

Summary of the Twentieth Meeting of the United Nations Open-Ended Informal Consultative Process on Oceans and the Law of the Sea: 10-14 June 2019

The United Nations Decade of Ocean Science for Sustainable Development (2021-2030) (UN Decade) was established by the UN to provide a common framework for strengthening management of the world's oceans for the benefit of humanity. The "informal" nature of the UN Open-ended Informal Consultative Process on Oceans and the Law of the Sea (ICP) fosters an open exchange among participants and, for 2019, offered a unique opportunity to provide vital input to planning of the UN Decade.

Over the week, delegates heard presentations and had thoughtful discussions covering a wide range of topics that will feed relevant information to the Intergovernmental Oceanographic Commission of the UN Educational, Scientific and Cultural Organization (IOC-UNESCO), which is coordinating design of the Decade. The structure of ICP-20—presentations followed by open discussions—focused on two main areas: identifying the sources, uses of, and gaps related to the ocean science for sustainable use of marine resources, and international cooperation and coordination needed to address gaps in ocean science.

Key points on gaps in ocean science from the panel discussions included:

- geographically-based disparity in ocean science, with more knowledge focused on and conducted by developed countries;
- gender-based disparities with inadequate representation by women in ocean science;
- the scope and scale of pressures affecting the health and resilience of the ocean, including climate change and ocean acidification;
- an increasing rate of change in ocean temperature and related impacts on fisheries;
- information gaps related to the blue socio-economic infrastructure; and
- the role of experts, scientific publications, data sharing, and existing processes to help advance ocean science.

On international cooperation and coordination in ocean science, key highlights included:

- examples from programmes that engage local communities;
- role of national governments and nonprofit organizations in addressing capacity building;
- importance of incorporating and promoting the use of traditional environmental knowledge;

- role of international data coordination centers for increasing access to and transparency of ocean data;
- relevance and role of different processes in promoting Sustainable Development Goal 14 (life below water);
- inputs from existing and upcoming global ocean assessments;
- opportunities for and examples of successful science-policy interface; and
- the potential engagement of private industry and philanthropy to support relevant goals of the UN Decade.

Delegates also heard updates on the work of UN-Oceans and, at the conclusion of the week-long meeting, reviewed the Co-Chairs' summary of the meeting.

ICP-20 convened from 10-14 June 2019 at UN Headquarters in New York, bringing together representatives from governments, intergovernmental organizations, non-governmental organizations, and academic institutions.

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A Brief History of the Law of the Sea and the ICP

On 1 November 1967, Malta's Ambassador to the UN, Arvid Pardo, asked the nations of the world to recognize a looming conflict that could devastate the oceans. In a speech to the UN General Assembly (UNGA), he called for "an effective international regime over the seabed and the ocean floor beyond a clearly defined national jurisdiction." The speech set in motion a process that spanned 15 years and saw: the creation of the UN Seabed Committee; the signing of a treaty banning the emplacement of nuclear weapons on the seabed; the adoption of a UNGA declaration that all resources of the seabed beyond the limits of national jurisdiction are the "common heritage of mankind"; and the convening of the Stockholm Conference on the Human Environment. These were some of the factors that led to the Third UN Conference on the Law of the Sea during which UN Convention on the Law of the Sea (UNCLOS) was adopted.

UNCLOS: Opened for signature on 10 December 1982 in Montego Bay, Jamaica, at the Third UN Conference on the Law of the Sea, UNCLOS sets forth the rights and obligations of states regarding the use of the oceans, their resources, and the protection of the marine and coastal environment. UNCLOS entered into force on 16 November 1994, and is supplemented by the 1994 Deep Seabed Mining Agreement and the 1995 Agreement for the Implementation of the Provisions of UNCLOS relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks.

UNGA Resolution 54/33: In November 1999, the UNGA adopted resolution 54/33 on the results of the review undertaken by the UN Commission on Sustainable Development at its seventh session on the theme of "Oceans and Seas." In this resolution, the UNGA:

- established an Open-ended Informal Consultative Process to facilitate the annual review of developments in ocean affairs;
- decided that the Consultative Process would meet in New York and consider the Secretary-General's annual report on oceans and the law of the sea, and suggest particular issues to be considered by the UNGA, with an emphasis on identifying areas where intergovernmental and inter-agency coordination and cooperation should be enhanced; and
- established the framework within which ICP meetings would be organized.

The mandate for the ICP is up for review by the General Assembly every two-three years and has been renewed as follows:

- UNGA resolution 57/141 (2002);
- UNGA resolution 60/30 (2005);
- UNGA resolution 63/111 (2008);
- UNGA resolution 65/37 (2010);
- UNGA resolution 67/78 (2012);
- UNGA resolution 69/245 (2014);
- UNGA resolution 71/257 (2016); and
- UNGA resolution 73/124 (2018), which extended the ICP until 2020.

Previous ICP Meetings

The first three ICP meetings identified issues to be suggested and elements to be proposed to the UNGA, and highlighted issues that could benefit from attention in its future work. The first seven meetings adopted recommendations to the UNGA. Beginning with ICP-10 in 2009, which reviewed the work of the ICP over its first nine years, the outcome of each meeting has been a Co-Chairs' summary. The issues considered by each ICP meeting are as follows:

- **ICP-1** (2000): fisheries and impacts of marine pollution and degradation.
- **ICP-2** (2001): marine science and technology, and coordination and cooperation in combating piracy and armed robbery at sea.
- **ICP-3** (2002): protection and preservation of the marine environment, capacity building, regional cooperation and coordination, and integrated oceans management.
- **ICP-4** (2003): safety of navigation, the protection of vulnerable marine ecosystems, and cooperation and coordination on ocean issues.
- **ICP-5** (2004): new sustainable uses of oceans, including the conservation and management of the biological diversity of the seabed in areas beyond national jurisdiction.
- **ICP-6** (2005): fisheries and their contribution to sustainable development, and considered the issue of marine debris.
- **ICP-7** (2006): ecosystem-based management and ecosystem approaches and oceans.
- **ICP-8** (2007): marine genetic resources. Delegates were unable to agree on key language referring to the relevant legal regime for marine genetic resources in areas beyond national jurisdiction, and as a result no recommendations were adopted and a Co-Chairs' summary report was forwarded to the UNGA for consideration.
- **ICP-9** (2008): maritime security and safety in promoting the economic, social, and environmental pillars of sustainable development.
- **ICP-10** (2009): review of the implementation of the ICP outcomes, including achievements and shortcomings in its first nine years.
- **ICP-11** (2010): capacity building for marine science.
- **ICP-12** (2011): progress to date and remaining gaps in the implementation of oceans- and seas-related outcomes of the major summits on sustainable development; new and emerging challenges for the sustainable development and use of oceans and seas; and the road to the UN Conference on Sustainable Development (UNCSD, or Rio+20) and beyond.
- **ICP-13** (2012): marine renewable energies.
- **ICP-14** (2013): ocean acidification.
- **ICP-15** (2014): role of seafood in global food security.
- **ICP-16** (2015): oceans and sustainable development.
- **ICP-17** (2016): marine debris, plastics, and microplastics.
- **ICP-18** (2017): oceans and climate change as it relates to existing mechanisms, scientific approaches, and conventions.
- **ICP-19** (2018) anthropogenic underwater noise.

ICP-20 Report

On Monday morning, Co-Chair Isabelle Picco (Monaco), opened the meeting and welcomed participants.

Miguel de Serpa Soares, Under-Secretary-General for Legal Affairs and UN Legal Counsel, reflected on the UN Decade of Ocean Science for Sustainable Development (2021-2030) as an opportunity to recognize the value of ocean science in eradicating poverty, supporting ocean-based economy, and mitigating the impacts of climate change. He recognized the value of the ICP in integrating knowledge and coordination among competent agencies and addressing emerging issues. He highlighted challenges in ocean science, which include insufficient funding, limited institutional and infrastructural capacity, and lack of national policies to promote ocean science.

Liu Zhenmin, Under-Secretary-General for Economic and Social Affairs, highlighted increasing stress to oceans and resources, which require strong efforts to advance ocean science,

including understanding of oceans and responses to external pressures. He said the UN Decade presents an opportunity to fill existing gaps and maximize impacts. He highlighted the second UN Ocean Conference to take place in Portugal in 2020, which will focus on scaling up ocean action based on science and innovation, stocktaking, partnerships, and solutions.

Fekitamoeloa Katoa ʻUtoikamanu, Under-Secretary-General and Office of the High Representative for the Least Developed Countries, Landlocked Developing Countries and Small Island Developing States, referred to efforts to address gaps and opportunities in ocean science for landlocked developing countries (LLDCs) and small island developing states (SIDS). She underscored the value of Sustainable Development Goal (SDG) Target 14.a in increasing scientific knowledge and enhancing marine biodiversity, noting that it aligns with the SIDS Accelerated Modalities of Action (SAMOA Pathway) goal to address marine scientific research (MSR) and associated technological capacity. She emphasized the value of traditional knowledge in enhancing scientific knowledge, and the need for local ownership and true participation efforts on ocean science.

Delegates adopted the meeting agenda (A/AC.259/L.20) and agreed on the organization of work.

General Exchange of Views

On Monday and Thursday mornings, delegates delivered general statements on the topic of ocean science and the UN Decade.

Romania, speaking for the European Union (EU), said a comprehensive scientific understanding of oceans is important for achieving the ocean-related goals of the 2030 Agenda for Sustainable Development (2030 Agenda). He drew attention to the 2020 High-Level UN Conference to Support the Implementation of SDG 14 (life below water), to be held in Lisbon, Portugal, on ways to scale up ocean science and innovation for implementation of SDG14.

Nauru, on behalf of the Pacific Islands Forum, called for recognition of indigenous knowledge, saying it has guided island populations for centuries in sustainable use of oceans. He emphasized the need for adoption of long-term approaches to partnerships for ocean science over short-term, low-hanging-fruit approaches.

Fiji, for Pacific SIDS, stressed capacity building to level the playing field in regard to science-based ocean action. He suggested that the terms of reference for UN-Oceans be strengthened to enhance information exchange and capacity building in ocean-related matters.

Jamaica urged doing more to reduce pressures on marine natural resources, drawing attention to climate change, illegal unreported and unregulated (IUU) fishing, reducing land-based sources of pollution, and noted her country's recent ban on single-use plastics. She further highlighted the need to empower women and girls in marine science and said needs assessments should be part of capacity development.

Noting his country's long history of marine research, Japan highlighted a commitment to actively contribute to the preparatory process for the UN Decade, including hosting an upcoming regional and planning workshop for the North Pacific and Western Pacific Marginal Seas.

Monaco expressed support for the six societal objectives of the UN Decade, which include:

- a safe ocean;
- a sustainable and productive ocean;
- a transparent and accessible ocean;

- a clean ocean;
- a healthy and resilient ocean; and
- a predicted ocean.

He noted that only 5% of the ocean floor has been mapped and only 1% in high resolution, adding better information is needed to reduce anthropogenic impacts on the marine environment.

Papua New Guinea, supporting statements by the Pacific Islands Forum and Pacific SIDS, reaffirmed the importance of ocean science as a cross-cutting issue in addressing SDG 14 and conservation and sustainable use of marine biological diversity of areas beyond national jurisdiction (BBNJ). He reflected on opportunities in ocean science, including the upcoming release of the Intergovernmental Panel on Climate Change (IPCC) Special Report on the Oceans and Cryosphere.

Iceland underscored the critical role of marine resources, noting that careful management of this global resource is a key feature of a sustainable future. He emphasized the value of increasing the participation of women scientists in ocean science and expressed concern for the low representation of women on the ICP-20 panels.

Argentina endorsed the UN Secretary-General's Report on oceans and the law of the sea (A/74/70), and underscored the value of UNCLOS as the fundamental legal framework for regulating activities in oceans. Referring to the report, he discouraged the differentiation between pure and applied research and noted that consent of coastal states does not need to apply to research activities in territorial waters.

The Philippines reported that the 12th Intergovernmental Session of the Intergovernmental Oceanographic Commission (IOC) for the Western Pacific, hosted by his country in April 2019, contributed to a better understanding of ocean research and development, science-based policy guidance, and capacity building.

Singapore called for international cooperation to enhance open access of data, identify capacity needs, and match these needs appropriately with funding and technology transfer. New Zealand said ocean science must be made accessible, inform decision-making, and be responsive to the special needs of SIDS.

India urged prioritization of technologies that enhance sustainable fisheries, and the development of sustainable energy and drinking water. Mauritius asked for boosting ocean literacy for society to understand the role of ocean science.

Canada described her country's support for the UN Decade through a dedicated office for ocean research and observations, and for work on connecting societies to science. The US reported that the upcoming conference, "An Ocean of Opportunity," to be held in September 2019, in Honolulu, Hawaii, US, seeks to improve ocean observation in order to address societal and scientific needs.

The International Seabed Authority (ISA) reflected on the 25th anniversary of the entry into force of UNCLOS as an important milestone for oceans and reiterated the importance of marine science and effective implementation of the Convention and other relevant legal instruments. He highlighted the intrinsic relationship between marine science and collaborative partnerships to create a lasting legacy of new data tools and training to ensure protection of the marine environment.

Nepal said an important knowledge gap that should be addressed is the functional and organic connection between oceans and mountains, citing hydrological links, upstream and downstream impacts from monsoons, and erosional effects from melting glaciers. Republic of Korea emphasized the importance

of ocean literacy and outlined his country's support for the UN Decade, including potential hosting of a UN support office.

Norway underscored the need for increased regional and global research and transfer of knowledge, and welcomed the inclusion of the International Council for the Exploration of the Sea (ICES) as an observer to the UN General Assembly. Peru emphasized, *inter alia*: the importance of the science-policy interface for promoting synergy and the exchange of information; and the role of ocean science for implementing the SDGs and addressing pollution, overfishing, and climate change.

IOC-UNESCO said ocean science must be strengthened among all Member States to prevent the loss of more lives and ensure the sustainable harvest of marine resources. He highlighted new science, technology, and modeling for addressing identified gaps, saying they will require innovation, investment, and capacity development to turn research to benefits. He called for the engagement of nations, saying the "UN Decade is yours to achieve."

Portugal highlighted, *inter alia*: the importance of a strong global ocean observation work; the potential for training network centers to support least developed countries (LDCs); and current efforts to commemorate the 500th anniversary of circumnavigation as an opportunity to promote ocean literacy and capacity building. Honduras noted the scientific value of underwater cultural heritage as evidence of past climate, and emphasized the role of regional alliances and non-governmental organizations (NGOs) for encouraging the sustainable use of marine resources.

The International Maritime Organization (IMO) outlined the importance of ocean science for its work on the safety and security of shipping, pollution prevention, and designation of potentially sensitive sea areas. The International Cable Protection Committee said her organization is committed to working with the UN system on growth of knowledge in MSR.

OceanCare said an improved science-policy interface is crucial to achieving SDG 14 and reminded that conservation action and management measures should be based on best environmental practices and best available technology.

Scope and Uses of, and Gaps in, Ocean Science

Discussion Panel 1: On Monday afternoon, Co-Chair Picco moderated the first panel discussion.

Vladimir Ryabinin, Executive Secretary, IOC-UNESCO, presented on the background and process involved in the planning and implementation of the UN Decade. On process, he highlighted the Roadmap for the Decade, which includes engagement of scientists from many countries, and planning of seven regional workshops, followed by consolidating ideas to be presented at the Second UN Oceans Conference. On challenges, he identified: fragmentation of funding; agency competition; gaps in the value chain of oceanography; and moving from a project-based approach to a system-based approach in ocean science. He said further actions will include:

- mapping of oceans, including the seabed;
- deep ocean observations and research;
- guided adaptation of ocean ecosystems;
- ocean prediction;
- ocean science for climate services;
- ocean economics; and
- polar oceans and their observing systems.

He said major changes are needed in approaches to ocean mapping, creating new generations of user-tailored data, and strengthening governance of ocean science.

Mauritius expressed interest in more information on how to encourage young people to study oceans and science in post-graduate studies. Ryabinin responded that ocean literacy is key to changing the paradigm of oceans and that development of the blue economy will create interest in other areas, including Africa.

John Agard, St. Augustine Centre for Innovation and Entrepreneurship, Trinidad and Tobago, presented on the global status of ocean science, reporting that the existence of gaps in knowledge hamper the effective application of ocean science for sustainable development. Agard said that gender imbalance in ocean science affects the interpretation of data, since data fails to show how women and children are affected by marine challenges. He also noted that the paucity of ocean science publications from developing countries had a knock-on effect leading to low ocean science funding in these regions, due to the fact that funding is often reliant on publication citation rates, which is often lower for developing countries. He highlighted priority areas for research, including: oceans and human health; role of climate change; biodiversity loss; and deep-sea exploration. He advocated for a blue and circular-economy model over the current business-as-usual model, saying the latter is largely responsible for habitat loss, over-exploitation, and pollution of the marine environment facilitated by weak high seas governance.

Hervé Raps, Monaco Scientific Center, Monaco, presented on ocean health and impacts on ocean and human life. He outlined ocean changes, including physical changes such as temperature, elevation, sea-level rise, and chemical changes, including acidification and variations of salinity. He identified some health impacts resulting from extreme events such as hurricanes, red tides, and algae blooms that affect seafood security. Referring to global work on health and climate change, which have required extensive efforts to influence public perception, he said human health and oceans can use the same approach by increasing awareness and understanding the linkages between ocean and human health. He outlined the work of the Monaco Scientific Center in collaboration with the World Health Organization to promote better understanding of the impacts of these ocean changes on human health.

Elva Escobar-Briones, Universidad Nacional Autonoma de Mexico, presented on deep-sea biological processes, relevant environmental, economic, and social aspects, and current gaps. Noting the value of oceans in regulating climate and supporting life on earth, she lamented increased pressures and increasing temperatures that threaten ocean health. She said current knowledge gaps require new technology to better understand biological processes in the deep sea and reiterated the value of the deep sea as natural capital, which provides a wide range of economic benefits to humanity. She called for accelerated science knowledge by all stakeholders to expand research and ocean literature and encouraged the development of interdisciplinary MSR that brings together the natural and social sciences to understand biological processes in the deep sea. Noting the value of data management, she urged for advanced modeling, capacity building, and marine technology transfer as ways to strengthen understanding of the deep sea. She said the UN Decade affords an opportunity to build on current issues in marine, social, and environmental science.

Francisco Werner, National Oceanic and Atmospheric Administration, US, presented on ocean science in support of sustainable fisheries. He highlighted, *inter alia*, the impact on fisheries of marine "heat waves," citing recent ecosystem shifts in the North Pacific, which affect the metabolism of and food availability for Pacific cod. Noting such changes are no

longer gradual, he observed that we currently lack the ability to accurately predict these events. He said no one country can afford the required observational systems needed to monitor the Earth and emphasized the need for increased data sharing and integration. He described the need for sustainable fisheries and multi-sector uses of oceanic environments to co-exist and urged development of a framework to address cumulative impacts on fisheries, citing, as an example, the geographic overlap of wind farms and key fishery areas. Werner also identified ocean science gaps related to aquaculture and wild-capture fisheries and called for a systematic, science-based approach that considers ecosystem resilience and sustainability, while optimizing benefits among diverse societal goals.

Silvana Birchenough, Centre for Environment, Fisheries and Aquaculture Science (CEFAS), United Kingdom, presented on benthic changes resulting from climate change and ocean acidification. She reported that commercial fisheries have been impacted by ocean acidification, due to pH variability. She highlighted there is a need to understand the natural variability of marine systems in order to safeguard the commercial value of marine resources.

In the ensuing discussions delegates and panelists discussed, *inter alia*:

- aquaculture life cycle impacts;
- specific scientific contributions by regional and issue-specific organizations to the UN Decade;
- effects of microplastics on marine species and subsequent impacts on human health;
- marine invasive species, including *Sargassum*, and avenues to address it, including using it as fertilizer and biofuel;
- aquaculture as a food security option for the future, and managing pressures on production;
- using conservation areas for natural populations and providing conservation areas for aquaculture; and
- the role of microorganisms in food webs and approaches at the regional and sub-regional levels to increase production in a sustainable manner.

Discussion Panel 2: On Tuesday morning, ICP-20 Co-Chair Penelope Althea Beckles (Trinidad and Tobago) moderated the second panel on this topic.

Francisco Arias-Isaza, Director-General, Institute for Marine and Coastal Research, Colombia, discussed the application of science for ocean management. He noted that uncertainties and errors in marine management are proportional to inadequate scientific information. Arias-Isaza emphasized that traditional knowledge should be valued data sources. He added that, even though ocean science is expensive, there is a need to ensure capacity building, and provide quality science that can reach managers in a timely manner and using accessible language. He concluded that the key applications of ocean science during the UN Decade should include: coastal zone management and adaptation; regional and national capacity development planning; marine spatial planning and blue economy; and early warning systems.

Miguel Marques, Economy of the Sea Project, PricewaterhouseCoopers, Portugal, presented on ocean science in support of the blue economy. He said use of the ocean is highly imbalanced, citing examples of intense geographical concentrations and industry dominance in sectors such as shipbuilding; offshore renewable wind capacity; vessel demolition; cruise ship operations; and aquaculture. He reported that the imbalance is growing and accelerating. Marques said the blue economy provides an answer to global megatrends related

to the SDGs, including on goals related to: rapid urbanization; technological breakthroughs; climate change and resource scarcity; demographic and social change; and shifts in global economic power. He reported that a better understanding of the blue socio-economic infrastructure is key to improved decision making for protecting the ocean, and called for focusing on a few key natural and socio-economic variables to start filling knowledge gaps.

Martin Visbeck, GEOMAR Helmholtz Centre for Ocean Research Kiel, Germany, presented on how global ocean observation systems serve science for sustainable development. Emphasizing the importance of international collaboration on ocean information and data, he highlighted the work of AtlantOS, which is a research and innovation project that proposes integration of ocean-observing activities across all disciplines for Atlantic, European, and global partners. He said the project's overall objective is to deliver an advanced framework for development of an integrated Atlantic Ocean Observing System that goes beyond the state-of-the-art platform, to leave a legacy of sustainability supporting the UN Decade and beyond. He highlighted outcomes such as improvement of international collaboration in the design, implementation, and benefit sharing of ocean observing along with effective dissemination methods to improve the quality and authority of ocean information. Noting challenges in ocean observation, he reflected on continued legal issues related to jurisdictions and definitions under UNCLOS, and related implications on operational, meteorological observations in marine waters within national jurisdictions.

In the ensuing discussions, delegates focused on issues relating to:

- data sharing, accessibility and utilization of available data;
- finding ways to access data commissioned by private companies, including adjustments to non-disclosure agreements;
- exploring the commercial value of data;
- applying the precautionary approach in ocean observation to ensure minimum damage; and
- capacity development in the use of new ocean observation technology.

Peter Kershaw, Chair, Joint Group of Experts on the Scientific Aspects of Marine Environmental Protection (GESAMP), presented on the work of GESAMP, a UN inter-agency body that provides independent and authoritative advice to the UN on a variety of marine environmental protection issues. He presented examples of outputs from the technical working groups, including:

- a revised GESAMP hazard-evaluation procedure for chemical substances carried by ships;
- a high-level review of a wide range of proposed marine geoengineering techniques; and
- a report on reducing environmental impacts of coastal aquaculture.

Kershaw announced the 50th anniversary celebration of GESAMP, in September 2019 in New York.

Karen Evans, Commonwealth Scientific and Industrial Research Organisation (CSIRO), Australia, presented on the Regular Process for Global Reporting and Assessment of the State of the Marine Environment, including Socio-economic Aspects (Regular Process). She reviewed the history, process and structure of the First Global Integrated Marine Assessment (World Ocean Assessment I), noting key findings, including:

- impacts affect all aspects of the marine environment;
- marine resources are a significant source of food and economy;

- exploitation has exceeded sustainable levels in many regions;
- the use of ocean space is increasing;
- impacts occur across national and international jurisdictions;
- benefits from the ocean are unevenly distributed; and
- if pressures are not adequately managed, current benefits from the ocean will decrease.

Noting that the World Ocean Assessment II is scheduled for completion in 2020, Evans highlighted the value of previous workshops for providing expanded input. On linkages with the UN Decade, she said the Regular Process would help guide activities in the UN Decade, which will in turn provide important inputs to the Regular Process.

Carlos Garcia-Soto, European Marine Board, Belgium, presented on marine science for a sustainable future. He described results from a recent publication, “Navigating the Future V,” highlighting, *inter alia*: the need to understand the functional links that connect components of the marine system; global-change activities, and the impacts of multiple stressors on ocean health, including climate-related extreme events, geological hazards, and marine accidents; and observation strategies, modeling, and technologies needed. He shared key recommendations from the report, including:

- promoting a holistic global view of sustainability science;
- ensuring international cooperation to underpin preservation of sustainable development and use;
- the value of fundamental research as the foundation for applied science to generate positive social impacts; and
- ensuring a circular blue economy, based on sustainable and equitable knowledge to minimize impacts on the marine environment.

In the ensuing discussions, delegates focused on:

- potential of oceans to decrease carbon emissions;
- improving delivery of compiled information to decision makers, entrepreneurs, range of end users, and beyond;
- gaps in reaching young people, awareness of oceans, and focus through schools and broader education system;
- involving end-users from the beginning to the end of assessments;
- communicating risks in a manner that takes into account different contexts and community interpretations;
- improving ocean literacy of non-specialists and the public through better communication and media engagement;
- making information a public good and building a reward system to ensure that it is accessible; and
- sustainable ocean science as a policy tool.

International Cooperation and Coordination in Advancing Ocean Science and Addressing Related Gaps

Discussion Panel 1: On Tuesday afternoon, Co-Chair Beckles moderated a panel on this topic.

Diva Amon, SpeSeas, Trinidad and Tobago, discussed approaches to address ocean science capacity-building needs in her country. She reported on the work of SpeSeas, an NGO that is using ocean research, education, and advocacy to overcome barriers in marine exploration. She reported on “My Deep Sea, My Backyard,” a programme aimed at building true and sustainable deep-sea capacity, by training scientists and students in low-cost, deep-sea exploration methods, and by building ocean stewardship through public awareness and outreach. Amon further discussed the Maritime Ocean Collection, a state-of-the-art technology that uses a combination of 360-degree photography, Google Street View, cellphone technology, and videography to allow viewing of her country’s unique underwater world.

Jens Kruger, Secretariat of the Pacific Community, New Caledonia, presented on approaches and initiatives in the Pacific to address capacity-building needs in ocean science. He outlined the political, scientific, and geographical landscape of ocean science and management in the region, which consists of 22 countries, 10 million people, and 20% of the world’s exclusive economic zones (EEZs). He noted strong collaboration in the Pacific, including an inclusive approach to working with multi-stakeholders. As an example of progress, he cited statistics for degrees in marine science and management from the University of the South Pacific, showing that women are 58% of undergraduates and 55% of post-graduates. He also stressed the value of the Pacific Ocean Portal, noting countries use that information to produce monthly ocean outlooks. Looking ahead, he emphasized the need to be user-focused and inclusive, and to better show the impacts of their work.

Wijemuni Nipuna Mahin Zoysa, National Aquatic Resources, Research and Development Agency (NARA), Sri Lanka, presented on his country’s approaches and initiatives to address capacity-building needs in ocean science. Highlighting coordination on ocean science, he said eight *sectors* are directly involved in ocean activities in Sri Lanka, including Marine Affairs, Ministry of Wildlife, Ocean University, and others. On challenges, he identified marine pollution, over exploitation, IUU fishing, over capacity, and low productivity as key issues. Emphasizing continued efforts in capacity building, he gave a brief overview on work to increase awareness and understanding of ocean science, including education, research and data sharing, and international collaboration on private and public partnerships.

Ariel Troisi, IOC Capacity Development Expert Group, Argentina, presented on capacity development and transfer of marine technology, which he characterized as cross-cutting issues for the UN Decade. He described types of technology used in ocean science that offer higher resolution data, and findings to define and better understand processes in the deep sea that were not previously known. He said capacity development can be pursued through collaborative opportunities and mechanisms at the local, sub-regional, and global levels to ensure that research is properly translated to policy in order to attain sustainable development.

Karin Kroon Boxaspen, Institute of Marine Research, Norway, presented outcomes of the Science for Ocean Action Conference, held in Norway in November 2018. The meeting, she reported, aimed at discussing critical science-based actions in response to the problems facing the ocean, based on five specific topics: impacts of climate change on marine ecosystems; ocean health; state of the fisheries resources; sustainable aquaculture; and the importance of seafood for human nutrition. She said the meeting emphasized the need for concerted efforts for balanced economic development, with increased food production, while protecting the marine environment and its biodiversity. She also noted that improved communication between scientists and policymakers was identified as essential. Boxaspen reported that action points were forwarded to the High-level Panel for a Sustainable Ocean Economy, which brings together world leaders who recognize that economic production and ocean protection must be mutually supporting for sustainable development.

In ensuing discussions, delegates considered, *inter alia*:

- collaborations between national and international partners is building genuine partnerships and competence in ocean science;
- the focus on oceans provided by the UN Decade as an ideal opportunity to provide solutions for marine protection;

- the need to address capacity in communicating with policymakers;
- ways of increasing aquaculture production while reducing its footprint;
- ways of strengthening national and regional capacity and mechanisms to transfer knowledge to ensure sustainability;
- development of relevant software to interpret data and providing training for SIDS and LDCs in their use;
- translating science to knowledge through data interpretation; and
- promoting inclusion of more women scientists by actively including them and supporting their involvement nationally and inside UN processes.

Discussion Panel 2: On Wednesday morning, Co-Chair Picco moderated a second panel on this topic.

Toshio Suga, Tohoku University, Japan presented on current and emerging technologies in ocean science contributing to sustainable development. He drew attention to the importance of sustained global ocean observations, presenting the Argo network as an example. This network, he informed, uses robotic Argo Floats, which collect temperature and salinity data from different depths of the ocean, from the surface to 2000m. Noting the rapid rate of innovation, he emphasized the importance of integrating new technologies, coordinated international collaboration, and creating protocols to sustain data availability. He presented the Global Ocean Observing System (GOOS) and its 2030 strategy, which facilitates this integration.

Frida Maria Armas-Pfirter, University of Buenos Aires, Argentina, discussed the legal framework for ocean science. Noting the value of UNCLOS as the legal framework governing all activities carried out in the ocean, she outlined limitations and implications related to MSR, including UNCLOS Article 76 requiring both legal and scientific experience and scientific evidence when assessing certain topics. Interpretations of parts of UNCLOS, she said, offer room for states to implement the Convention at the national level. She reiterated the need for states to take into account other international treaties that reference ocean science, including international, regional, bilateral, and other specific agreements, and specialized organization activities in the implementation of the Convention. She stressed the need for states' rights to implement rules at the internal level, while granting a greater role to ocean science. She underscored the increasing role of science in providing evidence for consideration in some incidences under the International Tribunal for the Law of the Sea (ITLOS).

Peter Haugan, Chair, IOC, France, presented his organization's role in coordinating and promoting cooperation in ocean science. He highlighted the opportunity provided by the SDGs to bring together different processes in the ocean agenda, including the UN Fish Stocks Agreement (UNFSA), BBNJ, UN Framework Convention on Climate Change (UNFCCC), the Sendai Framework for Disaster Risk Reduction 2015-2030, and the SAMOA Pathway. He said the UN Decade provides an opportunity for multidisciplinary approaches, but also for transforming scientific data into tools to support decision-making and science-informed actions. The UN Decade, he added, can also help strengthen mechanisms for coordination of data sharing. Coordination of ocean science at the international level, he said, is a multi-faceted activity with many actors, and different rationales and objectives, and opined that for science to make progress, observational data needs to be shared to empower nations in achieving the SDGs.

Michael Lodge, Secretary-General, ISA, Jamaica, presented on cooperation and coordination in deep-sea marine science. He highlighted ISA's exploration activities in the seabed area, which aim to gather information on the location and quality of seabed minerals including other necessary environmental information. He noted that the ISA has approved 29 contracts for exploration covering over 1.3 million square km, which involves 22 different countries, of which 12 are sponsored by developing countries. He said knowledge of the deep sea as a whole is still quite limited and that large-scale collaboration is essential to scale up research and exploration of the deep sea.

Peter Swarzenski, International Atomic Energy Agency (IAEA), Monaco, presented on the Ocean Acidification International Coordination Centre (OA-ICC), which is a hub for the global ocean acidification research community. He highlighted its role in promoting international collaboration on ocean acidification through data portals, standardized methodology, and sharing of best practices with Member States. He said the hub's goal is to communicate, promote, and facilitate international activities on ocean acidification, focused on three areas: science, capacity building, and communication. The OA-ICC, he explained, brings together prominent researchers and organizations globally to discuss ocean acidification issues, organize trainings, and compile, centralize, and disseminate data and information. He stressed the importance of capacity building as a cornerstone of OA-ICC's work through the establishment of regional hubs.

Ray Dalio, OceanX, US, presented on the importance of ocean exploration. He said only 5% of the ocean's coverage on earth has been explored, noting that ignorance of what exists under water hampers the management of these resources. Dalio explained that OceanX pursues a collaborative model to bring together governments, scientific institutions, and philanthropists to step up and recognize the urgent need to increase public awareness of the ocean and its vital importance to humanity. He reported on outreach to over 2 billion people around the world, including with the British Broadcasting Corporation (BBC), National Geographic, and an exhibition at the American Museum of Natural History. He discussed plans to unveil in late 2019 the *Alucia 2*, a research vessel equipped with cutting-edge technology to capture and report on more ocean exploration.

In ensuing discussions, delegates noted:

- the need to define global ocean science objectives;
- data standardization and interpretation should allow correlating biological and geochemical data;
- ocean science needs to take into account the provisions of UNCLOS as a legal framework;
- exploration through OceanX can help fill data gaps but data should be collected with respect for national jurisdictions and priorities;
- data management is as important as data observation, and should aim at ensuring utility and compatibility; and
- delivery of products to end users is also key and should involve fostering relationships between data providers and data users.

Discussion Panel 3: On Wednesday afternoon, Co-Chair Picco moderated a third panel on this topic.

Presenting on the role of NGOs in supporting ocean science, Dayne Buddo, Alligator Head Foundation, Jamaica, described his organization's public-engagement strategy to protect and restore marine habitats and fish stocks, with work focused on marine sanctuaries. He shared results from different projects that engage artists, schoolchildren, and fishermen. His examples included:

- vessel-based research that brings scientists and artists together, creating the opportunity for artists to communicate about science in ways that scientists cannot;
- mangrove seedling production and site restoration by schoolchildren that incorporates fieldwork, planting, and classroom experiments into math syllabi; and
- training and paying local fishermen, whose activities were displaced by the sanctuaries, to “shoot” fish using speargun-mounted laser cameras, which also measure fish size.

He outlined as main areas of research: habitat restoration; herbivore interactions; lionfish control and management; coastal water quality; status of zooplankton; coral reef health; and sea turtle conservation. Reporting on a coral restoration project to train scuba divers to clean algae from corals for subsequent transplanting, he noted this resulted in a 200% increase in sanctuary fish in just a few years.

Carlos F. Gaymer, Universidad Católica del Norte, Chile, presented on integrating traditional knowledge into ocean science. He highlighted the benefits of combining traditional ecological knowledge (TEK) and western science to develop models for sustainable resource use. TEK examples he identified include fish spawning calendars based on moon cycles from Hawaii, customary tenure in Polynesia, and spear restrictions, among others. Noting historical importance of TEK in Pacific islands, he stressed the importance of integrating traditions and culture into ocean management to ensure community buy in and sustainability. He drew alignment between TEK and science using an example from Easter Island where the scientific approach successfully confirmed the biodiversity value of a marine managed area already protected based on TEK approaches by the community.

Sergey Belov, Co-Chair, International Oceanographic Data and Information Exchange Programme (IODE), France, discussed international cooperation in data management. He highlighted that the increasing demands on ocean data and information from different communities together with fragmented and unconsolidated data management approaches leads to difficulties in conducting large-scale science, analysis, modeling, and support for decision making. Belov emphasized the need for joint efforts to stimulate data and information access, sharing, and integration, and highlighted the IODE programme facilitation of exchange of oceanographic data and information to meet the needs of users for data and information products. He discussed the IOC Ocean Data and Information System (ODIS) Catalogue of Sources (ODISat project), an online browsable and searchable catalogue of existing ocean related web-based data and information sources, aimed at contributing to data management requirements during the UN Decade. Belov further encouraged scientists to work closely with data managers during data collection, noting that a new paradigm on data sharing is required in order to adhere to the findable, accessible, interpretable and reusable (FAIR) principles of data management and stewardship.

In ensuing discussions on the sustainability of efforts to engage the public in ocean science, delegates noted:

- including marine science in school curricula may provide avenues for funding;
- while it may be challenging for communities to see a return on the commitment in the short term, it provides an opportunity to involve all community stakeholders; and
- projects such as an adopt-a-coral programme helps bring the ocean to the people.

Juliette Babb-Riley, Barbados, presented on strengthening the science-policy interface at the global level, noting that supporting

the management and sustainable development of natural resources is a key role of science. She reviewed the history and status of key global assessments, including: the Global Ocean Science Report; State of World Fisheries and Aquaculture; and GESAMP’s High Level Review of a Wide Range of Proposed Marine Geoengineering Techniques. Emphasizing results from World Ocean Assessment I, including the establishment of a baseline for measuring the state of the marine environment, she noted its conclusion that our oceans are reaching or in some cases have breached the limits of carrying capacity and that urgent action is needed. On the second cycle of the Regular Process, she reported on production of three technical abstracts to support the 2030 Agenda, the UNFCCC, and BBNJ negotiations, with activities including 12 regional workshops, and a multi-dialogue and capacity-building partnership event. Looking ahead, she stressed that further efforts are needed to ensure that these various assessments work together to avoid duplication and enhance synergy, saying the ICP helps with that objective.

Tarmo Soomere, Estonian Academy of Sciences, Estonia presented on the science-policy interface at the national level. He said strong science is an absolute precondition for a successful science-policy interface and highlighted efforts in his country to strengthen the interface. He said these efforts include the establishment of four site centers that examine long-term scenarios related to policies outlined by their government. Referring to good practices, he relayed the successful change in ship routes to minimize chances of North Atlantic right whale collision in the Boston Fairway, noting that scientific methods quantified the risks associated with ship traffic. He recommended that higher education need to include strong marine sciences in all fields such as physical, biological, and chemical studies. He emphasized the need to have proactive scientific advice and not reactive, noting that scientists need to be humble and communicate the science in a way that is better understood by policymakers.

Monika Stankiewicz, Executive Secretary, Baltic Marine Environment Protection Commission (HELCOM), Finland, presented her organization’s work as an example of science-policy interface at the regional level. The Baltic Sea, she said, is one of the best-studied seas in the world with regional policy development progressing rapidly for the protection of marine ecosystems. She reported that HELCOM’s science-policy interactions follow a bottom-up approach of science gathered by experts that feeds into policy and decision-making processes. She highlighted major results of this cooperation through the HELCOM Second Holistic Assessment of the Ecosystem Health of the Baltic Sea (2011-2016), which provides in-depth insights on the status of marine ecosystems, pressures, and impacts from human activities. The results of the assessment, she said, show high levels of eutrophication, pollution, overfishing, and habitat loss. She, however, reported positive trends in reduction of phosphorus and heavy metals, demonstrating that concerted regional actions are achieving successful results.

In the ensuing discussions, delegates focused on:

- the importance of humility among scientists to ensure a strong science-policy interface;
- applying the precautionary principle in scientific approaches to inform policy;
- best practices in training scientists on how to communicate their scientific research in terms that can be understood by the broader public;
- the importance of validating information through TEK methods; and

- taking science to the community by incorporating local communities from planning to publishing papers.

Inter-Agency Cooperation and Coordination

Activities of UN-Oceans: On Thursday, Miguel de Serpa Soares, UN Under-Secretary-General for Legal Affairs and UN Legal Counsel, in his capacity as the UN-Oceans Focal Point, reported on the work of UN-Oceans. He highlighted, *inter alia*:

- collaboration with IOC on preparatory work for the UN Decade, including creation of a contact group to facilitate input and guidance;
- organization of side events related to implementation of SDG 14 at various intergovernmental meetings,
- participation in joint meetings of the Communities of Ocean Action; and
- adoption of the biennial work plan (2019-2020), highlighting its inventory of mandates and activities by UN-Oceans members as a tool for identifying opportunities for enhanced synergy and coherence in implementation of relevant instruments.

In response to Portugal's request for elaboration on future inter-agency actions related to the UN Decade, de Serpa Soares said UN-Oceans is in consultation with the IOC on global planning and is working to identify and engage institutional stakeholders on communication activities.

Proposed methodology for SDG indicator 14.c.1: Miguel de Serpa Soares introduced an explanatory note on the proposed methodology for SDG indicator 14.c.1, which would require intergovernmental vetting and the undertaking of a pilot testing phase, before submission to the Inter-Agency and Expert Group (IAEG) on SDG Indicators for approval. He reminded delegates that Indicator 14.c.1 calls for an assessment of the number of countries making progress in ratifying, accepting and implementing, through legal, policy, and institutional frameworks, ocean-related instruments for the conservation and sustainable use of the oceans and their resources. He noted the indicator is currently classified as a Tier 3 Indicator (no internationally established methodology or standards are yet available for the indicator, but methodology/standards are being (or will be) developed or tested). To reclassify it, he said parties must submit a proposed methodology to the next meeting of the IAEG. He referred to a draft questionnaire, proposed for circulation to states, and contained in the explanatory note, as the basis for parties to submit information on progress made in adopting and implementing oceans-related instruments.

The EU, US, and Philippines welcomed an additional review period for the proposed methodology. The US noted that progress on indicators should be measured by national reporting and not a questionnaire. Norway said the indicator should focus only on UNCLOS and its two implementing agreements and, supported by Australia, suggested adding a question for the number of countries who intend to ratify an instrument.

Canada proposed addition of practical and specific actions by states to advance SDG 14. Togo and Haiti requested translation of the questionnaire into other UN languages, and Togo requested more information on review of the mandate of UN-Oceans.

In response, Gabriele Goettsche-Wanli, Director, UN Division of Ocean Affairs and the Law of the Sea (UNDOALOS), reminded parties that the exercise is meant to aggregate data that are numerical in nature, and that the questionnaire was framed for that purpose. In reference to the list of instruments, she emphasized the focus is on instruments relevant to enhancement of sustainable use of oceans and resources as reflected in

UNCLOS. She addressed matters relating to the format, process, language, and purpose of the proposed methodology.

Benjamin Rae, Statistics Division, UN Department of Economic and Social Affairs, briefed delegates on the process of reclassifying indicator tiers, noting that the next meeting of the IAEG will take place in October 2019, and reiterated the importance of information that is easy to aggregate.

Delegates agreed that further consideration is needed for the proposed methodology of SDG Indicator 14.c, before moving into the pilot phase.

Process for the Selection of Topics and Panelists so as to Facilitate the Work of the General Assembly

On Thursday morning, Co-Chair Beckles highlighted UNGA resolution 73/124 on Oceans and the Law of the Sea and, with no comments, closed the item.

Issues that Could Benefit from Attention in the Future Work of the General Assembly on Oceans and the Law of the Sea

On Thursday morning, Co-Chair Beckles invited delegates to comment on the streamlined list of issues contained in a document made available online that could benefit from attention in the future work of the UNGA.

Noting no statements on this item, Co-Chair Beckles said a Co-Chairs' summary would be circulated on Friday morning, reiterating that the document is intended for reference purposes only and not as an official record of discussions.

Consideration of the Outcome of the Meeting

Co-Chairs' Summary of Discussions: On Friday morning, the Co-Chairs presented their summary, capturing key points of ICP-20 discussions on each of the agenda items. Highlights include summaries of discussions on, *inter alia*:

- crosscutting role of ocean science in the 2030 Agenda;
- importance of ocean science in addressing the unprecedented pressures affecting the ocean, including impacts of climate change, ocean acidification, pollution, biodiversity loss, and land-based activities;
- challenges related to limited human and institutional capacity for certain states to conduct and benefit from ocean science;
- inadequate funding and need for sustained investment in ocean science;
- benefits of integrating traditional knowledge;
- need for increased gender diversity among ocean scientists;
- need to strengthen the science-policy interface, including through improved communication;
- critical importance of international cooperation in ocean science;
- role of ocean science in supporting a blue growth/blue economy;
- gaps in ocean science, including impacts of microplastics on food safety; and
- UNCLOS as the legal framework for ocean science.

On opportunities to advance ocean science, highlights included discussions on:

- developing technology, improving data availability, and operability;
- supporting capacity-building and transfer of technology;
- promoting ocean literacy, in particular for younger generations;
- engaging local communities in citizen science projects;
- the transfer of knowledge and technology to address gaps; and

- activities related to the UN Decade.

Feedback on the Co-Chairs' Summary: Co-Chair Picco invited participants to review and provide feedback on the Co-Chairs' summary. In the ensuing discussions, participants congratulated the Co-Chairs and the Secretariat on a comprehensive summary.

Participants suggested several amendments and clarifications to the text. Issues included, *inter alia*: references to: food security; underwater cultural heritage; and elements related to dimensions of submarine cable. Co-Chair Picco said the document will be presented to the President of the UN General Assembly as the outcome of the meeting.

Closing Plenary

On Friday, Gabriele Goettsche-Wanli, Director, UNDOALOS, provided an update on the voluntary trust fund, explaining it facilitates the participation of delegates and panelists from LDCs, SIDS, and LLDCs. She welcomed contributions from Estonia and New Zealand, and noted that, without more contributions, it will not be possible to fulfill all requests for assistance.

Goettsche-Wanli informed delegates that UN Secretary-General António Guterres would be delivering opening remarks at the start of the 29th Meeting of States Parties to celebrate the 25th anniversary of UNCLOS on 17 June 2019.

Co-Chair Beckles thanked the delegates, the Secretariat, and interpreters, and praised the panelists for their excellent and focused presentations on a wide range of topics, which she said will help to advance ocean science. Co-Chair Beckles gavelled ICP-20 to a close at 12:22 pm.

A Brief Analysis of ICP-20

The vastness, depth, and mystery of oceans were dissected and deliberated from a range of perspectives at the twentieth UN Open-ended Informal Consultative Process on Oceans and the Law of the Sea (ICP-20). Scientists, social scientists, delegates, and traditional environmental knowledge researchers came together to focus on preparations for the “UN Decade of Ocean Science for Sustainable Development.” The diversity of expertise and sharing of best practices set the scene for healthy discussions on a sustainable approach to healthy oceans. To this end, the ICP-20 Co-Chairs' summary strongly acknowledged that the achievement of sustainable oceans depends on ocean science.

During the week, delegates shared facts from ocean research on climate, pollution, and biodiversity, among others, and reviewed assessments showing the overall degeneration of our oceans, evidenced by increased weather extremes, sea level rise, coral bleaching, and species loss. Referencing the forthcoming “Special Report on Oceans and the Cryosphere in a Changing Climate” by the Intergovernmental Panel on Climate Change, some delegates emphasized that under a business-as-usual scenario, our oceans will continue to experience shifts in marine species distribution, calcification of organisms, changes in water cycles, and increased extreme storm events. Delegates also referenced the World Ocean Assessment I, which was the first output of the Regular Process for Global Reporting and Assessment of the State of the Marine Environment. The report, prepared by a Group of Experts and approved by the UN General Assembly in 2015, affirmed the dire state of the ocean, and called for urgent action based on scientific solutions.

Presentations highlighted the UN Decade as a global platform for action and during the exchange of view and discussions, ICP-20 delegates showed eagerness to play active roles in the

UN Decade, with hope that solutions for the problems plaguing our oceans are within reach. They noted that the sustainable development anchor of the UN Decade, in particular Sustainable Development Goal 14 (life below water), provides purpose for actions focused on reversing the decline of ocean health.

This brief analysis reviews the key outcomes from discussions on the scope, uses of, and gaps in ocean science, the range of potential solutions and narratives to transform ocean science into actions, and the role played by ICP-20 as a springboard in advancing the UN Decade of Ocean Science for Sustainable development.

Fit for Purpose

The theme of the UN Decade, “the science we need for the oceans we want,” calls for a future where oceans are clean, safe, healthy, sustainably harvested, with predictable future conditions, and where data, information, and technology are shared in a transparent manner.

ICP-20 emphasized that ensuring we have or obtain the necessary science to achieve the vision of “the ocean we want” is a global responsibility, which requires plans and strategies. Science-based solutions and bridging the science-policy interface have been in the limelight of oceans-related conventions over the past decades, but the key to successful implementation requires grounded realistic goals and step-wise measures to build global capacity to act together.

Some delegates lamented that scientists continue to occupy an ivory tower, with outputs that are often complex, inaccessible, and tailored toward more scientific work, rather than solutions. Two panel sessions on the scope and use of ocean science revealed a wealth of ocean data over a wide range of topics and geographical reaches. Delegates said the key to science-based actions is to transform data to a form that is “fit-for-purpose, and tailor-made for the oceans we want.”

Support for data quality over quantity prevailed over the week, as many noted that all the data in the world will not heal our oceans. Others emphasized that data related to societal needs should be prioritized to meet the needs rather than aspirations of sustainable development. The early warning system of India's ocean observatories, which helped India and Bangladesh minimize the Cyclone Fani death toll, was cited as an example of “fit-for-purpose” data for achieving safe oceans. Several delegates and civil society representatives highlighted the importance of ocean literacy for transparent and accessible oceans, where all nations, stakeholders, and citizens have access to ocean data and information, and technologies, and the capacities to inform their decisions. Panelists presented examples of citizen-science or participatory exploratory initiatives that reveal underwater wonders to society throughout the week. While many appreciated the potential for public outreach, some civil society participants, wearing their “watch-dog” hat, cautioned against turning over the UN Decade to sensational explorations aimed at supporting a private-sector “gold rush” for new underwater exploitation. They emphasized that data collection and assessments should be independent, and driven by national, regional, and international priorities.

The More We Know, the Less We Learn

The notion that data availability is a hindrance to action was questioned by some at ICP-20. One delegate, tongue in cheek, said, “We are swimming in a sea of data.” The disparity in data, expertise and technology between developed and developing countries, and among disciplines, was consistently cited as a

key area to address during the UN Decade. The question on whether, and how, to fill gaps was met with different views, with some noting it would take several decades to bring countries up to speed for global data uniformity, with others stating lack of uniformity should not be used as a justification for inaction.

Delegates cited the ancient use of traditional knowledge, suggesting it should be valued equally. Drawing on examples from Hawaii, Easter Island, and Trinidad and Tobago, panelists shared stories of marine species signaling impending shift in weather or currents. Pacific Islanders reiterated the important connection between culture and nature saying that sustainable solutions should be embedded in cultural and community practices to enhance the potential for achievement of SDG 14.

Many also highlighted the need for interdisciplinarity to strengthen the connections between the natural, social, and political sciences to provide purposeful data that take into account the multifaceted nature of sustainable development. Gender disparities came up early in the meeting, with many noting the gender imbalance among ICP-20 delegates, while acknowledging efforts by the ICP Secretariat to ensure a balanced representation of gender, youth, and regional representation. Some delegates lamented the low attendance at a side event with a panel of young female scientists, noting the ICP itself has room for improvement. In addition, the lack of data on effects of ocean deterioration on the most vulnerable in society, including women, was identified as a barrier to achieving the goals of the UN Decade.

The most consistent opinions expressed regarding adequate data were those supporting expedited action based on current knowledge. One delegate said, “We do not need to know everything in order to act, a decade is not a long time.” One relevant example was the effect of plastic pollution on human health. Some emphasized that an in-depth assessment will not change the obvious outcome of further study—that synthetic material is unfit for human consumption—and that current knowledge about the effects on marine organisms is enough to eliminate single-use plastics worldwide.

The key to data, many acknowledged, is development of thresholds from the types and quality of data available. In cases where neither modern nor traditional science exists, a number of participants called for the use of the precautionary principle to reduce environmental harm.

The challenge of transforming existing data into policy and action was the subject of much debate. Several panelists discussing existing data management tools, agreements, and partnerships, said that universality of data types is not the key, but rather interpretation of existing data, and transformation into “findable, accessible, interoperable, and reusable information,” or FAIR, data. Achieving “fairness” in data for action would require a paradigm shift toward step-wise, action-based information sharing. It also would require new narratives to overcome the current doom-and-gloom messaging that can foster despair, to create positive messages that support the UN Decade’s aspirations of effective science-based ocean action.

A New Narrative for Oceans

One ICP-20 panelist cited “A New Narrative for Oceans,” by Jane Lubchenco and Steven Gaines, published in *Science* in June 2019, saying it reflects current scientific knowledge and inspires new science and effective action. He explained that the pre-20th century narrative, “the ocean is so vast, it is simply too big to fail,” considered the ocean as immense and resilient, and is partly responsible for the current state of the ocean. Delegates agreed

that this old narrative continues to persist, but humankind is beginning to realize that as oceans fail to sustain livelihoods, our marine ecosystems are “broken.”

The resulting narrative that “oceans may be too big to fix” assumes an inability to stop or reverse the state of oceans. Delegates agreed that the UN Decade provides an opportunity for mankind to raise hope with renewed resolve that: oceans are still central to our future, solutions exist to global ocean problems, and the ocean is neither too big to fail, nor too big to fix. Instead, it is too big to ignore.

Options for changing the narrative were articulated through panel sessions on international cooperation and coordination in advancing ocean science. ICP-20 emphasized that the global pathway provided by the UN Decade calls for coordinated actions to increase local and national capacities, ensure equal participation of all states, and improve the inclusion of women and youth. A question remained about who will control the narrative, and whether it will tell the stories of local engagement heard at ICP-20, or be dominated by global media outlets.

As delegates left ICP-20 many reflected on the Co-Chairs’ summary, affirming ICP’s role in the UN Decade for catalyzing global partnerships for technology transfer, capacity-building, ocean literacy, and citizen science. One expressed optimism, saying, “Hopefully, by the end of the UN Decade, we would know more about the ocean than the moon.”

Upcoming Meetings

29th Meeting of States Parties to UNCLOS: The meeting will elect members of the International Tribunal for the Law of the Sea, and members of the Commission on the Limits of the Continental Shelf. It will review among others, the work of the International Seabed Authority and the Commission on the Limits of the Continental Shelf. The meeting will commemorate the 25th anniversary of the entry into force of UNCLOS.

dates: 17-19 June 2019 **location:** UN Headquarters, New York **www:** https://www.un.org/Depts/los/meeting_states_parties/twenty-ninthmeetingstatesparties.htm

25th Session of the ISA Assembly and the ISA Council (Part II): The International Seabed Authority Council will consider the 2017 report of the Finance Committee, including the 2019-2020 budget proposals, and the 2018 report of the Legal and Technical Commission. The ISA Assembly will consider the 2019-2020 budget, a draft strategic plan for the ISA, and the Council’s report. **dates:** 8-10 July 2019 for the Finance Committee; 15-19 July 2019 for the Council; and 22-26 July 2019 for the Assembly **location:** Kingston, Jamaica **www:** <https://www.isa.org/jm/>

HLPF 2019: The 2019 High-level Political Forum on Sustainable Development will address the theme, “empowering people and ensuring inclusiveness and equality.” It will conduct an in-depth review of Sustainable Development Goal (SDG) 4 (quality education), SDG 8 (decent work and economic growth), SDG 10 (reduced inequalities), SDG 13 (climate action), and SDG 16 (peace, justice and strong institutions), in addition to SDG 17 (partnerships for the Goals), which is reviewed each year. Among other items, the Forum will consider the Global Sustainable Development Report (GSDR), which is issued every four years. **dates:** 9-18 July 2019 **location:** UN Headquarters, New York **www:** <https://sustainabledevelopment.un.org/hlpf/2019>

BBNJ IGC-3: This session of 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 will continue to negotiate issues in particular, marine genetic resources, including questions on the sharing of benefits, marine protected areas, environmental impact assessments and capacity building and the transfer of marine technology. **dates:** 19-30 August 2019 **location:** UN Headquarters, New York **www:** <https://www.un.org/bbnj/>

46th session of the Joint Group of Experts on the Scientific Aspects of Marine Environmental Protection (GESAMP):

The meeting will be co-hosted by UNDOALOS and the UN Development Programme. On 10 September, GESAMP will celebrate its 50th anniversary. **dates:** 8-12 September 2019 **location:** UN Headquarters, New York **www:** <http://www.gesamp.org/meetings/46th-session-of-of-gesamp>

OceanObs'19 – An Ocean of Opportunity: This meeting is a community-driven global conference to communicate decadal progress of ocean observing networks and chart innovative solutions to society's growing needs for ocean information in the coming decade. **dates:** 16-20 September 2019 **location:** Honolulu, Hawaii, US **www:** <http://www.oceanobs19.net>

IPCC-51: The 51st session of the Intergovernmental Panel on Climate Change is expected to approve the summary for policymakers of the special report on the ocean and cryosphere in a changing climate. **dates:** 20-23 September 2019 **location:** Principality of Monaco **www:** <http://www.ipcc.ch/>

UN 2019 Climate Summit: UN Secretary-General António Guterres will convene the UN Climate Summit under the theme "A Race We Can Win. A Race We Must Win," to mobilize political and economic energy at the highest levels to advance climate action that will enable implementation of many of Sustainable Development Goals. Its aim to challenge states, regions, cities, companies, investors and citizens to step up action in nine areas: mitigation; social and political drivers; youth and public mobilization; financing; energy transition; industry transition; nature-based solutions; infrastructure, cities and local action; and resilience and adaptation. **date:** 23 September 2019 **location:** UN Headquarters, New York **www:** <http://www.un.org/climatechange/>

SDG Summit: The HLPF, under the auspices of the UN General Assembly, will assess progress achieved since the adoption of the 2030 Agenda in September 2015 and provide leadership and guidance on the way forward that would help accelerate implementation of the 2030 Agenda and SDGs. **dates:** 24-25 September 2019 **location:** UN Headquarters, New York **www:** <https://sustainabledevelopment.un.org/summit2019>

Inter-agency and Expert Group on SDG Indicators (IAEG-SDGs): The 10th meeting of the IAEG-SDGs will continue work on developing and implementing the global indicator framework for the goals and targets of the 2030 Agenda. **dates:** 21-25 October 2019 **location:** TBD **www:** <https://unstats.un.org/sdgs/iaeg-sdgs/>

Sixth Our Ocean Conference: The sixth Our Ocean conference will highlight the importance of knowledge as the basis of our actions and policies to ensure sustainable future economic growth. The conference will bring together leaders from governments, businesses, civil society, and research institutions to share their experience, identify solutions, and commit to action for a clean, healthy and productive ocean. **dates:** 23-24 October 2019 **location:** Oslo, Norway **www:** <https://ourocean2019.no/>

2019 Santiago Climate Change Conference: The 25th session of the Conference of the Parties (COP 25) to the UNFCCC, the 15th meeting of the Conference of the Parties serving as the Meeting of the Parties to the Kyoto Protocol

(CMP), and the second meeting of the Conference of the Parties serving as the Meeting of the Parties to the Paris Agreement (CMA) will convene. **dates:** 2-13 December 2019 **location:** Santiago, Chile **www:** <https://unfccc.int>

2020 High-Level UN Conference to Support the Implementation of SDG 14: This meeting will convene with an overarching theme, "Scaling Up Ocean Action Based on Science and Innovation for the Implementation of Goal 14: Stocktaking, Partnerships and Solutions." Co-hosted by the Governments of Portugal and Kenya, the Conference is expected to adopt an intergovernmental declaration on science-based and innovative areas of action, along with a list of voluntary commitments, to support SDG 14 implementation. **dates:** 2-6 June 2020 **location:** Lisbon, Portugal **www:** <https://oceanconference.un.org/>

ICP-21: The dates and topic for the next meeting of the ICP will be determined by the 74th session of the UN General Assembly in its annual debate on "Oceans and the law of the sea." **dates:** TBD **location:** UN Headquarters, New York **www:** http://www.un.org/depts/los/consultative_process/consultative_process.htm

For additional meetings, see: <http://sdg.iisd.org/>

Glossary

2030 Agenda	2030 Agenda for Sustainable Development
BBNJ	Biodiversity in areas beyond national jurisdiction
GESAMP	Joint Group of Experts on the Scientific Aspects of Marine Environmental Protection
IAEG	Inter-agency and Expert Group on SDG Indicators
ICP	UN Open-ended Informal Consultative Process on Oceans and the Law of the Sea
IOC	Intergovernmental Oceanographic Commission
ISA	International Seabed Authority
IUU	Illegal, unreported, and unregulated fishing
LDCs	Least developed countries
LLDCs	Landlocked developing countries
MSR	Marine scientific research
Regular Process	Regular Process for Global Reporting and Assessment of the State of the Marine Environment, including Socio-economic Aspects
SAMOA Pathway	Small Island Developing States Accelerated Modalities of Action
SDGs	Sustainable Development Goals
SIDS	Small island developing states
TEK	Traditional environmental knowledge
UN Decade	United Nations Decade of Ocean Science for Sustainable Development
UNCLOS	UN Convention on the Law of the Sea
UNDOALOS	UN Division for Ocean Affairs and the Law of the Sea
UNESCO	UN Educational, Scientific and Cultural Organization
UNFCCC	UN Framework Convention on Climate Change
UNGA	UN General Assembly