THE IOC CONTRIBUTION TO OCEAN LITERACY:
PERSPECTIVES AND DEVELOPMENTS IN VIEW OF THE
UN DECADE OF OCEAN SCIENCE FOR SUSTAINABLE DEVELOPMENT

Summary
This document was prepared in response of a request of the Officers to better describe the role of Ocean Literacy in IOC programmes and projects, and in particular in the context of the UN Decade of Ocean Science for Sustainable Development.

Purpose of the document: This document presents the concept of ocean literacy, its evolution, and its potential role in the framework of current IOC programmes, and projects, as well as in relation to the upcoming UN Decade of Ocean Science for Sustainable Development. The document also reports on the Ocean Literacy activities already undertaken by the IOC. The proposed decision associated to this agenda item aims at confirming the intention of pursuing the IOC involvement in Ocean Literacy, to invite the Secretariat to develop a Plan of Action to be reviewed at the next session of the IOC Assembly in 2019, and to invite Member States to contribute to Ocean Literacy activities by sharing good practices.

Financial and administrative implications: There are no financial and administrative implications.

The proposed decision is referenced EC-LI/Dec.4.9 in the Action Paper (document IOC/EC-LI/2 Prov.)
Introduction

1. Recognizing the lack of ocean-related subjects in formal education, a group of ocean scientists and education professionals in the U.S. initiated a collaborative and bottom-up process to develop a comprehensive framework to encourage the inclusion of ocean sciences into national and state standards and for more teaching about the ocean in K-12 classrooms. In October 2004, the College of Exploration hosted a two-week online workshop, Ocean Literacy Through Science Standards. At the end of this online workshop, there was a consensus on a definition of ocean literacy, and on a set of principles, which were eventually winnowed down to the seven Essential Principles (table 1).

2. More recently, European ocean scientists and education professionals recognized the need to define a strategy to make ocean science a component of formal education curricula. One of the pioneer European countries to implement an ocean literacy framework both in formal and non-formal education was Portugal. In 2011, under the leadership of Ciência Viva, the Portuguese National Agency for Scientific and Technological Culture, the Ocean Literacy Essential Principles and Fundamental Concepts were translated into Portuguese. The Conhecer o oceano (Knowing the Sea) project was developed to adapt the seven Ocean Literacy Principles to the Portuguese context.

3. As the EU ocean literacy movement was gaining momentum, a first European Ocean Literacy conference was held in Bruges in 2012, and other national and regional associations related to ocean literacy were established such as the European Marine Science Educators Association (EMSEA), and the Canadian Network for Ocean Education (CaNOE).

4. At the first Global Ocean Science Education (GOSE) workshop, convened in Rhode Island 2015, by COSEE and the College of Exploration, a group of Asian educators started a discussion to create an Asian Marine Educators Association (AMEA). This discussion was continued by the Asian participants in the 2015 National Marine Educators Association (NMEA) conference. A year later, a workshop was held at the Tokyo University of Marine Science and Technology (TUMSAT) to define a framework for the association and to discuss goals and interest and membership.
5. While all these organizations and associations have been critical to promote ocean literacy nationally and regionally, the need for an international collaboration and exchange of good practices and experiences led to the engagement of UNESCO in ocean literacy, both through its Intergovernmental Oceanographic Commission (IOC) and its Education Sector. This happened in particular through the organization of the GOSE workshops. The 2016 and 2017 workshops, co-organized by the IOC with COSEE, and the College of Exploration, were aimed at further strengthening the global ocean science education network by engaging the policy and the business sectors with the ocean research and education sectors.

6. The high-level United Nations Conference to Support the Implementation of Sustainable Development Goal 14: Conserve and Sustainably Use the Oceans, Seas and Marine Resources for Sustainable Development, convened at United Nations Headquarters in New York from 5 to 9 June 2017 provided the platform to further promote the ocean literacy concept and framework internationally. A voluntary commitment #OceanAction15187, Ocean Literacy for All: A Global Strategy to Raise the Awareness for the Conservation, Restoration, and Sustainable Use of Our Ocean, was submitted by UNESCO in partnership with many of the institutions mentioned above and other relevant partners. The main aim of the initiatives outlined in the Voluntary Commitment is to develop a global partnership to improve public knowledge across the world citizenry regarding our global ocean.

7. Furthermore, the UN Ocean Conference adopted, by consensus, the intergovernmentally agreed declaration in the form of a "Call for Action", which declares that Member States, in concert with relevant stakeholders agree to:

Support plans to foster ocean-related education, for example as part of education curricula, to promote ocean literacy and a culture of conservation, restoration and sustainable use of our ocean.

The future of ocean literacy in the context of the UN Decade of Ocean Science for Sustainable Development

8. Ocean Literacy is defined as the understanding of our influence on the ocean and the ocean influence on us. Ocean literacy is a way not only to increase the awareness of the public about the ocean, but it is as an approach to encourage all citizens and stakeholders to have a more responsible and informed behaviour towards the ocean and its resources. It is not just knowledge about the state of the ocean but a deeper understanding of our individual and collective responsibilities to take care of the ocean.

9. While education and traditional advertising can be effective in creating awareness, numerous studies document that behaviour change rarely occurs as a result of simply providing information, but there must also be initiatives delivered at the community level focusing on removing barriers to an activity, while simultaneously enhancing the activity’s benefits. Good ocean governance in the twenty-first century requires stewardship of life-support system and ecosystem services, accountability, transparency, informed opinion, national and local governmental commitment, interdisciplinary coordination and cooperation, development of integrated ocean policies.

10. The future and the challenge of ocean literacy is, therefore, to transform ocean knowledge into actions for the purpose of promoting ocean sustainability. Developing and sustaining innovative approaches to ocean governance will require improvements in global ocean literacy. This challenge requires a form of governance which is made of formal and informal networks of governmental, nongovernmental, and international organizations, using strategies that go far beyond the conventional policy-making. Such forms of governance require and depend on the empowerment of communities and networks of business, universities, research centres, and civic groups to share the responsibility for addressing urgent threats. These partnerships aim to represent a meeting point between the demand and the offer of scientific knowledge and information, i.e. between the scientific community and the private sector to organize common activities in the marine and maritime sector.
11. This is very much in line with the strategic approach of the UN Decade of Ocean Science for Sustainable Development, which aims at transforming the way the ocean science community manage cooperation and partnerships in support of Sustainable Development and healthy oceans. Increasingly, ocean governance will be about empowering collaboration to tackle emerging issues and define new strategies, which will depend on how problems are framed and narratives are constructed. Real world strategies will imply multiple approaches and a mix of strategies, market (e.g. carbon pricing) and policy ones (e.g. incentives for renewable energy) together with information and education campaigns, and promotion of new technology and research.

12. Ocean literacy approaches could become a facilitator for this kind of governance by incorporating explicitly social and economic concerns about ocean issues and resources into management and governance. Ocean literacy should be conceived within a larger ocean sustainability framework, promoting not only the understanding of ocean knowledge but also the understanding of how to govern marine ecosystems in a sustainable manner.

13. For many, the ocean is the new economic frontier. It holds the promise of immense resources, wealth, and great potential for boosting economic growth, employment, and innovation. It is increasingly recognized as indispensable for addressing many of the global challenges facing the planet in the decades to come, from world food security to climate change, to the provision of energy, natural resources, and improved medical care. However, the First World Ocean Assessment found that much of the ocean is now seriously degraded. A continued failure to address these problems is likely to create a destructive cycle of degradation that will ultimately deprive society of many of the benefits currently derived from the ocean. There is, therefore, an urgent need to better study and understand the ocean to develop effective solutions. Stronger cooperation and partnerships between the stakeholders responsible for ocean science have to be shaped, while facilitating a faster and more effective delivery of knowledge to policy and decision-makers and the society at large.

14. Ocean literacy is a fundamental tool to enhance ocean knowledge, but also to encourage citizens and stakeholders to have an active role in the implementation of sustainable actions on both individual and collective levels. While at the beginning, ocean literacy was developed for the specific purpose to fit the K-12 science curriculum in the U.S., it has, as concept and approach, been adopted and adapted to a broader context. Ocean literacy is seen now as a way to encourage more young people to start a career in the blue economy or in ocean science, to promote a more responsible citizenry, to develop sound public marine policy, as well as more sustainable production practices. Although many ocean literacy initiatives and programmes exist, there are still gaps to fill and challenges to meet to incorporate new cultural and disciplinary perspectives, to engage more institutions and more countries and regions. The UN Decade of Ocean Science, through IOC and its partners, can offer a sharing platform to pave the way for these new processes to start and flourish.

The paragraph below reports the major IOC Ocean Literacy initiatives, developed over the last three years (2015–2018)

15. IOC Ocean Literacy activities have been undertaken in the framework of the IOC Capacity Development Strategy (2015–2021) (IOC/INF-1314). More specifically, in relation to the foreseen output “Visibility and awareness increased”, and the connected activities, “Public Information and Ocean Literacy”.

16. First International Ocean Literacy Conference – As part of the implementation of the voluntary commitment “Ocean Literacy for All” the IOC of UNESCO organized the first International Ocean Literacy Conference in Venice, at the UNESCO Regional Bureau for Science and Culture in Europe, with the financial support of the Swedish Government. This event can be considered the first step in a collaborative process to put together initiatives worldwide toward shaping a global framework for ocean literacy, and to invite all relevant stakeholders to converge around a coherent approach to Ocean Literacy. The conference addressed topics covered by the Ocean Literacy for All voluntary commitment and, with a participatory approach, discussed activities to be developed in the next three years in preparation for the next UN Ocean Conference (2020). Furthermore, the
discussion focused on ways by which the initiative will best support Sustainable Development Goal 14 on the conservation and sustainable use of the ocean, seas and marine resources will be debated, as well as means to develop in tune with the International Decade of Ocean Science for Sustainable Development (2021–2030): The Ocean We Need for the Future We Want. The conference had an international focus and gathered for the first time over 100 participants from 30 countries covering all regions (Europe, Africa, North and South America and Asia). A wide variety of speakers—educators, scientists, activists, journalists, contemporary art curators and foundations joined. Research, art and communication working together for the ocean will be essential in the Ocean Literacy process. Good practices in formal and non-formal education as well as examples of successful public-private partnerships were presented to create the basis for an exchange amongst the participants.

17. **Ocean Literacy for All – A toolkit** - The two-part IOC Manual and Guides, 80 produced by UNESCO's Regional Bureau for Science and Culture in Europe (Venice, Italy) and the Intergovernmental Oceanographic Commission (IOC) is the result of joint work and contributions by members of the global partnership led by IOC. It builds on the “Ocean Literacy for All” initiative, as well as the Call for Action issued at the end of the UN Ocean Conference, which calls on all stakeholders to “support plans to foster ocean-related education [...] to promote ocean literacy”. The publication provides educators and learners worldwide innovative tools, methods and resources to understand the complex ocean processes and functions and, as well, to alert them on the most urgent ocean issues. It presents the essential scientific principles and information needed to understand the cause-effect relationship between individual and collective behaviour, and the impacts that threaten the ocean health. Trust is that it will inspire citizens, scientists, educators and learners to take greater personal responsibility for the ocean, as well as work through partnerships and networks, sharing ideas and experiences and developing new approaches and initiatives in support of ocean literacy. As the marine environment takes centre-stage in the pursuit of sustainable development, today more than ever, it is crucial to ensure that citizens and policy-makers are well equipped in their knowledge of how human and ocean well-being are tightly connected. As there can be no sustainable future without a healthy ocean, Ocean Literacy is key to achieving the 2030 Agenda for Sustainable Development. The Ocean Literacy for All – A Toolkit will be tested in schools of 35 countries belonging to the UNESCO Network of Associated Schools.

18. **Ocean Literacy online platform** – The ocean literacy online platform aims at sharing resources, projects and people on ocean literacy for sustainable development. The platform will also have an intranet section to facilitate collaboration among those interested in developing joint ocean literacy activities.

19. **Sea Change Project** – Sea Change was a EU H2020 funded project that aimed to establish a fundamental “Sea Change” in the way European citizens view their relationship with the sea, by empowering them, as Ocean Literate citizens, to take direct and sustainable action towards a healthy ocean and seas, healthy communities and ultimately a healthy planet. The project run from March 2015 to February 2018, and in this context the IOC of UNESCO developed the first Massive Open Online Course (MOOC) on ocean literacy attended by more than 500 participants from all over the world, and the Roadmap for Science-Society-Policy Interface for Ocean Governance.

20. **Global Ocean Science Education (GOSE) workshops** in 2016 and 2017 – The Global Ocean Science Education workshops are sponsored and facilitated by the international Consortium for Ocean Science Exploration and Engagement (COSEE), the IOC, and the College of Exploration with the aim of bringing together ocean science, education, policy and business sectors.

21. **CommOcean Conference and Ocean Teacher Global Academy Training** – The IOC was part of the organizing committee, together with the Flanders Marine Institute and the European Marine Board, of the second International Marine Science Communication Conference. A 1-day training on ocean science communication and digital storytelling was held after the conference. The training was carried out within the framework of the Ocean Teacher Global Academy.
22. **Ocean Teacher Global Academy (OTGA) Training course on Ocean Literacy and Story Telling Maps** – It took place in Santa Marta (Colombia) back to back with International Coastal Atlas Network (ICAN 8) linking both events in a complementary way, which allowed ICAN experts to support the OTGA course as instructors and teachers, while learning from each other. Students from all over South America participated from 13 to 15 September and worked in teams to produce story maps on coastal and marine issues within an OL context. The course promoted collaborative work and cooperation and facilitated practical use of story mapping technology and as such cultivated networking of course participants across diverse fields of expertise e.g. fisheries, ocean biodiversity or risk and disaster management across South America.

23. **One Ocean Forum** – One Ocean Forum was held in Milan in October 2017, promoted by the Yacht Club Costa Smeralda, under the high patronage of Princess Zahra Aga Khan, the forum brought together major stakeholders, and prominent experts from different fields to open an international dialogue on marine preservation. The discussion developed around pressing issues such as marine litter, and climate change, and solutions such as blue technologies and innovation, and ocean literacy.

24. **Collaboration with ocean literacy regional and national networks** – The IOC collaborates, and participates in the conferences, and activities organized at regional level by different marine science educators associations, such as the European Marine Science Educators Association (EMSEA), the Asia Marine Science Educators Association (AMEA), and the National Marine Educators Association (NMEA). The IOC has also facilitated the creation of national network on ocean literacy such as the Italian Network, Ocean Literacy Italia.

25. **Partnership with Sky Group** – The IOC has established a partnership with Sky and its Ocean Rescue Programme to develop short documentaries on the seven essential ocean literacy principles.

26. **Collaboration with other UNESCO Sectors** – Since 2014 the IOC is part of the Global Action Plan on Education for Sustainable Development promoted by the UNESCO Education Sector, is furthermore part of the UNESCO Youth Strategy promoted by the Social and Human Sciences Sector, and has collaborated with the Communication and Information Sector to develop innovative tools for ocean science education.

**Proposed Ocean Literacy Priority Areas of Action**

27. As a result of consultation processes with various ocean stakeholders it was possible to identify the following priority areas of action for future ocean literacy activities. The following list is preliminary and not exhaustive and will have to be further discussed with IOC Member States:

- **School curriculum**: Fostering the integration of ocean literacy into the curriculum of formal education systems around the world.

- **Educator training**: providing mechanisms to bolster educator training in ocean literacy – especially among teachers in formal education.

- **Bringing stakeholders together**: establishing mechanisms to bring more ocean literacy stakeholders into national and international ocean literacy discussions, and to foster increased dialogue and collaboration at the national, regional and international levels.

- **Policy and strategic planning**: fostering the creation of ocean literacy strategies at the national, regional and international level; advocating for stronger consideration and integration of ocean literacy in government policy at the national and international level.

- **Accessibility**: improving accessibility to ocean science and ocean literacy resources and dialogue – especially by improving translation, targeting disadvantaged and under-represented groups, increasing funding for ocean literacy activities and providing platforms for sharing resources and fostering dialogue.
Specific ocean literacy resources, programmes and tactics: develop and deliver a wide variety of ocean literacy resources, programmes, and other communication and education tactics to advance ocean literacy among target audiences.

Capacity development: strengthen the capacity of the media and journalists, government, private sector, decision-makers, scientists, communities, indigenous groups, and other stakeholders to engage in ocean literacy discussions and integrate ocean literacy into their activities.

Research: conduct more research on behaviour change, science communication, and the impacts of ocean literacy to improve the efficacy of ocean literacy strategies and activities.

Conclusions

28. Ocean Literacy can be considered a cross-cutting approach (fig. 1), which can complement the outreach and communication activities already developed and implemented. Furthermore, it can allow the IOC to disseminate, and to make accessible to a general public, to economic sectors, and in formal education contexts, the results of the activities undertaken in the context of the IOC flagship programmes (e.g. MSP, GOOS, Tsunami Early Warning, HABs).

29. Furthermore, Ocean Literacy can facilitate the collaboration with other UNESCO Sectors, in particular the Education Sector, but also Social and Human Sciences, as well as Culture, Science and Communication And Information. Some examples have been already presented in this document, but more efforts could be done to further these collaborations and joint projects development.

30. Finally, Ocean Literacy can support the transformative approach needed in the planning phase, and in the following implementation one of the UN Decade of Ocean Science for Sustainable Development, by developing more effective communication tools which will aim, not only to increase the awareness on ocean matters, but also to facilitate the collaboration between different sectors. Ocean Literacy can help bridging the gaps, and enhance the interfaces between science, society, and policy.

Figure 1 Ocean Literacy in connection with IOC programmes and regions, UNESCO Sectors, and international processes
Proposed decision

31. In light of the foregoing, the IOC Executive Council may wish to consider draft EC-LI/Dec.4.9 proposed in the Action Paper (IOC/EC-LI/2 Prov.)