
<td>Sharing of training materials</td>
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<td>19</td>
<td>57</td>
<td>21</td>
<td>43</td>
<td>25</td>
<td>18</td>
<td>209</td>
</tr>
<tr>
<td>Establishment of regional training [and research] centres relevant to IOC mandate</td>
<td>41</td>
<td>21</td>
<td>42</td>
<td>23</td>
<td>40</td>
<td>25</td>
<td>17</td>
<td>207</td>
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<tr>
<td>Access to on-board, research vessel-based training</td>
<td>46</td>
<td>24</td>
<td>32</td>
<td>14</td>
<td>39</td>
<td>22</td>
<td>17</td>
<td>192</td>
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<tr>
<td>Establishment of a visiting lecturer programme</td>
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<td>24</td>
<td>39</td>
<td>23</td>
<td>39</td>
<td>22</td>
<td>17</td>
<td>192</td>
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<tr>
<td>Establishment of a mentoring programme Development of IOC alumni networks</td>
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<td>23</td>
<td>33</td>
<td>17</td>
<td>48</td>
<td>26</td>
<td>18</td>
<td>192</td>
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<tr>
<td>Increased collaboration with UNESCO Chairs and IOC</td>
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<td>21</td>
<td>39</td>
<td>14</td>
<td>35</td>
<td>18</td>
<td>17</td>
<td>181</td>
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<tr>
<td>Establishment of consortia of higher education in your country or region</td>
<td>30</td>
<td>22</td>
<td>40</td>
<td>18</td>
<td>28</td>
<td>16</td>
<td>12</td>
<td>166</td>
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<tr>
<td>Establishment of “young scientists” awards</td>
<td>30</td>
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<td>20</td>
<td>12</td>
<td>35</td>
<td>21</td>
<td>14</td>
<td>158</td>
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<tr>
<td>Development of IOC alumni networks</td>
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<td>Promoting gender equality and participation of women in ocean science research</td>
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<td>29</td>
<td>20</td>
<td>9</td>
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</tr>
</tbody>
</table>

### Q6. In terms of increased access to physical infrastructure, how useful are the following for your country or region?

<table>
<thead>
<tr>
<th>Need</th>
<th>IOCAFRICA</th>
<th>IOCAFRI A LDC</th>
<th>IOCARIBE</th>
<th>IOCARIBE SIDS</th>
<th>WESTPAC</th>
<th>WESTPAC SIDS</th>
<th>WESTPAC non-SIDS</th>
<th>Overall</th>
</tr>
</thead>
<tbody>
<tr>
<td>Expanded access to regional scientific research infrastructure</td>
<td>41</td>
<td>28</td>
<td>60</td>
<td>21</td>
<td>46</td>
<td>27</td>
<td>19</td>
<td>257</td>
</tr>
<tr>
<td>Establishment and maintenance of a register of regional scientific research infrastructure (facilities, instruments, vessels) to facilitate access</td>
<td>40</td>
<td>28</td>
<td>64</td>
<td>21</td>
<td>42</td>
<td>23</td>
<td>18</td>
<td>236</td>
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</tbody>
</table>

### Q7. How would you rate your country’s needs regarding strengthening coordination with global, regional or sub-regional IOC bodies and local networks?

<table>
<thead>
<tr>
<th>Need</th>
<th>IOCAFRICA</th>
<th>IOCAFRI A LDC</th>
<th>IOCARIBE</th>
<th>IOCARIBE SIDS</th>
<th>WESTPAC</th>
<th>WESTPAC SIDS</th>
<th>WESTPAC non-SIDS</th>
<th>Overall</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reinforced budgeting of regional sub-commissions</td>
<td>41</td>
<td>27</td>
<td>47</td>
<td>25</td>
<td>33</td>
<td>13</td>
<td>26</td>
<td>333</td>
</tr>
<tr>
<td>Establishing an effective coordination and communication mechanism between the regional sub-commissions and the global programmes</td>
<td>40</td>
<td>27</td>
<td>24</td>
<td>28</td>
<td>32</td>
<td>12</td>
<td>20</td>
<td>220</td>
</tr>
<tr>
<td>Improved staffing of secretariat of regional sub-commissions</td>
<td>31</td>
<td>22</td>
<td>46</td>
<td>20</td>
<td>40</td>
<td>27</td>
<td>13</td>
<td>203</td>
</tr>
</tbody>
</table>
Q8. In terms of development of ocean research policies in support of sustainable development, how useful are the following for your country?

<table>
<thead>
<tr>
<th>Assistance with the development of national marine science management procedures and national policies</th>
<th>IOCAFIRA</th>
<th>IOCAFIRI A LDC</th>
<th>IOCARIBE</th>
<th>IOCARIBE SIDS</th>
<th>WESTPAC</th>
<th>WESTPAC non-SIDS</th>
<th>Overall</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>40</td>
<td>24</td>
<td>53</td>
<td>23</td>
<td>46</td>
<td>28</td>
<td>18</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Sharing of information on existing ocean research priorities among government and other organizations</th>
<th>IOCAFIRA</th>
<th>IOCAFIRI A LDC</th>
<th>IOCARIBE</th>
<th>IOCARIBE SIDS</th>
<th>WESTPAC</th>
<th>WESTPAC non-SIDS</th>
<th>Overall</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>44</td>
<td>24</td>
<td>43</td>
<td>17</td>
<td>52</td>
<td>33</td>
<td>19</td>
</tr>
</tbody>
</table>

Q9. In terms of increasing visibility and awareness of ocean research in your country how useful are the following?

<table>
<thead>
<tr>
<th>Support for communicating ocean science research to policy makers</th>
<th>IOCAFIRA</th>
<th>IOCAFIRI A LDC</th>
<th>IOCARIBE</th>
<th>IOCARIBE SIDS</th>
<th>WESTPAC</th>
<th>WESTPAC non-SIDS</th>
<th>Overall</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>58</td>
<td>28</td>
<td>55</td>
<td>27</td>
<td>54</td>
<td>34</td>
<td>18</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Development of an IOC ocean literacy ‘Community of practice’ to share experience within and across regions</th>
<th>IOCAFIRA</th>
<th>IOCAFIRI A LDC</th>
<th>IOCARIBE</th>
<th>IOCARIBE SIDS</th>
<th>WESTPAC</th>
<th>WESTPAC non-SIDS</th>
<th>Overall</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>40</td>
<td>28</td>
<td>45</td>
<td>26</td>
<td>51</td>
<td>33</td>
<td>18</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Support for development of effective public communication in ocean research institutions</th>
<th>IOCAFIRA</th>
<th>IOCAFIRI A LDC</th>
<th>IOCARIBE</th>
<th>IOCARIBE SIDS</th>
<th>WESTPAC</th>
<th>WESTPAC non-SIDS</th>
<th>Overall</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>53</td>
<td>24</td>
<td>50</td>
<td>21</td>
<td>48</td>
<td>31</td>
<td>17</td>
</tr>
</tbody>
</table>

Q10. In terms of mobilising sustained (long-term) resources, how useful are the following for your country or region?

<table>
<thead>
<tr>
<th>Assistance in financial resource mobilisation from Member States, Institutional and Private Sector Partners</th>
<th>IOCAFIRA</th>
<th>IOCAFIRI A LDC</th>
<th>IOCARIBE</th>
<th>IOCARIBE SIDS</th>
<th>WESTPAC</th>
<th>WESTPAC non-SIDS</th>
<th>Overall</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>31</td>
<td>30</td>
<td>56</td>
<td>29</td>
<td>44</td>
<td>27</td>
<td>17</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Assistance in fostering partnerships to increase in-kind support opportunities</th>
<th>IOCAFIRA</th>
<th>IOCAFIRI A LDC</th>
<th>IOCARIBE</th>
<th>IOCARIBE SIDS</th>
<th>WESTPAC</th>
<th>WESTPAC non-SIDS</th>
<th>Overall</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>43</td>
<td>28</td>
<td>38</td>
<td>17</td>
<td>43</td>
<td>26</td>
<td>13</td>
</tr>
</tbody>
</table>

Q11. Which existing marine information portals are you aware of, in use in your country or region?

<table>
<thead>
<tr>
<th>Global Ocean Observing System (GOOS) (<a href="https://www.goosocean.org">https://www.goosocean.org</a>)</th>
<th>IOCAFIRA</th>
<th>IOCAFIRI A LDC</th>
<th>IOCARIBE</th>
<th>IOCARIBE SIDS</th>
<th>WESTPAC</th>
<th>WESTPAC non-SIDS</th>
<th>Overall</th>
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<tbody>
<tr>
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<td>45</td>
<td>28</td>
<td>17</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>OceanExpert (<a href="https://www.oceaneexpert.net">https://www.oceaneexpert.net</a>)</th>
<th>IOCAFIRA</th>
<th>IOCAFIRI A LDC</th>
<th>IOCARIBE</th>
<th>IOCARIBE SIDS</th>
<th>WESTPAC</th>
<th>WESTPAC non-SIDS</th>
<th>Overall</th>
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<td>19</td>
<td>8</td>
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</table>

<table>
<thead>
<tr>
<th>POGO (<a href="http://www.ocean-partners.org">http://www.ocean-partners.org</a>)</th>
<th>IOCAFIRA</th>
<th>IOCAFIRI A LDC</th>
<th>IOCARIBE</th>
<th>IOCARIBE SIDS</th>
<th>WESTPAC</th>
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<td>31</td>
<td>19</td>
<td>12</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>IOC Capacity Development Portal (<a href="http://www.oic-cdp.org">http://www.oic-cdp.org</a>)</th>
<th>IOCAFIRA</th>
<th>IOCAFIRI A LDC</th>
<th>IOCARIBE</th>
<th>IOCARIBE SIDS</th>
<th>WESTPAC</th>
<th>WESTPAC non-SIDS</th>
<th>Overall</th>
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<tbody>
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<td>30</td>
<td>14</td>
<td>15</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Ocean Biogeographic Information Systems (OBIS) (<a href="http://www.iobis.org">http://www.iobis.org</a>)</th>
<th>IOCAFIRA</th>
<th>IOCAFIRI A LDC</th>
<th>IOCARIBE</th>
<th>IOCARIBE SIDS</th>
<th>WESTPAC</th>
<th>WESTPAC non-SIDS</th>
<th>Overall</th>
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<td>23</td>
<td>18</td>
<td>5</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>OceanTeacher Global Academy (<a href="https://classroom.oceanteacher.org">https://classroom.oceanteacher.org</a>)</th>
<th>IOCAFIRA</th>
<th>IOCAFIRI A LDC</th>
<th>IOCARIBE</th>
<th>IOCARIBE SIDS</th>
<th>WESTPAC</th>
<th>WESTPAC non-SIDS</th>
<th>Overall</th>
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</thead>
<tbody>
<tr>
<td></td>
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<td>22</td>
<td>14</td>
<td>8</td>
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</table>

<table>
<thead>
<tr>
<th>SeaDataNet (<a href="https://www.seadatanet.org">https://www.seadatanet.org</a>)</th>
<th>IOCAFIRA</th>
<th>IOCAFIRI A LDC</th>
<th>IOCARIBE</th>
<th>IOCARIBE SIDS</th>
<th>WESTPAC</th>
<th>WESTPAC non-SIDS</th>
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<td>28</td>
<td>18</td>
<td>8</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Ocean Literacy Portal (<a href="https://oceania.literacy.unesco.org">https://oceania.literacy.unesco.org</a>)</th>
<th>IOCAFIRA</th>
<th>IOCAFIRI A LDC</th>
<th>IOCARIBE</th>
<th>IOCARIBE SIDS</th>
<th>WESTPAC</th>
<th>WESTPAC non-SIDS</th>
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<tbody>
<tr>
<td></td>
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<td>12</td>
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<table>
<thead>
<tr>
<th>Ocean Training Partnership (<a href="http://www.oceantrainingpartnership.org">http://www.oceantrainingpartnership.org</a>)</th>
<th>IOCAFIRA</th>
<th>IOCAFIRI A LDC</th>
<th>IOCARIBE</th>
<th>IOCARIBE SIDS</th>
<th>WESTPAC</th>
<th>WESTPAC non-SIDS</th>
<th>Overall</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>31</td>
<td>23</td>
<td>24</td>
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<td>19</td>
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</table>

<table>
<thead>
<tr>
<th>Marine Training Platform (<a href="http://www.marinetraining.eu">http://www.marinetraining.eu</a>)</th>
<th>IOCAFIRA</th>
<th>IOCAFIRI A LDC</th>
<th>IOCARIBE</th>
<th>IOCARIBE SIDS</th>
<th>WESTPAC</th>
<th>WESTPAC non-SIDS</th>
<th>Overall</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>24</td>
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<td>19</td>
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</table>

Q14. In the context of priority areas of research and development for the UN Decade of Ocean Science for Sustainable Development 2021-2030, please rank your countries top 5 priorities.

<table>
<thead>
<tr>
<th>Priority Area</th>
<th>IOCAFIRA</th>
<th>IOCAFIRI A LDC</th>
<th>IOCARIBE</th>
<th>IOCARIBE SIDS</th>
<th>WESTPAC</th>
<th>WESTPAC non-SIDS</th>
<th>Overall</th>
</tr>
</thead>
<tbody>
<tr>
<td>Capacity development and accelerated technology transfer, training and education, ocean literacy</td>
<td>41</td>
<td>29</td>
<td>53</td>
<td>22</td>
<td>48</td>
<td>34</td>
<td>14</td>
</tr>
<tr>
<td>A quantitative understanding of ocean ecosystems and their functioning as the basis for their management and adaptation</td>
<td>38</td>
<td>28</td>
<td>34</td>
<td>24</td>
<td>41</td>
<td>23</td>
<td>18</td>
</tr>
<tr>
<td>A comprehensive ocean observing system</td>
<td>34</td>
<td>25</td>
<td>32</td>
<td>14</td>
<td>45</td>
<td>32</td>
<td>13</td>
</tr>
<tr>
<td>Ocean in earth-system observation, research and prediction, with engagement of social and human sciences and economic valuation</td>
<td>33</td>
<td>28</td>
<td>33</td>
<td>13</td>
<td>42</td>
<td>24</td>
<td>18</td>
</tr>
<tr>
<td>Ocean dimension in an integrated multi-hazard warning system</td>
<td>31</td>
<td>25</td>
<td>28</td>
<td>12</td>
<td>40</td>
<td>23</td>
<td>13</td>
</tr>
<tr>
<td>Data and information portal</td>
<td>28</td>
<td>24</td>
<td>31</td>
<td>14</td>
<td>37</td>
<td>23</td>
<td>14</td>
</tr>
<tr>
<td>Comprehensive map (digital atlas) of the ocean</td>
<td>19</td>
<td>19</td>
<td>28</td>
<td>14</td>
<td>36</td>
<td>24</td>
<td>13</td>
</tr>
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</table>
Q15: What information should a Clearing House Mechanism include?

<table>
<thead>
<tr>
<th>Information Category</th>
<th>IOCAFRICA</th>
<th>IOCAFRIC A LDC</th>
<th>IOCARIBE</th>
<th>IOCARIBE SIDS</th>
<th>WESTPAC</th>
<th>WESTPAC SIDS</th>
<th>WESTPAC non-SIDS</th>
<th>Overall</th>
</tr>
</thead>
<tbody>
<tr>
<td>Universities and other organisations offering study grants and facilities in marine science</td>
<td>32</td>
<td>20</td>
<td>52</td>
<td>28</td>
<td>50</td>
<td>28</td>
<td>21</td>
<td>234</td>
</tr>
<tr>
<td>Workshops, seminars and training courses at global, regional and sub-regional level, in particular those offering financial support</td>
<td>36</td>
<td>28</td>
<td>43</td>
<td>28</td>
<td>49</td>
<td>25</td>
<td>24</td>
<td>234</td>
</tr>
<tr>
<td>List of governmental, non-governmental or private entities interested in participating as donors in the transfer of marine technology, including information on the contact focal points, fields of competence, items to be transferred</td>
<td>37</td>
<td>24</td>
<td>32</td>
<td>23</td>
<td>45</td>
<td>26</td>
<td>19</td>
<td>206</td>
</tr>
<tr>
<td>Directory of marine research institutes offering laboratory facilities, equipment and opportunities for research and training</td>
<td>46</td>
<td>31</td>
<td>27</td>
<td>18</td>
<td>39</td>
<td>23</td>
<td>16</td>
<td>202</td>
</tr>
<tr>
<td>Links with national, sub-regional and/or regional agreements, institutions and centres holding information, experience and technical expertise of scientific relevance</td>
<td>40</td>
<td>27</td>
<td>32</td>
<td>19</td>
<td>42</td>
<td>26</td>
<td>16</td>
<td>202</td>
</tr>
<tr>
<td>List of experts/specialists for scientific and technical assistance</td>
<td>44</td>
<td>28</td>
<td>38</td>
<td>26</td>
<td>32</td>
<td>20</td>
<td>12</td>
<td>197</td>
</tr>
<tr>
<td>Offers of cruise studies at global, regional and sub-regional level</td>
<td>37</td>
<td>28</td>
<td>40</td>
<td>27</td>
<td>32</td>
<td>15</td>
<td>17</td>
<td>196</td>
</tr>
<tr>
<td>Opportunities for participation in projects or initiatives</td>
<td>33</td>
<td>19</td>
<td>42</td>
<td>23</td>
<td>38</td>
<td>24</td>
<td>14</td>
<td>193</td>
</tr>
<tr>
<td>Studies on rules and regulations concerning technology transfer and marine scientific research</td>
<td>26</td>
<td>26</td>
<td>13</td>
<td>9</td>
<td>38</td>
<td>22</td>
<td>16</td>
<td>150</td>
</tr>
</tbody>
</table>

Q16: The following is a list of what is considered marine technology for purposes of the IOC’s Criteria and Guidelines for the Transfer of Marine Technology. Please rank importance on a scale of 1 to 5.

<table>
<thead>
<tr>
<th>Technology Category</th>
<th>IOCAFRICA</th>
<th>IOCAFRIC A LDC</th>
<th>IOCARIBE</th>
<th>IOCARIBE SIDS</th>
<th>WESTPAC</th>
<th>WESTPAC SIDS</th>
<th>WESTPAC non-SIDS</th>
<th>Overall</th>
</tr>
</thead>
<tbody>
<tr>
<td>Expertise, knowledge, skills, technical/scientific/legal know-how and analytical methods relating to marine scientific research and observation</td>
<td>46</td>
<td>28</td>
<td>53</td>
<td>28</td>
<td>48</td>
<td>25</td>
<td>19</td>
<td>282</td>
</tr>
<tr>
<td>Information and data</td>
<td>48</td>
<td>25</td>
<td>54</td>
<td>28</td>
<td>37</td>
<td>19</td>
<td>18</td>
<td>229</td>
</tr>
<tr>
<td>Online or blended learning, ocean-related courses and MOOCs</td>
<td>40</td>
<td>23</td>
<td>44</td>
<td>30</td>
<td>43</td>
<td>27</td>
<td>16</td>
<td>223</td>
</tr>
<tr>
<td>Equipment for in situ and laboratory observations, analysis and experimentation</td>
<td>53</td>
<td>28</td>
<td>34</td>
<td>17</td>
<td>45</td>
<td>28</td>
<td>17</td>
<td>220</td>
</tr>
<tr>
<td>Computer and computer software, including models and modelling techniques</td>
<td>42</td>
<td>22</td>
<td>40</td>
<td>22</td>
<td>44</td>
<td>27</td>
<td>17</td>
<td>214</td>
</tr>
<tr>
<td>Observation facilities and equipment</td>
<td>49</td>
<td>28</td>
<td>37</td>
<td>24</td>
<td>32</td>
<td>14</td>
<td>18</td>
<td>202</td>
</tr>
<tr>
<td>Sampling and methodology equipment Observation facilities and equipment</td>
<td>46</td>
<td>28</td>
<td>45</td>
<td>24</td>
<td>24</td>
<td>15</td>
<td>9</td>
<td>192</td>
</tr>
<tr>
<td>Manuals, guidelines, criteria, standards, reference materials</td>
<td>40</td>
<td>28</td>
<td>38</td>
<td>25</td>
<td>29</td>
<td>10</td>
<td>9</td>
<td>189</td>
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</table>

Q17: What is the best functional format for the Clearing House Mechanism?

<table>
<thead>
<tr>
<th>Functional Format</th>
<th>IOCAFRICA</th>
<th>IOCAFRIC A LDC</th>
<th>IOCARIBE</th>
<th>IOCARIBE SIDS</th>
<th>WESTPAC</th>
<th>WESTPAC SIDS</th>
<th>WESTPAC non-SIDS</th>
<th>Others</th>
</tr>
</thead>
<tbody>
<tr>
<td>A hybrid model: online central portal integrating the data and information harvested from regional/sectoral CHM portals [need for interoperability]</td>
<td>1</td>
<td>1</td>
<td>3</td>
<td>1</td>
<td>3</td>
<td>1</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>A hybrid model: online central portal with deep-links to regional/sectoral CHM portals</td>
<td>1</td>
<td>1</td>
<td>3</td>
<td>0</td>
<td>2</td>
<td>0</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>Online central portal</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Online central portal with a human brokerage element to actively connect demand to offer (and vice versa)</td>
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<td>0</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>0</td>
<td>6</td>
</tr>
<tr>
<td>Online central portal focused on moderated online discussion groups, networks and community forums for user-led connections and driven by demand</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
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<tr>
<td>Only regional portals</td>
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<td>0</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>6</td>
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<tr>
<td>Other not included above (please specify)</td>
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<td>1</td>
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</tbody>
</table>

Q21: Overall, on a scale of 1 to 10, how instrumental would the proposed Clearing House Mechanism be to further develop ocean science capacity in your country?

<table>
<thead>
<tr>
<th>Instrumental Score</th>
<th>IOCAFRICA</th>
<th>IOCAFRIC A LDC</th>
<th>IOCARIBE</th>
<th>IOCARIBE SIDS</th>
<th>WESTPAC</th>
<th>WESTPAC SIDS</th>
<th>WESTPAC non-SIDS</th>
<th>Overall</th>
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<tbody>
<tr>
<td>Score 10</td>
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<td>10</td>
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<td>40</td>
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<tr>
<td>Score 9</td>
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<tr>
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<td>12</td>
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<tr>
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<td>5</td>
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<tr>
<td>Score 4</td>
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<tr>
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<tr>
<td>Score 1</td>
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<tr>
<td>Score</td>
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<td>56</td>
<td>84</td>
<td>47</td>
<td>88</td>
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</table>
In this Series, entitled

Reports of Meetings of Experts and Equivalent Bodies, which was initiated in 1984 and which is published in English only, unless otherwise specified, the reports of the following meetings have already been issued:

1. Third Meeting of the Central Editorial Board for the Geological/Geophysical Atlases of the Atlantic and Pacific Oceans
3. First Session of the IOC-FAO Guiding Group of Experts on the Programme of Ocean Science in Relation to Living Resources
4. First Session of the IOC-UN(OETB) Guiding Group of Experts on the Programme of Ocean Science in Relation to Non-Living Resources
5. First Session of the IOC-UN(OETB) Guiding Group of Experts on the International Bathymetric Chart of the Mediterranean and Overlay Sheets
6. First Session of the Joint Scientific Committee on Marine Geology and Geophysics of the Western Indian Ocean
7. First Session of the IOC Group of Experts on the Global Sea
8. First Session of the IOC Working Group on South Pacific Tectonics and Resources
9. First Session of the IOC Working Group on Post-IDOE Studies of East Asian Tectonics and Resources
10. Sixth Session of the IOC-UNEP Group of Experts on Methods, Standards and Intercomparison
11. First Session of the IOC Consultative Group on Ocean Mapping *(Also printed in French and Spanish)*
12. Joint 100-WMO Meeting for Implementation of IGOSS XBT Ships-Opportunity Programmes
13. Second Session of the Joint CCOP/SOPAC-IOC Working Group on South Pacific Tectonics and Resources
14. Third Session of the Group of Experts on Methods and Intercalibration
15. Eleventh Session of the Joint CCOP-IOC Working Group on Post-IDOE Studies of South-East Asian Tectonics and Resources
16. Second Session of the IOC Editorial Board for the International Bathymetric Chart of the Mediterranean and Overlay Sheets
17. Seventh Session of the IOC-UNEP Group of Experts on Methods, Standards and Intercalibration
18. Second Session of the IOC Group of Experts on Effects of Pollutants
19. Primera Reunión del Comité Editorial de la COI para la Carta Batimétrica Internacional del Mar Caribe y Parte del Océano Pacífico frente a Centroamérica (Spanish only)
20. Third Session of the Joint CCOP/SOPAC-IOC Working Group on South Pacific Tectonics and Resources
21. Twelfth Session of the Joint CCOP-IOC Working Group on Post-IDOE Studies of South-East Asian Tectonics and Resources
22. Second Session of the IOE Group of Experts on Marine Information Management
23. First Session of the IOC Group of Experts on Marine Geology and Geophysics in the Western Pacific
24. Second Session of the IOC-UN(OETB) Guiding Group of Experts on the Programme of Ocean Science in Relation to Non-Living Resources *(Also printed in French and Spanish)*
25. Third Session of the IOC Group of Experts on Effects of Pollutants
26. Sixth Session of the IOC-UNEP Group of Experts on Methods, Standards and Intercomparison
27. Eleventh Session of the Joint IOC-IHO Guiding Committee for the General Bathymetric Chart of the Oceans *(Also printed in French)*
28. Second Session of the IOC-FAO Guiding Group of Experts on the Programme of Ocean Science in Relation to Living Resources
29. First Session of the IOC-IAEA-UNEP Group of Experts on Standards and Reference Materials
30. First Session of the IOCARIIBE Group of Experts on Recruitment in Tropical Coastal Demersal Communities *(Also printed in Spanish)*
32. Thirteenth Session of the Joint CCOP-IOC Working Group on Post-IDOE Studies of East Asia Tectonics and Resources
33. Second Session of the IOC Task Team on the Global Sea-Level Observing System
34. Third Session of the IOC Editorial Board for the International Bathymetric Chart of the Mediterranean and Overlay Sheets
35. Fourth Session of the IOC-UNEP-IMO Group of Experts on Effects of Pollutants
36. First Consultative Meeting on RNODCs and Climate Data Services
37. Second Joint IOC-WMO Meeting of Experts on IGOSS-IDOE Data Flow
38. Fourth Session of the Joint CCOP/SOPAC-IOC Working Group on South Pacific Tectonics and Resources
39. Fourth Session of the IOE Group of Experts on Technical Aspects of Data Exchange
40. Fourteenth Session of the Joint CCOP-IOC Working Group on Post-IDOE Studies of East Asian Tectonics and Resources
41. Third Session of the IOC Consultative Group on Ocean Mapping
42. Sixth Session of the Joint IOC-WMO-CCPS Working Group on the Investigations of ‘El Niño’ *(Also printed in Spanish)*
43. First Session of the IOC Editorial Board for the International Bathymetric Chart of the Western Indian Ocean
44. Third Session of the IOC-UN(OALOS) Guiding Group of Experts on the Programme of Ocean Science in Relation to Non-Living Resources
45. Ninth Session of the IOC-UNEP Group of Experts on Methods, Standards and Intercomparison
46. Second Session of the IOC Editorial Board for the International Bathymetric Chart of the Caribbean Sea and the Gulf of Mexico
47. Cancelled
48. Twelfth Session of the Joint IOC-IHO Guiding Committee for the General Bathymetric Chart of the Oceans
49. Fifteenth Session of the Joint CCOP-IOC Working Group on Post-IDOE Studies of East Asian Tectonics and Resources
50. Third Joint IOC-WMO Meeting for Implementation of IGOSS XBT Ship-of-Opportunity Programmes
51. First Session of the IOC Group of Experts on the Global Sea-Level Observing System
52. Fourth Session of the IOC Editorial Board for the International Bathymetric Chart of the Mediterranean
53. First Session of the IOC Editorial Board for the International Chart of the Central Eastern Atlantic *(Also printed in French)*
54. Third Session of the IOC Editorial Board for the International Bathymetric Chart of the Caribbean Sea and the Gulf of Mexico *(Also printed in Spanish)*
55. Fifth Session of the IOC-UNEP-IMO Group of Experts on Effects of Pollutants
56. Second Session of the IOC Editorial Board for the International Bathymetric Chart of the Western Indian Ocean
57. First Meeting of the IOC *ad hoc* Group of Experts on Ocean Mapping in the WESTPAC Area
58. Fourth Session of the IOC Consultative Group on Ocean Mapping
59. Second Session of the IOC-WMO/IGOSS Group of Experts on Operations and Technical Applications
60. Second Session of the IOC Group of Experts on the Global Sea-Level Observing System
61. UNEP-IOC-WMO Meeting of Experts on Long-Term Global Monitoring System of Coastal and Near-Shore Phenomena Related to Climate Change
62. Third Session of the IOC-FAO Group of Experts on the Programme of Ocean Science in Relation to Living Resources
63. Second Session of the IIOC-AEA-UNEP Group of Experts on Standards and Reference Materials
64. Joint Meeting of the Group of Experts on Pollutants and the Group of Experts on Methods, Standards and Intercompilation
65. First Meeting of the Working Group on Oceanographic Co-operation in the ROPME Sea Area
66. Fifth Session of the Editorial Board for the International Bathymetric and its Geological/Geophysical Series
67. Thirteenth Session of the IOC-IHO Joint Guiding Committee for the General Bathymetric Chart of the Oceans (Also printed in French)
68. International Meeting of Scientific and Technical Experts on Climate Change and Oceans
69. Fourth Joint IOC-IUMC Meeting for Implementation of IGOSS XBT Ship-of-Opportunity Programmes
70. ROPME-IOC Meeting of the Steering Committee for Oceanographic Co-operation in the ROPME Sea Area
71. Seventh Session of the Joint IOC-WMO-CPPS Working Group on the Investigations of “El Niño” (Spanish only)
72. Fourth Session of the IOC Editorial Board for the International Bathymetric Chart of the Caribbean Sea and the Gulf of Mexico (Also printed in Spanish)
73. UNEP-IOC-ASPEI Global Task Team on the Implications of Climate Change on Coral Reefs
74. Third Session of the IOE Group of Experts on Marine Information Management
75. Fifth Session of the IOE Group of Experts on Technical Aspects of Data Exchange
76. ROPME-IOC Meeting of the Steering Committee for the Integrated Project Plan for the Coastal and Marine Environment of the ROPME Sea Area
77. Third Session of the IOC Group of Experts on the Global Sea-level Observing System
78. Third Session of the IOC-IAEU-UNEP Group of Experts on Standards and Reference Materials
79. Fourteenth Session of the Joint IOC-IHO Guiding Committee for the General Bathymetric Chart of the Oceans
80. Fifth Joint IOG-WMO Meeting for Implementation of IGOSS XBT Ship-of-Opportunity Programmes
81. Second Meeting of the UNEP-IOC-ASPEI Global Task Team on the Implications of Climate Change on Coral Reefs
82. Seventh Session of the JSC Ocean Observing System Development Panel
83. Fourth Session of the IOE Group of Experts on Marine Information Management
84. Sixth Session of the IOC Editorial Board for the International Bathymetric chart of the Mediterranean and its Geological/Geophysical Series
85. Fourth Session of the Joint IOC-JGOFS Panel on Carbon Dioxide
86. First Session of the IOC Editorial Board for the International Bathymetric Chart of the Western Pacific
87. Eighth Session of the JSC Ocean Observing System Development Panel
88. Ninth Session of the JSC Ocean Observing System Development Panel
89. Sixth Session of the IOE Group of Experts on Technical Aspects of Data Exchange
90. First Session of the IOC-FAO Group of Experts on OSLR for the IOCINCWIO Region
91. Fifth Session of the Joint IOC-JGOFS CO, Advisory Panel Meeting
92. Tenth Session of the JSC Ocean Observing System Development Panel
93. First Session of the Joint CMM-IGOSS-IOE Sub-group on Ocean Satellites and Remote Sensing
94. Third Session of the IOC Editorial Board for the International Chart of the Western Indian Ocean
95. Fourth Session of the IOC Group of Experts on the Global Sea Level Observing System
96. Joint Meeting of GEMS and GEEP Core Groups
97. First Session of the Joint Scientific and Technical Committee for Global Ocean Observing System
98. Second International Meeting of Scientific and Technical Experts on Climate Change and the Oceans
99. First Meeting of the Officers of the Editorial Board for the International Bathymetric Chart of the Western Pacific
100. Fifth Session of the IOC Editorial Board for the International Bathymetric Chart of the Caribbean Sea and the Gulf of Mexico
101. Second Session of the Joint Scientific and Technical Committee for Global Ocean Observing System
102. Fifteenth Session of the Joint IOC-IHO Committee for the General Bathymetric Chart of the Oceans
103. Fifth Session of the IOC Consultative Group on Ocean Mapping
104. Fifth Session of the IOE Group of Experts on Marine Information Management
105. IOC-NOAA Ad hoc Consultation on Marine Biodiversity
106. Sixth Session of the Joint IOC-JGOFS Panel on Carbon Dioxide
107. Sixth Joint IOC-WMO Meeting for Implementation of IGOSS XBT Ship-of-Opportunity Programmes
108. Third Session of the Health of the Oceans (HOTO) Panel of the Joint Scientific and Technical Committee for GLOSS
109. Second Session of the Strategy Subcommittee (SSC) of the IOC-WMO-UNEP Intergovernmental Committee for the Global Ocean Observing System
110. Third Session of the Joint Scientific and Technical Committee for Global Ocean Observing System
111. First Session of the Joint GCOS-GOOS-WCRP Ocean Observations Panel for Climate
112. Sixth Session of the Joint IOC-JGOFS C02 Advisory Panel Meeting
113. First Meeting of the IOC/WESTPAC Co-ordinating Committee for the North-East Asian Regional - Global Ocean Observing System (NEAR-GOOS)
114. Eighth Session of the Joint IOC-WMO-CPPS Working Group on the Investigations of “El Niño” (Spanish only)
115. Second Session of the IOC Editorial Board of the International Bathymetric Chart of the Central Eastern Atlantic (Also printed in French)
116. Tenth Session of the Officers Committee for the Joint IOC-IHO General Bathymetric Chart of the Oceans (GEBCO), USA, 1996
117. IOC Group of Experts on the Global Sea Level Observing System (GLOSS), Fifth Session, USA, 1997
120. IOC/WESTPAC Co-ordinating Committee for the North-East Asian Regional Global Ocean Observing System (NEAR-GOOS), Second Session, Thailand, 1997
122. First Session of the IOC-IUCN-NOAA Ad hoc Consultative Meeting on Large Marine Ecosystems (LME), France, 1997
123. Second Session of the Joint GCOS-GOOS-WCRP Ocean Observations Panel for Climate (OOPC), South Africa, 1997
124. Sixth Session of the IOC Editorial Board for the International Bathymetric Chart of the Caribbean Sea and the Gulf of Mexico, Colombia, 1996 (also printed in Spanish)
125. Seventh Session of the IODE Group of Experts on Technical Aspects of Data Exchange, Ireland, 1997
126. IOC-WMO-UNEP-ICSU Coastal Panel of the Global Ocean Observing System (GOOS), First Session, France, 1997
127. Second Session of the IOC-IUCN-NOAA Consultative Meeting on Large Marine Ecosystems (LME), France, 1998
128. Sixth Session of the IOC Consultative Group on Ocean Mapping (GOOM), Monaco, 1997
129. Sixth Session of the Tropical Atmosphere - Ocean Array (TAO) Implementation Panel, United Kingdom, 1997
132. Sixteenth Session of the Joint IOC-IHO Guiding Committee for the General Bathymetric Chart of the Oceans (GEBCO), United Kingdom, 1997
134. Fourth Session of the IOC Editorial Board for the International Bathymetric Chart of the Western Indian Ocean (IOC/EB-IBCWIO-IW3), South Africa, 1997
136. Seventh Session of the Joint IOC-JGOFS C02 Advisory Panel Meeting, Germany, 1997
137. Implementation of Global Ocean Observations for GOOS/GCOS, First Session, Australia, 1998
139. Second Session of the IOC-WMO-UNEP-ICSU Steering Committee of the Global Ocean Observing System (GOOS), Brazil, 1998
140. Third Session of IOC/WESTPAC Co-ordinating Committee for the North-East Asian Regional - Global Ocean Observing System (NEAR-GOOS), China, 1998
143. Seventh Session of the Tropical Atmosphere-Ocean Array (TAO) Implementation Panel, Abidjan, Côte d'Ivoire, 1998
144. Sixth Session of the IODE Group of Experts on Marine Information Management (GEMIM), USA, 1999
145. Second Session of the IOC-WMO-UNEP-ICSU Steering Committee of the Global Ocean Observing System (GOOS), China, 1999
146. Third Session of the IOC-WMO-UNEP-ICSU Coastal Panel of the Global Ocean Observing System (GOOS), Ghana, 1999
147. Fourth Session of the GCOS-GOOS-WCRP Ocean Observations Panel for Climate (OOPC); Fourth Session of the WCRP CLIVAR Upper Ocean Panel (UOP); Special Joint Session of OOPC and UOP, USA, 1999
149. Eighth Session of the Joint IOC-JGOFS C02 Advisory Panel Meeting, Japan, 1999
150. Fourth Session of the IOC/WESTPAC Co-ordinating Committee for the North-East Asian Regional – Global Ocean Observing System (NEAR-GOOS), Japan, 1999
151. Seventh Session of the IOC Consultative Group on Ocean Mapping (GOOM), Monaco, 1999
152. Sixth Session of the IOC Group of Experts on the Global Sea level Observing System (GLOSS), France, 1999
153. Seventeenth Session of the Joint IOC-IHO Guiding Committee for the General Bathymetric Chart of the Oceans (GEBCO), Canada, 1999
154. Comité Editorial de la COI para la Carta Batimétrica Internacional del Mar Caribe y el Golfo de México (IBCCA), Septima Reunión, Mexico, 1998
155. IOC Editorial Board for the International Bathymetric Chart of the Caribbean Sea and the Gulf of Mexico (IBCCA), Seventh Session, Mexico, 1998
156. Initial Global Ocean Observing System (GOOS) Commitments Meeting, IOC-WMO-UNEP-ICSU/Imlp-III/3, France, 1999
157. First Session of the ad hoc Advisory Group for IOCARIIBE-GOOS, Venezuela, 1999 (also printed in Spanish and French)
158. Fourth Session of the IOC-WMO-UNEP-ICSU Coastal Panel of the Global Ocean Observing System (GOOS), China, 1999
162. Eighth Session of the IODE Group of Experts on Technical Aspects of Data Exchange, USA, 2000
163. Third Session of the IOC-IUCN-NOAA Consultative Meeting on Large Marine Ecosystems (LME), France, 2000
164. Fifth Session of the IOC-WMO-UNEP-ICSU Coastal Panel of the Global Ocean Observing System (GOOS), Poland, 2000
165. Third Session of the IOC-WMO-UNEP-ICSU Steering Committee of the Global Ocean Observing System (GOOS), France, 2000
166. Second Session of the ad hoc Advisory Group for IOCARIIBE-GOOS, Cuba, 2000 (also printed in Spanish and French)
167. First Session of the Coastal Ocean Observations Panel, Costa Rica, 2000
168. First GOOS Users’ Forum, 2000
170. First Session of the Advisory Body of Experts on the Law of the Sea (ABE-LOS), France, 2001 (also printed in French)
171. Fourth Session of the IOC-WMO-UNEP-ICSU Steering Committee of the Global Ocean Observing System, Chile, 2001
172. First Session of the IOC-SCOR Ocean CO2 Advisory Panel, France, 2000
173. Fifth Session of the GCOS-GOOS-WCRP Ocean Observations Panel for Climate (OOPC), Norway, 2000 (electronic copy only)
174. Third Session of the ad hoc Advisory Group for IOCARIIBE-GOOS, USA, 2001 (also printed in Spanish and French)
175. Second Session of the Coastal Ocean Observations Panel and GOOS Users’ Forum, Italy, 2001
176. Second Session of the Black Sea GOOS Workshop, Georgia, 2001
177. Fifth Session of the IOC/WESTPAC Co-ordinating Committee for the North-East Asian Regional – Global Ocean Observing System (NEAR-GOOS), Republic of Korea, 2000
178. Second Session of the Advisory Body of Experts on the Law of the Sea (IOC/ABE-LOS), Morocco, 2002 (also printed in French)
179. Sixth Session of the Joint GCOS-GOOS-WCRP Ocean Observations Panel for Climate (OOPC), Australia, 2001 (electronic copy only)
180. Cancelled
231. First Meeting of the Inter-ICG Task Team 2 on Disaster Management and Preparedness (Working Group on Tsunamis and Other Hazards Related to Sea-Level Warning and Mitigation Systems (TOWS-WG)), Seattle, USA, 29 November–1 December 2010

232. First Meeting of the Inter-ICG Task Team 3 on Tsunami Watch Operations (Working Group on Tsunamis and Other Hazards Related to Sea-Level Warning and Mitigation Systems (TOWS-WG)), Seattle, USA, 29 November–1 December 2010

233. Primera Reunión del Grupo de Trabajo Regional para América Central del Grupo Intergubernamental de Coordinación del Sistema de Alerta contra los Tsunamis y Atenuación de sus Efectos en el Pacífico (ICG/PTWS), Managua (Nicaragua) del 4 al 6 de noviembre de 2009 (Resumen dispositivo en español e inglés)

234. Segunda Reunión del Grupo de Trabajo Regional para América Central del Grupo Intergubernamental de Coordinación del Sistema de Alerta contra los Tsunamis y Atenuación de sus Efectos en el Pacífico (ICG/PTWS), San Salvador (El Salvador) del 28 al 30 de septiembre de 2011 (Resumen dispositivo en español e inglés)

235. First Session of the Joint IODE-JCOMM Steering Group for the Global Temperature-Salinity Profile Programme (SG-GTSPP), 16–20 April 2012, Ostend, Belgium

236. Ad hoc Session of the Joint JCOMM-IODE Steering Group for the Ocean Data Standards Pilot Project (SG-ODSPP), 23–25 April 2012, Ostend, Belgium

237. First Meeting of the Regional Working Group on Tsunami Warning and Mitigation System for the South China Sea Region (SCS-WG), Sanya, China, 12–14 December 2011

238. First Meeting of the IODE Steering Group for OceanDocs (SG-OceanDocs), 24–27 January 2012, Ostend, Belgium

239. Fifth Session of the Working Group on Tsunamis and Other Hazards Related to Sea-Level Warning and Mitigation Systems (TOWS-WG), Tokyo, Japan, 15 February 2012 (Executive Summary in English, French, Russian and Spanish included)


241. Twelfth Session of the IODE Group of Experts on Marine Information Management (GE-MIM), Miami, USA, 22–25 January 2013

242. Twelfth Session of the IOC Group of Experts on the Global Sea level Observing System (GLOSS), Paris, 9–11 November 2011 (electronic copy only)

243. Meeting of the Pacific Tsunami Warning System Working Group 2 on Detection, Warning and Dissemination Task Team on PacWave11, Honolulu, USA, 21 May 2012 (electronic copy only)

244. Sixth Session of the Working Group on Tsunamis and Other Hazards Related to Sea-Level Warning and Mitigation Systems (TOWS-WG), Paris, 20–21 February 2013 (Executive Summary in English, French, Russian and Spanish included)

245. Second Meeting of the Regional Working Group on Tsunami Warning and Mitigation System for the South China Sea Region (SCS-WG), Petaling Jaya, Malaysia, 16–18 October 2012 (electronic copy only)

246. Seventh Meeting of the Working Group on Tsunamis and Other Hazards Related to Sea-Level Warning and Mitigation Systems, UNESCO, Paris, 12–13 February 2014 (Executive Summary in English, French, Russian and Spanish included)

247. Third Meeting of the Regional Working Group on Tsunami Warning and Mitigation System for the South China Sea Region (SCS-WG), Hong-Kong, China, 6–7 April 2014 (electronic copy only)

248. Tercera Reunión del Grupo de Trabajo Regional para América Central del Grupo Intergubernamental de Coordinación del Sistema de Alerta contra los Tsunamis y Atenuación de sus Efectos en el Pacífico (ICG/PTWS), Managua, Nicaragua del 29 al 30 de septiembre de 2014 (Resumen dispositivo en español e inglés)

249. Workshop on Tsunami Modelling and Mitigation of the ICG/CARIBE-EWS Working Group 2: Tsunami Hazard Assessment, 1–3 December 2014, Cartagena de Indias, Colombia (electronic copy only)

250. Fourth meeting of the Regional Working Group on Tsunami Warning and Mitigation System for the South China Sea Region (SCS-WG), Jakarta, Indonesia, 11–12 February 2015 (electronic copy only)

251. Eighth Session of the Working Group on Tsunamis and Other Hazards Related to Sea-Level Warning and Mitigation Systems (TOWS-WG), Jakarta, Indonesia, 11–12 February 2015 (electronic copy only)

252. Ninth Meeting of the Working Group on Tsunamis and Other Hazards Related to Sea-Level Warning and Mitigation Systems, UNESCO, Paris, 25–26 February 2016 (Executive Summary in English, French, Russian and Spanish included)

253. Fifth Meeting of the Regional Working Group on Tsunami Warning and Mitigation System for the South China Sea Region (SCS-WG), Manila, Philippines, 2–3 March 2016 (electronic copy only)

254. Second Meeting of the Regional Working Group for the North West Indian Ocean (WG-NWIO), Tehran, Islamic Republic of, 27–28 February 2017 (electronic copy only)

255. Sixth Meeting of the Regional Working Group on Tsunami Warning and Mitigation System for the South China Sea Region (SCS-WG), Shanghai, China, 1–3 March 2017 (electronic copy only)

256. Tenth Session of the Working Group on Tsunamis and Other Hazards Related to Sea-Level Warning and Mitigation Systems (TOWS-WG), Paris, 23–24 February 2017 (Executive Summary in English, French, Russian and Spanish included)

257. First Meeting of the Group of Experts on Capacity Development (GE-CD), Paris, 21–23 March 2018 (electronic copy only)

258. Eleventh Session of the Working Group on Tsunamis and Other Hazards Related to Sea-Level Warning and Mitigation Systems (TOWS-WG), Paris, 16–17 February 2018 (Executive Summary in English, French, Russian and Spanish included)

259. Seventh Meeting of the Regional Working Group on Tsunami Warning and Mitigation System for the South China Sea Region (SCS-WG), Hanoi, Vietnam, 6–8 March 2018 (electronic copy only)

260. Cuarta reunión del Grupo de Trabajo Regional para América Central del Grupo Intergubernamental de Coordinación del Sistema de Alerta contra los Tsunamis y Atenuación de sus Efectos en el Pacífico (ICG/PTWS), Managua (Nicaragua) el 11 de febrero de 2019 (Resumen dispositivo y recomendación en español e inglés)

261. Eighth Meeting of the Regional Working Group on Tsunami Warning and Mitigation System for the South China Sea Region (SCS-WG), Jakarta, Indonesia, 4–6 March 2019 (electronic copy only)

262. First Joint Meeting of the Task Teams of the IOC Group of Experts on Capacity Development: Capacity development requirements of Member States and implementation of a Clearing House Mechanism (CHM) for the Transfer of Marine Technology, UNESCO, Paris, 13–14 March 2019 (electronic copy only)