



DIVISION FOR OCEAN AFFAIRS  
AND THE LAW OF THE SEA



日本財団  
THE NIPPON  
FOUNDATION

IMPLEMENTING PRACTICAL SOLUTIONS IN OCEAN AFFAIRS  
AND THE LAW OF THE SEA

# UNNF TRAINING

OCEAN SCIENCE FOR OCEAN SUSTAINABILITY



UNNF TRAINING ACTIVITIES

# ABOUT THE PROGRAMME

In light of the ongoing impacts of the COVID-19 pandemic on the implementation of in-person activities, the Division for Ocean Affairs and the Law of the Sea (DOALOS), with the support of The Nippon Foundation and in consultation with UNNF Alumni, launched a 6-month Virtual Programme under the theme “Implementing Practical Solutions in Ocean Affairs and the Law of the Sea.” The Programme started in March 2021.

The Programme aimed to initiate participatory conversations between our Alumni Network and selected experts to discuss ideas and respond to concrete challenges on self-identified ocean-related topics. Alongside the various sessions, the Slack Platform facilitated networking.

# ABOUT THIS REPORT

In this report, we have summarized the presentations given by a range of experts and Alumni during the sessions, extracting and highlighting the practical challenges, solutions, case studies, and examples that our speakers have identified. We have placed national studies alongside global ones, finding the connections between the experiences of different States and disciplines worldwide, and identifying common themes between presentations and even across sessions.

This approach aims to present practically useful information on the problems encountered by ocean professionals and real solutions that can be used to tackle them, as well as demonstrating the connections between us and how, by sharing our knowledge and experiences, we can support each other as a community.

# ABOUT THE VIRTUAL FORMAT

Building on the positive experience we had in 2020 in implementing two online training Programmes, “Impacts of COVID-19 on Ocean Affairs and Law of the Sea and the Possible Solutions” and “Law of the Sea,” respectively, this year’s goal was to share the daily challenges that our Alumni experience in their roles as ocean professionals and explore possible practical solutions to overcome them.

The Virtual Programme incorporated:

- Knowledge-sharing sessions between Alumni and experts to discuss ideas and to respond to concrete challenges that they face as ocean professionals;
- Scenario-based seminar sessions;
- Activities to crowdsource solutions to specific challenges;
- Networking activities.

# IMAGE CREDITS:

- Aruna Maheepala, UNNF Alumnus, for the provision of all photos herein, which were taken in Jaffna Peninsula in Si Lanka.
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## KEY OF ICONS TO INDICATE CHALLENGES



**Communication: Combining Science, Policy and Law**



**Capacity: Uneven Distribution of and Lack of Financial, Technical and Human Resources**



**Cooperation: Stakeholders and National Institutions & Frameworks**



**Knowledge Network: Local, Traditional & Indigenous Knowledge**



**Gender Equality: Empowering Women in Ocean Science(s)**



**Data: Collection, Sharing and Use**



**Social and Environmental Limitations, Security and Technical Challenges**



**Legal: Issues, Complexities and Oversights**

## KEY OF ICONS TO INDICATE SPEAKERS



**UNNF Alumni**



**Expert**

# PILOT SERIES ON “OCEAN SCIENCE FOR OCEAN SUSTAINABILITY”



Our Virtual Series facilitated discussions between Alumni and experts, exploring the different areas of knowledge needed for sustainable ocean governance, including traditional and community knowledge; the importance of ocean science and scientific data for policymakers; the 1982 United Nations Convention on the Law of the Sea (UNCLOS) legal framework for marine scientific research (MSR) and the development and transfer of marine technologies; and the challenges in integrating science into governance and institutional processes.

We encouraged our speakers to consider practical solutions that might inspire and guide other ocean professionals facing similar challenges. We highlighted practically representative case studies from these discussions and uncovered common challenges and solutions on national and global levels.

These sessions supported the spirit of the UN Decade of Ocean Science for Sustainable Development, 2021-2030 by creating a participatory dialogue between ocean professionals and experts in the law of the sea in order to facilitate the creation and implementation of sustainable ocean policy and law which incorporates and responds directly to ocean science.

The UN Decade of Ocean Science for Sustainable Development, 2021-2030, works to deliver transformative ocean science solutions for sustainable ocean development, connecting people and the ocean in a more inclusive way. As a movement that brings together knowledge producers and users, it will generate a new dialogue to inform policies that ensure a well-functioning, productive, resilient, and sustainable ocean, in line with the 2030 Agenda for Sustainable Development, particularly SDG 14. These conversations have already begun to build these necessary connections between ocean professionals from different sectors, exploring the challenges they face in accessing, using, and processing ocean knowledge(s), and sharing practical solutions that have been implemented at global and national levels.



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# SESSION 1: An Introduction to Ocean Science(s)

## OVERVIEW

The opening session introduced the different disciplines and types of knowledge needed for sustainable ocean governance - including natural, social, legal, economic, and community sciences. It considered who generates that knowledge and how it is communicated and integrated into governance processes. It incorporated a global perspective through the Global Ocean Science Report 2020 (GOSR2020) and a series of national perspectives highlighting key challenges and possible solutions to better communicate science(s) and to make ocean knowledge more accessible and inclusive.



### GUIDING QUESTIONS

- What kind of ocean science(s) do ocean professionals require and produce in their daily work activities, including natural, social, economic, political, community science?
- How is ocean science communicated to and integrated into governance processes?
- Who generates that type of knowledge?

### TAKE-HOME MESSAGE



Gender Equality in ocean science(s) remains a challenge; collaborative strategies are needed to support women and young scientists.



There is a need to broaden "ocean science" to include local and traditional knowledge; interdisciplinary and transdisciplinary approaches are key to having truly transformative solutions.



Funding for ocean science(s) remains an issue generally and especially regarding "the human side;" Unequal distribution of technical capacity is also a major challenge.



This uneven distribution of capacity means that many States are ill-equipped to collect and manage their own ocean data, leading to an unknown ocean.

## THE IOC-UNESCO REPORT ON GLOBAL OCEAN SCIENCE

### ALONGSIDE ALUMNI'S NATIONAL CASE STUDIES

Below is a summary of the GOSR2020 and the national perspectives included in this webinar. On the following pages, you will find further detail on the challenges and solutions identified by the GOSR2020 and their connections to those found in national experiences.

### THE IOC-UNESCO GOSR 2020: CHARTING CAPACITY FOR OCEAN SUSTAINABILITY

This session started with a presentation on the findings of the recent IOC-UNESCO Report, delivered by Ms. Kirsten Isensee, expert from IOC-UNESCO, which considered the challenges faced in ocean science on a global level, and recommended solutions to these.



**"A resource for policymakers, academics, and other stakeholders seeking to assess progress towards the Sustainable Development Goals of the UN 2030 Agenda".**

----- **Ms. Kirsten Isensee, IOC-UNESCO**

The GOSR2020 demonstrated that the findings of ocean science have direct implications for sustainable development policies and are applied in the management strategies and action plans of multiple societal sectors.

### NATIONAL CASE STUDIES

This was followed by a series of presentations on ocean science(s) in national cases, with Alumni and experts using their personal experience and professional expertise to provide practical examples and implementable solutions to real challenges.

The findings of the IOC-UNESCO Report were often reflected in the practical experiences of our Alumni. Some of these connections are demonstrated on the following two pages.



**Dr. Hendra Siry, Indonesia, Alumna: a policymaker's perspective**

*"Science is necessary to have right and good policies that benefit the local community and that make economical sense"*

- E.g. MPA activities: science is fundamental in determining the buffer zone.
- E.g. The Ministry of Marine Affairs and Fisheries of Ghana recruits ocean science Alumni, fundamental in the decision-making processes and for the actual implementation of policies.

### LIST OF SPEAKERS INCLUDED:

- Ms. Kirsten Isensee, IOC-UNESCO [EXPERT]: "The Global Ocean Science Report 2020" ·
- Mr. Andrei Polejack, Brazil [ALUMNUS]: "A natural sciences perspective" ·
- Prof. Anthony Charles, SMU [EXPERT]: "A local/traditional knowledge and community sciences perspective". ·
- Dr. Hendra Siry, Indonesia [Alumna]: "A policy-maker perspective" ·
- Dr. Mariamalia Rodriguez-Chaves, Costa Rica [Alumna]: "Gender perspectives"

CHALLENGES

RECOMMENDATIONS

**Mariamalia Rodriguez-Chavez, Costa Rica, Alumna: Who is generating that science?**

- Though 39% of ocean scientists are women, meaningful representation, especially in decision-making roles, remains a challenge.
- Some initiatives, such as the World Maritime University's Empowering Women Programme, support progress: <https://empoweringwomen.wmu.se>

**Prof. Anthony Charles, SMUS, Expert: Local, Traditional and Community Science**

- There is a need for community and traditional knowledge to be incorporated into governance processes to have more collaborative and effective management strategies. This requires funding, will, and interest, which are lacking.
- The human side of ocean science is underfunded and coastal communities are not truly empowered to take part in scientific activities.

**Dr. Nina Rivers, One Ocean Hub, Expert: Anthropological and Environmental Education Perspective**

- The gaps and challenges faced in generating anthropological and environmental knowledge include:
- lack of access to historical and cultural data;
  - establishing a meaningful relationship with indigenous groups and locals, which requires a great deal of time and trust;
  - ethical considerations.

**Andrei Polejack, Brazil, Expert: Natural sciences perspective**

- Lack of a clear definition of ocean science and MSR.
- Ocean science is dependent on technology, which is very expensive, and therefore concentrated in the global North. This hinders equitable access to marine technologies and benefit-sharing.
- Data generation requires time, funds, human and technical expertise that may be lacking in developing countries.
- These gaps in countries' scientific capabilities mean that the ocean remains unknown in much of the world.

**Funding**

Funding for ocean science is largely inadequate. This lack of support undermines ocean science's ability to support the sustainable provision of ocean ecosystem services to humanity.

**Inclusivity**

There is insufficient recognition of, and support offered to, young ocean scientists in some countries.

Women in ocean science continue to be underrepresented, particularly in the highly technical categories.

**Capacity**

Ocean science technical capacity is unevenly distributed geographically, with particular insufficiency in developing countries—an imbalance further accentuated by short-term or ad hoc funding for ocean science.

Countries are inadequately equipped to manage their ocean data and information which hampers open access and data sharing

**Strategies**

Few countries have specific strategies focusing on SDG 14

**Funding**

Increase the current level of funding for ocean science through mechanisms at all levels, from governments to institutions, philanthropic organizations, and private corporations.

Establish a continuous collection of internationally comparable data on investments in ocean science to identify their multiple socio-economic returns.

**Inclusivity**

Develop strategies and implementation plans to support the career needs of women and young scientists.

Foster education and training in professions related to ocean science.

Move towards ocean science capacity development with the equal participation of all countries, genders, and ages, embracing local and indigenous knowledge.

**Capacity**

Facilitate co-design of ocean science by involving ocean science information users and producers.

Promote multi-stakeholder partnerships in ocean science and operationalize UNCLOS regime on TMT to optimize marine research capacities, research infrastructure, and human potential in developing States.

Find solutions to remove barriers for open access to ocean data, recognizing it as a common good.

Assess the impact of the COVID-19 pandemic on human and technical capacity in ocean science.

**Prof. Anthony Charles, SMUS, Expert: Local, Traditional and Community Science**

- To better integrate local and traditional knowledge into governance processes, a concerted effort to engage policymakers and local communities is required
- To empower coastal communities and indigenous groups. They should be called upon as designers of science, not just as subjects.
- There is a need to study the human aspects of ocean science and go beyond the narrow view that ocean science is restricted to natural science.
- We need to fund the human side of the ocean to plan for the future; we need to know how humans are using the ocean, regionally and globally.

**Mariamalia Rodriguez-Chavez, Costa Rica, Alumna: Who is producing that science?**

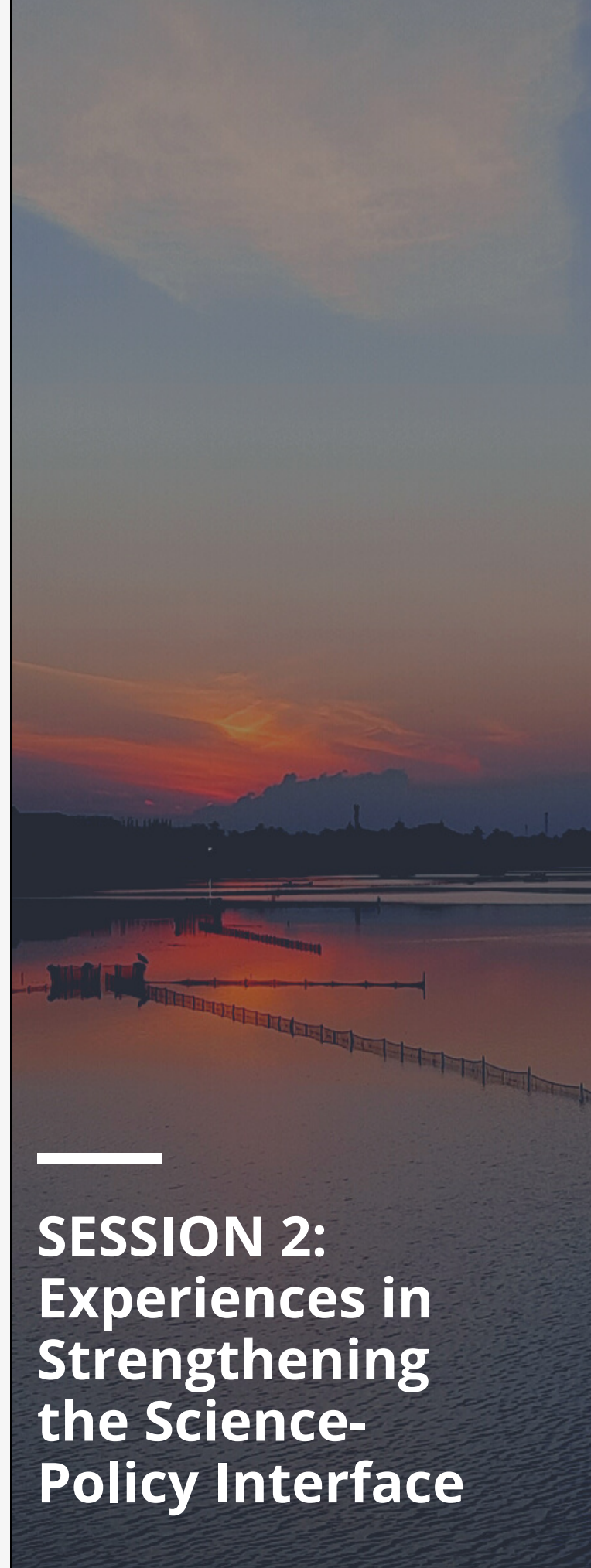
- The 2020 Fisheries and Oceans Canada Report, "Gender Equity in Ocean Science," recommends that we tackle the issue by:
  1. Ensuring equity in (senior) decision-making roles;
  2. Collecting gender-disaggregated data to visualize the areas that need gender equality;
  3. Creating mentorship and leadership opportunities for women;
  4. Supporting networking.

**Dr. Nina Rivers, One Ocean Hub, Expert: Anthropological and Environmental Education Perspective**

- Make use of different ways of communicating local and traditional knowledge, including through academic papers, policy briefs, local art exhibitions, and WhatsApp groups with local ocean users, e.g., fishers;
- Take into consideration the context when integrating indigenous and local knowledge into processes, e.g. when planning marine spatial planning (MSP).

**Andrei Polejack, Brazil, Expert : Natural Sciences Perspective**

- Because ocean science, access to marine technologies, and decision-making processes are highly interconnected, a holistic and global approach is needed.
- Implementation of the UNCLOS regime, Parts XIII and XIV, particularly the promotion of international cooperation, is critical to the promotion and sharing of research and technology.
- The UN Decade dialogue can help us with this.



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## SESSION 2: Experiences in Strengthening the Science- Policy Interface

## OVERVIEW

Enhancing the science-policy interface, or "knowledge ecosystem," is crucial to the creation of effective ocean governance policies and laws at global and national levels. This session highlighted the challenges faced by Alumni in accessing and using scientific data for decision-making processes and presented some practical solutions, which have been implemented nationally.



### GUIDING QUESTIONS:

- 🐟 When looking at national ocean governance frameworks, how are science and knowledge incorporated? Do you see clear pathways? How were they created?
- 🐟 How do we create mechanisms that are effectively capturing different kinds of knowledge? How do they interfere in an ocean governance framework? How do you accommodate these different forms of knowledge and their results? How do you make the database?

### Take-Home Message



The conversation highlighted that we may be called upon to move beyond the concept of "science-policy interface", embracing the term "knowledge ecosystem" to include traditional and local knowledge.



People should be at the center of a more inclusive conversation based on co-learning, co-design, and co-management strategies.



Story-telling and public hearings offer concrete examples of how to communicate ocean science(s) more effectively into decision-making processes.



Summary

## GLOBAL RELEVANCE SCIENCE-POLICY INTERFACE

The (World Ocean Assessment) WOA II is an ongoing process that assesses the state of the marine environment against the three pillars of sustainable development, making the findings useful for policymakers, scientists, and the general public towards the achievement of SDG 14.



Summary

## NATIONAL RELEVANCE SCIENCE-POLICY INTERFACE

**Challenges** that our Alumni face when using/incorporating scientific data in legislative and decision-making processes include:



- lack of scientific data on specific issues;



- having data and/or information that is not available during the decision-making process either because scientific knowledge is not accessible to policymakers in day-to-day decisions or scientists are not involved in the process of developing public policies and/or legal instruments;



- the so-called "sausage effect," where scientists are involved in the processes and scientific data are available but are not reflected in the outcome of a public policy.

### Case study

**Experiences in applying science to the environmental agenda as an environmental analyst from the Brazilian Government.**

**Dr. Mariana Pereira, Alumna, Brazil**



**Why do we need science and scientific data?**

1. To generate awareness of environmental issues that need to be addressed.
2. To support institutions in designing and developing solutions to these issues, such as public policies.
3. Because public policies can regulate or limit some social activities, science is needed to help the public, stakeholders, policymakers, and society at large better understand why they are needed and thus accept them.

In summary, science helps us to show:

1. PROBLEM;
2. CAUSES OF THE PROBLEM;
3. GOALS TO BE ACHIEVED.

Public policies help us to:

1. DESIGN THE MEASURES TO ADDRESS THE PROBLEM AND ITS CAUSES;
2. HOW TO ACHIEVE THE GOALS.

### Practical solutions

**Examples of science successfully incorporated into the decision-making process**

1. Targeted capacity-building activities to exchange knowledge. The Brazilian Government hired a well-recognized environmental impact assessment specialist to train over one hundred environmental analysts. As a result, all analysts learned to apply the same environmental impact analysis methodology in their daily decisions.
2. Involvement of scientists in public policy making. For example, in the process of constructing environmental policies, scientists can participate in the discussion and contribute scientific knowledge to public officials (e.g., National action plans for endangered species and ecosystems).
3. Consideration of research as a management tool. Scientific research is considered an important part of national park management, and data are used to help manage protected areas.



**Challenges** that our Alumni face when using scientific data in legislative and decision-making processes include:



- the lack of clarity from policymakers about the information they need in decision-making.

### Case study

#### Gonzalo Rodriguez, Alumnus, Uruguay



##### Participatory processes for developing fisheries legislation in Uruguay

Challenges in incorporating scientific data into decision-making processes in Uruguay include the lack and/or weakness of scientific information on specific topics and often a lack of clarity from policymakers about the information they need in decision-making. For example, many inspectors do not know how to apply the recent Draft Regulation on IUU fishing to better implement the Agreement on Port State Measures (PSMA), and as a result, FAO is developing targeted training programmes.

Participatory processes related to IUU and small-scale fisheries, including artisanal fishers, among other stakeholders, might help overcome the challenge and incorporate science into decision-making processes.

### Practical solutions

#### The key elements of this process are:

- Participation model to be implemented, consisting of a “make a decision together” approach.
- Identify possible stakeholders, including those who would be directly and indirectly affected, who make decisions, who would be interested in the topic, who is influential, and who can disseminate public information.
- Define tools for engagement, such as surveys, interviews, and workshops. Currently, the COVID-19 pandemic is affecting the implementation of these activities, especially since small-scale fisheries do not have access to the internet. To overcome these issues, fishers are asking corporations and coast guards to help them with virtual workshops.
- Level of involvement, depending on the objective.

**Challenges** that our Alumni face when using scientific data in legislative and decision-making processes include:



- difficulties in accessing scientific papers;



- the intrinsic limitations of science due to its highly specialized nature.

### Case study

#### Katryana Madeira, Alumna, Brazil



##### Applying science in public management

Port establishment and development are some of the most important socio-economic activities in coastal areas, but port activities also have some negative environmental impacts on the surrounding areas. As such, Port Authorities must ensure that activities are carried out in an environmentally friendly manner. As part of the environmental licensing process, they must implement environmental countermeasures, which involve generating scientific data from the monitoring process and organizing it into an annual report.

Some challenges our Alumna faces in working for the Port Authority include:

- difficulty accessing scientific papers that support the findings;
- having results that do not reflect what public management needs, but rather present a more academic point of view;
- difficulty in drawing a common path between political positing and technical-scientific positing.



# SESSION 3: Challenges in Data Collection, Access and Use

## OVERVIEW

This session highlighted the frequency and range of challenges in data collection and use for marine resources and ecosystem management at global and national levels, including technical, social, environmental, and financial constraints. Our Alumni identified several practical solutions they have implemented.



### GUIDING QUESTIONS:

- What challenges do you face in the collection, access, and use of data?
- If you were successful: what strategies did you use?

### Take-Home Message

-  Social, technical, environmental, security challenges.
-  Lack of standardization.
-  Lack of human and financial capacity.
-  Data is not collected for decision-making and management purposes.
-  Publicly available data is not well distributed around the world.
-  Much of the data is not shared by scientists due to a lack of platforms, or it is collected by the private sector and commercialized.
-  Data is not collected routinely in much of the world, for instance, other issues might be competing for that money, such as in cases of national disasters.



Summary

## NATIONAL RELEVANCE DATA COLLECTION, ACCESS AND USE

General **challenges** include:

- Data is not collected routinely in much of the world; for instance, other issues might be competing for that money, such as in cases of national disasters.
- Publicly available data is not well distributed around the world.
- Due to a lack of platforms, much of the data is not shared by scientists, or it is collected by the private sector and commercialized.
- Social, technical, environmental, and security challenges.
- Data is not collected for decision-making and management purposes.
- Lack of standardization.

**GLOBAL SCALE PROMISES**

**Linwood Pendleton  
Centre for the 4th Industrial Revolution**



**Some reflections on promises and challenges for using data for ocean management**

- We now have more data on the oceans than ever before.
- With the development of new technologies, we have more ways to collect data and new instruments, tools, and platforms to analyze them.
- We have access to more kinds of data, including acoustic data to measure ecosystem integrity and biodiversity.
- Data are faster and cheaper to obtain (real-time data).
- The private sector is also involved.

**Practical solutions**

- Identify what requires standardization, who can address it and work hard; encourage parties to implement these standards/models

The Project's main objective is to maintain and enhance island countries' ecosystem goods and services through integrated approaches to land, water, forest, biodiversity, and coastal resources management that contribute to poverty reduction, sustainable livelihood, and climate change.

**Case study**

**Silia Leger, Alumna, Tonga**

National Project Coordinator **Regional Programme "Reach to Ref"**

- Due to its small size and geographic location, Tonga's greatest challenge is its lack of financial capacity. Global knowledge and technology are improving and changing at such a rapid pace that is extremely difficult for Small Island Developing States (SIDS) to catch up. For example, in offshore data collection, Tonga does not have any equipment to conduct its own deep-sea scientific research, making it dependent on foreign research vessels to access this data. In addition, once they could afford or know how to use equipment, methodologies and indicators had already changed, making it difficult for Tonga and other SIDS to keep up with developed countries.
- Lack of knowledge and expertise in terms of data collection and management creates challenges in ensuring that data are collected properly, that metadata is compiled correctly concerning data, time, series, location, and that data are unbiased and follow the methodology. Depending on foreign aid for scientific research, different organizations and donors have indicators and methodologies that are difficult for them to follow. This is also evident in species identification, where there may be confusion between species due to differences in language. Another challenge is that databases are often corrupted at the local level and not workable due to missing metadata or incorrectly entered.

**Practical solutions**

- Collaboration and coordination within their local capacity among governmental ministries, non-governmental organizations, and local entities, such as the private sector, that have the necessary knowledge on data collection;
- Using technology, such as drones, also helped with the success in data collection

**Case study**

**FILIMONI YAYA, Alumnus, FIJI**



**Challenges in implementing MSP for the Pacific Region**

- Data is collected internationally, so it needs to be reprojected to the Pacific Region.
- Most countries receive raw data from cruise ships but do not have the tools and equipment to process it due to financial constraints.
- Issues with data storage and in understanding who has jurisdiction over which data.
- Lack of funds and budgets to look at the data.
- National priorities during national disasters.

**Practical solutions**

- Work with partners within the countries where you plan to implement MSP.
- Engage with local communities by holding consultations and showing them maps, explaining how they will benefit from MSP.

**Case study**

**BENJAMIN BANAFI, Alumnus, GHANA**



**Challenges in offshore data collection and exploration**

- ENVIRONMENTAL CHALLENGES, including frequencies and noise disturbances that, coming from offshore activities, may affect animals and marine life.
- SOCIAL CHALLENGES: Data collection prevents fishermen from accessing the research area for some time. As a result, fishermen tend to approach research vessels to increase their catch, risking their lives and creating problems for research activities.
- SECURITY CHALLENGE.

**Practical solutions**

1. Collection of other kinds of data that might be relevant for the local community to build trust and reduce costs.
2. Educating and engaging the local community.
3. Recruitment of people living nearby on board for non-technical activities.

**TECHNICAL CHALLENGES:**

- Lack of availability of data to perform the desk study needed before going offshore. These data often have not been stored or, if available, are not accessible because they are considered highly confidential information.
- Maritime boundary issues with neighboring countries, especially Cote D'Ivoire; data collection requires obtaining permits to enter their waters, but this is difficult due to trust and security issues.

**Practical solutions**

- The Government of Ghana through legislation requires that data collected to be added to the national data repository for ease of use and access.

**Common challenges**





# Session 4: Legal framework for marine scientific research and transfer of marine technology

## OVERVIEW

This session introduced the legal framework for marine scientific research (MSR) and the transfer of marine technology (TMT), with a particular focus on the UNCLOS legal regime, Parts XIII (MSR) and XIV (TMT). The primary speaker, Professor Alfred Soons, from the Utrecht School of Law, considered this topic at the international level, explaining the essence of the UNCLOS regime for conducting MSR, the practical implementation issues faced by coastal States, and the benefits in implementing it. This initial discussion was followed by Alumni presentations which highlighted issues of implementation at the national level and proposed new practical solutions.



### GUIDING QUESTIONS

### TAKE-HOME MESSAGES



**Capacity (budget; MSR capacity; scientific infrastructure; human resources; experience with foreign applications) is often an issue.**



**There is a need for increased trust in regional organizations and will for cooperation between States.**



**Legal issues include the lack of a clear definition of MSR, regimes failing to take into account new technology, and the use of exhortative language.**

## EXPERT SPEAKER: UNCLOS

### PART XIII: MARINE SCIENTIFIC RESEARCH

Professor Alfred Soons outlined the essence of the UNCLOS legal regime, its background, and the challenges and benefits to coastal States in its implementation. We have compared these global challenges with those experienced by our UNNF Alumni in the Mauritius and Brazilian contexts.



**Prof. Alfred Soons,  
Utrecht University School of Law**

### The Essence of the UNCLOS legal regime

#### MSR in areas under national jurisdiction

- In the territorial sea, coastal State consent is required for all MSR and the State has the discretion to decide on all MSR activities (Article 245).
- For certain categories of MSR in the exclusive economic zone (EEZ) and in the continental shelf, the coastal State may at its discretion decide whether or not it will allow that research to be conducted (Article 246 (5)).
- Other MSR in the EEZ and in the continental shelf should normally be permitted. The researching State must comply with certain conditions (Articles 246(3); 248-250).

#### MSR in areas beyond national jurisdiction

- Freedom to conduct marine scientific research in the high seas, subject to Parts VI and XIII (Article 87 (1)(f)).

### NOTION OF MSR under UNCLOS

MSR is not defined in UNCLOS, but it is clear from other provisions that:

- Should be distinguished from other data collecting activities in the marine environment;
- Part XIII primarily deals with the actual collection of data and samples and the conduct of experiments in situ ("fieldwork").
- It is done for the purpose of increasing humankind's knowledge of the marine environment.
- It doesn't cover resource prospecting and exploration, hydrographic surveying, or military survey.
- It is done to make the results publicly available (Article 248 (1)(e)).

### History of the MSR regime: finding a balance

- The regime was first negotiated in the 1970s and discussed at the Third United Nations Conference on the Law of the Sea. The need to balance several interests, including the value of acquiring ocean knowledge for coastal management and environmental protection purposes, and the concerns of coastal States with limited scientific infrastructure and capacity, led to a regime that regulates access of foreign research vessels to coastal State areas and recognizes the practical dimension of MSR.



- **Challenge:** UNCLOS regime is primarily based on the traditional notion of research cruises; now, new forms of technology can be used to conduct MSR and obtain data, such as floats, gliders, and drones. This results in legal questions on the application of Part XIII.

## Challenges in the Implementation of UNLCOS:

- The challenges faced varying greatly between different coastal States.
- For example, some States do not have their own capability to conduct MSR; others do not have the necessary capacity to evaluate foreign applications to conduct MSR in their waters.

### Solutions:

- To clearly distinguish between dealing with MSR applications ("collection of data for public publication") and permits for other data collection (e.g. for economic-resource purposes) which should be regulated by separate legislation (e.g. mining or fisheries legislation).
- To demonstrate to coastal States how they can benefit from the regime: by making use of the conditions of Article 249 (1) which allows them to participate, obtain preliminary and final reports, access data and samples, and gain assistance with the assessment of data and results.
- As several coastal States lack the capability to assess applications and to monitor research activities, facilitation by international or regional organizations could be improved to assist States in this regard. This could be effected through regional cooperation.

### Further challenges to facilitation by an international or regional organization:

- Lack of budget on a regional level to pay several scientists to assist.
- Hesitation from States to put trust in such organization to assist them in monitoring complaints, assessment of the results and applications.

### Shameelah Mamode, National Case Study: Mauritius

**Challenge:** How can States implement their obligations to coastal States concerning Article 249 of UNCLOS: duty to comply with certain conditions when undertaking MSR in the EEZ or on the continental shelf of a coastal State.

**Practical Solution:** Ocean Observatory E- Platform

- This is a centralized database designed to facilitate data compilation; discovery and sharing between researchers, partners, and users involved in management; policy; and planning.
- It will provide access to cruise reports and data collected during research cruises that have been approved under the Maritime Zones (Conduct of Marine Scientific Research) Regulation 2017.
- This will ensure the dissemination and flow of scientific data and information resulting from marine scientific research as stipulated under Article 244 of UNCLOS.

**Link:** <https://gococeanobservatory.govmu.org>

# EXPERT SPEAKER: UNCLOS

## PART XIV: TRANSFER OF MARINE TECHNOLOGY

Professor Alfred Soons discussed the challenges involved in implementing the UNCLOS regime concerning the transfer of marine technology, and solutions to these. We have compared this with the experiences of Dr. Andrei Polejack, an Alumnus from Brazil, who considered the issue on a national level.

### Challenges in TMT

- Part XIV is one of the least developed and implemented parts in practice.
- The Convention mainly uses exhortations to encourage States to cooperate, but these are not translated into practice.
- Budgetary constraints faced by regional and international organizations, which have an extremely important role to play.

### Andrei, National Case Study: Brazil

- **Solution:** Obligation for foreign vessels accessing Brazilian waters to have a formal commitment with Brazilian institutions regarding international cooperation. This provides leverage capacity and means that they do not rely on exhortations alone.

### Solutions in TMT

- Budget increase
  - It is important that international organizations support TMT
  - IOC 2005 – Criteria and Guidelines on the Transfer of Marine Technology. This has the potential to be a solution, but this system has only been used few times
- Link:** <https://repository.oceanbestpractices.org/bitstream/handle/11329/856/139193qaa.pdf?sequence=1&isAllowed=y>

### Dr. Andrei Polejack, Brazil: A practitioner's perspective

#### Challenges

- Exhorting States to cooperate, including through international organizations, in TMT is key. Most of the world does not have the capacity to develop and access marine technologies, on which ocean science is deeply dependent.
- Broad definition of TMT, which ends up including not only research vessels, but also information, equipment, knowledge, protocols, data, etc.
- Lack of a clearing-house mechanism on a global level and weakness of South-South cooperation.
- IOC is not solving the problem as the transfer mainly happens among scientists, peers to peers, which is insufficient.
- Standards of certification are too high.
- Lack of human and technical capacity.

#### Possible Solutions

- It is important to move assets from one place to another, making them available to people, for example by opening UNCLOS to other legal regimes such as those of the World Intellectual Property Organization/World Trade Organization dealing with intellectual property rights.
- Involve the private sector to lower standards of certification, creating a meaningful conversation between public/private sectors and researchers.
- Make use of science diplomacy processes to open up the discussion, especially through the UN Decade of Ocean Science.





# SESSION 5: Seminar on the legal regime for Marine Scientific Research

## OVERVIEW

Through a scenario-based interactive seminar, the session introduced the legal framework for conducting marine scientific research (MSR) under UNCLOS.

- Read each part, and try to answer the questions using the legislation below.
- Check your answers against those included on page 31-33, and find out how well you know the legal regime for marine scientific research!



**Innocent Passage; Consent and Discretion; Participation and Access; Resolution of Disputes**

### What Do You Need to Complete this challenge?

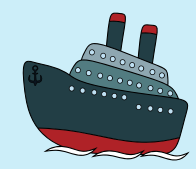
UNCLOS, particularly Articles 17, 18, 19, 21, 245, 246, 248, 249, 252, 253, 297

DOALOS, Marine Scientific Research: A revised guide to the implementation of the relevant provisions of the United Nations Convention on the Law of the Sea (2010).

## THE SCENARIO

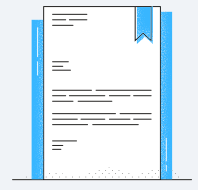
**Part 1:** A ship flying the flag of State B is conducting marine scientific research at a distance of 5 nautical miles from the coast of State A. The authorities of State A stop the vessel, indicating that the research is unauthorized. The ship asserts that it is exercising its right of innocent passage.

- A)** What are State A's rights to the conduct of marine scientific research within this zone under UNCLOS?
- B)** Is the ship engaged in an innocent passage in these circumstances?



**Part 2:** On 1 March 2020, State B formally requests to State A to conduct marine scientific research on the continental shelf at a distance of 150 nautical miles from the coast. The objective of the research was to understand the impact of microplastics on some sedentary species on the seabed.

- A)** What information should the request contain?
- B)** Can State A refuse to grant its consent in these circumstances?



**Part 3:** State B does not hear back from State A, so begins carrying out the activities on 1 September 2020.

- A)** Is State B allowed to commence this research in the absence of explicit consent from State A?



**Part 4:** State A, when eventually granting its consent, asks that some of its scientists participate in State B's marine scientific research project, that it be provided with the results of the research, and that it be given access to the data and samples collected. However, State B rejects all of these requests.

- A)** Is State B entitled to reject these requests? Is there anything that State A could do in the circumstances?

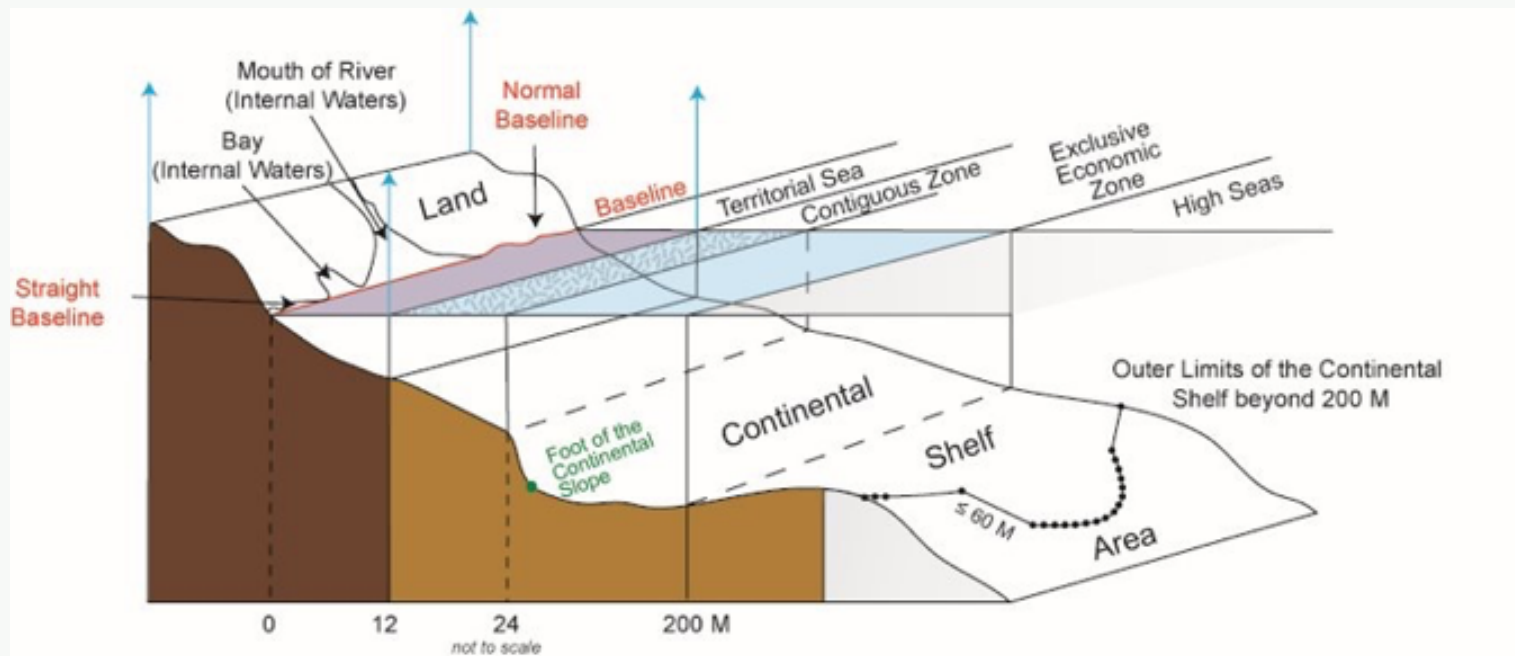


**Part 5:** The research project continues. However, after some time, State A begins to suspect that State B is not, in fact, conducting research relating to microplastics, but is conducting research related to the exploitation of the mineral resources of its continental shelf, which it would not have authorized. It orders State B to cease the research project. State B asserts that State A is mistaken and that its research activities were being conducted following the information it had earlier communicated.

- A)** What process does UNCLOS envisage for the resolution of this kind of dispute?



# THE ANSWERS



A quick review: maritime zones



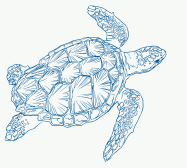
## Part 1:

**A)** Under Article 21(1)(g), State A may adopt laws and regulations concerning the conduct of MSR in its territorial sea. In addition, under the consent regime set forth by Article 245, State A, in the exercise of its sovereignty, has the exclusive right to regulate, authorize, and conduct MSR in its territorial sea and all MSR therein shall be conducted only with its express consent or under such conditions as it may determine.

**B)** Articles 17 and 18 establish the purpose and conditions under which the right of innocent passage may be exercised by foreign vessels. Article 19(2)(j) states that the passage shall be considered prejudicial to the peace, good order, or security of the coastal State if in the territorial sea it engages in, *inter alia*, conducting research or survey activities. Therefore, the ship is not engaged in innocent passage.



## Part 2:

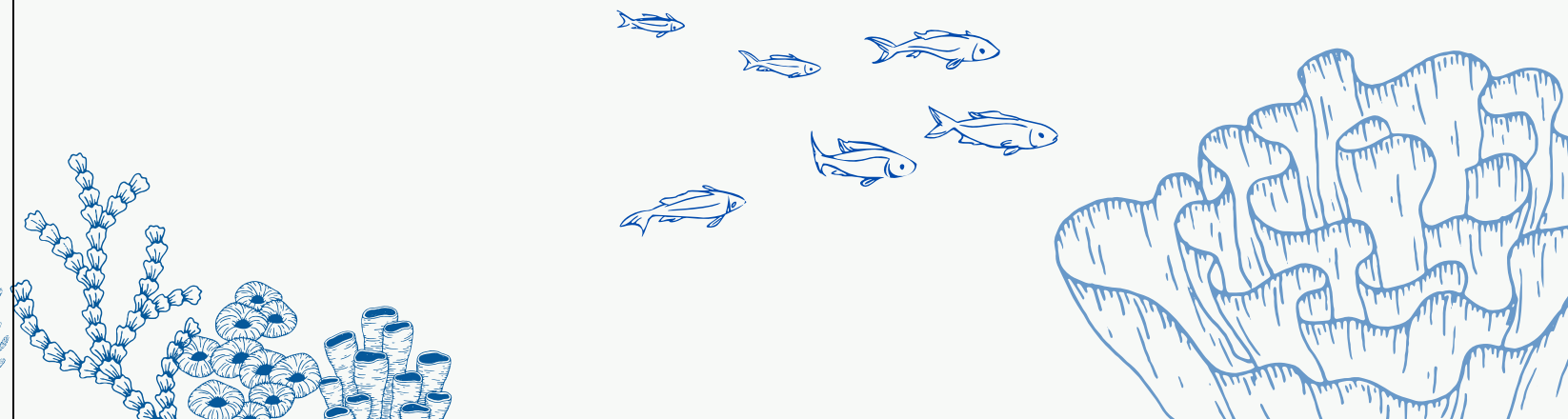
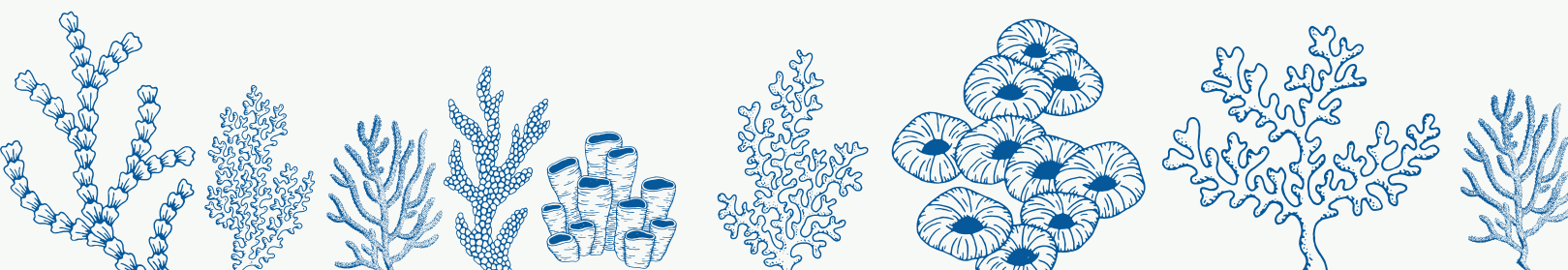


**A)** According to Article 248, State B must provide, no less than six months in advance of the expected starting date of the project, State A with a full description of:

- the nature and objectives of the project;
- the method and means to be used, including name, tonnage, type, and class of vessels and a description of scientific equipment;
- the precise geographical areas in which the project is to be conducted;
- the expected date of first appearance and final departure of the research vessels, or deployment of the equipment and its removal, as appropriate;
- the name of the sponsoring institution, its director, and the person in charge of the project, and;
- the extent to which it is considered that the coastal State should be able to participate or to be represented in the project.

**B)** According to Article 246(1)(2), State A, in the exercise of its jurisdiction, has the right to regulate, authorize, and conduct MSR in the EEZ and the continental shelf and MSR therein shall be conducted with its consent. Paragraph 3 clarifies that the coastal States shall, in normal circumstances, grant its consent for MRS projects “to be carried out (...) exclusively for peaceful purposes and to increase scientific knowledge of the marine environment for the benefit of all mankind”. Paragraph 5 establishes the right of coastal State to withhold its consent to the conduct of an MSR project, *inter alia*, if the project is of direct significance for the exploration and exploitation of natural resources, whether living or non-living, or it involves drilling into the continental shelf, the use of explosives or the introduction of harmful substances into the marine environment.

In this case, the MSR project aims to understand the impact of micro-plastics on some sedentary species on the seabed. State A cannot refuse to grant its consent because none of the circumstances outlined in Article 246(5) appears to apply.





### Part 3:

**A)** Yes. Under Article 252, a State may proceed with a project after 6 six months of the formal request, unless one of the circumstances listed therein occurs within four months. State B made a formal request to State A on March 1, 2020. Therefore, it can proceed with the project on September 1, assuming State A's implied consent.



### Part 4:



**A)** No. According to Article 249(d), State B must, *inter alia*, ensure the right of the coastal State, if so desired, to participate or be represented in the MSR project, and provide the coastal State with an assessment of data, samples, and research results.

Under the circumstances set forth by Article 253, State A could either request the suspension of the activities, as the activities are not being conducted following the information communicated under Article 248, or require cessation of the activities, in case State B does not rectify the situation within a reasonable period.

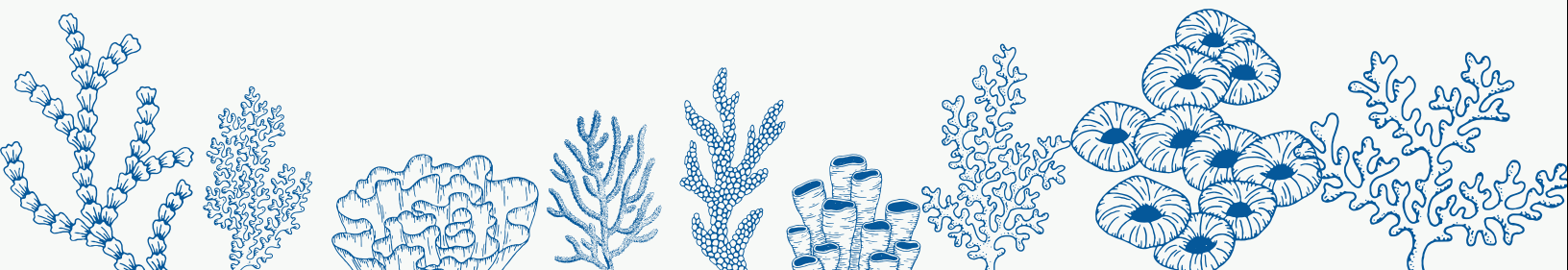


### Part 5:

**A)** Article 297 (2)(a) states that the “disputes concerning the interpretation or application of the provisions of this Convention concerning MSR shall be settled following Section 2, except that the coastal State shall not be obliged to accept the submission to such settlement of any dispute arising out of:

(ii) a decision by the coastal State to order suspension or cessation of a research project in accordance with Article 253.”

Furthermore, Article 297 (2)(b) states that a dispute arising from an allegation by the researching State that concerning a specific project the coastal State is not exercising its rights under Article 253 in a manner compatible with the Convention, shall be submitted, at the request of either party, to conciliation under Annex V, section 2.







# SESSION 6: Challenges relating to the integration of science into Governance / Institutional Processes

## OVERVIEW

This session explored the challenges and opportunities to enhance the science-policy interface into governance and institutional processes. This session incorporated five reports by Alumni, each detailing their own experiences and answering the guiding questions.

- Area-Based Management Tools
- Civil Society's support of International Negotiations
- Science in Ocean Governance: Barbados
- Science in Ocean Governance: Cameroon
- Integration of science into International Negotiations

Across these reports, three essential subjects reoccurred: Communication, Capacity, and Cooperation. We have focused on each of these in turn, dividing each Alumnus' report to demonstrate the commonalities between the experiences shared and how individual cases illuminate broader concerns.



### Guiding questions:

- 🐟 How ocean science(s) are integrated in the governance/institutional/negotiations?
- 🐟 What are the challenges in incorporating ocean science(s) into governance/institutional processes?
- 🐟 How to incorporate science or get science incorporated successfully into governance/institutional processes?

### TAKE-HOME MESSAGE



**We need to improve the dialogue between law, science and policy.**

Pages 22-3



**Enhanced capacity building activities are necessary.**

Pages 24-5



**Multidisciplinary and interdisciplinary approaches to every topic are necessary.**

Pages 26-7

## A GLOBAL PERSPECTIVE: THE UN DECADE OF OCEAN SCIENCE

A PRESENTATION BY JULIE RIGAUD OF IOC-UNESCO

### Why do we need to reinforce international cooperation and the science-policy interface to strengthen ocean governance?



• There is an urgent need for adaptation strategies and science-informed policy responses to global change.



• Ocean governance needs to develop regional or global solutions through cooperation, rather than national, due to the transboundary nature of the marine environment.



• We have observed a shift towards the use of ocean science in sustainable development, policymaking, and policy evaluation.

### What are the challenges faced in incorporating ocean science into governance/institutional processes?



• Fragmented governance frameworks/ocean management.



• Knowledge is fragmented and has gaps, especially in the deep ocean and areas beyond national jurisdiction.



• Uneven capacity; resources (financial, institutional, and human) are imbalanced, especially in developing countries/SIDS.



• Transdisciplinary research is undervalued. We need more training for scientists in how to navigate the decision-making processes and in transdisciplinary research.



• A lack of opportunities that allow researchers and managers to engage with the gaps in knowledge production, and to focus on policy-relevant data.

### How will the UN Decade strengthen the science-policy interface, especially in developing countries?

#### Transformative ocean science will:



• Bring together knowledge generators and users (through platforms and networks). It will respond to the entire value chain, from knowledge generation to applications and services, to the use of science for solutions.



• Engage multi-stakeholder dialogues (decision-makers, scientists, and all relevant stakeholders) to deliver ocean science that is co-designed and co-delivered in a multi-stakeholder environment and to promote transdisciplinary and solution-oriented research.



• Promote interdisciplinary research and complementarities between knowledge systems including indigenous and traditional knowledge. Create knowledge-to-policy, rather than science-to-policy, interfaces.



• Communicate science in broadly accessible and engaging forms to build the capacity of decision-makers to understand and use ocean knowledge.

#### Capacity development efforts will:



• Focus on increasing the capacity to do and understand the science, as well as to influence the design of science and participate in co-design efforts.



• Be needs-driven, targeting both knowledge generators and users, and responding to regional and national priorities.



• Privilege long-term partnerships that build on existing resources and networks to avoid short-term and uncoordinated approaches.



The UN Ocean Decade will also support **global legal & policy frameworks**, including the BBNJ and complementary UN initiatives, and support multi-stakeholder platforms for regional ocean governance.

**Success Story: Hilsha Fish Management  
(ECOFISH-Bangladesh 2014-2019)  
Md. Mostafa Monwar, Bangladesh**

**Steps of the process:**

1. Data collection (environmental, sea uses, social, economic). This is important for defining and analyzing existing conditions, and implementing and enforcing the Spatial Management Plan.
2. Stakeholder identification and consultation
3. In response to the consultation, the Government imposed a 22-day ban on catching and transporting Hilsha in a 7000km breeding ground. During this period, a massive operation was conducted across the country. The fishermen received 30 kg of rice from the Government, under the vulnerable group feeding program.
4. Involvement of the institution/governance

**Where:**

Waterways, fish landing centres, warehouses, fish markets- relevant

**When:** 2014-2019

**Donor:** USAID

**Implementing organization:**

Department of Fisheries, GoB and WorldFish

**Outcome:**

1. The number of Hilsha fish almost doubled
2. Hilsha fish's size increased
3. Fishing income has increased

**Example Problem: Portugal**

The law states that after a concession period of 50 years, the user of the concession must restore maritime areas to their physical and chemical circumstances. However, scientifically speaking, this is impossible: the maritime space is changing rapidly.

**AREA-BASED MANAGEMENT TOOLS**



**PROFESSOR VASCO BECKER-WEINBERG, UNIVERSIDADE NOVA DE LISBOA**

- How do we incorporate science, as a dynamic field, into static legal processes concerning MSP/MPAs?

- **Communication:** It is important to allow science into the legal processes when developing these tools. We must consider what the most relevant science to incorporate and use interdisciplinary approaches is.
- **An open decision-making process:** To incorporate environmental triggers from a legal perspective, one must have an open decision-making process that includes the need to gather good science.

A lack of dialogue will lead to MPAs that only exist on paper.

**Advantages of MSP**

- Certainty to investments
- Resolution of conflicts
- Transparency
- Sectoral synergies
- Multi-stakeholder integration
- Ensure ocean space & resources for future generations

**Why do we need data?**

1. Defining and analyzing existing conditions;
2. Implementing and enforcing the Spatial Management Plan (IOC-UNESCO step-by-step approach).

**Example Dialogue: EU Directive**

The EU's Marine Strategic Framework Directive, which aims to achieve a good environmental status (GES) for EU waters by 2020, shows a new, meaningful dialogue between law and science

**CIVIL SOCIETY'S SUPPORT OF INTERNATIONAL NEGOTIATIONS**



MARIAMALIA RODRIGUEZ-CHAVEZ, COSTA RICA  
KALID HIBAB, TRINIDAD AND TOBAGO

**Challenges**

- **The rotation of Government officials:** This slows down continuous progress and creates imbalances in the resources and capacities of Governments.

**Solutions**

- **NGOs can provide continuity throughout the negotiations.** They bridge gaps in the continuity of delegation expertise by providing scientific and expert advice through publications, materials, and meetings.

**Institutional arrangements within the international legally binding instrument under the United Nations Convention on the Law of the Sea on the conservation and sustainable use of marine biological diversity of areas beyond national jurisdiction (BBNJ) Treaty linked to ocean science:**

- Scientific and technical body
- Clearing house mechanism
- Decision-making processes to be informed by science.



## Stakeholders

## Solutions Implemented



### Governmental:

Ministry of Maritime Affairs and the Blue Economy, Ministry of Tourism; Ministry of Environment; other departments, including energy, security, housing, and commerce.

### Governmental:

- Provision to employees of further training through locally-based and internationally-offered IGO-sponsored **seminars, workshops and courses, and fellowship programmes.**
- **Training leaves** to further education in fields of responsibility by extended higher learning.
- **An evidence-based approach** to Coastal Zone Management with ongoing rigorous studies such as beach profiling, coral reef health assessments, planning assessments, and so forth, informing daily decision-making.
- **Coastal Zone Management Unit (CZMU) has experts** trained in oceanography, hydrography, coral reef translation, etc. Governmental stakeholders include a range of scientific experts.



### Private Sector:

Hotel industry, insurance companies, fishers, dive businesses, farmers, shipping and distribution, businesses;

### Private Sector:

- **Training** subject to what the entities can afford;
- The opportunity for **training in marine sciences**, based on this private or non-governmental agency's agenda and resources.
- Access to **IGO workshops and seminars** not equal.

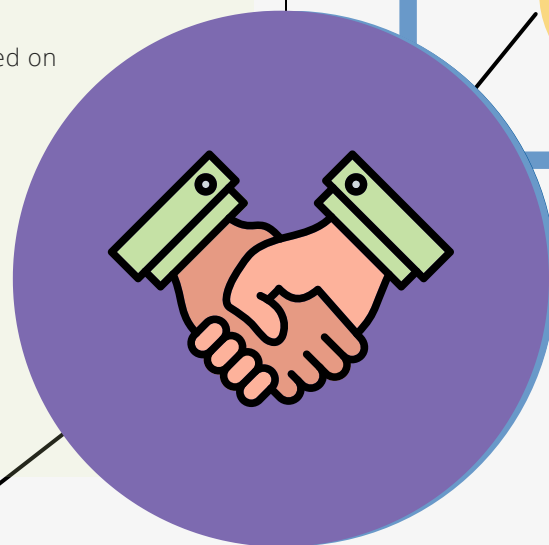


### Non-Governmental:

Schools and universities, tourism associations, diving communities, fisherfolk organizations, coastal communities, beach users.

### Non-Governmental:

- Training through locally based and internationally offered **IGO-sponsored seminars, workshops, courses, and fellowship programmes;**
- **Privately sponsored access to training.**



## Challenges

Cameroon has a complex national institutional framework characterized by a difficult cohabitation between a variety of public institutions. This imposes challenges on the effectiveness of ocean governance, including:

- Jurisdictional conflicts between stakeholders: As there is no clearly defined portfolio for the various stakeholders, there are overlaps between their actions.
- The fragmentation of institutional frameworks prevents the acquisition of an adequate mechanism for national coordination and cooperation, and cohesion among existing governmental institutions.
- Activities are not well regulated, and therefore no transparency in decision-making.
- Reluctance in the elaboration and implementation of State marine strategies and State action at sea.
- Lack of capacity (See Capacity Building, Pages 41-42)

## Solutions

- Ensuring that the integration is made available and conducted across academic sectors;
- Developing the Blue Economy.



## SCIENCE IN OCEAN GOVERNANCE: CAMEROON

MONIQUE NGHOMSI, CAMEROON

**Ocean science is not fully integrated with governance in less developed countries—particularly in Cameroon.**

- For instance, the 2008 Presidential Decree regulating State action at sea in Cameroon does not include at the institutional framework the Ministry in charge of Scientific Research, as a stakeholder/actor.

## Challenges:

Variety and interconnectivity of the stakeholders:

- The stakeholders are many and their interests are diverse and divergent.
- Yet with a small coastline and watershed, limited resources must be shared, and entities must work together.
- There is a lack of awareness, between stakeholders, of the required modus operandi or process of others, and this can cause conflict.
- The urgency of policy decision-making does not allow sufficient time to handle the divergent needs of policy-makers and conduct systematic research that can appropriately inform policy decisions.



## SCIENCE IN OCEAN GOVERNANCE: BARBADOS

ALEEZA MOSELEY, BARBADOS

## Solutions:

More cross-sector training which will:

- teach stakeholders about each other's work;
- enable stakeholders to develop techniques to accommodate each other's processes while advancing policy change and implementation.

## Examples: Successful incorporation of science training into the stakeholder process

- Science training can be incorporated by integrating science-focused programmes and staff in the institution's organizational mandate and programming.

E.g. Coastal Management Unit includes engineering, planning, and biological staff in their planning and programming.

- The University of the West Indies (UWI), as a non-governmental stakeholder, has partnerships with other universities to enhance its research capabilities and help communities in the face of climate change and changing global conditions.

E.g. A 5-year MOU between UWI Mona Campus in Jamaica and the University of Missouri in the USA to promote Sustainable Community Development, Education, and Research.

## Example: Cermes

The Centre for Resource Management and Environmental Studies at the University of West Indies, Cave Hill Campus offers programmes and degrees in various coastal management areas which incorporate much ocean science.

### LINK:

<https://www.cavehill.uwi.edu/cermes/home.aspx>

## Challenges

- The cost of marine scientific research prevents substantial interest in its materializing. It requires well-equipped assets, and technological resources, not yet possessed by LDCs.
- There is a real deficit of capacities and financial resources to enable/enhance the integration of ocean science(s) in Cameroon, and as a result ocean science is not fully integrated with governance.
- The integration of ocean science is not yet successful in LDC, and most developing countries in Africa, due to the reluctance of developed countries to proceed with the transfer of marine technology as outlined by UNCLOS.

## Solutions

- Fostering multilateral and bilateral cooperation mechanisms. This will not only assist developing countries but will create and encourage pathways to access marine technologies.
- Through the participation of developing countries in marine scientific research cruises.

### SCIENCE IN OCEAN GOVERNANCE: CAMEROON MONIQUE NGHOMSI, CAMEROON



## Challenges

- Scientific expertise relating to ABNJ, including regarding genetic resources, is not evenly distributed around the world but concentrated in the Global North.
- This means that developing countries are left in a position of disadvantage in the negotiations and can be unsure of what they want from the Agreement or if they know what they want, how to get it.

## Solutions

- The NGO community, in particular the High Seas Alliance, plays a great role in getting scientific information to negotiators and negotiation groups (through information briefs, side events, workshops, etc.).
- The institutionalization of the use of scientific expertise in the Agreement through the establishment of a scientific and technical body (STB). This would ensure that scientific expertise is available to and operating on behalf of all countries and that decisions regarding the managing of areas beyond national jurisdiction are informed by the best available science.
- Capacity building and technology transfer provisions, which enable the Global South to attain the scientific knowledge expertise they need. This involves boosting individual and institutional capacity through partnerships and the provision of finance for the development of scientific capacity.

### INTEGRATION OF SCIENCE IN INTERNATIONAL NEGOTIATIONS MARIAMALIA RODRIGUEZ CHAVEZ, COSTA RICA KAHLIL HASSANALI, TRINIDAD AND TOBAGO



### BBNJ: Case Study Solutions to these challenges

- The creation of chapters on intellectual property rights and MGRs chapter; emerging activities in areas beyond national jurisdiction (floating cities, seabed mining) and EIAs (cumulative impacts, transboundary effects).
- Potentially, promoting balance in the CBTT chapter and the sharing of information in the Clearing House Mechanism.
- Finding regional experts to communicate relevant science to the delegations.

### CIVIL SOCIETY'S SUPPORT OF INTERNATIONAL NEGOTIATIONS

MARIAMALIA RODRIGUEZ CHAVEZ, COSTA RICA  
KAHLIL HASSANALI, TRINIDAD AND TOBAGO



#### Challenges

- The availability of ocean science experts in specific fields.
- Technology, information, and knowledge is not evenly distributed worldwide.
- Challenges related to language & in-region scientists.

#### Solutions

- Finding regional experts to communicate relevant science to the delegations.
- Promoting balance and the sharing of information through the infrastructure of the international bodies and tools.

#### Challenges:

- There is no significant challenge accessing training, but challenges do arise out of or after training in the context of wider small-island-developing-state conditions.
- The lack of coordination in building different aspects of institutional capacity.
  - E.g. Training has been received in areas of coastal engineering that require the use of sensitive equipment. However, there is no technology transfer, and so the recipient of the training has no way to put knowledge to use.
- The expense of technology.
- Limited human and financial resources and undiversified markets.
  - E.g. There are limited job opportunities for coastal engineers, technicians, and scientists in the field of ocean governance.

### SCIENCE IN OCEAN GOVERNANCE: BARBADOS ALEEZA MOSELEY, BARBADOS



# Acknowledgements

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We thank you for your continued support in our efforts relating to Ocean Affairs and the Law of the Sea.

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