

ADVANCE, UNEDITED VERSION (ENGLISH ONLY)

Twentieth meeting of the United Nations Open-ended Informal Consultative Process on Oceans and the Law of the Sea

(10 to 14 June 2019)

Co-Chair's summary

Agenda items 1 and 2

Opening of the meeting and adoption of the agenda

1. The Co-Chairs, Penelope Althea Beckles, Permanent Representative of Trinidad and Tobago to the United Nations, and Isabelle Picco, Permanent Representative of the Principality of Monaco to the United Nations, appointed by María Fernanda Espinosa Garcés, President of the seventy-third session of the General Assembly, opened the meeting.
2. Opening remarks were made by the Under-Secretary-General for Legal Affairs and United Nations Legal Counsel, Miguel de Serpa Soares, the Under-Secretary-General for Economic and Social Affairs, Liu Zhenmin, and the Under-Secretary-General and High Representative for the Least Developed Countries, Landlocked Developing Countries and Small Island Developing States, Fekitamoeloa Katoa 'Utoikamanu, on behalf of the Secretary-General.
3. The meeting adopted the format and annotated provisional agenda and approved the organization of work.

Agenda item 3

General exchange of views

4. A general exchange of views took place at the plenary meetings on 10 and 13 June. Delegations expressed their appreciation for the report of the Secretary-General on oceans and the law of the sea on the topic of focus (A/74/70), which was considered to be comprehensive and to provide a solid basis for discussions, as well as their support for the Open-ended Informal Consultative Process on Oceans and the Law of the Sea, including the opportunity the meeting offered to develop substantive inputs to the preparation for the United Nations Decade of Ocean Science for Sustainable Development (the Decade).
5. Delegations welcomed the proclamation of the Decade, which commences on 1 January 2021, and considered the focus of the twentieth meeting of the Informal Consultative Process on

ocean science and the Decade appropriate, timely and important. Appreciation was expressed to the Intergovernmental Oceanographic Commission of the United Nations Educational, Scientific and Cultural Organization (IOC) for the work that it had done thus far in preparation for the Decade. In addition to the current meeting, the holding of the 2020 United Nations Conference to Support the Implementation of Sustainable Development Goal 14 (2020 Ocean Conference) was seen as an important foundation for the Decade.

6. Support was expressed for the emerging themes of the Decade and its societal outcomes. Several delegations stressed that a key component of the Decade should be achieving a healthy, productive and resilient ocean, noting, as stated in the draft Roadmap for the Decade, that this required an inter-disciplinary and holistic approach that breaks down silos and draws necessary linkages between research and policy-making processes. They noted that this objective was in line with the Sustainable Development Goals (SDGs) of the 2030 Agenda for Sustainable Development (2030 Agenda), particularly SDGs 14, 13 and 7, the Paris Agreement, the S.A.M.O.A. Pathway and was also in line with the forthcoming Intergovernmental Panel on Climate Change (IPCC) Special Report on the Ocean and Cryosphere in a Changing Climate.

7. Delegations affirmed the importance of the United Nations Convention on the Law of the Sea (UNCLOS) as the legal framework within which all activities in the oceans and seas must be carried out, including marine scientific research, and for the sustainable development of the ocean and its resources. Several delegations suggested that increasing awareness of the provisions of UNCLOS could advance ocean science. The need to avoid fragmentation of the concept of marine scientific research by distinguishing between pure research activities and applied research, or by exempting activities related to operational oceanography from the concept, was highlighted. The need to seek the consent of the coastal State to conduct marine scientific research under its jurisdiction was also highlighted. The Decade was identified by many delegations as a good opportunity to further support the implementation of the applicable provisions of the Convention as well as the achievements of the SDGs, particularly SDG 14.

8. Delegations noted the cross-cutting role of ocean science in the 2030 Agenda, highlighting that science-based management underpinned the achievement of the targets under SDG 14, and that achievement of those targets would support the achievement of the other Goals under the 2030 Agenda.

9. The dependence of humankind on the ocean and its resources was highlighted, particularly in light of the ocean's role in ensuring a habitable climate and providing food security, with more than three billion people directly relying on oceans for their livelihoods, as well as its role as a source of energy and natural resources and for tourism.

10. Delegations stressed the importance of ocean science in addressing the unprecedented pressures affecting the ocean, including the impacts of climate change and ocean acidification, pollution, particularly from microplastics, biodiversity loss, and the impacts of activities on land, such as mining, transport, agriculture and development of coastal areas. Many delegations emphasized the need to address the cumulative effects of various stressors. The contribution that ocean science and long-term ocean observations had made to several fundamental decisions of

the United Nations and the development of environmental regulations and treaties was also highlighted.

11. Delegations highlighted the gaps in knowledge about the ocean and its resources, with some delegations noting, in particular, the scarcity of data on the deep-sea floor and the low level of accuracy of existing data, in particular for areas beyond national jurisdiction. The Arctic and Indian Oceans were highlighted as being the ocean basins about which the least was known. Several delegations expressed the view that a lack of scientific information should, however, not be used as an excuse to postpone conservation and management measures. The view was expressed that the interlinkages between oceans and mountains had been overlooked with mountain ranges significantly affecting hydrological cycles and glacial melting caused by climate change contributing to sea level rise.

12. Several delegations noted that a more comprehensive understanding of the oceans was indispensable to ensuring the sustainable management of oceans and their resources, including for the development of blue economies. The importance of scientific observation for cartography, safe navigation, shipping, search and rescue, monitoring and predicting extreme weather events, disaster prevention, and natural resource development, including for offshore oil and gas and sustainable fisheries, in particular artisanal fisheries, was highlighted. The role of underwater cultural heritage as providing information, including regarding past climates, was also emphasized and the need for its protection was underscored. Greater knowledge was also identified as critical for the development of mitigation measures in the context of climate change.

13. In terms of challenges, delegations noted that certain States, particularly developing States, have limited human and institutional capacity to conduct and benefit from ocean science, and lack the necessary infrastructure. The need to provide an opportunity for landlocked countries to participate in ocean science, including through the development of capacity, was also highlighted. Several delegations emphasized the need for commitments in the field of capacity-building.

14. The importance of ensuring reliable and accessible ocean data to support sustainable management of oceans, as well as to promote cooperation, was underlined by delegations. The role of submarine cables in globalizing access to telecommunication networks, and the socioeconomic benefits they deliver was highlighted by an observer delegation. Several delegations highlighted obstacles related to data sharing and the need for best practices for the management and exchange of data.

15. Several delegations noted the need for particular attention to be given to ensuring access to user-friendly data, including so that developing countries are able to benefit from ocean science. It was highlighted that internationally accepted standards to support open access and interoperability of data, and the establishment of a clearinghouse mechanism, were potential initiatives being discussed in the context of the Intergovernmental Conference on an international legally binding instrument under UNCLOS on the conservation and sustainable use of marine biological diversity of areas beyond national jurisdiction.

16. Many delegations also noted that the development of ocean science faces challenges stemming from limited funding and stressed the need for sustained investment in this respect.

17. Some delegations highlighted the gender dimension of ocean science as a particular challenge, calling for increased gender diversity amongst ocean scientists. The view was expressed that while female participation in oceans sciences on average was 10 percentage points higher than for sciences generally, the overall average rate of 38 percent was still insufficient. In this regard Member States, regional and international organizations, universities and research institutions were encouraged to increase efforts to empower women and girls and encourage women to study and pursue careers in ocean science.

18. Notwithstanding various challenges, many delegations highlighted the opportunities available to advance ocean science, including by developing technology, improving data availability and operability, supporting capacity-building and the transfer of marine technology, and promoting ocean literacy in particular for younger generations. Several delegations noted their contributions to capacity-building projects and programmes.

19. Several delegations underscored the wealth of knowledge held by indigenous peoples and local communities. They underlined the important complementary role of traditional knowledge, and the contribution it can make to improving our knowledge of the ocean and ocean governance and highlighted the need for the Decade to recognize and systemize the inclusion of relevant traditional knowledge and traditional knowledge holders into scientific work.

20. Delegations highlighted how critical ocean science was for decision-makers and emphasized the need to strengthen the science-policy interface. A delegation observed that the Regular Process for Global Reporting and Assessment of the State of the Marine Environment, including Socioeconomic Aspects (Regular Process), and the First Global Integrated Marine Assessment showed that policy decisions should be underpinned by the best available science. Many delegations highlighted that an improved understanding of the interconnectivity between the ocean and the climate was essential to furthering climate policy. In this respect, several delegations emphasized the links between ocean science and the IPCC process. Delegations also noted that ocean science featured prominently in several policy processes, including the Intergovernmental Conference on an international legally binding instrument under UNCLOS on the conservation and sustainable use of marine biological diversity of areas beyond national jurisdiction. Several delegations pointed out that the use of a science-based approach should be one of the core principles of the future instrument. The role of ocean science in the development of exploitation regulations, pursuant to Part XI of UNCLOS, to govern activities in the Area, which is intended to be completed in 2020, was also noted. A delegation stressed that in the absence of reliable data and the corresponding presence of scientific uncertainty, the precautionary principle must be applied.

21. Delegations highlighted the critical importance of international cooperation and the need for increased collaboration and coordination in the field of ocean science, including at national, regional and global levels, including through South-South, North-South and triangular cooperation, and through engagement with various stakeholders. Several delegations gave an overview of their current international partnerships with other States, and of frameworks for such

cooperation. In this regard, the High-Level Panel for a Sustainable Ocean Economy, which would deliver its final report in 2020, was highlighted by a delegation as an authoritative ocean policy body which could trigger and accelerate action for ocean protection and productivity. Several delegations expressed the view that a review of the terms of reference of UN-Oceans could be undertaken with the purpose of strengthening it to realize its full potential, including in relation to ocean science.

22. The Decade was considered an important opportunity to focus attention to address gaps in ocean science, increase knowledge, improve synergies, and support the sustainable conservation and management of marine resources (see also paras. 7 and 19). Many delegations suggested that the Decade could foster a better understanding of the ocean-climate nexus. A delegation also suggested that the Decade could enhance knowledge of areas beyond national jurisdiction. Several delegations expressed the view that a priority of the Decade should be capacity and technology needs assessments at all levels, in particular for small island developing States (SIDS). It was suggested that the Decade and the 2020 Ocean Conference could help mainstream ocean science and increase awareness of it. It was also hoped that the Decade would catalyse greater investment in ocean science and lead to better coordination between existing institutions and processes. The view was expressed, however, that a decade might not be enough time to achieve all of the goals which States set for themselves.

23. Several delegations gave an overview of their current research programmes and activities in the field of ocean science, including in relation to ocean observation, data collection, and forecasting, resource monitoring, assessment and tracking, technology development, conservation, ocean literacy, management of blue forests, and the involvement of local coastal communities in fighting poverty. Some delegations also noted outreach undertaken nationally with constituents, experts, universities, and professional societies to promote the Decade and receive input. Other delegations informed the meeting of the establishment of national inter-agency committees or offices in support of the Decade.

Area of focus: Ocean Science and the United Nations Decade of Ocean Science for Sustainable Development

24. In accordance with the format and annotated provisional agenda, the discussion panel on the topic of focus was organized in two segments structured around: (a) Scope and uses of, and gaps in, ocean science; and (b) International cooperation and coordination in advancing ocean science and addressing related gaps. The panellists gave presentations, after which interactive discussions were held.

1. Scope and uses of, and gaps in, ocean science

Panel presentations

25. In the first segment, Vladimir Ryabinin, Executive Secretary, IOC, introduced the United Nations Decade of Ocean Science for Sustainable Development as a unique opportunity to address important links between ocean health and sustainable development. John Agard, Director, St. Augustine Centre for Innovation and Entrepreneurship, and Professor of Tropical

Island Ecology, University of the West Indies, Trinidad and Tobago, provided an overview of the status of ocean science in advancing sustainable development, pointing out the interconnectivity of the SDGs and highlighting research priorities. Hervé Raps, Medical Delegate to the Monaco Scientific Center, addressed the links between ocean health and human health, highlighting on-going research on pathogens and changes in the oceans that affect ocean and human life. Elva Escobar-Briones, Director, Institute of Marine Sciences and Limnology, National Autonomous University of Mexico, provided information on deep-sea biological processes, relevant environmental, economic and social aspects and current gaps in knowledge. Francisco Werner, Director of Scientific Programmes and Chief Science Advisor, National Marine Fisheries Service, National Oceanic and Atmospheric Administration, United States of America, provided an overview of ocean science in support of sustainable fisheries. Silvana Birchenough, Principal Ecologist and Advice and Assessment Group Manager, Marine Climate Change Centre (MC3), Cefas Lowestoft Laboratory, United Kingdom of Great Britain and Northern Ireland, presented the current state of knowledge on benthic changes resulting from climate change and ocean acidification including its effects on commercial species and potential future consequences for aquatic ecosystems worldwide. Francisco Arias-Isaza, Director-General of the Institute for Marine and Coastal Research of Colombia, discussed the application of science to ocean management and emphasized the importance of the social sciences and traditional knowledge in addition to the natural sciences. Miguel Marques, PricewaterhouseCoopers Economy of the Sea Project Lead, provided information on how ocean science could be applied in support of blue growth/a blue economy, noting that an integrated approach identifying mutual gains for stakeholders was essential. Martin Visbeck, GEOMAR Helmholtz Centre for Ocean Research, Kiel, Germany, discussed how enhancing the free exchange of data concerning ocean observations, capacity-building and research could inform management decisions regarding the conservation and sustainable use of the oceans. Peter Kershaw, Chair of the Joint Group of Experts on the Scientific Aspects of Marine Environmental Protection (GESAMP), presented the institutional structure and work of GESAMP in advising United Nations agencies with responsibilities relating to the marine environment. Karen Evans, member of the Group of Experts of the Regular Process, described, in a pre-recorded presentation, the work and findings of the first World Ocean Assessment and presented some of the possible links between the Regular Process and the Decade. Carlos Garcia-Soto, Vice-Chair of the European Marine Board, presented the findings of the European forward-looking report “Navigating the Future V” concerning marine science for a sustainable future as an example of a scientific publication written in a format accessible to policy-makers.

Panel discussions

26. The discussions held after the presentations addressed, *inter alia*, the role and uses of ocean science in better understanding, predicting and addressing the impacts of climate change and other pressures on ocean ecosystems and food safety and security, how data and information could be better shared, and how the gap between science and policy-making could be bridged. Discussions also took place on ocean literacy and education as well as funding for ocean science. Ways for the Decade to address these aspects were also touched upon.

27. A delegation observed that there was much about the ocean that was still unknown, noting that ocean science seemed to constantly lag behind changes and developments in the

ocean, and queried what could be done to better anticipate and respond to emerging challenges. Mr. Marques remarked that ocean science would likely always lag behind, but that the scientific community would adapt accordingly as needs changed. An observer delegation underlined that it was essential for decision-making processes to be underpinned by the precautionary principle and that failure to do so could have adverse impacts on the marine environment. Mr. Marques affirmed the importance of the precautionary principle and observed that the uses of the oceans were increasing in number and intensity, noting that environmental protection should be seen as a value rather than a cost.

28. Addressing the impacts of ocean noise produced by certain tools and methods used in ocean science, such as seismic surveying, an observer delegation stressed that technology should be improved to reduce adverse impacts on marine life. Mr. Visbeck agreed that ocean noise was a pollutant and indicated that the scientific community had recognized that challenge and sought to avoid taking data using tools and methods with impacts on marine life unnecessarily. He noted that there were further opportunities to reduce noise pollution.

29. Considering the impacts of ocean acidification and marine heat waves on potential aquaculture zones, a question was raised concerning the means available to maintain sufficient seafood production to ensure food security. In this regard, Ms. Birchenough highlighted monitoring of temperature and carbonate chemistry as an important means, not only to increase the understanding of the underlying processes and impacts, but also to predict changes and events that may require certain preventive actions at aquaculture facilities, such as temporarily moving sensitive life-cycle stages to less affected areas or buffering the water. Noting that more research was needed, Mr. Werner further added, in the context of changes in species distribution caused by increases in temperatures, that harvesting species new to an area or decreasing the fishing pressure on other species might be considered. He also stressed the need for improvements in the two to three-year forecasting cycle, which he noted was of special interest for commercial as well as human health activities. Ms. Escobar-Briones suggested including climate change as a factor when developing numerical models for aquaculture farms, as well as conservation areas for natural populations. She underscored the importance of also including populations that provide sustenance and food supply for higher trophic level species of commercial interest in the models and the forecasting.

30. With regard to the potentially serious impacts of localized decreases of pH values on calcareous microorganisms at the base of the food web and the implications for food security at regional or sub-regional levels, Mr. Werner noted that, while the importance of the lower part of the food web has long been understood, new molecular biology approaches were helping in the difficult quantification of changes in communities at the base of the food chain that occurred over the past 40-50 years in response to environmental or other conditions, but that more research needed to be done. He added that there was evidence that changes at the base of the food web had an impact on higher trophic levels as well. Several delegations underscored the importance of taking the entirety of the food web into account in order to successfully enable an ecosystem-based management approach and the conservation and sustainable use of the ocean and its resources and pointed to the forthcoming IPCC Special Report on the Ocean and Cryosphere in a Changing Climate as a potential source of further information in this context.

31. A delegation, noting that the topic of sea level rise in relation to international law had recently been added to the work programme of the International Law Commission, asked whether there were any non-legal aspects to this issue that could be addressed during the Decade. With reference to deep-sea biological processes, Ms. Escobar-Briones highlighted the need to take into account environmental, social and economic aspects, considering that a number of ecosystem services and potential losses due to deep-sea activities or climate change had yet to be valued, which is a prerequisite for assessing whether the benefits of planned activities would truly outweigh potential losses.

32. In response to a question on whether the Decade would take into consideration the issue of the resilience of Caribbean countries to hurricanes, Ms. Birchenough drew attention to a project implemented in the Caribbean in cooperation with the World Bank, which included parametric insurance as a means of compensation for local fishing communities to remedy, for example, the loss of gear or the loss of sea time due to extreme weather events.

33. Responding to a question on the effects of plastic microcontaminants contained in fish used for human consumption on human health, Mr. Raps referenced studies from the Faroe Islands demonstrating a link between the high mercury content in whale meat and blubber and developmental delays in children from mothers that had consumed whale meat, leading to recommendations that pregnant women should avoid the consumption of certain parts of whales. He noted that questions were being raised about whether to also recommend avoiding consumption of smaller fish and shellfish during pregnancy due to plastic contamination. Ms. Birchenough added that studies were currently being conducted to examine the absorption of microplastics especially in certain filter-feeding species in the Caribbean, though the results had yet to be published. Several delegations voiced their concern with respect to the potential effects of microplastics on human health in general, noting the wide distribution of these contaminants, not only in seafood, but also in drinking water, and the gaps in knowledge in that regard, and suggested that the Decade might stimulate more research on this topic. Mr. Raps added that other types of pathogens, such as bacteria, may attach to microplastics and constitute additional contaminants and risks to human health. He further pointed to a study currently being conducted by the World Health Organization on plastic particulates in drinking water.

34. A delegation noted the detrimental effects of invasive Sargassum seaweed on the Caribbean and enquired about ways to deal with the issue. Mr. Agard suggested to reframe the issue as an opportunity and pointed to a number of proposals for alternative uses of Sargassum, including converting it into a fertilizer, and creating biodegradable plastics out of Sargassum, underscoring the circular aspect of the blue economy. Ms. Birchenough noted that while several possible solutions were already being discussed, including its use as biofuel or fertilizer, funding was required for the implementation of such solutions. She cautioned that due to the presence of heavy metals, certain uses of Sargassum would need to involve treatment. Ms. Escobar-Briones pointed to habitat losses due to Sargassum and encouraged the use of AMEXCID funds reserved for that purpose. She stressed the need for further experimental studies, baseline analyses and additional data, particularly from remote sensing with a sufficient resolution and better coverage. She cautioned against burning the Sargassum as fuel due to the additional release of carbon dioxide to the atmosphere that this would cause and stressed the need for further cooperation in the wider Caribbean.

35. A delegation welcomed the Colombian example recounted by Mr. Arias-Isaza as to how, on the basis of research, the activities and interests of different fisheries stakeholders were able to be accommodated and underlined that it was essential to involve social and behavioural scientists as well as economists to ensure the success of the Decade.

36. Noting that the enhancement of data-sharing was being discussed in the context of the Intergovernmental Conference on an international legally binding instrument on the conservation and sustainable use of marine biological diversity of areas beyond national jurisdiction, some delegations enquired about the key issues to be resolved to promote data-sharing, with a delegation noting that data was considered as a possible benefit to be shared in the context of those discussions. A delegation observed that while there were several data platforms, issues of interoperability and connectivity needed to be addressed. Mr. Visbeck noted that the amount of available data and information was growing, and data sharing was essential, but there was as yet no global database. However, the international community was working to fill this gap.

37. With reference to the question raised by Mr. Visbeck concerning the legal framework for operational oceanography, a delegation noted that such legal questions had been settled by IOC with regard to Argo floats, which provided freely-available data on oceanographic phenomena to the global scientific community. The delegation also recalled that the inclusion of new sensors on Argo floats had recently been approved. Further noting that the capacity to retrieve and use data from the Argo floats needed to be enhanced, that delegation, along with Mr. Visbeck, suggested that States with the capabilities to do so could assist others in building the required capacity, including by sharing tools and information. Mr. Visbeck observed that while most scientists supported and promoted free and open access to data, data collected by private companies was often subject to permanent non-disclosure agreements. He suggested that there should be time limits to such agreements, observing that some non-disclosure agreements expired after 10 years. Mr. Arias-Isaza suggested that stakeholders whose profits were generated from oceans-related activities should share information gathered in the course of those activities. He stated that the Decade could be the vector for a shared responsibility, so that ocean information is shared for the benefit of all humankind.

38. With regard to the use of ocean science in policy and management and in relation to how the gap could be bridged between scientists, policy-makers and the public, Mr. Visbeck noted that the First Global Integrated Marine Assessment (also known as the “first World Ocean Assessment”) was the only global undertaking aimed at providing a regular scientific assessment of the state of the marine environment, including socioeconomic aspects, in order to enhance the scientific basis for policy-making. A delegation observed that the Regular Process had not garnered much attention, which could be partly due to a lack of media visibility.

39. A delegation noted that political action was required to ensure that ocean science was integrated into decision-making. Delegations also stressed the importance of presenting knowledge in such a manner that would allow decision-makers to properly understand and therefore properly address the issues at stake. Mr. Arias-Isaza noted a confidence gap, whereby political groups may ignore or alter scientific information if thought to be against their interests. He noted that this issue needed to be overcome in order to build confidence among the various

stakeholders. Moreover, scientists had to learn to communicate their results and policy-makers had to ask the right questions and trust the science. Mr. Kershaw noted that, in order for ocean science to be useful, the end-users needed to be involved from the beginning, so as to make sure the expected outputs responded to their needs. Mr. Visbeck observed that when research was funded by governments, it was stakeholder-driven. Mr. Garcia-Soto referred to the use of science for sustainable development as another possible option, noting such an approach was created to solve issues of relevance to States and therefore of value. Mr. Ryabinin noted that newly developed mechanisms of measuring and reporting on developments in ocean science capacity had the potential to attract the attention of governments. Mr. Marques considered communication barriers as the biggest obstacle to progress, noting that different languages used in business and in science as well as different backgrounds of people working in those fields contributed to those barriers. In his view, it was necessary to identify mutual gains in order to move forward. Mr. Visbeck observed that, in order to move away from the current way of thinking, it would be important to ensure that scientific information is recognized as a public good.

40. Mr. Arias-Isaza stressed the need to ensure that scientific information produced by various processes is delivered not only to a wide range of ocean users, but also beyond the ocean community. He also noted gaps in reaching, and actively involving, the youth, suggesting that specific curricula for schools on matters pertaining to ocean science and its importance for all could be designed.

41. Mr. Marques stressed the need for ocean science to have short-term goals that are clear for the public. While noting that government administrations often change every few years, a delegation suggested that a long-term media campaign be established as part of the Decade to adequately sensitize people, starting with primary schools. The possibility of also conducting awareness-raising campaigns in the margins of major international events, such as the FIFA world cups, was also mentioned. Mr. Kershaw cited the need to make educational materials available and to promote citizen science. He further stressed the need for behavioural scientists to foster effective communication.

42. In relation to ways to encourage the next generation to pursue careers in ocean science, Mr. Ryabinin noted a change of paradigm with respect to the interest in ocean science which the Decade was expected to further support and coordinate.

43. Noting the ongoing need to improve ocean literacy among stakeholders and communities, Mr. Visbeck cited UN-Oceans as one of the main mechanisms which could play a major role in ocean literacy during the Decade. Mr. Ryabinin also underscored the importance of developing ocean literacy and creating a sense of ownership of the ocean, and highlighted existing initiatives in that regard, including IOC's Ocean Teacher Global Academy.

44. Mr. Visbeck emphasized the importance of working together in the United Nations system and across the sciences, in order to make sound decisions. A delegation enquired about the potential of drawing upon existing regional or subject-matter-oriented organizational bodies, such as the International Council for the Exploration of the Sea and the North Pacific Marine Science Organization, to help describe the science objectives of the Decade. In this context, Mr. Werner encouraged building on the existing capability and experience of such organizations.

Ms. Birchenough further emphasized the need for collaboration in order for the implementation plan for the Decade to benefit from the existing infrastructure and scientific expertise.

45. With regard to investments in ocean science, Mr. Agard highlighted the importance of investment on the part of industry in further research. Addressing a question on how to avoid that “blue bonds” suffer the same difficulties as carbon trading permits, Mr. Agard noted that, in order to progress with a blue and circular economy, financing needed to be put in place, and that “blue bonds”, which were currently being evaluated, were only part of a menu of potential financial instruments that could be used.

2. International cooperation and coordination in advancing ocean science and addressing related gaps

Panel presentations

46. In the second segment, the first three speakers discussed approaches and initiatives to address capacity-building needs in ocean science in Trinidad and Tobago, the Pacific and Sri Lanka, respectively, as follows: Diva Amon, Marie Sklodowska-Curie Fellow, Natural History Museum, United Kingdom, and Co-Founder and Director of SpeSpeas, Trinidad and Tobago, highlighted initiatives of SpeSeas to engage local communities in marine science; Jens Kruger, Manager, Ocean Affairs, Pacific Community, described the principal regional organizations, frameworks and strategies relevant to ocean science in the Pacific, and provided examples of projects in the region; and Wijemuni Nipuna Mahin Zoysa, Director General, National Aquatic Resources Research and Development Agency, Sri Lanka, addressed national challenges and approaches to capacity-building. Ariel Troisi, IOC Vice-Chair and Chair of the IOC Group of Experts on Capacity Development, Servicio de Hidrografia Naval, Argentina, discussed capacity development and transfer of marine technology as cross-cutting issues of the Decade, highlighting the importance of surveying capacity-development needs, and matching them with capabilities. Karin Kroon Boxaspen, Research Director, Norwegian Institute of Marine Research, provided an overview of the recommendations from the Science for Ocean Action Conference, held in Bergen, Norway, from 19 to 21 November 2018, and the inputs it generated to the High-Level Panel for a Sustainable Ocean Economy. Toshio Suga, Professor, Department of Geophysics, Graduate School of Science, Tohoku University, Japan, presented some current and emerging technologies in ocean science, in particular the Global Ocean Observing System (GOOS) and Argo, emphasizing their importance and the need to provide an enabling environment through international cooperation. Frida Maria Armas-Pfirter, Professor of International Law, University of Buenos Aires, Argentina, described the legal framework for ocean science, noting that it was centered around UNCLOS and that all other applicable legal instruments must be consistent with it. Peter Haugan, IOC Chairperson and Programme Director, Institute of Marine Research, Norway, highlighted the importance of international cooperation for ocean science at the international level and described a number of activities undertaken by the IOC in cooperation with other international organizations and bodies in this regard. Michael Lodge, Secretary-General, International Seabed Authority (ISA), addressed cooperation in deep-sea science, describing the contributions made by the ISA and how the Decade could contribute to addressing various challenges. Peter Swarzenski, Section Head, Radioecology Laboratory, IAEA Environment Laboratories, provided an overview of the Global Ocean

Acidification Observing Network (GOA-ON), noting that it provides a hub for global scientific cooperation in relation to ocean acidification. Ray Dalio, Co-Chief Investment Officer and Co-Chairman of Bridgewater Associates, L.P., Co-founder of OceanX, spoke about the importance of taking a collaborative approach to ocean exploration and science, describing OceanX's contribution in bringing together oceanographic institutions with global media companies and major philanthropic organizations. Dayne Buddo, CEO and Marine Biologist, Alligator Head Foundation, Jamaica, addressed the role of non-governmental organizations in supporting ocean science, highlighting citizen science and ocean literacy projects. Carlos F. Gaymer, Director, Millennium Nucleus for Ecology and Sustainable Management of Oceanic Islands, Universidad Catolica del Norte, Chile, presented on the benefits of integrating traditional knowledge in ocean science, providing examples from the Pacific Islands, including Easter Island. Sergey Belov, Co-Chair, International Ocean Data Exchange Programme (IODE), All-Russian Research Institute Hydrometeorological Information, Obninsk, Russian Federation, provided an overview of international cooperation in data management under the auspices of IOC, including the IOC Data and Information Management Strategy, the IODE, and the future IOC Data and Information System (ODIS). Tarmo Soomere, President, Estonian Academy of Sciences, provided an overview of the science-policy interface at the national level, with a focus on Estonia, noting the importance of strong input from the national level for decision-making in interregional and subcontinental organizations. Monika Stankiewicz, Executive Secretary, Baltic Marine Environment Protection Commission – Helsinki Commission, gave a presentation on the science-policy interface at the regional level, with a focus on the HELCOM Commission and its work in the Baltic marine environment. Juliette Babb-Riley, Co-Chair, Ad Hoc Working Group of the Whole on the Regular Process for Global Reporting and Assessment of the State of the Marine Environment, including Socioeconomic Aspects (Regular Process), discussed avenues for strengthening the science-policy interface at the global level, highlighting the role of current sectoral and thematic scientific assessments, and, in particular, the integrated assessment under the Regular Process.

Panel discussions

47. The discussions held after the presentations addressed international cooperation and coordination in advancing ocean science, *inter alia*, through addressing related capacity-building needs, including under the Decade and other collaborative endeavours. UNCLOS as the legal framework applicable also to ocean science, data use, standardization and management, the integration of traditional knowledge in ocean science, the role of non-governmental organizations and strengthening the science-policy interface at all levels were also discussed.

48. A delegation asked whether capacity-development should be focussed on enhancing science capabilities, or whether there should be a closer link to the socioeconomic applications of science. In particular, clarification was sought regarding the most useful approach to capacity-development. Mr. Kruger suggested that capacity-building activities under the Decade should transform the way in which natural scientists, social scientists and politicians communicate with each other. Mr. Troisi concurred, highlighting the need to bridge the gap between scientific disciplines and between ocean scientists and policy-makers, decision-makers, managers and social scientists. He also noted that one size does not fit all in capacity development, and that account should be taken of different requirements across individual

regions, Member States and topics. Ms. Amon agreed that generalization should be avoided but added that certain common issues stood out for the Caribbean, such as improving governance, building financial resources and creating regional collaboration.

49. Addressing the issue of so-called “parachute science”, in which externally funded programmes conduct research without leaving research samples and sharing data and results with the coastal State, a delegation noted that changes in its national approach to funding of research had raised the level of engagement of local partners in research and enquired about the experience of panellists in this regard. Several panellists pointed to positive experiences of cooperation between marine scientists and local stakeholders, including under the Nansen Programme. Mr. Kruger noted an improvement in the types of partnerships being forged between researchers and local stakeholders in the Pacific but suggested more could be done with respect to retention of research samples in the region, and involvement of local scientists in analysis of samples and publication of research results. Ms. Amon noted that further improvements were also required in the Caribbean context. Ms. Boxaspen highlighted the role that bilateral agreements and national regulations could play in this regard.

50. A delegation queried to what extent the experiences of the panellists were focussed on areas within national jurisdiction or whether they could also be applied in areas beyond national jurisdiction, and whether capacity-building in areas beyond national jurisdiction would enhance capacity in areas within national jurisdiction. Mr. Troisi and Ms. Amon confirmed that the same experience and expertise could be applied irrespective of jurisdiction and that capacity-building and the transfer of marine technology in relation to areas beyond national jurisdiction could enhance research capabilities and expertise of countries in areas within national jurisdiction, and vice versa. Mr. Kruger indicated that the main challenge regarding capacity-building in the Pacific was the shortage of expertise and the time required to train scientists.

51. Noting the systematic approach to maritime boundary delimitation in the Pacific, a delegation sought further information in this regard. In response, Mr. Kruger confirmed the progress made with respect to maritime boundaries but noted that more support from partners was needed with regard to work in the Pacific concerning the continental shelf beyond 200 nautical miles. A delegation acknowledged the need for sufficient scientific and technical expertise regarding these matters and noted that collaboration at the regional level could strengthen national capacity.

52. With regard to preparations for the Decade, a delegation enquired about the panellists’ experiences with developing models of capacity-building that were responsive to changes in needs and demands over time. Mr. Troisi observed that the strategy to be developed for capacity-building and transfer of marine technology under the Decade would be designed for the long term, but that its implementation plan and regular reviews would be key to ensuring that it brought about the desired effects.

53. Noting that, while data-sharing and open access data were essential, many countries lacked the capacity to analyze the data and translate it into information and knowledge, a delegation queried whether an objective of the Decade could be making software, including standard open-source software, freely available and accessible for ocean data exploration and

modelling. Mr. Troisi agreed that there was a need to develop capacity in data analysis to generate products for policy makers and sought the support of partners to work with IOC in integrating this proposal in the context of the Decade. Mr. Kruger acknowledged the role of open source modelling tools but emphasized that such tools should be needs driven and that their usefulness had to be evaluated in light of local circumstances. For example, he explained that existing storm surge models cannot inform early warning systems regarding marine flooding in the Pacific, since coastal inundation in the Pacific is in fact caused by waves breaking on the reef.

54. It was also highlighted that inclusivity and knowledge transfer within the marine scientific community could be enhanced, including by improving the gender balance and furthering education. A delegation emphasized the importance of engaging youth in the Decade.

55. A delegation asked whether there was a conflict between population growth and the corresponding need for more food from the ocean, on the one hand, and the sustainable management of fisheries on the other. Ms. Boxaspen noted the need to ensure that the production and harvest of such resources was done in a sustainable manner, based on an integrated ecosystem assessment. With regard to aquaculture, she added that food could not be produced without a footprint, but that footprint should be made as small as possible.

56. With regard to the legal framework, delegations reiterated that UNCLOS also provides the legal framework for ocean science activities. Mr. Suga indicated that, in some cases, the provisions of UNCLOS needed to be interpreted in light of new technologies and requirements, while Ms. Armas-Pfirter underlined that such interpretation should not result in a fragmentation of the way UNCLOS is applied and that the practice and decisions of various bodies in the field of ocean science should be consistent with UNCLOS. She also pointed out the importance of respecting the rights of coastal States under UNCLOS. She further noted that law and science needed to work together to address challenges. In this regard, a delegation referred to the General Assembly and its primary role in discussing developments ocean affairs and the law of the sea, including ocean science.

57. In response to questions regarding how the legal framework for ocean science under UNCLOS would relate to an international legally binding instrument under UNCLOS on the conservation and sustainable use of marine biological diversity of areas beyond national jurisdiction, Ms. Armas-Pfirter noted that although she could not provide a conclusive reply as negotiations were ongoing, it appeared that delegations envisioned that the outcome would be consistent with the provisions of UNCLOS, including in relation to ocean science. A delegation noted that UNCLOS was the legal framework underpinning the negotiations for such an instrument, and the provisions of UNCLOS on marine scientific research were the basis of related discussions in the Intergovernmental Conference.

58. A delegation suggested that the coordination of GOOS, through existing mechanisms and legal frameworks, provided a good model for actions to be taken as part of the Decade. Several delegations welcomed the incorporation by GOOS of a broader range of ocean observations, which was considered necessary for integrated ocean management to address multiple stressors and cumulative impacts.

59. In response to a question about how temperature data collected by GOOS and Argo could be used to explain possible marine living resource migrations in the Indian Ocean resulting from ocean warming, Mr. Suga explained that although an answer could not be provided on the basis of temperature data alone, the collection and integration of comprehensive multi-disciplinary data from different sources could provide a better scientific understanding for improved decision-making. Responding to a question regarding the use, standardization and management of data, Mr. Suga noted that Argo took into account the importance of data management from the outset, with the goal of making its data useful over the long term. This resulted in data that is accessible and compatible for different uses, operational agencies and scientists. He noted the importance of cooperation with different potential end-users and stakeholders, including through fora such as OceanObs19.

60. A delegation highlighted the importance of the work of IOC in cooperation with other entities as fundamental for the Decade and drew attention to an example of international cooperation in the Atlantic that could be used as a model, including to bring together ocean and atmospheric science. Mr. Haugan cited an example of cooperation with the World Meteorological Organization based on multi-disciplinary and regional ocean observation data which was useful to meteorologists, while also noting they should be connected to global programmes.

61. In response to a question regarding how the ISA's future database would interact with existing databases, Mr. Lodge explained that while the ISA data was specialized, it could contribute to a broader understanding of the ocean, and therefore linking ISA data with other data was essential. He noted that the ISA was in advanced discussions with other bodies in order to do this, citing as an example the fact that the database was set to become a node in the Ocean Biogeographic Information System. A delegation enquired as to whether the ISA database would be comprehensive or just focused on mineral resources. Mr. Lodge noted that the ISA database would contain data that had been collected over more than 30 years of deep-sea exploration with a focus on deep-sea minerals and mineral resources. However, he also explained that, while the database contained resource-specific data, it also contained an even larger amount of environmental data collected in accordance with ISA guidelines and recommendations. Another delegation remarked that the database would be very useful in the context of an international legally binding instrument under UNCLOS on the conservation and sustainable use of marine biological diversity of areas beyond national jurisdiction. An observer delegation queried whether, in line with the precautionary approach, enough was known about the impact of exploitation of deep-sea resources absent environmental impact assessments and directed research.

62. Addressing questions related to whether OceanX was open to working with institutions around the world, whether the data it collected was openly available, and whether it was considering capacity-building for developing countries, Mr. Dalio explained that OceanX generally supported scientific exploration that was media attractive, in order to have the double impact of good science and media attention. He clarified that the scientific institutions supported by OceanX owned the data that they gathered, however such data was usually shared with host countries. He added that his organization had provided contributions to a number of developing

countries, including by financially supporting local non-governmental organizations, and researching and publicizing their unique coastal and underwater features. A delegation suggested that pilot projects with direct applicability, for example on ocean thermal energy conversion, low temperature thermal desalination and sustainable fisheries techniques, such as cage cultures and coast aquaculture, would appeal to the public at large and raise interest in ocean science. Several delegations highlighted the importance of mobilizing a broader range of resources, including philanthropic resources, in the implementation of the Decade. Mr. Lodge concurred and stressed the importance of international cooperation as no single government could fund the necessary research.

63. In response to a question concerning the important questions that the Decade should address, including with regard to defining what sustainability really means in the ecological context, Mr. Dalio noted that one aspect of sustainability that had not been given enough attention was financial sustainability, a critical requirement for research, and added that raising public support was an important way of ensuring such sustainability. Mr. Swarzenski noted that while it was known that the ocean played an important role in sequestering carbon dioxide, how changing conditions altered its capacity to do so was still unknown. In particular, he pointed to the role of microbes in the midwater column as an area in the carbon cycle that required more research.

64. In response to a question on practices of integrating ocean science into school curriculums, Mr. Buddo noted that his organization implemented field study programmes for students of tenth and eleventh grades of high school, and that these programmes received good responses from teachers and financial support from the schools' budget for field activities. Mr. Gaymer noted that the "Educational Managed Marine Area" initiative, started in the Marquesas Islands in French Polynesia, was a successful example of preparing the future generation for the management and conservation of the oceans through integrating ocean science into the formal education curriculum. Under this initiative, every island in the Marquesas Islands had one such area which was run by children between the ages of seven to eleven years who would study biology, mathematics, languages and other subjects in the field rather than in a classroom. He further noted that such areas had been designated in many other places, including in Rapa Nui.

65. A delegation enquired about challenges facing the sustainability of community-based programmes. Mr. Buddo noted that community-based programmes faced funding challenges due to longer periods before seeing the return on environmental investments, but they also provided opportunities to involve all stakeholders in the conservation of the oceans, either through appeals to donors or through projects like the Adopt-A-Coral project of his organization. Mr. Gaymer highlighted the importance of sharing successful experiences in this regard through international collaboration, including through cooperation between governments and through experience-sharing networks such as "the Big Ocean".

66. With respect to the integration of traditional knowledge into ocean science, delegations expressed the view that traditional knowledge of natural phenomena was a very useful adjunct to the knowledge gained through modern academic science, and sometimes using them together could be very synergistic. Mr. Gaymer pointed out that traditional knowledge was not only

important in terms of taking information from local communities. Scientists should also learn to validate such information, develop scientific questions based on such information, and bring science back to local communities, including by incorporating local communities in research planning and publishing papers through citizen science projects. Mr. Soomere noted that the importance of traditional knowledge, which had allowed communities to survive for many centuries with limited resources, had been heavily underestimated but could provide valuable insights for future development.

67. Delegations expressed the view that the science-policy interface should be a two-way process through which scientists and policy-makers can listen to each other and be able to understand each other's needs. Several delegations stressed the importance for policy-makers to apply the precautionary principle in the face of incomplete scientific knowledge, as well as use environmental impact assessments as a tool to identify gaps in scientific knowledge.

68. In response to a question on Estonia's practice in providing scientists with systematic training on how to communicate with policy-makers, Mr. Soomere provided further information on training exercises in Estonia for scientists to develop their skills in communicating with policy-makers, including a nationwide competition designed to encourage young scientists to present their research to a wide audience that included policy-makers and meetings that brought together former politicians and scientists. He emphasized, in this regard, the importance of ensuring that the scientific evidence and advice remain undistorted until the decision-making stage.

Agenda item 4

Inter-agency cooperation and coordination

69. The Under-Secretary-General for Legal Affairs and United Nations Legal Counsel made two statements in his capacity as Focal Point of UN-Oceans. In the first statement, the Focal Point provided information on the activities of UN-Oceans since the nineteenth meeting of the Informal Consultative Process, including in relation to the topic of focus. It was noted that since that time, two new members had joined UN-Oceans, namely the Secretariat of the Convention on Migratory Species of Wild Animals and the United Nations Office for Project Services.

70. The Focal Point emphasized the support of UN-Oceans to the topic of focus of the Informal Consultative Process. In this regard, the Focal Point noted that, at its 19th face-to-face meeting hosted by the World Meteorological Organization in Geneva, from 7 to 8 February 2019, UN-Oceans had established a contact group to facilitate inputs and guidance to the preparatory phase of the Decade. With regard to its mandate in support of the implementation of the 2030 Agenda, including SDG 14, the Focal Point informed the meeting of the side events that were organized in the margins of major intergovernmental meetings to implement the UN-Oceans voluntary commitment registered at the 2017 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 (2017 Ocean Conference) to raise awareness of relevant regulatory and policy frameworks and the activities of its members in support of SDG 14. In addition, the Focal Point called attention to the inventory of mandates and activities by UN-Oceans members, available on the website of UN-Oceans (www.unoceans.org).

He also noted the role of many members of UN-Oceans as co-leads of Communities of Ocean Action which were established to galvanize action on the voluntary commitments registered at the 2017 Ocean Conference.

71. The Focal Point drew attention to the 2019-2020 UN-Oceans biennial Work Programme, highlighting the following new items: contribution to the fiftieth anniversary of GESAMP to be held on 10 September 2019, the Secretary-General's High-Level Summit on Climate Action, to be held on 23 September 2019, the High-Level Review of the S.A.M.O.A Pathway, to be held on 27 September 2019, and the 2020 Oceans Conference, to be held from 2 to 6 June 2020.

72. Delegations thanked the Focal Point for his statement and expressed their appreciation and support for the work of UN-Oceans and its members. Responding to a question regarding the coordination of activities by UN-Oceans for the Decade, the Focal Point noted that UN-Oceans was consulting with IOC to contribute to core documents and meetings, as well as to identify and develop other activities relevant to the Decade. With regard to the review of the UN-Oceans terms of reference which was deferred by the General Assembly at its 73rd session, reference was made to the background paper prepared by UN-Oceans to assist Member States in that review which highlights the current achievements of UN-Oceans and what the mechanism could deliver if sufficiently empowered and supported, including through financial resources.

73. In the second statement, the UN-Oceans Focal Point provided information on the work of UN-Oceans in developing a methodology for the agreed indicator to monitor progress towards the achievement of target 14.c under SDG 14. The Focal Point outlined the draft methodology developed by UN-Oceans, as reflected in an Explanatory Note made available to delegations in hard copy and circulated by email on 11 June 2019.

74. The Focal Point emphasized that there was a sense of urgency to progress in the development of this methodology during 2019 to enable the submission of a request for reclassification of indicator 14.c.1 from tier III to tier II to the Inter-Agency Expert Group on Sustainable Development Goal Indicators (IAEG-SDGs). Regarding the timeframe for submitting such a request, the representative of the Statistics Division of the United Nations Department of Economic and Social Affairs clarified that relevant documentation to support the request, including the results of the pilot testing phase, would need to be received by the IAEG-SDGs at least one month in advance of its next meeting, which will take place from 21 to 25 October 2019. That meeting would be the last opportunity to request tier reclassification in 2019, prior to the 2020 Comprehensive Review of all indicators by the United Nations Statistics Commission.

75. Delegations expressed their appreciation for the efforts of UN-Oceans, in particular the Division for Ocean Affairs and the Law of the Sea (DOALOS), in progressing development of the methodology for indicator 14.c.1, and for the consultations undertaken with States in that regard.

76. With regard to the substance of the draft methodology, several delegations proposed that the methodology should be further streamlined, confining it to ratification or accession and implementation of UNCLOS and its implementing agreements. It was also proposed that States

could be invited to report on other ocean-related instruments which they consider also implement international law as reflected in UNCLOS for the conservation and sustainable use of the oceans and their resources. A delegation expressed the view that information relative to indicator 14.c.1 should be collected through national reporting platforms rather than through a questionnaire and welcomed efforts to connect the draft methodology with such platforms. Another delegation drew attention to the challenges in capacity given the multiplicity of agencies at the national level that would have relevant information and the already existing reporting streams, noting that responding to a single questionnaire could present challenges. Specific proposals were made with respect to the drafting and content of the questions to be included in the proposed questionnaire as part of the draft methodology.

77. Regarding next steps in progressing the development of the methodology, several delegations requested more time to consult and reflect on the draft methodology, while recognizing the need to proceed in a timely manner. In that regard, it was proposed that DOALOS circulate a revised Explanatory Note, taking into account the views expressed, to all Permanent Missions to the United Nations and to the States Parties to UNCLOS, and request their feedback within a four to six weeks timeframe, before proceeding with pilot testing. A request was made to circulate the Note also in French. Depending on the feedback received, the possibility of engaging in further discussions on the methodology in the margins of the third session of the Intergovernmental Conference on an international legally binding instrument under UNCLOS on the conservation and sustainable use of marine biological diversity of areas beyond national jurisdiction before proceeding with pilot testing was also raised.

78. The Director of DOALOS confirmed that an Explanatory Note detailing the revised draft methodology would be circulated to all Permanent Missions to the United Nations and to the States Parties to UNCLOS, as requested by delegations, for comments in advance of a possible pilot testing phase.

Agenda item 5

Process for the selection of topics and panellists so as to facilitate the work of the General Assembly

79. Referring to paragraph 352 of General Assembly resolution 73/124, the Co-Chairs invited views and proposals on ways to devise a transparent, objective and inclusive process for the selection of topics and panellists so as to facilitate the work of the Assembly during informal consultations concerning the annual resolution on oceans and the law of the sea.

80. No statements were made under this item.

Agenda item 6

Issues that could benefit from attention in the future work of the General Assembly on oceans and the law of the sea

81. The Co-Chairs drew attention to a composite streamlined list of issues that could benefit from the attention of the General Assembly and invited comments from representatives.

82. The Co-Chairs also invited representatives to submit additional topics that could benefit from the attention of the General Assembly.

83. An observer delegation suggested consideration of the seaward implications of sea level rise as a result of climate change, in light of the possible effects of changing baselines on maritime activities and applicable legal regimes.
