CENTER FOR OCEANS LAW AND POLICY

MARINE BIODIVERSITY OF AREAS BEYOND NATIONAL JURISDICTION

Edited by
Myron H. Nordquist and Ronán Long

BRILL | NIJHOFF

Marine Biodiversity of Areas beyond National Jurisdiction

Center for Oceans Law and Policy

Edited by

Myron H. Nordquist and John Norton Moore

VOLUME 24

The titles published in this series are listed at *brill.com/colp*

Marine Biodiversity of Areas beyond National Jurisdiction

Edited by

Myron H. Nordquist and Ronán Long

BRILL
NIJHOFF

LEIDEN | BOSTON

Library of Congress Cataloging-in-Publication Data

Names: Nordquist, Myron H, editor. | Long, Ronán, editor.
Title: Marine biodiversity of areas beyond national jurisdiction / edited by Myron H Nordquist and Ronán Long.
Description: Leiden, The Netherlands : Koninklijke Brill NV, [2021] | Series: Center for Oceans Law and Policy, 1872-7158 ; volume 24 | Includes bibliographical references and index. | Summary: "This book is based on presentations made at the 2019 Malmö Conference by many of the most knowledgeable experts on both the on-going BBNJ negotiations at the United Nations and on the well-established UNCLOS principles and rules. The Malmö Conference featured remarks by distinguished diplomats followed by six parts devoted to identifying the major issues at the BBNJ negotiations"– Provided by publisher.
Identifiers: LCCN 2020046606 (print) | LCCN 2020046607 (ebook) | ISBN 9789004422414 (hardback) | ISBN 9789004422438 (ebook)
Subjects: LCSH: Marine biodiversity conservation–Law and legislation–Congresses. | United Nations Convention on the Law of the Sea (1982 December 10) | Marine biodiversity. | Continental shelf–Law and legislation. | Law of the sea.
Classification: LCC K3488.A6 M37 2021 (print) | LCC K3488.A6 (ebook) | DDC 346.04/695616–dc23
LC record available at https://lccn.loc.gov/2020046606
LC ebook record available at https://lccn.loc.gov/2020046607

Typeface for the Latin, Greek, and Cyrillic scripts: "Brill". See and download: brill.com/brill-typeface.

ISSN 1872-7158
ISBN 978-90-04-42241-4 (hardback)
ISBN 978-90-04-42243-8 (e-book)

This book is printed on acid-free paper and produced in a sustainable manner.

Contents

PART 5
Cross-Cutting Issues

PART 6
Arctic Issues: Environment, Security, Shipping

Foreword

The ocean is fundamental to the well-being of our planet and closely connected to many aspects of our lives. As is evident from many scientific reports, we are facing multiple crises in relation to the health of the ocean and the unsustainability of human activities. For this reason, the World Maritime University – Sasakawa Global Ocean Institute was founded and tasked with addressing some of the most pressing issues in ocean affairs and the law of the sea. The Nippon Foundation is therefore very pleased to see that the Institute is working very closely with the Center of Oceans Law and Policy at the University of Virginia School of Law along with other international partners in making a substantive contribution to the negotiation of a new treaty on biodiversity beyond national jurisdiction through this academic conference and fine volume of conference papers. Undoubtedly, this contribution will assist delegations in bringing the BBNJ negotiations to a successful conclusion. We are also very pleased to see the high-level representatives that attended the conference at the World Maritime University from most countries and regions, including land-locked ones, and from intergovernmental organisations, business and civil society. The BBNJ Agreement will require support from all of these entities when adopted. If it attracts universal support, it can make a big difference in how the global community addresses the environmental pressures that are exacerbating inequalities and threatening food security in some of the world's poorest countries. These issues are so intertwined that it is crucial to build networks, with an interdisciplinary perspective, in order to accelerate cooperation that goes beyond the existing frameworks within countries and institutions. In that spirit, the Nippon Foundation has been committed to develop experts from all over the world in maritime and ocean affairs over three decades; the joint program with the UN DOALOS is one example of our capacity building initiatives. We have been delivering training to government officials in the conservation and sustainable use of marine biodiversity beyond national jurisdiction, in order to reinforce the knowledge and capacity necessary for effective national participation in the BBNJ process and to ensure the effective implementation of the new instrument in due course. Crucially in this regard, we are delighted to see a very solid focus on capacity-building in the papers presented in this volume. This important contribution to scholarship will be welcomed worldwide by all those concerned with ocean affairs and international cooperation to ensure peace and the sustainable future of our planet for many future generations.

Mr. Mitsuyuki Unno
Executive Director of The Nippon Foundation

Preface

The 43rd Annual Conference of the Center for Oceans Law and Policy (COLP) was held 14 May to 16 May 2019 at the World Maritime University Sasakawa Auditorium in Malmö, Sweden. The Conference was co-organized with the World Maritime University – Sasakawa Global Ocean Institute (WMU) under its Nippon Foundation Program. The subject discussed was the development of an internationally legally binding instrument under the United Nations Convention on the Law of the Sea (UNCLOS) on the topic of the conservation and sustainable use of marine biological diversity of areas beyond national jurisdiction (BBNJ).

This book is based on presentations made at the Malmö Conference by many of the most knowledgeable experts on both the on-going BBNJ negotiations at the United Nations and on the well-established UNCLOS principles and rules. The Malmö Conference featured remarks by distinguished diplomats followed by six Parts devoted to identifying the major issues at the BBNJ negotiations.

The lead off speaker was Ambassador Rena Lee from Singapore who serves as the elected President of the BBNJ Inter-governmental Conference. She commented on the recently issued Intergovernmental Panel on Climate Change (IPCC). The report contains a comprehensive assessment on the status of the earth's biodiversity and she felt that the Malmö Conference was important and timely as documented in IPCC Report. The second featured speaker was Hans Corell (Sweden) the former Under-Secretary-General for Legal Affairs and Legal Counsel of the United Nations. With his wide experience with both UNCLOS and the BBNJ negotiations he was willing and able to offer valuable insights on significant Rule of Law issues involved. The third featured speaker at the Malmö Conference was Arif Havas Oegroseno the Indonesian Ambassador to Germany and former Deputy Minister of his country's Coordinating Ministry of Maritime Affairs. Ambassador Oegroseno, long a highly respected expert on the subject at hand, focused specifically on the topic of managing marine genetic resources in the high seas.

Part 1 of the Malmö Conference kicked off on the context for the BBNJ negotiations with the first presentation by J. Ashley Roach now a retired attorney who was for many years the most knowledge, able and experienced UNCLOS expert in the United States Department of State. He brought the Malmö Conference up to date on the BBNJ negotiations previously described by him at prior COLP events such as its 2018 session in Beijing. Captain (USN retired) Roach was followed by Ms. Lisa Eurén Höglund who has been actively engaged in the current BBNJ negotiations for Sweden. She reflected on area-based

management tools, including marine protected areas (MPA), in the BBNJ negotiations.

Part 2 covered access and benefit sharing with respect to marine genetic sharing through a joint presentation by Professors Marcel Jaspers and Abbe E.L. Brown from the University of Aberdeen, Scotland. Chemistry Professor Jaspers mainly looked at useful products while Professor Brown's particular interest was in intellectual property implications. Associate Professor on Intellectual Property Law, London School of Economic and Political Science, Siva Thambisetty then delved into normative implications and proposed a "no harm" principle to reconcile competing intellectual property positions at the BBNJ Conference.

Part 3 dealt with environmental impact assessments (EIAS), scientific data and databases and sensor technology as impacting the BBNJ negotiations. Professor Larry Mayer, Director of the Center for Coastal and Ocean Mapping at the University of New Hampshire, stressed our minimal understanding of the geospatial context within which global observations are being made. His coauthor, Captain J. Ashley Roach, joined in analyzing the legal issues for achieving the goal of collecting the bathymetric data necessary to produce the high resolution topographical maps now required for policy-making about the world's oceans. Dr. Robin Warner from the Australian National Centre for Ocean Resources and Security (ANCORS) next emphasized the opportunity BBNJ negotiations offer to improve the lack of legal and institutional frameworks through EIAS. She pointed out that a developed EIA regime is a fundamental prerequisite for the conservation and sustainable use of marine biodiversity on our planet. Professor Karen N. Scott at University of Canterbury in New Zealand next examined the rules relating to marine scientific research as they apply to geoengineering in the BBNJ context. She suggested that the potential "solution" to managing its risks lies in supporting and implementing the existing regime.

Part 4 was focused on capacity building and transfer of technology in the BBNJ negotiations. Professor Alf Håkon Hoel from the Arctic University of Norway in Tromsø discussed the existing global framework for capacity building and technology and lessons that can be drawn. Then he said that there was ample room for improvements under the UNCLOS umbrella. Dr. Harriet Harden-Davies from ANCORS examined the UNCLOS framework for marine technology. She proposed that there are challenges as well as opportunities to enhance the implementation to build capacity in the BBNJ negotiations for the conservation and sustainable use of BBNJ resources.

Part 5 took up cross-cutting issues in the BBNJ negotiations. Professor Ronán Long, who holds the Nippon Foundation Chair in Ocean Governance and the Law of the Sea at WMU, explored the shortcomings in capacity building

in developing countries. He concludes that the BBNJ Agreement has the potential to be a game-changer on capacity-building if it establishes a robust institutional setting for decision-makers, codifies the requirements for a regular needs assessment and establishes a mandatory and sustainable funding stream. Ted L. McDorman, Law Faculty, University of Victoria, British Columbia tackled the relationship between a BBNJ Convention and existing relevant instruments and global, regional and sectoral bodies. He identified several areas where the BBNJ Convention could "undermine" existing instruments and frameworks. Associate Law Professor Joanna Mossop from Victoria University of Wellington, New Zealand and WMU Professor Clive Schofield teamed up to address the spatial and functional complexities relating to biodiversity beyond national jurisdiction in the BBNJ negotiations. Uncertainties include coastal baselines, sea level rise, excessive coastal State claims, island disputes and incomplete delineation of continental shelf limits beyond 200 nautical miles. Given horizontal and vertical ecological connectivity issues, they discuss options to deal with these challenges.

Part 6 was devoted to Arctic environment, security and shipping matters. Dr. Nong Hong from the Institute for China-America Studies located in Washington, DC, reviewed the geo-political landscape of the Arctic today. Apart from the traditional Arctic States, she identified the growing interest of China, Japan and South Korea. She urges the promotion of cooperation with these stakeholders in the years to come. The final presenter was Commander David Dubay of the US Coast Guard on duty with the Stockton Center for International Law, U.S. Naval War College, Newport, Rhode Island. He examined issues relating to the Central Arctic Ocean Fishing Agreement (CAOFA) that is intended to restrict unregulated fishing on the high seas and allow scientists time to study whether fish populations can support a commercial fishery.

Acknowledgments

Marine Biodiversity of Areas Beyond National Jurisdiction: Intractable Challenges & Potential Solutions is part of a series of publications on oceans law and policy sponsored by the Center for Oceans Law and Policy, University of Virginia School of Law, in connection with its annual conference. This volume is based on presentations made 15–16 May 2019 at the Center's 43rd conference which was held in Malmö, Sweden. The principal organizers were the Virginia Center, the World Maritime University – Sasakawa Global Ocean Institute, and the Nippon Foundation. Additional sponsors were the Institute for China-America Studies, the Centre for International Law at the National University of Singapore, the Stockton Center for the Study of International Law at the US Naval War College, the Korea Maritime Institute, and the Federal Ministry of Transport and Digital Infrastructure in Germany.

Local administrative support for the conference was provided by Elnaz Barjandi, Jill Jarnsäter, and the staff of the WMU Sasakawa Global Ocean Institute. Technical editing assistance for this volume was provided by Judith A. Ellis.

Figures and Tables

Figures

Table

Notes on Contributors

Abbe E. L. Brown

is Professor in Intellectual Property Law at the University of Aberdeen. She has a particular interest in the intersection between intellectual property and laws relating to important societal challenges, and in 2019 published her second monograph "Intellectual Property, Climate Change and Technology" with Edward Elgar. Abbe has been involved in biodiversity beyond national jurisdiction since 2018, working closely with Marcel Jaspars. Abbe is a member of IUCN World Commission on Environmental Law and has attended meetings of the IGC. Before returning to academia in 2003, Abbe spent 10 years as a practising litigator in London, Melbourne and Edinburgh.

The authors are delighted to acknowledge the significant contribution made to this piece by Dr. Olivia Woolley (School of Law University of Aberdeen, shortly to be of Durham University), and research assistance provided by Jack Cameron (graduate of the School of Law University of Aberdeen). We also acknowledge the invaluable contribution to scholarship and to the ongoing negotiations by Arianna Broggiato, Thomas Vanagt, Laura E. Lallier, Geoff Burton and Dominic Muyldermans – authors, alongside Jaspars, of the *Mare Geneticum* piece to which reference is made in this chapter.

Hans Corell

(Sweden) was Under-Secretary-General for Legal Affairs and the Legal Counsel of the United Nations 1994–2004. From 1962 to 1972, he served in the Swedish judiciary. In 1972, he joined the Ministry of Justice where he became Director of the Division for Administrative and Constitutional Law in 1979. In 1981, he was appointed Chief Legal Officer of the Ministry. He was Ambassador and Under-Secretary for Legal and Consular Affairs in the Ministry for Foreign Affairs from 1984 to 1994. Since his retirement from public service in 2004 he is engaged in many different activities in the legal field, *inter alia* as legal adviser, lecturer, and member of different boards. Among others, he is involved in the work of the International Bar Association, the Stockholm Center for International Law and Justice and the Hague Institute for Innovation of Law.

David Dubay

is a Military Professor of International Law and Associate Director for the Law of Maritime Operations, Stockton Center for International Law, U.S. Naval War College, Newport, Rhode Island. The views presented are those of the author

and do not necessarily reflect the official policy or position of the U.S. Navy, U.S. Coast Guard, or the U.S. Naval War College.

Harriet Harden-Davies
is a visiting Science Diplomacy Fellow at The Fletcher School and a postdoctoral research fellow with the Nereus Program at the Australian National Centre for Ocean Resources and Security (ANCORS), University of Wollongong. Harriet gratefully acknowledgements the support from the Nippon Foundation Nereus Program for attendance at this conference and the research for this paper. Harriet has worked as a consultant for IOC-UNESCO on projects relating to the preparation for the UN Decade of Ocean Science. hhdavies@uow.edu.au

Alf Håkon Hoel
is Professor of Ocean Law and Policy at UiT – the Arctic University of Norway in Tromsø. He is also an adjunct professor at the Norwegian Institute of Marine Research, and a global fellow at the Wilson Centre in Washington, DC. His research addresses issues related to ocean governance in general and in fisheries in particular, and recent publications discuss the new fisheries arrangement for the central Arctic Ocean, challenges in international ocean governance, and the implementation of integrated oceans management.

Lisa Eurén Höglund
has a law degree from Uppsala University and has studied international law at Université de Strasbourg Robert Schuman. Ms. Eurén Höglund was actively engaged in the BBNJ process as representative of Sweden from 2012 to 2019, including as head of the Swedish Delegation to the Intergovernmental Conference. Ms. Eurén Höglund is an experienced diplomat with experience from a broad range of foreign policy areas, including development cooperation. She fulfilled the Diplomatic Training Program of the Swedish Ministry for Foreign Affairs in 2004.

Nong Hong
is Executive Director and Senior Fellow at the Institute for China-America Studies in Washington, DC. She holds a PhD in interdisciplinary study of international law and international relations from the University of Alberta, Canada, and held a Postdoctoral Fellowship in the University's China Institute.

Marcel Jaspars
is Professor of Chemistry and Director of the Marine Biodiscovery Centre at the University of Aberdeen, Scotland, UK. Marcel Jaspars' main expertise is in the

discovery, characterisation and utilisation of useful products and processes from marine genetic resources. Marcel has been active at national and international levels to develop the science, its applications/industrial uptake and associated policy involved in marine biodiscovery and biotechnology. Since 2014 Marcel has been involved in the BBNJ process, providing scientific input and co-authoring the *Mare Geneticum* proposal which provides building blocks based on good scientific practice towards a solution for the MGR aspects of the BBNJ process.

*Rena Lee**
is President of the BBNJ Inter-governmental Conference, Ambassador for Oceans and Law of the Sea Issues, and Special Envoy of the Minister for Foreign Affairs of Singapore.
**Views expressed are her own and do not reflect the views of the Government of Singapore.*

Ronán Long
is the Director of the WMU-Sasakawa Global Ocean Institute at the World Maritime University (WMU) in Malmö, Sweden, and holds the Nippon Foundation Chair in Ocean Governance and the Law of the Sea. He is the author of over 70 scholarly articles and book contributions on oceans law and policy. He read for his PhD at the School of Law Trinity College Dublin, he has been a Senior Visiting Scholar-in-Residence at the University of California, Berkeley, and a Visiting Scholar at the 'Centre for Oceans Law and Policy' at the University of Virginia. Additionally, Professor Long has participated at many law of the sea negotiations as a member of the European Union and Irish delegations including at the BBNJ processes at the United Nations.

Larry Mayer
is a Professor and Director of The Center for Coastal and Ocean Mapping at the University of New Hampshire. He received a Ph.D. from the Scripps Institution of Oceanography in Marine Geophysics in 1979. In 2000 Larry became the founding director of the Center for Coastal and Ocean Mapping at the University of New Hampshire. He is the recipient of the Keen Medal for Marine Geology and an Honorary Doctorate from the University of Stockholm. In 2016 Larry was appointed by President Obama to the Arctic Research Commission, was elected to the National Academy of Engineering in 2018 and in 2019 was elected to the Royal Swedish Academy of Sciences. Larry's current research deals with sonar imaging and remote characterization of the seafloor as well as advanced applications of 3-D visualization to ocean mapping problems and applications of mapping to Law of the Sea issues, particularly in the Arctic.

Ted L. McDorman
is a Professor at the Faculty of Law, University of Victoria, Victoria, British Columbia, Canada. He has written widely on ocean law and policy issues having published over 120 articles, chapters in books, etc. Since 2000, he has been editor-in-chief of *Ocean Development and International Law.* From 2002–2004 and again from 2011 to 2013, Professor McDorman was "academic-in-residence" in the Legal Affairs Branch of the Canadian Department of Foreign Affairs and International Trade (now Global Affairs Canada) where he was involved in a number of Arctic law of the sea and environmental matters, worked on Canada's submission to the CLCS and represented Canada at several international forums. From January-May 2007, he was the Fulbright Visiting Chair in Canada-U.S. Relations at the Woodrow Wilson International Center for Scholars in Washington D.C

Joanna Mossop
is an Associate Professor in law at Victoria University of Wellington, New Zealand. Her research in the law of the sea covers a range of topics including marine biodiversity, dispute settlement, maritime security, fisheries and whaling. Her book *The Continental Shelf beyond 200 Nautical Miles: Rights and Responsibilities* (Oxford University Press, 2016) was a joint winner of the JF Northey Memorial Award. This chapter was completed while she was a MacCormick Fellow at Edinburgh Law School. In 2019 the New Zealand government nominated her to the list of arbitrators and conciliators under Annexes V and VI of UNCLOS.

Arif Havas Oegroseno
is the Indonesian Ambassador to Germany. Previous to his ambassadorship to Germany, he was Indonesia's Deputy Minister of the Coordinating Ministry of Maritime Affairs. In the latter capacity Dr. Havas Oegroseno served as President of the 20th Meeting of the 162 State Parties to the UN Convention on the Law of the Sea (SPLOS). Before his vice-ministerial position, he was the Indonesian Ambassador to Belgium, Luxembourg, Head of Mission to the European Union and the World Custom Union 2010–2015. He worked vis-à-vis NATO on maritime security issues. A career diplomat and an expert in international law of the sea, he has served in the Indonesian foreign service for over 25 years since 1986.

J. Ashley Roach
is a retired Captain in the Judge Advocate General's Corps of the US Navy; Visiting Senior Principal Research Fellow, Centre for International Law, National

University of Singapore; and retired from the Office of the Legal Adviser, US Department of State. The views expressed in this chapter are not intended to reflect the position of any government or any of their departments or agencies. The author's PowerPoint is available at <http://www.virginia.edu/colp/pdf/malmo-roach.pdf>.
At State, he was responsible for law of the sea matters. He has taught, advised and published extensively on national maritime claims and other law of the sea issues, including piracy and armed robbery at sea. He has negotiated, and participated in the negotiation of, numerous international agreements involving law of the sea issues. He received his LLM (highest honors in public international law and comparative law) from the George Washington University School of Law in 1971 and his JD from the University of Pennsylvania Law School in 1963.
The views expressed in this chapter are not intended to reflect the position of any government or any of their departments or agencies.

Clive Schofield
is Head of Research at the WMU-Sasakawa Global Ocean Institute, World Maritime University, Malmö, Sweden and Professor with the Australian Centre for Ocean Resources and Security (ANCORS), University of Wollongong, Australia. He holds a PhD in Geography, University of Durham, UK and an LLM in international law, University of British Columbia, Canada. His research relates to international maritime boundary delimitation and technical aspects of the law of the sea on which he has delivered over 200 publications. He has also been involved in the peaceful settlement of international boundary disputes through negotiations and in cases before international judicial bodies.

Karen N. Scott
is a Professor of Law at the University of Canterbury in New Zealand, President of the *Australian and New Zealand Society of International Law* (ANZSIL) and Editor-in-Chief of *Ocean Development and International Law* (ODIL). She researches and teaches in the areas of public international law, law of the sea and international environmental law. Karen has published over 70 edited books, journal articles and book chapters in these areas. She was Head of the School of Law at the University of Canterbury (2015–2018) and previously taught at the University of Nottingham in the UK.

Siva Thambisetty
is Associate Professor of Intellectual Property Law, London School of Economics and Political Science. She researches and teaches comparative and

international patent law with a particular focus on emerging technologies, including biotechnology. Her research and policy work is rooted in an interdisciplinary approach.

Robin Warner
is Professor, Deputy Director and Head of Postgraduate Studies at the Australian National Centre for Ocean Resources and Security (ANCORS), University of Wollongong, Australia. She is a member of the Advisory Board for the Oceans Coasts and Coral Reefs Specialist Group of the IUCN World Commission on Environmental Law. Her research interests include law of the sea, oceans governance, marine environmental law and climate law. She is the author of more than 80 publications on ocean law and policy including *Protecting the Oceans beyond National Jurisdiction: Strengthening the International Law Framework* (Martinus Nijhoff, Leiden, 2009)

Featured Remarks

CHAPTER 1

The Journey to Realisation

Rena Lee

Keywords

marine biological diversity – areas beyond national jurisdiction – policy – intergovernmental conference

The theme for this year's conference is about Biodiversity Beyond National Jurisdiction (BBNJ). It is my great privilege and honour to play a role in the intergovernmental conference (IGC) to develop an international, legally binding instrument under UNCLOS for the conservation and sustainable use of marine biological diversity of areas beyond national jurisdiction. I am very grateful for the support shown to me by all delegations. Here I will address our journey to the realisation of our objective, and what some of the overarching themes are.

Recently some of you may have come across news reports of the latest report issued by the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES). It is, I believe, the biodiversity equivalent of the Intergovernmental Panel on Climate Change or IPCC. The report, which is known as the IPBES Global Assessment Report on Biodiversity and Ecosystem Services, is the first of its kind and is a comprehensive assessment of the state of the earth's biodiversity. Although I have only read the news reports, they make for sober reading. Out of eight million species of animals and plants on earth, it is estimated that up to one million species are threatened with extinction over the next few *decades*. It means that in our lifetime, we could possibly see over one million species of plants and animals disappear forever. This is a rate of extinction which is higher than the average for the last 10 million years. These figures are mind boggling. And this is, I assume, for known species of plants and animals. There is so much that we do not know about the areas beyond national jurisdiction, in the deep ocean and seabed.

To assist policy makers, the Report identifies the direct drivers of change. Top of the list, meaning the biggest driver, is land and sea use changes, followed by direct exploitation of organisms. These direct drivers are the result of an array of different reasons but this is not the place to discuss these reasons.

 | DOI:10.1163/9789004422438_002

The Report however, is not all gloom and doom. There is hope. These are projected outcomes and there is still time for us to make a difference. To quote the Chair of the IPBES, Sir Robert Watson, "Through 'transformative change', nature can still be conserved, restored and used sustainably". But if we want to make that difference and develop more sustainable pathways, we must act urgently.

What is the relevance of the Report to our work in the IGC? The Report covers not just terrestrial biodiversity but marine biodiversity as well. The one million species threatened with extinction include almost 33% of reef-forming corals and more than one third of marine mammals. So this Report underscores what we all know – that the work of the IGC is urgent. That is part of our mandate by the way; resolution 72/249 refers to developing the instrument "as soon as possible". Indeed, at the end of the last session of the IGC in early April, some member states noted that there remained two more of the four sessions mandated in 72/249. This is not to say that the new instrument is going to be the "silver bullet" that solves all the ills plaguing the areas beyond national jurisdiction; it is not – we are governed by our mandate. But it can be part of the transformative change that the IPBES is calling for. And in fact some of the "levers" of change described in the Report are what we are working on: capacity-building, integrated and cross-sectoral cooperation, precautionary actions, and the rule of law.

So the question is, how do we fulfil the mandate that has been given to us? In other words, what is the pathway to realisation of our objective? I take process first: over the course of the IGC, I have had reason to give a lot of thought to process issues because process matters. What I have come to realise is that there is no one single pathway, no one single process to realisation. There are many possible pathways to realisation. I personally think it is important that the process is one that is systematic, that allows participants to follow the work and to be heard. Yes, I am keenly aware of the urgency of our work and I value the advice of those who want to pick up the pace but as I have said before: sometimes, we have to go slow to go fast. Opportunities like this IGC are not around every corner so it is important that we do not squander the opportunity that is before us; it is important to take the time to get things right. But precisely because there are many possible pathways, I hope that those of you who participate in the IGC will continue to share your ideas with me and with your bureau members. At the same time, I want to express my gratitude for the flexibility that delegations have shown thus far with regard to the process, and I hope that this can be continued, as we may need to adjust our process as the situation demands it.

But while process matters, it is inconsequential without the substance. The substance is what drives our process. Once the dust has settled, the substance is what remains. And the substance is what will bring about real results, what will make a difference. At the start of the IGC, I said that my vision was to build a fair, balanced and effective instrument.

To me, a fair outcome is one where the various interests and concerns are taken into account. This is not to say that we will all get what we want. Nonetheless, in our quest for consensus, we must seek to give consideration to different viewpoints, not dismiss them out of turn, and consider how they can be accommodated if possible. A balanced outcome speaks to the package that we are seeking to build. Many delegations have, in the past, referred to the "delicate balance" of rights and duties, of different interests, that are reflected in UNCLOS. In building our BBNJ package, I hope we can strive to achieve a balance as well, both within each of the elements and across the elements of the package.

An effective outcome is something I have been and continue to focus on. There are a number of aspects to effective outcomes but the two main pillars, in the context of the BBNJ instrument, are universality and implementability. Because we are talking about areas beyond national jurisdiction, it is important that we bring on board as many people as possible, which means seeking to achieve a high rate of ratification of the new instrument. It is equally important that the outcome is an implementable one. This means is that it should be clear how the provisions of the BBNJ instrument are to be implemented. The twin pillars of an effective outcome are important because the implementation of what we decide to do by as many people as possible is what will bear fruit, what will produce real results, in the areas beyond national jurisdiction.

The search for an implementable outcome is why I have, in the IGC process, placed an emphasis on processes and people – how will we do what we say we want to do and who's going to do it. For example, it is not enough to say we want to apply an area-based management tool. There should be an understanding of how are we going to do so; in other words, what the process is, and who the actors are. The areas beyond national jurisdiction are not empty. There are many players out there, and it would be helpful to know who will be doing what, and to work out the place of this BBNJ instrument in the universe of ocean governance. This will help us to avoid what I call the "everybody, somebody, nobody" syndrome, where everybody knows somebody has to do it, but nobody does it because everybody thinks somebody else is doing it. Or just as problematic: everybody knows somebody has to do it, but everybody does it because nobody thinks somebody else is doing it.

One significant hallmark of the IGC is the high level of engagement displayed by all delegations, and that includes the observer delegations – that was very evident at the last session. And I can see that in many respects, delegations are trying to move beyond the "headlines" as it were, to delve into issues with greater specificity. Delegations are trying to tease out the elements of the benefit-sharing regime for marine genetic resources, to work out the process for the application of area-based management tools, to establish what's involved in an environmental impact assessment, and to consider how capacity and technology needs can be met, while harnessing on-going efforts. But there is still much ground to cover because these are complex issues. For example, we need a better handle on what is the role of intellectual property rights in the context of marine genetic resources, how area-based management tools will be implemented, who will undertake strategic environment assessments, and how to sustain capacity building and technology transfer efforts, and there are more of these issues to tackle.

This is why conferences such as this are important. Yesterday, at the reception, Madam President of the WMU quoted Nelson Mandela who said that "[e]ducation is the most powerful weapon which you can use to change the world". Conferences such as this one are important in educating people on the issues that we are tackling in the IGC. I see that the sub-theme of this year's conference is "Intractable challenges and potential solutions". I am pleased to note that even intractable issues have solutions. The ideas that you seed here may bear fruit in the IGC. The high level of engagement and dedication shown by delegations give me the confidence to tell you that given time, if we persist, we will fulfil our mandate.

CHAPTER 2

The United Nations Convention on the Law of the Sea in the Present Geo-Political Situation

Hans Corell

Keywords

United Nations Convention on the Law of the Sea – geo-political – International Seabed Authority – International Tribunal for the Law of the Sea – Commission on the Limits of the Continental Shelf – intergovernmental conference – marine biodiversity – areas beyond national jurisdiction – Arctic

1 The United Nations Convention on the Law of the Sea

Adopted in Montego Bay, Jamaica, on 10 December 1982, this treaty with this well-known acronym UNCLOS is surely one of the most important treaties in the world. At present, there are 168 parties to UNCLOS. Among the UN Member States there are 28 that are still not parties. Fifteen of these States are land-locked, so they may not be so interested in ratifying or acceding to the treaty.[1] However, the remaining thirteen States are the following: Cambodia, Colombia, the Democratic People's Republic of Korea, El Salvador, the Islamic Republic of Iran, Israel, Libya, Peru, the Syrian Arab Republic, Turkey, the United Arab Emirates, the United States of America, and Venezuela. The question I always ask myself is whether the United States of America belongs in this group?

For my part, I have a very determined opinion about the importance of this Convention. I was not involved in the negotiations of the same. However, I had the honour of chairing the delegation of my country, Sweden, when we negotiated the delimitation of the exclusive economic zones in the Baltic Sea in the 1980s with the then-Soviet Union, Poland and Finland.

In March 1994, I became the Legal Counsel of the United Nations. This meant that I had the privilege of chairing the final consultations on Part XI of

1 These land-locked States are: Afghanistan, Andorra, Bhutan, Burundi, the Central African Republic, Ethiopia, Kazakhstan, Kyrgyzstan, Liechtenstein, Rwanda, San Marino, South Sudan, Tajikistan, Turkmenistan, and Uzbekistan.

 | DOI:10.1163/9789004422438_003

UNCLOS that resulted in an agreement that was adopted by the UN General Assembly on 28 July 1994. During these consultations I had great support from Satya Nandan of Fiji.

The UNCLOS entered into force on 16 November 1994, which meant that the three organs under the Convention: the International Seabed Authority in Kingston, Jamaica, the International Tribunal for the Law of the Sea in Hamburg, Germany, and the Commission on the Limits of the Continental Shelf that works in New York had to be established. This task fell upon the Division for Ocean Affairs and the Law of the Sea (DOALOS) in the United Nations Office of Legal Affairs. Consequently, I had to oversee this process—a very rewarding experience.

The International Seabed Authority (ISA) was already established in 1994. The International Tribunal for the Law of the Sea (ITLOS) was established in 1996, and the Commission on the Limits of the Continental Shelf (CLCS) held its first meeting in New York in June 1997.

Since I retired from the United Nations and public service in 2004, I have been able to follow these three organs at a distance only. With respect to UNCLOS my main focus since then has been on the polar regions. I had the privilege of chairing the 28th Antarctic Treaty Consultative Meeting in 2005. However, my attention has been on the Arctic in particular. The reason is that there are often misunderstandings in the media about the legal regime that applies there. It is therefore of great importance to clarify that the legal regime in the Arctic is UNCLOS. All the Arctic States except the United States are parties to UNCLOS.

There is often talk about disputes among the Arctic States. However, they are all aware of the legal regime that applies there, and even if the United States is not a party to UNCLOS it respects the rules of the Convention. As a matter of fact there is a direct reference to "the law of the sea" in the so-called Ilulissat Declaration, adopted by the five Arctic coastal States on 28 May 2008.[2] The Declaration concerns the applicability of the law of the sea in the Arctic Ocean.

And disputes relating to the Arctic area have so far been settled through negotiations. At present, there are only two territorial disputes that I am sure will be resolved through friendly settlements. One concerns Hans Island in the sea between Greenland and Ellesmere Island in Canada. The other concerns the delimitation of the territorial sea and the exclusive economic zone between the United States (Alaska) and Canada, where Canada maintains that it should

2 See https://cil.nus.edu.sg/wp-content/uploads/formidable/18/2008-Ilulissat-Declaration.pdf.

follow the 141st azimuth while the United States maintains that it should follow the equidistance line.

As we know, the Commission on the Limits of the Continental Shelf shall make recommendations to States on the outer boundaries of the shelf when it extends beyond 200 nautical miles. In the media there is often reference to claims in the Arctic Ocean. And there will certainly be competing claims as, for example, in the case of Canada, Denmark (because of Greenland) and the Russian Federation. The duty of the Commission is to make recommendations with respect to how far out in the sea the shelf can be claimed. With respect to overlapping claims, these are questions that must be settled between the competing States. I have no doubt that the States in question will follow the rules that apply. So far, I note that they have made notifications relating to such claims in conformity with UNCLOS.

Now, a few words about the three organs of UNCLOS.

a ***The International Seabed Authority***

The International Seabed Authority has a very demanding responsibility with respect to the so-called Area or as it is often referred to "the common heritage of mankind". This is the area outside the territorial jurisdiction of States. According to article 153 of UNCLOS, activities in the Area shall be carried out and controlled by the Authority on behalf of mankind as a whole. The article contains rules about the manner in which these activities shall be carried out. In article 170 we find rules about the so-called Enterprise, which shall be the organ of the Authority which shall carry out activities in the Area.

The task of the Authority is indeed demanding. The First Part of the 25th Annual Session of the Authority took place from 25 February to 1 March 2019. The Authority has issued a summary of this meeting which is very interesting reading indeed. The summary also contains a brief analysis of the meeting focusing on The Economic Model, The Enterprise, Environmental Concerns, and Leaving No One behind, and focusing on the concerns of developing countries that have less capacity to equitably participate in the work of the Authority. Let me quote the last paragraph in the introduction to this summary:

> This brief analysis examines the main achievements, dilemmas, and questions that surfaced during the Council meeting related to the economic model and the relevant payment mechanism, the Enterprise, and protection of the marine environment. It further outlines key outstanding issues that will re-appear on the Council's agenda when it meets in July 2019.

I warmly recommend reading this summary, in case you have not already done so.[3]

b ***The International Tribunal for the Law of the Sea***

With respect to the International Tribunal for the Law of the Sea there has been an interesting development since the Tribunal was inaugurated in October 1996. We recognize the presence of two former Judges of the Tribunal: Helmut Türk of Austria and Rüdiger Wolfrum of Germany. Rüdiger Wolfrum was the President of the Tribunal 2005–2008.

So far, 26 cases have been submitted to the Tribunal. They involve wide-ranging subjects, such as maritime delimitation disputes, law of fisheries, the exploitation of the Area, the preservation and protection of the marine environment, and the arrest and detention of vessels.

The Tribunal also offers capacity-building programmes on the peaceful settlement of disputes under the Convention. So far, a series of thirteen regional workshops have been held in different regions of the world to provide experts from various States with practical information on dispute-settlement procedures before the Tribunal.

There is also an internship programme. Every year this programme gives twenty students from around the world the opportunity to gain a deeper understanding of the work and functions of the Tribunal. Since 2007 there is also a nine-month capacity-building and training programme on dispute settlement under the Convention for the benefit of young governmental officials and researchers.

An interesting summary of the work of the Tribunal at present appears in a statement by its President, Judge Jin-Hyun Paik, before the UN General Assembly on 11 December 2018. Since we have been addressing the issue of Biodiversity Beyond National Jurisdiction at our Conference, let me quote the following from the President's statement:

> Allow me to say a few words about the current negotiations in the intergovernmental conference on an international legally binding instrument under the Convention on the conservation and sustainable use of marine biological diversity of areas beyond national jurisdiction.
>
> I wish to draw the attention of the Member States of the United Nations to the importance of incorporating a robust dispute-settlement

3 Summary of the Twenty-fifth Annual Session of the International Seabed Authority (First Part): 25 February–1 March 2019. IISD Vol. 25 No. 185 available at http://enb.iisd.org/download/pdf/enb25185e.pdf.

mechanism in the future instrument, as such a mechanism would ensure compliance with it. In this regard, consideration could be given to the possibility of incorporating Part XV, on dispute settlement, of the Convention in the new instrument, following the example of the other agreements which have been concluded to implement provisions of the Convention. It might also be useful to consider the possibility of requesting the Tribunal for an advisory opinion in the new instrument. In this connection, you may recall that the Tribunal's jurisdiction comprises "all matters specifically provided for in any [agreement other than the Convention] which confers jurisdiction on the Tribunal" (article 21 of the Statute of the Tribunal).[4]

c *The Commission on the Limits of the Continental Shelf*

With respect to the Commission on the Limits of the Continental Shelf there has also been a very interesting development.[5] One concern that the Meeting of States Parties to the Convention has had to address is the workload of the Commission in combination with the question of the ability of States, particularly developing States, to fulfil the requirements of article 4 of annex II to the Convention.[6] Without going into detail about these elements, let me just say that as of 6 May 2019 the Commission had received 90 submissions containing information on the limits of the continental shelf beyond 200 nautical miles from the baselines from which the breadth of the territorial sea is measured.

As you are aware, in accordance with article 76, paragraph 8 of the Convention, the Commission shall make recommendations to coastal States on such submissions. The limits of the shelf established by a coastal State on the basis of these recommendations shall be final and binding. So far, the Commission has adopted 31 recommendations under this provision.[7]

2 The Division for Ocean Affairs and the Law of the Sea

Finally, in addition to the three organs of UNCLOS, reference should be made to DOALOS, which, as I said, is part of the UN Office of Legal Affairs. This is a

4 The statement is available at https://www.itlos.org/fileadmin/itlos/documents/statements_of_president/paik/2018_GA_111218_en.pdf.

5 See https://www.un.org/Depts/los/clcs_new/clcs_home.htm.

6 Reference is made to SPLOS/72 https://undocs.org/SPLOS/72 and to SPLOS/183 https://undocs.org/SPLOS/183.

7 See https://www.un.org/Depts/los/clcs_new/commission_submissions.htm 6 May 2019.

very important entity—a focal point—in the field of the law of the sea and ocean affairs. According to the rules, the core functions of DOALOS consist of:

- Providing to States and intergovernmental organizations a range of legal and technical services, such as information, advice and assistance as well as conducting research and preparing studies relating to the United Nations Convention on the Law of the Sea (UNCLOS) and other agreements in the field of the law of the sea and ocean affairs;
- Providing substantive servicing to the General Assembly on the law of the sea and ocean affairs, including the United Nations Open-ended Informal Consultative Process established by the General Assembly in its resolution 54/33 in order to facilitate the annual review by the Assembly of developments in ocean affairs; the Meeting of States Parties to the Convention and to the Commission on the Limits of the Continental Shelf;
- Providing support to the organizations of the United Nations system to facilitate consistency with the Convention of the instruments and programmes in their respective areas of competence;
- Discharging the responsibilities, other than depositary functions, of the Secretary-General under the UNCLOS and the UN Fish Stocks Agreement;
- Conducting monitoring and research activities and maintaining a comprehensive information system and research library on the Convention and on the law of the sea and ocean affairs; and
- Providing training and fellowship and technical assistance in the field of the law of the sea and ocean affairs.

A visit to the DOALOS website is recommended.[8]

3 The Intergovernmental Conference on Marine Biodiversity of Areas beyond National Jurisdiction

May I also say a few words about the second session of the Conference that is engaged in the subject matter that we have discussed here at the World Maritime University, namely 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.[9] This session took place from

8 Available at http://legal.un.org/ola/div_doalos.aspx?section=doalos.

9 See https://www.un.org/bbnj/. Reference is also made to the following two press releases: https://www.un.org/press/en/2019/sea2101.doc.htm and https://www.un.org/press/en/2019/sea2102.doc.htm.

25 March to 5 April 2019 under the presidency of Ambassador Rena Lee of Singapore, whom we are glad to see is among us here. Congratulations on the good result, Ambassador Lee!

Let me just say that the main part of the Conference was held in the format of four informal working groups on basically the same topics as has been discussed by the panels in our Conference, namely:

– Marine genetic resources, including questions on the sharing of benefits;
– Measures such as area-based management tools, including marine protected areas;
– Environmental impact assessments; and
– Capacity-building and the transfer of marine technology.

An informal working group on cross-cutting issues facilitated by the President was also set up.

An advanced and unedited version of the President's statement at the closing of the second session is available on the website of the Conference.[10] Annexed to the statement are also the oral reports of the facilitators of the five informal working groups. I recommend that you take part of this material if you have not already done so. The hope is that the result of the second session will enable the preparation of a draft of an instrument to be made available for negotiations at the third session of the Conference from 19 to 30 August 2019.

I am sure that Ambassador Lee in her capacity as President of the session will find observations and analyses made at our Conference helpful. Personally, I noted in particular the discussions about the expressions "under the UNCLOS", "fully consistent with UNCLOS", "not undermine the existing system", and "no additional bureaucracy".

4 The Present Geo-Political Situation

Against this background, let us now look at the present geo-political situation. As I said at the outset, UNCLOS is certainly one of the most important treaties in the world. The development after its entry into force in 1994 has been very positive, even if one would hope that one day also the United States of America would be a party to it. However, a serious question is if this positive development will be affected by the present geo-political situation.

10 Availableathttps://www.un.org/bbnj/sites/www.un.org.bbnj/files/bbnj_-_igc2_-_presidents_closing_statement_-_advance_unedited_version.pdf.

It is sad to note that gradually in later years the most fundamental rules that we inherited from a generation that had experienced two world wars are being questioned or violated—even by Western democracies. Populism is on the rise. The behaviour of authoritarian State actors has entailed that international legal obligations have been ignored. The rule of law and fundamental human rights are being undermined.

Of particular concern is that the United States has withdrawn from the UN Human Rights Council and has left the so-called Paris Agreement—the global response to the threat of climate change—concluded in 2015.[11] The United States has also withdrawn from the comprehensive, long-term solution to the Iranian nuclear issue, culminating in the Joint Comprehensive Plan of Action (JCPOA) concluded on 14 July 2015.[12] States like Hungary and Poland are acting in flagrant violation of fundamental principles of the rule of law. The attack by Russia on Ukraine in 2014 is an obvious violation of the UN Charter. More examples of violations of international law in other parts of the world could be mentioned.

Furthermore, important contributions of science relating to the climate are not respected in a manner that one would expect in a civilised world. The question is whether this will also affect UNCLOS.

Basically, States parties to UNCLOS have respected the rules of the Convention, and disputes are being settled through negotiations or through arbitration or by the use of international dispute settlement mechanisms like ITLOS or the International Court of Justice. The organs of UNCLOS are functioning well. This is indeed positive. However, there are exceptions. One of the most serious examples is the manner in which China behaves in the South China Sea at present. This does not bode well for the future.

Another serious matter is the manner in which refugees that come across the Mediterranean are treated. We must also realise that climate change may in the future generate a flow of refugees in the world of such proportions that makes what we see today but a trickle in comparison.

With respect to the Arctic, the Arctic Council is an important institution. Established in Canada in 1996, it now has its secretariat based at Tromsø in Northern Norway.[13] The Council is the leading intergovernmental forum promoting cooperation, coordination and interaction among the Arctic States,

11 Available at https://unfccc.int/process-and-meetings/the-paris-agreement/the-paris-agreement.

12 See Security Council resolution 2231 (2015) and its Annexes A and B available at https://undocs.org/S/RES/2231(2015).

13 See https://arctic-council.org/index.php/en/.

Arctic Indigenous communities and other Arctic inhabitants on common Arctic issues, in particular on issues of sustainable development and environmental protection in the Arctic.

The cooperation within the Arctic Council has been very successful over the years, and every time all eight Arctic foreign ministers have met, they have issued a joint declaration. However, when the 11th ministerial meeting ended in Rovaniemi in Finland on 7 May this year, the meeting ended for the first time ever without such a declaration. The problem was that the United States refused to address the topic of "climate change" in the declaration. This was unbelievable. It is commonly known that rising CO_2 levels have caused climate change that simply have to be addressed. Reference is made to the 1992 United Nations Framework Convention on Climate Change (UNFCCC)[14] and the 2015 Paris Agreement that I just mentioned.[15]

Time does not allow me to go into detail here. However, I have addressed this question in another context focusing on Security Council reform and the effects that climate change will have on the question of international peace and security.[16] There I also make a special reference to the situation in the Arctic.

The fact that the United States has left the comprehensive, long-term solution to the Iranian nuclear issue, the JCPOA that I just mentioned, is very serious indeed and has caused tensions at the international level.[17] I have addressed also this question in another context.[18] My conclusion is that one could question whether this withdrawal is legal after the endorsement of the agreement by the Security Council in its resolution 2231 (2015). Under all circumstances, in my opinion the United States is bound by the obligations under this resolution in the same manner as are all UN Member States.

One situation of special concern is the manner in which Morocco treats Western Sahara. In November 2001, when I served as the UN Legal Counsel, the Security Council asked for my opinion on "the legality in the context of international law, including relevant resolutions of the Security Council and the General Assembly of the United Nations, and agreements concerning Western Sahara of actions allegedly taken by the Moroccan authorities consisting in

14 Available at https://unfccc.int/resource/docs/convkp/conveng.pdf.

15 *Supra*, note 11.

16 See H. Corell, 'Security Council Reform—The Council Must Lead by Example' (2019) 22(1) *Max Planck Yearbook of United Nations Law Online*.

17 *Supra*, note 12.

18 *Supra*, note 16.

the offering and signing of contracts with foreign companies for the exploration of mineral resources in Western Sahara". Having examined two contracts, concluded in October 2001, for oil-reconnaissance and evaluation activities in areas offshore Western Sahara, I came to the conclusion that if further exploration and exploitation activities were to proceed in disregard of the interests and wishes of the people of Western Sahara, they would be in violation of the principles of international law applicable to mineral resource activities in Non-Self-Governing Territories.[19] Since I left the United Nations I have developed my thinking in this matter further, in particular since I think that the European Union is simply not following international law in the interaction with Morocco in this matter.[20] It is of utmost importance that this question is resolved in accordance with international law.

5 Conclusion

In conclusion, let me say that UNCLOS is an extraordinary achievement negotiated under the auspices of the United Nations. The States Parties understand that it is important that they bow to this law, even if all of them do not fully observe *pacta sunt servanda*. The geo-political situation is troubling. But let us hope that the States Parties to UNCLOS realize how important it is that this treaty that governs 70 per cent of the surface of the globe is respected. There is so much to gain from a strict observance of UNCLOS.

As a matter of fact, what all this boils down to is respect for the rule of law at the national and international levels. Of particular importance is that politicians understand *their* responsibility for the rule of law. I therefore cannot resist making reference to a publication on the rule of law that is directed to politicians. It was inspired by a comment by former Chancellor Helmut Schmidt of Germany in a meeting of the InterAction Council of Former Heads of State and Government in 2008. The publication is some 45 pages in length and is freely available for downloading and printing from the web in 25 languages.[21] Please

19 Letter dated 29 January 2002 from the Under-Secretary-General for Legal Affairs, the Legal Counsel, addressed to the President of the Security Council, available at https://www.securitycouncilreport.org/atf/cf/%7B65BFCF9B-6D27-4E9C-8CD3-CF6E4FF96FF9%7D/s_2002_161.pdf.

20 See for example 'The Responsibility of the UN Security Council in the Case of Western Sahara'. In: *International Judicial Monitor*, Winter 2015 Issue, available at http://www.judicialmonitor.org/current/specialcommentary.html.

21 *Rule of Law—A guide for politicians*. A Guide elaborated under the auspices of the Raoul Wallenberg Institute of Human Rights and Humanitarian Law at Lund University,

google "Rule of Law—A guide for politicians" and you will find it. And please spread the message!

During our Conference here several speakers have made references to the UN Sustainable Development Goal 14: "Conserve and sustainably use the oceans, seas and marine resources" and its 10 targets. Rightly so!

However, let me point also to Goal 16: "Promote just, peaceful and inclusive societies". I am thinking in particular of two of its targets:

> 3. Promote the rule of law at the national and international levels and ensure equal justice for all;
> and
> 5. Substantially reduce corruption and bribery in all their forms.

In my view achieving this goal is a precondition for achieving all the other goals.

Finally, on a very personal note: As a student, I used to sign on ships during my summer vacations. During four summers in the 1950s, I acquired 12 months of experience as a sailor in the Swedish merchant marine. One thing that I will never forget from this time is when I was standing at the helm taking orders from a pilot. When—after a few commands for "Starboard!" and "Port!"—the pilot determined that the ship was heading in the right direction, the command would be: "Steady as she goes!" It struck me that we should apply the same thought when we navigate UNCLOS towards the future: Steady as she goes! And the pilot should be Statesmanship!

Sweden, and the Hague Institute for the Internationalisation [now Innovation] of Law (HiiL), the Netherlands, available at https://rwi.lu.se/2017/03/rule-law-guide-politicians.

CHAPTER 3

Managing High Seas through a *Sui Generis*

Arif Havas Oegroseno

Keywords

marine biological diversity – areas beyond national jurisdiction – marine genetic resources – environment – Indonesia – conservation

One of the most challenging issues in ocean affairs today is managing marine genetic resources in the high seas. Discussions on biodiversity beyond national jurisdictions is complex and vast, encompassing fundamental questions such as the meaning of conservation and management of biodiversity, the meaning of marine genetic resources, transfer of technology, benefit sharing, the meaning and implication of a legally binding instrument, and many other rather complex matters. I shall not address all of them but offer some of my observations based on our geographic ocean features as the largest archipelagic State in the world.

Indonesia is a country that has **direct contact with area of biodiversity beyond national jurisdiction** in two fronts, namely in the eastern part of Indian Ocean and the western part of the Pacific Ocean. I am sure, Indonesia is not the only one that has these rather unique geographic features. Many of those countries are also represented at this Conference.

In our view, activities in the areas beyond national jurisdiction will have a direct impact on areas under our jurisdiction and also *vice versa*.

Conservation and management of living resources as well as pollution are of particular concern, because the marine environment as an ecosystem will affect them regardless of legal boundaries established in accordance with UNCLOS 1982. Fish have no passports.

Furthermore, Indonesia has delineated its continental shelf beyond 200 nautical miles in the northwest of Sumatra based on the recommendation adopted by the Commission on the Limits of the Continental Shelf of 28 March 2011, and recently, on 11 April 2019, Indonesia made another submission on the Eauripik Rise in the Pacific Ocean, covering an area of more than 196,000 square kilometers.

 | DOI:10.1163/9789004422438_004

In those areas, significant continental shelf is going to be within Indonesia's national jurisdiction while the water column is under the regime of the high seas. We have this experience in a different context with one of our neighboring countries, Australia. However, an overlap of our continental shelf with the water column of BBNJ would be a first.

This specific concern has to be addressed because it leaves a gaping question with regard to the legal status on the biodiversity and genetic resources in those related areas with two different regimes. There must be a clarity in this particular situation whereby the biodiversity or genetic resources in the water column may have their life cycle starting from the subsoil and seabed or the other way around, as well as biodiversity or genetic resources that do have uninterrupted and well-connected biological linkage between the seabed and the water column in areas where overlap between extended continental shelf and BBNJ exist.

The possible solution is to assign the water column above the seabed beyond 200 nautical miles that have been recommended by the Commission on Limits of the Continental Shelf to the coastal countries concerned. This may create fewer complications on the management of the biodiversity beyond national jurisdiction. The assignment may be followed with transparent monitoring by an international organ. However, some may consider this approach unfair because the coastal countries with extended continental shelves gain access to the resources in the water column. It is indeed an issue that has not been dealt with thoroughly at the intergovernmental conference (IGC) discussion in New York.

A specific arrangement, a *sui generis*, may be considered in this unique overlapping situation of extended continental shelf and the water column above it which may be included as ABNJ.

In this geographic situation of direct boundary with ABNJ, an issue of pollution or side effects coming from economic activities in the ABNJ going into the Exclusive Economic Zone or continental shelf of a coastal nation, especially small archipelagic and island developing States, must also be taken into consideration. As a matter of fact, many small island developing countries have become the epicenter of marine biodiversity in the world.

Again, being directly connected to an ABNJ has certain complicated features, thus the issue of adjacency is critical to be discussed in the coming deliberations. The interests of all countries, especially the small island developing countries, that are adjacent to ABNJ require to be taken into account in the legally binding instrument on BBNJ.

A certain type of guarantee for enviromental protection of adjacent marine areas from any activity relates to exploration in ABNJ as well as the

establishment of responsibility of any environmental damages indeed needs special discussion.

The adjacency factor must be considered thoroughly.

On the issue of what is **marine genetic resources** itself, what it and what it is not, Indonesia has wealth of experience on defining what is marine genetic resources in our vast waters stretching from the Indian Ocean to the South China Sea to the Pacific Ocean. For us, under our laws, regulations and culture, marine genetic resources include all life forms at sea whether they are part of an ecosystem such as coral reef systems or mangroves, or highly migratory fish, or part of economic activity or not. Furthermore, activities in ABNJ may also be threats to certain species of fish or corals or some other life forms.

Our understanding of oceanic and terrestrial biodiversity is similar; thus certain plants and herbs that are both important for our biodiversity but also have healing power so that they have economic value, the same as fish that have economic value as well as importance for biodiversity in our ocean. In the context of sustainable development, it is thus relevant to be able to strike the balance between conservation, the environment and economic benefit.

We are of course aware of the discussion **on the monetary and non-monetary values** that are derived from the utilisation of marine genetic resources and how such benefits may be shared.

While not opposing the idea of sharing of monetary benefit, we are also aware of the degree of complication in addressing this issue. In our experience on anything related to monetary matters, things are going to be very complicated. Sometimes the technicalities will become hindrances and blockages to smooth monetary aspects of benefit sharing.

Therefore, it is better for us to focus on non-monetary benefit including a limitation of duration of any intellectual property rights derived from marine genetic resources in ABNJ, as well as sharing knowledge such as in the form of scholarships or academic exchanges or strengthening the capacity of a particular party of a country or applying the already proven model under the auspices of International Seabed Authority.

Honored participants, although our planet Earth has more waters than lands, we do not have a single organization that deal with ocean. We have UNGA, ITLOS, ISBA, DOALOS, IMO, FAO, IOC, Regional Fisheries Organizations in many regions, and many others. Thus, I believe that the instrument of ABNJ should not be in conflict with the existing mechanisms as well as with other already existing international legal instruments on ocean affairs.

Reconciling interests between States with opposite views in ocean affairs is not an impossible task. We have seen how our predecessors created the archipelagic sea lane passage to balance the archipelagic States needs, the Exclusive

Economic Zone which balances the interests of coastal States with user states in global navigation, and also the establishment of the Commission on the Limits of the Continental Shelf for delineation of the continental margin beyond 200 nautical miles in order to prevent abuse from a coastal State in its seabed claim. These are just a few of many balanced results of UNCLOS 1982.

I believe this 43rd COLP Annual Conference will meet its objective as an avenue to exchange views and ideas as well as pose some crucial questions that we should carefully consider in order to form the new instrument on BBNJ. I truly hope this conference and all of us will greatly contribute to the process in the IGC.

PART 1

Context—Conservation and Sustainable Use of Biological Diversity beyond National Jurisdiction (BBNJ)

∴

CHAPTER 4

BBNJ Treaty Negotiations 2019

J. Ashley Roach

Abstract

Substantive negotiations began in 2019 on an internationally legally binding instrument under the Law of the Sea Convention for the conservation and sustainable use of marine biological diversity of areas beyond national jurisdiction with two two-week sessions. These negotiations were held pursuant to UN General Assembly resolution A/72/249 of 24 December 2017. This chapter brings up to date the intergovernmental conference previously described in the author's chapter in the Center for Ocean Law and Policy's book on its annual conference in Beijing in mid-2018, 'BBNJ: Developments since Yogyakarta.' The chapter describes the two substantive sessions held in 2019: 25 March–5 April and 19–30 August 2019.

Keywords

marine biological diversity – intergovernmental conference – areas beyond national jurisdiction – treaty negotiations – marine genetic resources – area-based management tools – environmental impact assessment – capacity-building – marine technology

1 Background

The immediate three previous annual conferences of the Center for Oceans Law and Policy of the University of Virginia School of Law have included examination of various issues involved in the conservation and sustainable use of marine biological diversity of areas beyond national jurisdiction (BBNJ), in 2016 at UN Headquarters in New York,[1] in 2017 in Yogyakarta,

1 In two chapters by Dire Tladi, 'The Common Heritage of Mankind in the Proposed Implementing Agreement,' and J. Ashley Roach, 'Update on the BBNJ Negotiations,' in *Legal Order in the World's Ocean: UN Convention on the Law of the Sea,* Myron H. Nordquist, John Norton Moore and Ronán Long (eds.), (London & Boston: Brill Nijhoff, 2018), pp. 72–90 and 91–123 respectively.

 | DOI:10.1163/9789004422438_005

Indonesia,[2] and in 2018 in Beijing.[3] The final two sessions of the Preparatory Committee were held in 2017 and the first two sessions of the Diplomatic Conference were held in 2018. This Chapter describes the two substantive negotiating sessions of the Intergovernmental Conference (IGC-2 and IGC-3) that were held in two two-week periods in the spring and summer of 2019.

2 Introduction

In resolution A/69/292, 19 June 2015, the General Assembly decided to convene a preparatory committee (PrepCom) of four sessions to develop an internationally legally binding instrument (ILBI) under the 1982 United Nations Convention on the Law of the Sea (UNCLOS) on conservation and sustainable use of marine biological diversity of areas beyond national jurisdiction (ABNJ).[4] Two sessions were held in 2016 and two in 2017. Thereafter, notwithstanding the failure to reach consensus on any issue at the PrepCom, on 24 December 2017, the UN General Assembly by resolution A/72/249 decided to convene a diplomatic conference (DipCon) for the same purpose of *at least* four sessions preceded by an organizational session in New York 16–18 April 2018. The first substantive session (IGC-1) was held 4–17 September 2018. The second and third substantive sessions were held for 10 working days each 25 March–April 2019 and 19–30 August 2019, and the fourth substantive session

2 In four chapters: by Kristine Dalaker Kraabel, 'The BBNJ PrepCom and Institutional Arrangements: The Hype about the Hybrid Approach'; by Su Jin Park, 'The Legal Framework and Relevant Issues on the Marine Protected Areas in the Areas beyond National Jurisdiction'; by A. Gusman Siswandi, 'Marine Genetic Resources beyond National Jurisdiction and Sustainable Development Goals: The Perspective of Developing Countries'; and by Robin Warner, 'Realising Biodiversity Conservation and Sustainable Use in Southern Hemisphere Oceans beyond National Jurisdiction: Challenges and Prospects,' in *The Marine Environment and UN Sustainable Development Goal 14: Life Below Water,* Nordquist, Moore and Long (eds.), (London | Boston: Brill Nijhoff, 2019), pp. 137–172, 173–193, 194–226 and 111–136 respectively.

3 In two chapters: by Ronán Long and John Brincat, 'Negotiating a New Marine Biodiversity Instrument: Reflections on the Preparatory Phase from the Perspective of the European Union,' and the other by this author on 'BBNJ: Developments since Yogyakarta,' in *Cooperation and Engagement in the Asia-Pacific Region*, Nordquist, Moore and Long (eds.) (London | Boston: Brill Nijhoff, 2020), pp. 443–468 and 469–506 respectively.

4 For a comprehensive first-hand account of the process leading up to the convening of the PrepCom see Kristina M. Gjerde, 'Perspectives on a Developing Regime for Marine Biodiversity Conservation and Sustainable Use beyond National Jurisdiction,' in Harry N. Schreiber, Nilufer Oral and Moon-Sang Kwon (eds.), *Ocean Law Debates: The 50-Year Legacy and Emerging Issues for the Years Ahead* (Leiden|Boston: Brill Nijhoff, 2018), pp. 354–380.

in the first half of 2020 on dates to be decided. The resolution is silent on future substantive sessions. If needed, that would also require future decisions by UNGA.[5] The parameters set for the PrepCom were repeated for the DipCon, as follows.

The work and results of the conference should be fully consistent with the provisions of UNCLOS (para. 6). The process and its result should not undermine existing relevant legal instruments and frameworks and relevant global, regional and sectoral bodies (para. 7). The conference shall be open to all States Members of the UN, members of specialized agencies and parties to UNCLOS (para. 8). The resolution stressed the need to ensure the widest possible and effective participation in the conference (para. 9). Neither participation in the negotiations nor their outcome may affect the legal status of non-parties to UNCLOS or any other related agreements with regard to those instruments, or the legal status of parties to UNCLOS or any other related agreements with regard to those instruments (para. 10). For the meetings of the DipCon the participation rights of the EU are the same as at the Meetings of States Parties to UNCLOS (para. 11). Attendance as observers is permitted by IGOs, NGOs and UN specialized agencies, organizations, funds and programs (paras. 12–15). The conference is to exhaust every effort in good faith to reach agreement on substantive matters by consensus (para. 17),[6] but failing that by two-thirds majority of representatives present and voting (para. 19).[7]

5 As was done for the sessions of UNCLOS III. In contrast, the resolution convening the fish stocks conference, resolution A/47/192, 22 Dec. 1992, para. 1, limited its duration to less than two years ("convene in 1993 … should complete its work before" the 49th session of the General Assembly in November 1995). The fish stocks agreement was adopted 4 August 1995 and has not received nearly as many ratifications (90) as the LOS Convention (168).

6 There is no agreed UN definition of "consensus". Two treaties include various formulation of such a definition. It is defined in the Convention for the Strengthening of the Inter-American Tropical Tuna Commission Established by the 1949 Convention between the United States of America and the Republic of Costa Rica ("Antigua Convention"), article I(5): "consensus" means the adoption of a decision without voting and without the expression of any stated objection. "Consensus" is defined in article 20(1) of the 2000 Convention on the Conservation and Management of Highly Migratory Fish Stocks in the Western and Central Pacific Ocean as "the absence of any formal objection made at the time the decision was taken".

7 This is very similar to the "Gentleman's Agreement" made by the President and endorsed by the Conference at its 19th meeting on 27 June 1974, A/CONF.62/30/Rev.3, Rules of Procedure, Appendix, p. 17. Rule 37 also called for a cooling off period before the vote was to be taken. The multiple sessions of UNCLOS III were necessary to reach consensus on the package deal. Consensus was not reached at the fish stock conference because of its limited duration.

3 Organizational Meeting

Pursuant to paragraph 5 of resolution A/72/249, the UNGA President, after open and transparent consultations, nominated Ms. Rena Lee of Singapore as President-designate of the conference. On 16 April 2018 she was elected President of the Conference by acclamation. Ambassador Lee is the newly appointed Ambassador for Oceans and Law of the Sea issues and Special Envoy of the Singapore Foreign Minister.

The further proceedings of this organizational session as well as the first substantive session (IGC-1) in September 2018 are described in my earlier chapter (note 3) and need not be repeated here.

4 Second Substantive Session (IGC-2)

To assist delegation in preparing for IGC-2, the President issued her Aid to Negotiations in October 2018.[8] This extensive compilation of previous proposals was organized along the lines of the President's 2018 Aid to Discussions.[9] Its principal components were the sections on the four elements of the 2011 "Package": marine genetic resources, area-based management tools, environmental impact assessments, and capacity building and transfer of marine technology, as well as cross-cutting issues. Each of the sections contained major elements and components as well as many textual options. The structure and subject headings of these sections suggested similar provisions may appear in the zero draft of the ILBI.

4.1 *Program of Work*[10]

As at IGC-1, after general remarks in plenary, discussion of each of the four elements of the package and cross cutting issues were facilitated in informal working groups.[11] The facilitators presented their reports on the last day of IGC-2. The President then gave her concluding remarks.

8 http://undocs.org/A/CONF.232/2019/1>. Reissued as A/CONF.232/2019/1*, 1 December 2018.

9 A/CONF.232/2018/3, 25 June 2018.

10 A/CONF.232/2019/3, 25 March 2019.

11 Many Delegations posted their interventions to the UN's PaperSmart website, <http://papersmart.unmeetings.org/ga/bbnj-intergovernmental-conference/second-session/statements/>.

4.2 *Facilitators Reports*

The Facilitators Reports do not provide a comprehensive summary of the extensive and complex discussions that took place, but rather give an overview of the main issues discussed and the general trends observed. They are appended to the President's closing remarks, as a matter of convenience.[12] They are set out in the following five sub-sections.

4.2.1 Marine Genetic Resources (MGR), Including the Sharing of Benefits

Ambassador Janine Elizabeth Coye-Felson (Belize) summarized the work on MGR at IGC-2 as follows:[13]

The discussions proceeded on the basis of the President's aid to negotiations, more specifically section 3 of Part III of that document. The informal working group addressed section 3 in the following sequence:

– Benefit-sharing (section 3.2.2);
– Intellectual property rights (section 3.2.3);
– Monitoring (section 3.3);
– Scope (section 3.1); and
– Access (section 3.2.1)

Ambassador Felson welcomed the constructive engagement of delegations in focused text-based negotiations. On the basis of the President's Aid to Negotiations, the discussions in the Informal Working Group were very helpful in further clarifying the various proposals, and identifying areas where streamlining could take place, for example by merging certain options or sub-options or moving some paragraphs of a cross-cutting nature to other sections of the document. Delegations provided suggestions with respect to options which did not necessarily represent their preferred option. Ambassador Felson provided a brief overview of where matters stood in respect of the main issues discussed, in terms of progress achieved and areas which could, in her view, benefit from further consideration going forward.

4.2.1.1 *Introductory Paragraph*

A number of comments were made on the introductory paragraph of section 3 dealing with the relationship between UNCLOS and this Part of the instrument. There seemed to be convergence towards interpreting and applying the Convention and this Part/the instrument as a single instrument. Preference

12 A/CONF.232/2019/5, 18 April 2019, *infra* note 17.
13 A/CONF.232/2019/5, Annex (1), pp. 5–8.

was expressed to reflect this in a general section applicable to the instrument as a whole. Further consideration as to whether the Convention or the instrument would prevail in the event of any inconsistency would be beneficial.

4.2.1.2 *Benefit-Sharing* (*Section 3.2.2*)

Ambassador Felson addressed the objectives of benefit-sharing and principles and approaches guiding benefit-sharing together, as the issues raised were somewhat similar. Preferences were expressed with respect to each of the options currently in the text, namely listing or not the objectives and principles and approaches guiding benefit-sharing in the section on marine genetic resources. With respect to the objectives currently listed, there seemed to be some convergence towards some objectives, in particular that benefit-sharing should contribute to the conservation and sustainable use of marine biodiversity of areas beyond national jurisdiction and build the capacity of developing countries to access and use marine genetic resources. Other objectives will benefit from further consideration.

As regards the principles and approaches currently listed in the document, different views were expressed regarding the inclusion of the common heritage of mankind and the freedom of the high seas. Going forward, the placement and content of a list of objectives and of principles and approaches guiding benefit-sharing would benefit from further consideration.

On the benefits that might be shared, views were expressed in support of each of the two options currently in the text, namely sharing both monetary and non-monetary benefits or sharing non-monetary benefits only. There seemed to be some convergence towards including in the instrument a non-exhaustive list of benefits which would be reviewed and further developed at a later stage. Going forward, these issues would benefit from further consideration.

Based on the views expressed on the options presented, there were also issues in the section on benefit-sharing modalities that would also benefit from further consideration. These included whether benefit-sharing modalities should be set out in the instrument or be determined at a later stage by a body under the instrument; whether benefits should be shared on a voluntary or on a mandatory basis; and who might share benefits and with whom. In this regard, the need for the instrument to set out obligations of States, rather than of other entities, was noted.

There seemed to be some convergence towards the inclusion in the instrument of a provision regarding the purposes for which benefits might be used, and that benefits should be used to contribute to the conservation and sustainable use of marine biodiversity of areas beyond national jurisdiction. The

inclusion of other purposes, however, received different levels of support and would benefit from further consideration.

On how and when benefits might be shared, various arrangements were proposed. Different views were expressed on whether benefit-sharing should take place at different stages or not and what types of benefits might be shared at those stages; and whether monetary benefits would be paid to a fund established under the instrument or not. Further consideration would be beneficial on these issues.

With regard to a clearing-house mechanism, views were expressed in support of each of the two options currently in the text, namely addressing relevant matters of the clearing-house mechanism in the section on marine genetic resources, or not, with suggestions made to address these matters in a separate part of the instrument on the clearing-house mechanism. Different views were also expressed concerning some of the functions currently listed in the text which, going forward, would benefit from further consideration.

4.2.1.3 *Intellectual Property Rights* (*Section 3.2.3*)

Views were expressed in support of each of the three options currently in the text, namely addressing intellectual property rights in the instrument in a *sui generis* manner, addressing intellectual property rights by requiring consistency with relevant agreements under the auspices of the World Intellectual Property Organization and the World Trade Organization, or not addressing intellectual property rights in the instrument. Going forward, this issue, in particular whether to reflect it in the text and, if so, how, would benefit from further consideration.

4.2.1.4 *Monitoring of the Utilization of Marine Genetic Resources of Areas Beyond National Jurisdiction* (*Section 3.3*)

Views were expressed in support of each of the two options in the text, namely setting out a monitoring mechanism in the instrument, or not. Going forward, this issue, in particular whether to reflect it in the text and, if so, how, would benefit from further consideration.

4.2.1.5 *Scope* (*Section 3.1*)

The discussions on scope addressed the geographical, material and temporal scope, including the possibility of addressing all these aspects in a single provision placed in a general section of the instrument.

Geographical scope—views were expressed in support of each of the options set out in the text, namely referring to marine genetic resources of the high seas and the Area, accessed in areas beyond national jurisdiction, or

of the Area, with modifications proposed to some of these options and an additional option being introduced. Views differed on whether marine genetic resources of areas beyond national jurisdiction should be governed by a single regime or by different regimes for those of the high seas and those of the Area.

There seemed to be convergence towards the inclusion of a "without prejudice" clause relating to the rights and jurisdiction of States under the Convention, with flexibility being expressed concerning the exact formulation and placement of such a provision. Views differed on the inclusion of provisions addressing compatibility between measures for the conservation and sustainable use of marine genetic resources of areas beyond national jurisdiction and those adopted for areas within national jurisdiction; conducting activities with respect to resources of areas beyond national jurisdiction that are also found in areas within national jurisdiction with due regard to the rights and interests of coastal States under the jurisdiction of which such resources are found; as well as consultation with adjacent coastal States that have made a submission to the Commission on the Limits of the Continental Shelf.

Material scope—there seemed to be convergence towards the position that the instrument would not apply to the use of fish as a commodity, but with different views expressed on whether to reflect this explicitly in the instrument or not. Similarly, options to include a reference to a threshold amount beyond which fish would be considered a commodity, to treat a fish species with value for its genetic material as a marine genetic resource regardless of the volume of the catch, or not to include text on this issue, all received support. Views continued to differ on whether the instrument should apply to marine genetic resources collected *in situ* only, or also to those accessed *ex situ* and *in silico* and digital sequence data and to derivatives.

Temporal scope—Support was expressed for each of the two options currently in the text, namely including a non-retroactivity clause or not having text at all. The need to clarify whether the instrument would apply to marine genetic resources collected *in situ* before the entry into force of the instrument but accessed or utilized *ex situ* or *in silico* after entry into force was highlighted, as was the need to consider how a non-retroactivity clause would apply to States becoming parties after the entry into force of the instrument.

Given the continued differing views, further consideration on issues related to scope would be beneficial.

4.2.1.6 *Access* (*Section 3.2.1*)

There seemed to be some convergence towards including a general obligation to cooperate in the conservation and sustainable use of marine genetic

resources of areas beyond national jurisdiction, including questions on the sharing of benefits, with a suggestion made to place it in a general section of the instrument.

On access, support was expressed for each of the three options currently in the text, namely that access be governed by the provisions of the Convention, that access be undertaken in accordance with the instrument, with provision made for access modalities, or not addressing access in the instrument. Views were also expressed that access and benefit-sharing should be more closely linked in the instrument.

Different views were expressed with regard to the various access modalities currently set out in the text, such as whether to address all activities or access for certain purposes only; how to address marine scientific research; requirements for pre- or post-collection notification, permits and licenses; specific terms and conditions for access; additional requirements, including whether to undertake environmental impact assessments; whether access to marine genetic resources *ex situ* should be free and open; whether to address traditional knowledge and how; and the need for States to take appropriate and effective legislative, administrative and policy measures to ensure that genetic resources of areas beyond national jurisdiction utilized within their jurisdiction had been accessed in accordance with the instrument.

All these issues would benefit from further consideration.

4.2.2 Area-Based Management Tools (ABMTs), Including Marine Protected Areas (MPAs)

Ms. Alice Revell (New Zealand) summarized the work on ABMTs at IGC-2 as follows:[14]

The discussions proceeded on the basis of the President's Aid to Negotiations, specifically section 4 of Part III. The Informal Working Group addressed section 4 in the following sequence:

- Process in relation to ABMTs, including MPAs (section 4.3), including identification of areas (section 4.3.1) and the designation process (section 4.3.2);
- Relationship to measures under relevant instruments, frameworks and bodies (section 4.2);
- Implementation (section 4.4);
- Monitoring and review (section 4.5); and
- Objectives of ABMTs, including MPAs (section 4.1)

14 A/CONF.232/2019/5, Annex (II), pp. 8–12.

First, the comprehensive set of options included in the President's aid to negotiations provided a very useful guide for our discussions. She welcomed the constructive engagement of delegations in clarifying their positions on various options presented, identifying areas where merging certain options or sub-options would be beneficial, indicating which parts of the text may be moved to other sections of the document, as well as in identifying issues that may benefit from further consideration. She particularly appreciated delegations providing suggestions on options which did not necessarily fully represent their position, but that they recognized could form the basis to move forward in the negotiations.

4.2.2.1 *Process in Relation to ABMTs, Including MPAs* (*Section 4.3*)
As a general observation, discussions highlighted the importance of arriving at a common understanding on the different types and functions of ABMTs. Such an understanding is also needed to inform future consideration of issues relating to decision-making and institutional arrangements in relation to ABMTs, including MPAs.

In particular, one common thread throughout the discussions is the question of whether different processes are required for different types of ABMTs, including MPAs, while ensuring that existing relevant legal instruments and frameworks and relevant global, regional and sectoral bodies are not undermined. Therefore, going forward, further consideration of this question would be beneficial, in particular regarding the scope of the process or processes we wish to set out under the instrument and their application to the different types of tools.

4.2.2.2 *Identification of Areas* (*Section 4.3.1*)
On the identification of areas, progress was made in refining the elements to be reflected in the text of the instrument. There seemed to be convergence towards including a requirement that the identification of areas be based on the best available scientific information. There also seemed to be some convergence towards the inclusion of relevant traditional knowledge, noting that further clarification on the circumstances in which traditional knowledge might apply was sought. There also seemed to be a general movement towards the inclusion in the instrument of a list of standards and criteria for the identification of areas. Views were expressed that such a list should not be exhaustive, could draw on other internationally-agreed standards and criteria, and that relevant provisions would need to be drafted with sufficient flexibility to permit the standards and criteria to be reviewed and revised in the future. Going forward, further consideration of the contents of a list of standards and criteria, as well as the modalities of a process to review it, would be beneficial.

4.2.2.3 *Designation Process* (*Section 4.3.2*)

Regarding the designation process, views were expressed both for and against establishing such a process in the instrument. Nonetheless, overall discussions reflected progress in distilling the central elements of a process for the development and submission of proposals, and consultation on and assessment of such proposals. In this respect, while preferences were expressed for various options set out in the current text regarding the possible stakeholders that might submit proposals for ABMTs, including MPAs, there seemed to be a convergence of views towards proposals being submitted by State parties, either individually or collectively. Whether proposals could also be submitted by State parties through relevant global, regional and sectoral bodies or in conjunction with other stakeholders, or whether other stakeholders should be permitted to submit proposals in their own right, would benefit from further consideration.

Content of a proposal—preferences were expressed for the various elements in the current text and additional elements were suggested and therefore further consideration of this issue would be beneficial. There seemed to be some convergence towards the inclusion of certain required elements in a proposal, while also providing for the possibility that further guidance could be set forth in a subsidiary instrument.

Who would receive a proposal—preferences were expressed for each of the three options in the text, although there seemed to be convergence towards the proposition that, for administrative purposes, a proposal could first be submitted to the Secretariat.

Consultation on and assessment of a proposal—there was convergence that the consultation process set out in the instrument should be inclusive, transparent and open to all stakeholders. However, going forward, further consideration could be given to whether a list of stakeholders should be set out in the instrument or developed at a later stage. In addition, the possibility of identifying certain categories of stakeholders, in particular adjacent coastal States, would benefit from further consideration. Further consideration of the modalities of the consultation process will also be beneficial.

Scientific assessment—there seemed to be a convergence of views that assessment of a proposal needed to take place. However, the modalities for such assessment would benefit from further consideration, since views were expressed in support of each of the options set out in the text, namely, review by a scientific/technical body set forth under the instrument, a group of experts selected from a pool of scientific experts set forth under the instrument, an ad hoc scientific/technical body, an existing scientific/technical body, or

one or more independent scientists recognized under the instrument. Possible variations on those options were also put forward.

Decision-making—while she observed a general movement towards a body under the instrument addressing matters related to ABMTs, including MPAs, views were expressed in favour of each of the different options reflected in the text, while various combinations of those options were also proposed. Further consideration of these issues would be beneficial. Such consideration would, of course, also be linked to the underlying question referred to earlier regarding the possibility of establishing different processes for different ABMTs, including MPAs, and their relationship to measures under relevant instruments, frameworks and bodies.

4.2.2.4 *Relationship to Measures under Relevant Instruments, Frameworks and Bodies* (*Section 4.2*)

There was a convergence of views that the instrument must not undermine existing relevant legal instruments and frameworks and relevant global, regional and sectoral bodies. The importance of promoting coherence, complementarity and synergies in measures related to ABMTs, including MPAs was highlighted.

Further consideration as to how the instrument can best promote such coherence, complementarity and synergies would be helpful, since different modalities have been suggested. These include the establishment of a global overarching framework under the instrument; utilizing relevant global, regional and sectoral bodies, including establishing new bodies or expanding the mandates of existing bodies, as necessary; and/or identifying mutually supportive roles for these different frameworks, while avoiding potential hierarchies.

There seemed to be a convergence of views that cooperation and coordination between relevant legal instruments and frameworks and relevant global, regional and sectoral bodies, with regard to ABMTs, including MPAs, without prejudice to their respective mandates, could be enhanced through the instrument. Whether or not to provide for the establishment of coordination and/or consultation mechanisms in the instrument and, in the latter case, the type and functions of such mechanisms, would benefit from further consideration. Such consideration would be linked to discussions on the process in relation to ABMTs, including MPAs.

There seemed to be a convergence of views that the instrument must not prejudice the rights of coastal States over all areas under their national jurisdiction, including the continental shelf within and beyond 200 nautical miles and the exclusive economic zone, and that a provision be included to that effect. Whether the provision should be placed in the section on ABMTs, including

MPAs, or in the relevant cross-cutting sections of the instrument would benefit from further consideration, as would the potential inclusion of a provision clarifying that the instrument does not prejudice the rights, jurisdiction, freedoms and duties of States under the Convention.

With respect to the relationship between measures under the instrument and those established by adjacent coastal States, different views were expressed. Further consideration of issues related to compatibility with, due regard for and the need to avoid undermining the effectiveness of measures adopted by adjacent coastal States would also be beneficial as well as whether, and if so, how consultations with adjacent coastal States would take place.

4.2.2.5 *Implementation* (*Section 4.4*)
On the question of who would ultimately be responsible for implementation of the measures, options focused on State parties, relevant global, regional or sectoral bodies, or both. As this issue is linked to the overall process to be established under the instrument, it too would benefit from further consideration.

4.2.2.6 *Monitoring and Review* (*Section 4.5*)
Views were expressed in support of each of the options reflected in the text, namely specifying that these functions would be performed by a global body, by relevant global, regional, or sectoral bodies, by both, or alternatively not including any text in the instrument. Going forward, this issue would benefit from further consideration bearing in mind the need to distinguish between aspects related to the monitoring and review of the effectiveness of measures for ABMTs, including MPAs, and the monitoring and review of the implementation of the agreement.

4.2.2.7 *Objectives of ABMTs, Including MPAs* (*Section 4.1*)
There seemed to be convergence towards the inclusion of a list of objectives of ABMTs, including MPAs, in the instrument. The content of such a list would benefit from further consideration, as would the question of whether it should be non-exhaustive and open for further development.

4.2.3 Environmental Impact Assessments (EIAs)
Mr. René Lefeber (The Netherlands) summarized the work on EIAs at IGC-2 as follows:[15]

The informal working group addressed section 5 in the following sequence:

15 A/CONF.232/2019/5, Annex (III), pp. 13–16.

– Environmental impact assessment process (section 5.4);
– Content of environmental impact assessment reports (section 5.5);
– Monitoring, reporting and review (section 5.6);
– Strategic environmental assessments (section 5.7);
– Activities for which an environmental impact assessment is required (section 5.3);
– Relationship to environmental impact assessment processes under relevant instruments, frameworks and bodies (section 5.2); and
– Obligation to conduct environmental impact assessments (section 5.1).

He was pleased by the constructive engagement and cooperative spirit of delegations in clarifying their positions on various options presented in the President's Aid to Negotiations, and commenting on options that did not necessarily fully represent their position. He particularly welcomed the concrete proposals made for streamlining the text and for avoiding duplication by moving parts of the text to other sections of the document.

4.2.3.1 *Environmental Impact Assessment Process* (*Section 5.4*)

As a general observation on the discussions on the EIA process, he noted that the President's Aid to Negotiations provided a very useful guide for our discussions. Moreover, it appeared to have captured all of the options and steps proposed by delegations.

One common thread throughout the discussions is the need to consider whether, and if so, to what extent, the EIA process under the instrument will be internationalized. Therefore, going forward, further consideration would be beneficial on this topic, in particular on whether existing bodies or those potentially created by the instrument will play a role in the EIA process and the nature of such role.

On how the EIA process should be reflected in the instrument, preferences were expressed for various options. However, there seemed to be general movement towards the inclusion in the instrument of certain steps relating to the EIA process in a streamlined manner.

As regards the steps that could be specifically mentioned in the instrument, there seemed to be convergence towards the inclusion of, for example, screening, scoping, and decision-making. Different views were expressed on the other steps mentioned in the text and further consideration would be helpful to clarify what certain other steps entail and whether these steps should be included in the instrument. It was proposed that public notification should have its own sub-section in the instrument as there was a view that public notification should take place during various stages of the EIA process.

Different views were expressed concerning the placement of monitoring in this section in addition to the placement in a section on monitoring, reporting and review.

Going forward, further consideration regarding the possible streamlining of the text, including by combining similar elements and moving some elements to other sections, such as the section on the content EIA reports, would be beneficial with a view to identifying the steps of the EIA process to be included in the instrument. In addition, further consideration of the level of detail regarding specific steps would be useful.

Finally, further consideration on whether any steps to be contained in the instrument would be mandatory in nature or indicative, and on how to treat unanticipated effects would also be beneficial given the different views expressed on these matters.

4.2.3.2 *Content of Environmental Impact Assessment Reports* (*Section 5.5*)

There seemed to be a convergence of views towards the inclusion of the key or essential elements of such reports in the instrument and the development of further details regarding the required content at a later stage. However, further consideration would be useful to determine which particular combination of elements set out in the text should be reflected, as well as on the different options for the formulation of specific elements. A proposal for the addition of a "no text" option for the whole section was also made.

There seemed to be a convergence of views on some of the elements in the text to be included in EIA reports, while the inclusion of other elements would benefit from further consideration. Suggestions were also made for additional elements to be included in EIA reports. Further consideration would, for example, be beneficial in relation to whether and how social, socioeconomic and/or cultural impacts should be reflected in EIA reports. Moreover, further consideration would also be beneficial on whether the provision on the content of EIA reports should be mandatory, potentially constituting a minimum national or international standard, or only be indicative.

4.2.3.3 *Monitoring, Reporting and Review* (*Section 5.6*)

There seemed to be a convergence of views that the instrument should include text on the obligation to monitor an activity and report on its impacts.

Different preferences were expressed regarding the level of detail and modalities of this obligation, including in particular, whether the instrument should set out only the duties of States, or also duties of proponents of an activity and/or duties of relevant global, regional and sectoral bodies. Going forward, this issue would benefit from further consideration.

Different views were expressed on whether the text should also contain provisions on review and going forward this issue would also benefit from further consideration.

Views were expressed in support of the various elements in the current text regarding follow-up to the monitoring process. While there seemed to be some convergence that reports resulting from the monitoring should be made publicly available, the modalities and frequency of any reporting obligation would benefit from further consideration.

With respect to compliance, divergent views were expressed on whether or not to include provisions on compliance and, if so, their placement in this part of the instrument, as well as the modalities of any compliance process. Further consideration on this issue would therefore be beneficial.

Divergent views were also expressed on whether and to what extent adjacent coastal States in particular would be involved in the monitoring, reporting and review process. Further consideration would be useful on whether, and, if so, where to include any provisions to this effect.

In addition to the options in the current text, further consideration of the consequences of monitoring, reporting and review, including whether to provide for adaptive management, would be useful.

4.2.3.4 *Strategic Environmental Assessments* (*Section 5.7*)

Views were expressed both in favour and against the establishment of a process for SEAs in the instrument. If SEAs were to be included in the instrument, it was suggested that reference could be made to State parties acting collectively as well as individually, including within regional and sectoral bodies. However, concerns were expressed about the lack of clarity on how such assessments could be carried out in areas beyond national jurisdiction and by whom.

The connection between SEAs and area-based management tools (AMBTs) was raised, as was the idea to include SEAs in the section on measures such as ABMTs, including MPAs.

Further consideration on the scope, content and implementation of SEAs in areas beyond national jurisdiction, and also on potential linkages with ABMTs, would be useful.

4.2.3.5 *Activities for Which an Environmental Impact Assessment Is Required* (*Section 5.3*)

Support was expressed for different options in each of the five subsections presented in the text—the thresholds and criteria for EIAs; list of activities that require or do not require an EIA; cumulative impacts; transboundary impacts and specific provision for EIAs in areas identified as ecologically or biologically significant or vulnerable.

Thresholds and criteria—views were expressed in support of several of the options for possible thresholds for determining when an EIA would need to be conducted and further consideration would be beneficial to further reduce the options under consideration, including by continuing to explore the possibility of refining and merging existing options.

Different views were expressed on whether or not to develop a list of activities that require or do not require an EIA. Different views were also expressed on how such a list would be updated and whether it would be included in the instrument or in an annex. Further consideration would be beneficial on this issue.

Different views were also expressed on whether and, if so, how, to take into account cumulative impacts and transboundary impacts in EIAs in the instrument. Both of these issues would benefit from further consideration, including in relation to their potential placement in the text. Suggestions were made to place them in the sections relating to the process for EIAs or the content of EIA reports.

Further consideration would also be useful as to whether a specific provision for EIAs in areas identified as ecologically or biologically significant or vulnerable should be included in the instrument.

4.2.3.6 *Relationship to Environmental Impact Assessment Processes under Relevant Instruments, Frameworks and Bodies* (*Section 5.2*)

There was a convergence of views that the EIA process in the instrument should not undermine existing relevant legal instruments and frameworks and relevant global, regional and sectoral bodies. The view was also expressed that the EIA obligation in the instrument would need to respect and be mutually supportive of obligations in other relevant instruments in order to promote coherence. Different views, however, were expressed on whether specific provisions to this effect were necessary, and if so, whether they should be included in a section on general principles and approaches. This issue would therefore benefit from further consideration.

Further consideration would be beneficial on the modalities for operationalizing the relationship between any bodies or processes established by the instrument and relevant global, regional and sectoral bodies since views were expressed in support of different elements in each of the options in the text.

4.2.3.7 *Obligation to Conduct Environmental Impact Assessments* (*Section 5.1*)

There was a convergence of views towards the inclusion of an obligation to conduct EIAs in the instrument. Views were expressed in support of elements and combinations of the options in the current text. Further development of

the options in the current text, including in particular, on the operationalization of the general obligation to conduct an EIA set out in UNCLOS, would benefit from further consideration.

While the definition of "jurisdiction and control" in the current text received some support, views were expressed that this definition may be too restrictive. This is an element that would benefit from further consideration.

4.2.4 Capacity-Building and Transfer of Marine Technology (CB-TMT)

Ambassador Ngedikes Olai Uludong (Palau) summarized the work on CB-TMT at IGC-2 as follows:[16]

The informal working group addressed section 6 in the following sequence:

- Types of and modalities for capacity-building and the transfer of marine technology (section 6.2)
- Funding (section 6.3)
- Monitoring and review (section 6.4)
- Objectives of capacity-building and the transfer of marine technology (section 6.1)

She thanked delegations for being responsive in their interventions, not only to each other, but also to the request for focused discussions, as well as their flexibility in adapting to the proposed sequence of discussions. On the basis of the President's Aid to Negotiations, which provided a very useful guide for the discussions, proposals were made for streamlining some of the text and moving some text to the sections dealing with cross-cutting issues. This active engagement reflects once again the convergence of views that capacity-building and the transfer of marine technology are crucial and central elements to achieving the goal to conserve and sustainably use marine biological diversity of areas beyond national jurisdiction. She was encouraged by the strides made at this session in the discussions.

4.2.4.1 *Types and Modalities for Capacity-Building and the Transfer of Marine Technology* (*Section 6.2*)

As a general observation, a common thread throughout the discussions was the recognition that provisions on types and modalities, including a clearing-house mechanism, should be included in the instrument, but that there is a need to achieve some balance in terms of the level of detail.

Types—there seemed to be a general movement towards the inclusion in the instrument of a non-exhaustive list of broad categories of types of

16 A/CONF.232/2019/5, Annex (IV), pp. 17–20.

capacity-building and the transfer of marine technology. There seemed to be a convergence of views that the current list in the text could benefit from streamlining, and views were expressed in support of developing parts of that list at a later stage or placing it in an annex, particularly if a large number of elements listed in the President's aid to negotiations were to be retained. Proposals were also made for merging or deleting some of the elements. The need to include clearer references to relevant traditional knowledge was also highlighted.

There seemed to be a convergence of views on the need to provide for the updating of the list, in order to take into account technological progress and innovation, and also to respond and adapt to evolving needs of States and regions. Different views were expressed though on who would undertake a review and updating of the list. Going forward, further consideration of the contents of a list of types of capacity-building and the transfer of marine technology would be beneficial, as would further consideration of the modalities for reviewing and updating the list.

Modalities—Preferences were expressed for aspects of each of the two main options in the text, with some proposals to combine them. Progress was made in that there seemed to be some convergence of views towards the inclusion of specific modalities in the instrument, bearing in mind relevant existing examples, such as the Criteria and Guidelines for the Transfer of Marine Technology of IOC/UNESCO.

With respect to the specific modalities set out in the text, there seemed to be a convergence of views that capacity-building and the transfer of marine technology should be needs-based and country-driven. However, the mechanisms for identifying those needs, including through a needs-assessment, would benefit from further consideration since different views were expressed on how to take this forward.

There was some convergence of views as well on highlighting in the text the duty to cooperate at all levels in support of capacity-building and the transfer of marine technology. Divergent views though were expressed as to the terms on which capacity-building, and particularly the transfer of marine technology, should be carried out, the relationship with intellectual property rights, and the intended beneficiaries of capacity-building and the transfer of marine technology. Going forward, further consideration of these issues would be useful.

Clearing-house mechanism—there was convergence around the need for a clearing-house mechanism. However, views were expressed both in support of considering matters relating to a clearing-house mechanism at this point; and of leaving such consideration until all of the other parts of the instrument had been discussed.

As regards the functions of a clearing-house mechanism mentioned in the text, proposals were made for additions and deletions. Overall, there seemed to be a convergence of views towards streamlining the functions of such a mechanism in the text, taking into account the need to avoid duplication with existing mechanisms. Going forward, it would be beneficial to further consider the functions of a clearing-house mechanism.

4.2.4.2 *Funding* (*Section 6.3*)

There was some convergence towards the inclusion of some provisions regarding funding in the instrument, and on adopting a flexible approach to sources of funding. In that regard, views were expressed in support of funding both on a voluntary and mandatory basis, or in support of funding on a voluntary basis only. There were divergent views expressed on whether a funding mechanism or mechanisms needed to be established, and if so, whether this would be realized in the instrument, or left to the decision-making body. The need to consider existing mechanisms was also underscored. Different views were also expressed on whether it would be necessary to categorize who would have access to funding. Going forward, further consideration would be useful on all aspects of funding for capacity-building and the transfer of marine technology, including their placement in the instrument.

4.2.4.3 *Monitoring and Review* (*Section 6.4*)

There seemed to be some convergence of views towards the need for capacity-building and transfer of marine technology activities to be monitored and reviewed. However, divergent views were expressed as to whether this should be effected on a voluntary or mandatory basis, and on the nature of the modalities for undertaking such monitoring and review. Going forward, these issues would benefit from further consideration.

4.2.4.4 *Objectives of Capacity-Building and the Transfer of Marine Technology* (*Section 6.1*)

Introductory paragraphs—there seemed to be a convergence of views that the instrument would include a general obligation to promote cooperation in relation to capacity-building and the transfer of marine technology, with proposals made to bring the text closer in line with similar provisions in other instruments. Divergent views were expressed though on whether capacity-building and the transfer of marine technology should be provided on a mandatory or voluntary basis. The manner in which the objectives of capacity-building and the transfer of marine technology could be reflected in the instrument, and their placement, would benefit from further consideration.

General objectives and principles—there seemed to be convergence towards the inclusion of streamlined objectives and principles in the instrument. In that regard, while preferences were expressed with respect to each of the options in the text, there was some convergence towards merging elements from both options. Further consideration of how to frame these obligations and principles regarding capacity-building and the transfer of marine technology would be beneficial going forward.

Specific objectives—views were expressed both in favour of, and against, the inclusion in the instrument of specific objectives for capacity-building and the transfer of marine technology. Therefore, further consideration of this issue would be beneficial.

Categories of States and special requirements of developing countries—different views were expressed as to whether to include such a provision and, if so, what level of detail would be appropriate.

There seemed to be some convergence towards including certain categories of States, with some movement towards including in the text special consideration for the Least Developed Countries and recognition of the special circumstances of Small Island Developing States. Proposals were also made to streamline the text, including by merging options. Going forward, this issue could benefit from further consideration including as regards the related question on whether the instrument should provide for "preferential treatment" with regard to capacity-building and the transfer of marine technology.

4.2.5 Cross-Cutting Issues

Ambassador Lee summarized the work on cross-cutting issues at IGC-2 as follows:[17]

The informal working group addressed the cross-cutting issues in the following sequence:

- Institutional arrangements (Part IV)
- Clearing-house mechanism (Part V)
- Review (Part VI), financial resources and issues, compliance, dispute settlement, responsibility and liability and final clauses
- Use of terms (Part II.1)
- General principles and approaches (Part III.1)
- Scope (Part II.2)
- Objectives (Part II.3)

17 A/CONF.232/2019/5, Annex (V), pp. 21–24.

– Relationship to the Convention and other instruments and frameworks and relevant global, regional and sectoral bodies (Part II.4)
– International cooperation (Part III.2)

She thanked delegations for their constructive comments on the President's Aid to Negotiations, including by clarifying their positions and proposals, suggesting merging certain options or sub-options, or indicating which parts of the text may be moved to other sections of the document. She particularly appreciated the flexibility of delegations providing suggestions or comments on options which did not necessarily fully represent their position, but that they recognized could form the basis to move forward in the negotiations.

As a general observation, and as was observed by several delegations, she noted that cross-cutting issues are intimately linked to the four elements of the package and, as such, further consideration of these issues would benefit from the developments concerning the other parts of the instrument.

4.2.5.1 *Institutional Arrangements* (*Part IV*)

The discussions on institutional arrangements focused on the need for and role of the bodies set out in the text, bearing in mind that form might follow function or vice versa.

Decision-making body—while preferences for each of the options in the text were expressed, there seemed to be a general movement towards the establishment of a global decision-making body under the instrument, in the form of a Conference of the Parties. Views also seemed to converge on certain functions listed in the text that such a body would fulfil, such as facilitating the exchange of information relevant to the implementation of the instrument and promoting cooperation and coordination. Further consideration on these and other functions, as well as on the body's relationship to relevant global, regional and sectoral bodies, would be useful.

There also seemed to be general movement towards the need for a scientific and/or technical body or forum. Different views were expressed on the modalities of such a body or forum, including its nature, composition, the periodicity of its meetings and its precise functions. Suggestions were made to rely on existing arrangements. These issues would benefit from further consideration given the different views expressed, and in the light of developments in the other parts of the instrument.

Different views were also expressed on whether the instrument should establish other subsidiary bodies or whether it would be sufficient to leave this to the decision-making body. This issue, as well as the type and functions of such subsidiary bodies, would benefit from further consideration. There seemed to

be some convergence towards the view that the decision-making body under the instrument should have the ability to establish other subsidiary bodies, as needed.

Views converged on the need for a secretariat of the instrument. However, further consideration is needed as to whether the instrument would establish a new secretariat, whether the instrument's decision-making body would designate a secretariat from among existing competent international organizations, or whether DOALOS would be designated as the secretariat. The functions of the secretariat would also benefit from further consideration, with a preference having been expressed for a streamlined list of functions.

4.2.5.2 *Clearing-House Mechanism* (*Part V*)

There seemed to be convergence towards the need for a clearing-house. However, whether there should be a single, overarching mechanism or multiple mechanisms needs further consideration, as would the questions whether it should operate on a global level only or also include regional and national components, whether it would be web-based or take another form, and whether it would build on and link to existing mechanisms.

As to the functions of a clearing-house mechanism set out in the text, views converged on its central role in the sharing of information and as a tool for information exchange. Further consideration would be useful concerning other possible functions.

Different views were expressed on whether a clearing-house mechanism or mechanisms would be set up by a decision-making body under the instrument or would be established by the instrument itself. This would benefit from further consideration, as would whether such mechanism(s) would be managed by the secretariat under the instrument or by another entity.

4.2.5.3 *Review* (*Part VI*), *Financial Resources, Compliance, Dispute Settlement, Responsibility and Liability, Final Clauses*

Review—there seemed to be convergence on the need to periodically review the effectiveness of the instrument in achieving its objectives. Different views were expressed, however, regarding the specific modalities for this review, including whether such review should be carried out by a Conference of the Parties, a review conference or both.

Financial resources and issues—references were made to the views expressed during the discussions on capacity-building and the transfer of marine technology, and also to a number of instruments that could provide inspiration for the development of possible provisions.

Compliance—references were made to the views expressed on this issue during the discussions on the substantive elements of the package and some additional views were expressed regarding the modalities of any compliance process.

Settlement of disputes—the need to settle disputes concerning the interpretation or application of the instrument by peaceful means was underscored. However, views differed on whether provisions in the instrument should be modelled on the dispute settlement procedures set out in UNCLOS, or in the United Nations Fish Stocks Agreement, or whether a tailored dispute settlement arrangement would be required.

Responsibility and liability—different views were expressed on the need for provisions on responsibility and liability in the instrument.

Final Clauses—views were expressed on provisions that should be included in the final clauses. Suggestions were made to draw from the United Nations Fish Stocks Agreement, in particular, as a potential source of guidance. References were also made to additional clauses in the Paris Agreement and the United Nations Framework Convention on Climate Change.

Further consideration of these issues will be undertaken in due course, taking into account negotiations on other parts of the instrument.

4.2.5.4 *Use of Terms* (*Part II.1*)

With regard to use of terms, preferences were expressed for the various terms and options set out in the text and possible definitions of certain terms were advanced. Suggestions were made to include additional terms. A number of considerations were put forward to guide a decision on which terms to define, including the scope of the instrument, the need to ensure consistency with terms used in existing instruments, and whether the term had an obvious or ordinary meaning.

While there seemed to be some convergence towards the need to define "area-based management tools", "marine protected areas" and "marine genetic resources", further consideration of these and other terms in the context of the other parts of the instrument would be beneficial.

4.2.5.5 *General Principles and Approaches* (*Part III.1*)

There seemed to be some convergence towards including a streamlined list of such principles and approaches in a single general section of the instrument, although the utility of including principles and approaches in each of the substantive parts of the instrument was also noted. Suggestions were made to include or reformulate specific principles and approaches. These and other related issues would benefit from further consideration.

4.2.5.6 *Scope* (*Part II.2*)

Geographical scope—There seemed to be convergence towards including the provisions on geographical scope as contained in the President's Aid to Negotiations, with suggestions being made to replace the provision on the rights and jurisdiction of coastal States with a general "without prejudice" clause, and to provide a definition of the term "areas beyond national jurisdiction".

Material scope—whether to include either of the two provisions provided for in the aid to negotiations, namely a general provision setting out the elements of the package, and a specific provision relating to vessels owned or operated by a State in government non-commercial service, would benefit from further consideration.

4.2.5.7 *Objectives* (*Part II.3*)

Views seemed to converge on the inclusion of a provision for the overall, general objective of the instrument to ensure the conservation and sustainable use of marine biological diversity of areas beyond national jurisdiction.

4.2.5.8 *Relationship to the Convention and Other Instruments and Frameworks and Relevant Global, Regional and Sectoral Bodies* (*Part II.4*)

There seemed to be some convergence on the inclusion of a provision dealing with the relationship of the instrument to the Convention as set out in the text. Further consideration would be beneficial on the formulation of the provision addressing the relationship with other instruments and frameworks and relevant global, regional and sectoral bodies, as support was expressed for elements of all three options provided in the aid to negotiations. Views were also expressed on whether or not to include a provision on the legal status of non-parties to the Convention or any other related agreements.

4.2.5.9 *International Cooperation* (*Part III.2*)

There was convergence on including a general provision on this issue in the instrument as currently set out in the text, with suggestions made that such provision should encourage State parties to not only cooperate between themselves, but also with relevant international organizations and also encourage cooperation between relevant global, regional and sectoral bodies.

4.3 *President's Concluding Remarks at IGC-2*

The President delivered her concluding remarks, providing her positive views of DipCon-2, intersessional work, and plans for DipCon-3 in August 2019.

Her remarks have been issued as a conference document in all six official languages.[18]

The President was requested to prepare, as part of the preparations for the third session of the Conference, a document with the aim of enabling delegations to negotiate the text of the future instrument. Such a document would take into account the negotiations held in the second session of the Conference, as well as the various proposals that were made. These would be studied to enable as concise a document as possible to be developed that would facilitate further negotiations on the draft treaty. The document would likely be structured in a form more akin to a treaty, and containing treaty language.

The President stated that she would make every effort possible to make the document available to delegations well in advance of the third session of the Conference. However, given the limited time frame before the third session, it may not be possible to have the document issued in all official languages of the United Nations well in advance of the third session. However, an advance and unedited version of the document in English only could be made available earlier.

The President also undertook to propose an organization of work in advance of the third session, taking into account further consultations with the Bureau on this issue. Such organization of work may include the convening of informal-informal groups and parallel meetings in order to advance text-based negotiations in the third session.

5 Preparations for Third Substantive Session (IGC-3)

On 25 June 2019, DOALOS issued an advance, unedited version (English only) of the President's first draft text of an ILBI (zero draft). That was replaced on 8 July with the official text of 70 articles and an annex totaling 42 pages.[19] The President's introductory note stated that the draft text was prepared by her with the assistance of DOALOS. It is structured "in a form akin to a treaty and contains treaty language with provisions addressing each of the four topics" identified in the 2011 package and cross-cutting issues (para. 5). It was aimed at "streamlining" the options contained in the President's Aid to Negotiations. It also contained new provisions on settlement of disputes, non-parties to the agreement, and final provisions prepared with the assistance of the treaty

18 A/CONF.232/2019/5, 18 April 2019, available at <https://undocs.org/en/a/conf.232/2019/5>.

19 A/ CONF/232/2019/6, 17 May 2019, available at <https://undocs.org/en/a/conf.232/2019/6>.

section of the Office of Legal Affairs (para. 6) The President's Note stated the draft "is without prejudice to the structure of the future instrument" and without prejudice to the position of any delegation. Further it does not preclude consideration of matters not included in the draft (para. 9).

5.1 *Omissions and Ambiguities in the Zero Draft*

The zero draft had a number of omissions and problematic provisions. While the draft resembled somewhat the 1995 fish stocks implementing agreement, it lacked a number of its comparable provisions.

Missing are a title for the agreement, definitions of the basic terms used in the A/72/249 convening the diplomatic conference: "conservation", "sustainable use" and "marine biological diversity".

Further, the draft definition of "areas beyond national jurisdiction" is simply "the high seas and the Area".[20] The draft text does not address the issue of the application of the agreement to unresolved continental shelf claims beyond 200 nautical miles with superjacent waters being the high seas.[21] Nor does it address in Article 3(1) its non-application to Antarctica (Antarctic Treaty and CCAMLR) or the Central Arctic Ocean (Fisheries Agreement). Further it does not expressly exclude land and maritime disputes as proposed by some delegations.

In addition, the definition of the "Convention" refers only to the 1982 treaty and does not include either of the two implementing agreements both of which address areas beyond national jurisdiction.[22]

Further, various formulations of "traditional knowledge" appear throughout the text but the term is nowhere defined.

In addition, the draft text has a number of provisions that deviate from those in the 1995 Fish Stocks Agreement:

- The definition of "States Parties" in Article 1(12) deviates from the definition in Article 1 of the Fish Stocks Agreement by omitting paragraph 3 and in Article 56 on non-parties omitting Article 17(3) of the Fish Stocks Agreement on fishing entities whose vessels fish on the high seas.
- Article 55 on procedures for the settlement of disputes regarding experts, chambers, advisory opinions and applicable law differ from those in the Convention or 1995 Agreement.

20 Article 1(4).

21 This issue is partially addressed in Article 15(6) where an area-based management tool subsequently falls under the national jurisdiction of a coastal State.

22 Article 1(5).

– Omitted are provisions on provisional measures (FSA article 31), responsibility and liability (FSA article 35), and where amendments may enter into force with different members, the relationship with those bound and not bound by such an amendment (FSA article 45(7)).

In addition, ambiguities were introduced when proposing inserting "existing" in many articles.[23] Only one article defines "when", at time of signature, ratification (by whom), entry into force, or later.

The term "long-term", although only used twice (in the definition of MPA (Article 1(10) and the Annex para (e)(ii)), is not defined as to "how long is long-term" and thus is ambiguous.

Proposals to address some of these issues were submitted during IGC-3 as mentioned below in section 6.5.

6 Third Substantive Session (IGC-3)

6.1 *Program of Work*

On 25 June 2019, DOALOS also published on its BBNJ website two other documents. One was the provisional program of work, which indicated that only some of the articles in the draft text were scheduled for consideration during the five informal working groups and informal-informals.[24] IGC-3 was held at UN Headquarters in New York 19–30 August 2019.

At the beginning of the last day of the first week the President proposed changes to the program of work for the second week to include more parallel sessions and additional informal-informals. As with the first week, the program of work identified which articles would be considered at each session. The changes were approved and adopted.[25]

The President encouraged delegations to submit proposals to amend the zero draft to DOALOS who compiled them into conference room papers (CRPS). A total of 849 proposals in 33 conference room papers were submitted during IGC-3. They have been compiled and issued in 813 pages, one

23 Articles 4(3), 13(2), (3)(b) & 3(c), 14(1)(a), (b), (d), 15(1)(a), (b)(i), (2 Alt.), (3), (4), 16(4), 18(2)(a)(iii), (b), (b)(iii), 19(1), (Alt 1 (b)(ii), (c), (d)), (Alt. 2 (c)), (3), 20(5) & (7), 21(Alt. 3), 23(2), (3 Alt. 1), (4)(Alt. 1), (5)(Alts. 1, 2, 4), 27(2 Alt. 3), 34(2), 40(1 Alt. 3), (2), (2)(b), 43(1), (2), 44(2), 48(4)(c), 49(3), 50(1 Alt. 2), 51(4)(b), (d), 52(2), and (Alt. 1 5bis(d)). There seemed to be general agreement at IGC-3 that the term "existing" should be deleted.

24 A/CONF.232/2019/L.4, available at <https://undocs.org/en/a/conf.232/2019/L.4>. The provisional agenda was also issued at the same time. A/CONF.232/2019/L.3, <https://undocs.org/en/a/conf.232/2019/L.3>.

25 A/CONF.232/2019/8/Rev.1, 23 August 2019.

delegation's proposal(s) per article per page.[26] Except for the final provisions, there were proposals for changes to all other articles, as well as 11 proposals for new articles. As at IGC-2, many delegations' statements were uploaded to PaperSmart.[27]

As with IGC-2, summaries of each of the 10 sessions and a final comprehensive summary of the Third Session has been published in the Earth Negotiations Bulletin (ENB), 2 September 2019.[28] In addition, the UN issued daily coverages of the meetings.[29]

The final edition of the *Earth Negotiations Bulletin* for IGC-3 summarized the discussions on the zero draft according to the Parts of the draft: General Provisions (pages 3–6), Marine Genetic Resources, including Benefit-Sharing Questions (pages 6–10), Environmental Impact Assessments (pages 10–15), Capacity Building and the Transfer of Marine Technology (pages 15–16), Institutional Arrangements (pages 16–18), Financial Resources and Mechanisms (pages 18–19), Implementation and Compliance (page 19), and Settlement of Disputes (page 19). The title, preamble, non-parties, good faith and abuse of rights, and the final provisions were not discussed in this ENB.

6.2 *Reports of Facilitators*

The reports of the Facilitators were read in Plenary on the last day and the texts appended to the President's closing remarks. Her written report emphasized that the Facilitators' reports do not constitute a summary of discussions nor do they reflect the President's assessment of the discussions. They are set out in the following five sub-sections.

6.2.1 Marine Genetic Resources (MGR), Including the Sharing of Benefits

Ambassador Janine Elizabeth Coye-Felson (Belize) summarized the work on MGR at IGC-3 as follows:[30]

At the outset, she noted significant progress in moving away from general and conceptual discussions in the past towards identifying textual solutions to

26 Links to the CRPs were posted at <https://www.un.org/bbnj/content/conference_room_papers> along with the compilation of proposals, A/CONF.232/2019/CRP.1, at <https://www.un.org/bbnj/sites/www.un.org.bbnj/files/master_crp_consolidated_rev2.docx>.

27 <https://papersmart.unmeetings.org/ga/bbnj-intergovernmental-conference/third-session/statements/>.

28 <http://enb.iisd.org/oceans/bbnj/igc3/>.

29 SEA/2008, SEA/2110–2014, 2116–2118, 19–30 August 2019 <https://www.un.org/press/en/highlights/BBNJ>.

30 A/CONF.232/2019/10, Annex (I), pp. 5–8.

the issues at hand. In particular, she welcomed the constructive engagement of delegations with the draft text, with several drafting proposals put forward to streamline Part II with a view to clarifying the steps of the access and benefit-sharing process and related obligations. She noted that a number of proposals seemed to go in a similar direction, and encouraged delegations to consult with each other with a view to consolidating these proposals to the extent possible. That being said, going forward, further focused discussions will be required on a number of issues on which there is still a divergence of views. Taking the issues one by one, her assessment of progress made and areas requiring further work were as follows.

6.2.1.1 *Objectives*

She noted progress with regard to the objectives, as there seemed to be convergence on most of the objectives listed in article 7. Further discussions will be required, however, with regard to the wording, order and placement of these objectives, and whether or not to include the realization of a just and equitable international economic order among the objectives.

6.2.1.2 *Application*

Concerning application, she noted general convergence on the importance of including an article on application addressing the geographical, material and temporal scope, although further discussions will be required on whether such an article would relate to the provisions of Part II only or to the agreement as a whole and on its formulation.

There seemed to be convergence on defining the geographical scope of application as "areas beyond national jurisdiction". However, further discussions will be beneficial on whether to refer to marine genetic resources "of", "accessed in", "originating from" or "collected in" those areas, or to a combination of these options.

There seemed to be a general understanding among delegations that the material scope of application would not extend to fish and other biological resources used as commodities. Further discussion may be required on whether to reflect this in the agreement and, if so, how. In that regard, progress was made in streamlining the text as the option of referring to thresholds did not seem to generate any support.

Whether the agreement should apply to marine genetic resources collected *in situ* only, or also to those accessed *ex situ* and *in silico* and digital sequence data and/or information, as well as to derivatives, would benefit from further discussion. Terminology concerning ways to refer to access to digital information will also require further consideration. Views also differed on whether or

not marine scientific research should be excluded from the material scope of application of the agreement.

There seemed to be convergence on the importance of including language on the temporal scope of the agreement. Further discussion will be required, however, on whether or not marine genetic resources collected before the entry into force of the agreement but accessed *ex situ* or *in silico* afterwards would fall within the temporal scope of the agreement.

6.2.1.3 *Activities*

Further discussions will be required on whether to include article 9 in the agreement and, if so, whether the activities to be addressed should be limited to marine scientific research or also include other activities; whether or not such activities should be conducted with due regard for the rights and legitimate interests of coastal States with respect to marine genetic resources found in areas both within and beyond national jurisdiction; whether or not the principle that no State shall claim or exercise sovereignty or sovereign rights over marine genetic resources of areas beyond national jurisdiction, and the principle of non-appropriation, should be stated; whether or not such activities should be for the benefit of mankind as a whole; and whether to specify that such activities should be carried out exclusively for peaceful purposes in Part II or in a cross-cutting part of the agreement.

6.2.1.4 *Access*

With regard to the issue of access to marine genetic resources of areas beyond national jurisdiction, further discussions will be required concerning the definition of "access", as views differed on whether this referred to the collection of marine genetic resources *in situ* or also to access *ex situ* and *in silico*. These views were linked to different perspectives on whether or not to regulate access to marine genetic resources of areas beyond national jurisdiction and, if so, how. In particular, further discussions will be required on the need for notification, permitting or licensing for *in situ* access, as well as on whether to set out an obligation to ensure that access *ex situ* is free and open and access to *in silico* information and data is facilitated. While there seemed to be general convergence that the prior consent of coastal States concerned would not be required for activities that may result in the utilization of marine genetic resources found in areas both within and beyond national jurisdiction, further discussions will be required on whether coastal States—whether concerned or adjacent—should nevertheless be notified and consulted.

6.2.1.5 *Sharing of Benefits*

There seemed to be some progress in the discussions on the sharing of benefits, with some convergence on the inclusion of benefit-sharing modalities in the agreement as opposed to being determined by a Conference of the Parties. There was general support f or the sharing of non-monetary benefits. However, further discussions will be required on the sharing of monetary benefits and on benefit-sharing modalities. Going forward, delegations may wish to focus their discussions on which activities would trigger benefit-sharing, whether benefits should be shared on a voluntary or mandatory basis, what types of benefits might be shared, as well as how and when benefits might be shared. While there seemed to be general support for the inclusion of a provision addressing the purpose for which benefits might be used, further discussions will be needed on some of the purposes listed in the draft text.

With regard to both access and the sharing of benefits, she noted progress concerning the possible way of addressing traditional knowledge of indigenous peoples and local communities in the agreement, and welcomed, in particular, the efforts made by like-minded delegations to submit a joint proposal for a new article addressing that issue specifically.

In general, further discussions will be required on the need to provide for the obligation of State Parties to take necessary measures to ensure compliance with the provisions on access and the sharing of benefits, including on the most appropriate placement of such a provision.

6.2.1.6 *Intellectual Property Rights*

Further discussions will be required on whether the agreement should address intellectual property rights or not and, if so, how, including whether to address intellectual property rights with respect to marine genetic resources of areas beyond national jurisdiction in a *sui generis* manner, or to include a provision setting out the need for consistency with the relevant agreements concluded under the auspices of the World Intellectual Property Organization and the World Trade Organization.

6.2.1.7 *Monitoring*

On monitoring, generally, further discussions could clarify how to balance the need for transparency in the utilization of marine genetic resources of areas beyond national jurisdiction with the need to not create disincentives for marine scientific research. Two divergent perspectives were noticeable. One perspective emphasized the need for a robust track-and-trace mechanism and consequently offered proposals on who would be in charge of monitoring, the

activities that would be subject to monitoring, and how monitoring would be carried out, including whether it would be through the clearing-house mechanism, a scientific and technical body, an obligatory notification system, or a combination of those mechanisms. Another perspective questioned the feasibility and desirability of a monitoring mechanism that would include the use of identifiers, notifications by databases, repositories and gene banks, and submission of periodic status reports by proponents of marine scientific research in areas beyond national jurisdiction.

While there seemed to be general support for a requirement that State Parties make available to the clearing-house mechanism information on the legislative, administrative and policy measures adopted in accordance with Part II, further discussions will be required on the need for State Parties to submit reports on the utilization of marine genetic resources of areas beyond national jurisdiction to a Conference of the Parties and on who should be responsible for reviewing such reports. She noted, in this regard, a proposal to establish an access and benefit sharing mechanism which would have monitoring functions among others.

6.2.1.8 *Use of Terms*

Delegations also exchanged views on the use of relevant terms as found in article 1. While there seemed to be general convergence on the inclusion of a definition of the term "marine genetic resources", further discussions will be needed on whether or not the terms "access", "marine genetic material" and "utilization of marine genetic resources " should be defined in the agreement and, if so, how they should be defined. Should the terms be defined, further discussions will be required on whether to draw from the definitions in other instruments addressing genetic resources or to consider other formulations. There seemed to be general convergence that geographical aspects should not be included in the terms "marine genetic material" and "marine genetic resources". Further discussions will be required on whether other relevant terms, such as "biotechnology" and "derivatives", should also be defined in the agreement.

6.2.2 Area-Based Management Tools (ABMTs), Including Marine Protected Areas (MPAs)

Ms. Alice Revell (New Zealand) summarized the work on ABMTs at IGC-3 as follows:[31]

31 A/CONF.232/2019/10, Annex (II), pp. 9–12.

6.2.2.1 *Overall Progress*

Progress was made in clarifying the specific steps of the overall process under Part III in relation to measures such as ABMTs, including MPAs. There are still divergent views on the central question of the roles in that process of the bodies established under the agreement; and/or of relevant global, regional and sectoral bodies. This tension under lies delegations' views on the specific steps of the process in relation to measures such as ABMTs, including MPAs.

Another overarching question raised in the discussions, which would still benefit from further reflection, is whether the process in relation to establishing or designating MPAs should be distinguished from the process for other types of ABMTs. That is, whether different processes may be required for different types of tools.

Further discussions on the meaning and scope of the terms "ABMT" and "MPA" would also be beneficial, in order to arrive at a shared understanding of those terms, and of how any relevant definitions in article 1 should be framed. Discussion on the latter issue might usefully be reserved until such time as the substantive provisions of Part III are further refined.

She then turned to more specific aspects.

6.2.2.2 *Objectives*

There seemed to be general support for the inclusion of a list of objectives in Part III of the agreement, although the possible role of a scientific and technical body and of the Conference of the Parties in further elaborating the objectives would benefit from further consideration.

Another aspect which needs further consideration is whether the objectives under consideration relate to Part III as a whole or to the establishment or designation of specific ABMTs, including MPAs.

There was also general support for streamlining the list of objectives in paragraph 1 of article 14. In this regard, focusing on outcome-oriented rather than process-oriented objectives, and reflecting some of the objectives under the Part on cross-cutting issues were suggested as possible ways in which the list could be streamlined.

6.2.2.3 *International Cooperation and Coordination and Decision-Making*

Discussions on international cooperation and coordination (article 15) were inextricably linked to those on decision-making (article 19). In particular, there was progress in refining delegations' approaches to the two scenarios captured in these provisions: first, where there are relevant legal instruments or

frameworks or relevant global, regional or sectoral bodies; and second where there are no such instruments, frameworks or bodies.

A range of text proposals were made on these scenarios, which would benefit from further reflection and discussion. The central question remains the extent of any decision-making function for the bodies established under the agreement vis-à-vis the relevant global, regional and sectoral bodies. These provisions are central to the operation of Part III and will need to remain a focus for delegations in order to move forward. They are closely linked to delegations' perception of the risk of the process for decision-making "undermining" other bodies.

In addition, discussions advanced on how the relevant legal instruments and frameworks and relevant global, regional or sectoral bodies should cooperate and coordinate. There was general convergence on the objective of enhancing cooperation and coordination with and among relevant legal instruments and frame works and relevant global, regional and sectoral bodies, without prejudice to their respective mandates. Different ideas were put forward as to how the relevant provision—currently reflected in article 15, paragraph 3—might be drafted. It would be beneficial to reflect further on the different possibilities in this regard, in particular, on the role that States Parties and the Conference of the Parties might play, and whether there would be complementary roles for both.

6.2.2.4 *Cross-Cutting Issues*

There was general convergence on the need to include text stating that the instrument would not undermine existing relevant legal instruments and frameworks, and relevant global, regional and sectoral bodies, nor prejudice the rights of coastal States over areas under national jurisdiction and/or the effectiveness of any measures adopted by coastal States therein, but it would be useful to reflect further on the placement of specific provisions to this effect, whether in Part III and/or in the "General Provisions". Such a discussion might usefully be deferred until the text of the agreement, in its totality, is further developed.

There also seemed to be support for addressing the modalities of decision-making by the Conference of the Parties, and the principle of transparency, in the cross-cutting provisions of the agreement.

There was general convergence that the best available science, traditional knowledge of indigenous people and local communities, the application of the precautionary approach or principle and an ecosystem approach should be the basis upon which areas are identified and proposals are formulated. Further discussion is needed on whether to refer to these elements in relevant articles of Part III, or more generally in article 5.

6.2.2.5 *Identification*

Turning then to the individual steps of the process, on the identification of areas, the option of specifying an indicative list of criteria in an annex and/or in guidelines, rather than detailing such criteria in the text of article 16 received strong support.

Going forward, various proposals were put forward regarding the content and organization of the indicative list currently contained in article 16, paragraph 2, including for streamlining and categorizing, which would benefit from further discussion.

6.2.2.6 *Proposals*

There was a convergence of views that proposals in relation to the establishment or designation of ABMTs, including MPAs, would only be submitted by State Parties, possibly in collaboration with other States, including States entitled to become Parties, and stakeholders. Further discussion will be needed on the specific elements to be reflected in proposals, as many different alternatives were put forward in this regard, as well as on whether these elements should be included in an annex to the agreement and/or whether they would need to be further elaborated in the future by the bodies established under the agreement.

6.2.2.7 *Consultation and Assessment*

Among delegations supporting a role for the bodies established under the agreement in the identification and/or establishment of ABMTs, including MPAs, there was general convergence on providing for an open, inclusive and transparent consultation and assessment process in Part III, which would include many of the elements reflected in article 18. Various constructive proposals were put forward to refine and streamline the text, which would benefit from further consideration in future discussions. Important questions were also raised about how the text balances providing for revision of proposals and possible repetition of the consultation process, respecting the procedures of relevant instruments, frameworks and bodies, and providing for an efficient and time-bound consultation process. The sequencing of the consultation and assessment process, in particular, the appropriate point, or points, in the process when the proposal should be submitted to a scientific and technical body for assessment, and whether a preliminary review might be desirable, are also matters requiring further discussion.

6.2.2.8 *Implementation*

Regarding implementation, there was general convergence on the need to incorporate some form of article 20 in the instrument, but different views were expressed on which of the elements currently reflected in that article should

be retained. Delegations' views on this point were informed by their different perspectives on institutional arrangements with respect to ABMTs, including MPAs, and in particular the role that the bodies established under the instrument would play (if any) vis-à-vis relevant instruments and frameworks, and relevant global, regional and sectoral bodies. As already indicated, this fundamental question will need to be a focus of attention going forward.

6.2.2.9 *Monitoring and Review*

With respect to monitoring and review, views were expressed in support of each of the three alternatives reflected in the text of article 21.

Among delegations supporting a role for the bodies under the agreement in the establishment or designation of ABMTs, including MPAs, there seemed to be a general preference to work on the basis of the first alternative, which provides for the following three elements: reporting by State Parties on implementation; monitoring and review by a scientific and technical body; and decision-making by the Conference of the Parties with regard to amendments and/or revocation of ABMTs.

Some support was also expressed for the second alternative text which provides that the proponent State should take the lead in monitoring measures and that measures would be time-bound and terminate automatically.

Delegations who do not favour a role for the bodies under the agreement in the establishment or designation of ABMTs, including MPAs, did not favour any of the alternatives reflected in article 21 as a whole, but had different models in mind which incorporated various aspects of those three alternatives.

Going forward, this issue would benefit from further consideration.

6.2.2.10 *Drafting Questions*

Some general drafting questions will be relevant across all provisions of Part III. A general preference was expressed for removing all references to the term "existing" in relation to relevant instruments and frameworks, and relevant global, regional and sectoral bodies, and for including a reference to "subregional" bodies. As for the use of "establishing" or "designating" in relation to ABMTs, including MPAs, a general preference was expressed for using whichever term encompassed the whole process.

6.2.3 Environmental Impact Assessments (EIAs)

Mr. René Lefeber (The Netherlands) summarized the work on EIAs at IGC-3 as follows:[32]

32 A/CONF.232/2019/10, Annex (III), pp. 13–16.

6.2.3.1 *Overall Progress*

During the course of these two weeks, text-based negotiations helped develop a clear understanding of the various options presented for each step in the EIA process set out in Part IV, as well as how the various provisions fit together. As a result, potential opportunities for further streamlining the text which merit further consideration have been identified, including removing alternatives that no longer enjoy support and merging provisions where appropriate.

Different views continue to be expressed regarding the degree to which the EIA process should be "internationalized", for example, by assigning roles to the Scientific and Technical Body or the Conference of Parties. Questions remain regarding whether additional guidance may be required to facilitate the implementation of various provisions on EIAs, and how such guidance should be developed. Finally, additional focused discussions will be needed to overcome divergent positions in relation to some of the key operational provisions, such as thresholds and criteria and the relationship with EIA processes under relevant legal instruments and frameworks and relevant global, regional and sectoral bodies (relevant processes).

Text-based discussions also allowed delegations to begin focusing on questions regarding consistency in drafting, as well as the risk of using different terms interchangeably. For example, delegations identified the need to consider carefully when to use "a State Party" or "State Parties", "impacts" or "effects", "this Part" or "this Agreement" as well as the consequences of such a choice.

Delegations also discussed the consequences of different options for referring to particular provisions of the Convention, "obligations under the Convention" and "in accordance with" or "consistent with" the Convention. Further discussions on whether and how to incorporate references to "economic, social, cultural and health impacts", "adjacent States", "small island developing States" and "traditional knowledge" throughout Part IV are also needed. The incorporation of "subregional" into references to "global, regional and sectoral bodies" throughout the text also received some support.

He then turned to more specific aspects.

6.2.3.2 *Objectives, Obligation, Thresholds and Criteria*

A proposal to include a new article on objectives of EIAs, was widely supported in principle, though its content requires further consideration.

There was broad support for a provision on the obligation to conduct EIAs although further discussion is needed on the specific drafting of the article. Support continued to be expressed for both the "impact-oriented" and "activity-oriented" approach to determining which activities would be covered. This

vital issue, which relates to the scope of Part IV, would benefit from further consideration.

In regard to thresholds and criteria for EIAs various options continued to be supported, including adopting the threshold contained in article 206 of the United Nations Convention on the Law of the Sea (the Convention), and a stricter standard which requires EIAs for any planned activity with more than a minor or transitory effect, or a tiered approach that would require a less extensive EIA process for activities that surpassed a lower threshold, and a full/comprehensive EIA for activities that meet the article 206 threshold. Further discussions are needed on this important topic, as well as whether to include a non-exhaustive list of criteria to guide States in applying the article 206 threshold, and the role, if any, for bodies established under the agreement to further elaborate the threshold and criteria.

6.2.3.3 *Relationship*

There was some discussion on whether there was a need for a provision on the relationship between the EIA process in the agreement and those under other relevant processes, in light of the overarching obligation currently set out in article 4. Further discussions are needed on how exactly the EIA process under the agreement would relate to those under other processes to avoid duplication, as different options continued to enjoy support. He suggested that rather than providing that the Agreement would set minimum global standards for the conduct of EIAs, as currently proposed, further consideration could be given to the development of "common standards" through a collaborative process with other relevant processes.

6.2.3.4 *Cumulative impacts, Transboundary Impacts, and Areas Identified as Ecologically or Biologically Significant or Vulnerable*

With regard to the type of impacts that should be taken into account in the conduct of EIAs, there was broad support for references in the text to cumulative impacts and transboundary impacts; however, particularly with respect to 'transboundary impacts', the need for a separate article was questioned by some as well as the terminology.

Furthermore, it was also clear that further discussion on how these impacts would be taken into account as well on the level of specificity to be included in the text would be beneficial. Questions were also raised regarding the definition of cumulative impacts, which would also benefit from further consideration. Delegations agreed that the provision on ecologically or biologically significant or vulnerable areas, as currently drafted, was not needed. A new

proposal, reflecting a different approach for addressing areas identified as requiring protection, was introduced to replace the provision in its entirety.

6.2.3.5 *Strategic Impact Assessments and List of Activities That Require or Do Not Require an EIA*

Growing support was expressed for the inclusion of a provision on SEAs, but questions remained about how SEAs would be implemented in practice. A proposal to make the preparation of SEAs voluntary was put forward. Discussions on the definitions of "Environmental Impact Assessment" and "Strategic Environmental Assessments" demonstrated that both terms would benefit from further consideration.

Different views were expressed on the need for a list of activities that require or do not require an environmental impact assessment, with some delegations supporting the inclusion of a list, and others requesting its exclusion.

He encouraged delegations to consider the possibility of an enabling clause in the agreement that would permit or direct the Conference of the Parties to take up SEAs and a negative and/or positive list of activities at a later stage.

6.2.3.6 *Screening, Scoping, Impact Assessment and Evaluation, Mitigation, Prevention and Management of Potential Adverse Effects, Public Notification and Consultation, Preparation and Content of EIA Reports, Publication of Assessment Reports, Consideration and Review of Assessment Reports*

Support was expressed for including a provision addressing screening, but there was also some support for addressing the issue through guidelines. Among those who favoured a provision, there appeared to be convergence that the State should bear responsibility for the screening and that the outcome of the screening process should be made publicly available. If a provision is included then further discussions are needed regarding whether it should explicitly address areas that have been identified for their significance or vulnerability, and whether a scientific and technical body under the agreement should review screening determinations.

There was wide support to include a provision in the agreement establishing scoping as a step in the EIA process. The question was raised as to who would undertake the scoping exercise, with some delegations suggesting that the obligation be on States to "ensure" that scoping is conducted, with others expressing support for the scoping procedure to be established as a collective effort. This is of course also connected to the broader question of whether or not the EIA process should be "internationalized". Different views were also expressed regarding the level of detail to be set out in this provision. While

support was expressed for the inclusion of the identification of key environmental impacts, different views were expressed on whether to retain the various elements in square brackets.

There was general agreement on the inclusion of a provision requiring the conduct of impact assessment and evaluation, though further discussion is needed on whether it should set out specific rules in this regard or provide that States establish relevant procedures, and on whether there would be a role for bodies under the agreement.

There was general convergence on including a provision on transparent and inclusive public notification and consultation in the EIA process, though further discussions are necessary on the exact nature and the modalities of such a process and on a proposal to change the title of the article.

There was also wide support for a requirement for the publication of reports, consistent with the Convention, either directly, through the clearing-house mechanism, the Secretariat or a dedicated registry.

Regarding the provision on the establishment of procedures for mitigation, prevention and management of potential adverse effects, questions were raised about both the intent and drafting of the provision, in particular, whether it is meant to address a part of the assessment process or the subsequent decision process.

Another aspect which would require further discussion is whether there is a role for the Scientific and Technical Body to consider and review EIAs, or a percentage of EIAs, possibly with a view to building an information or best practice repository.

6.2.3.7 *Decision-Making*

On decision-making, further consideration is needed regarding whether bodies established under the agreement should play any role in deciding whether an activity should be allowed to go forward following the EIA. There was however general support for enhancing transparency in the decision-making process, and growing support for decision-making documents being made publicly available, but further discussion is required on the modalities for this.

6.2.3.8 *Monitoring, Reporting and Review*

There appeared to be convergence on the need to include a provision on monitoring, and that the responsibility for monitoring should rest with a State Party and not the proponent of an activity. Proposals made for simplifying the text, aligning it more closely with article 204 of the Convention, and for merging the provisions on monitoring and reporting would benefit from additional consideration.

While there appeared to be convergence on the inclusion of a provision on reporting on the impacts of authorized activities, additional consideration is needed regarding the scope of the obligation to report, including its link to provisions on monitoring and threshold, as well as article 204 of the Convention. Moreover, while there was broad support for making any reports publicly available, either through a secretariat or the clearing-house mechanism, different views were expressed regarding the potential role of relevant global, regional and sectoral bodies in reporting, and the role of bodies to be established under the agreement in receiving reports.

While there was substantial support for including a provision on review, divergent views still exist regarding the substance of such a provision. There seemed to be convergence towards State Parties bearing responsibility for ensuring the review of the environmental impacts of an authorized activity, but further consideration regarding potential additional steps would be beneficial. Divergent views were expressed regarding a possible role in the review process for bodies under the agreement.

There was no support expressed for the inclusion of a non-adversarial consultation process in the review provision, although some saw value in its possible inclusion as part of the dispute settlement or compliance provisions of the agreement. However, in the context of the discussion on the environmental impact assessment process, this issue was taken up again and it appeared that delegations would like to further discuss the role of public notification and consultation in respect of monitoring, reporting and review.

6.2.4 Capacity-Building and Transfer of Marine Technology (CB-TMT)

Ambassador Ngedikes Olai Uludong (Palau) summarized the work on CB-TMT at IGC-3 as follows:[33]

6.2.4.1 *Overall Progress*

She noted that overall, progress was made in the Informal Working Group in relation to a number of articles and paragraphs. She heard proposals from States which could provide a possible way forward on substantive matters. There seemed to be convergence around the inclusion of certain drafting suggestions, such as deleting some of the references to "existing" in relation to legal instruments and frameworks, and adding a reference to the "subregional" level in relevant provisions. It was also encouraging to hear proposals for streamlining the text and reducing duplication. She encouraged delegations to

33 A/CONF.232/2019/10, Annex (IV), pp. 17–19.

study the proposals put forward. While there was a constructive exchange of views on issues relating to modalities for capacity-building and the transfer of marine technology, there still remains work to be done with regard to clarifying and elaborating on the obligations in this respect. There is also a need for further consideration and deliberation on the relationship between the future agreement and the United Nations Convention on the Law of the Sea, including to what extent the provisions in the agreement should operationalize relevant articles in the Convention.

In her summary, she highlighted further those areas where she believed progress was made, and those areas where further focused discussion would be beneficial.

6.2.4.2 *Objectives*

With regard to the objectives of capacity-building and the transfer of marine technology, there was general convergence towards including most of the provisions proposed in the draft text. Delegations identified specific areas where duplication could be reduced, and the text streamlined. Nevertheless, further discussions are required on whether to include a reference to "peaceful purposes" in relation to access to, and transfer of, marine technology. There is also a need for further deliberations on the relationship between the objectives and the obligations under discussion in other parts of the draft text, with a view to clarifying those obligations and determining to what extent capacity-building and the transfer of technology could assist in their implementation.

6.2.4.3 *Cooperation in Capacity-Building and Transfer of Marine Technology*

Regarding cooperation, there was general convergence towards including provisions on cooperation in capacity-building and the transfer of marine technology which would take place at all levels, including through global, regional, subregional and sectoral bodies.

From the discussions she suggested that there could be a way forward in response to concerns regarding the imposition of obligations on industry and the private sector, and encouraged further consideration of this issue. Further deliberations are needed on the nature of any obligation to cooperate, such as whether there should be a duty to "ensure" or "promote" cooperation, whether to include a reference to the Convention, and how the interests of non-State parties to the Convention could be taken into account. Further consideration is also needed on the various categories of States whose special requirements would be recognized under the agreement.

6.2.4.4 *Modalities for Capacity-Building and the Transfer of Marine Technology*

As regards modalities for capacity-building and the transfer of marine technology, there was general agreement that capacity-building and the transfer of marine technology should respond to needs. There was also support for streamlining the text. Views were expressed in this respect that there was some duplication with regard to the provisions on modalities, and delegations made concrete proposals as to how that duplication could be reduced.

However, further deliberations are needed on a number of issues, including whether capacity-building is to be provided only on a voluntary or a mandatory and voluntary basis.

Delegations were invited to elaborate on the circumstances in which each alternative might apply, and the associated practical implications. Further discussions will also be needed on the implications of a requirement not to duplicate existing efforts; on the level(s) and/or mechanisms through which needs should be identified and assessed; on who should be able to benefit from capacity-building and the transfer of marine technology; and on the role of the Conference of the Parties in elaborating modalities for capacity-building and transfer of marine technology and the timing for such elaboration. The terms and conditions upon which capacity-building and the transfer of marine technology should be provided also require further detailed consideration.

6.2.4.5 *Types of Capacity-Building and Transfer of Marine Technology*

There was general convergence on the categories of types of capacity-building and transfer of marine technology set out in article 46 of the draft text, and on the Conference of the Parties, its subsidiary, or other appropriate body, having some role with regard to determining such types. However, further consideration needs to be given to whether a list of types should be contained in the instrument itself, whether a more detailed list should be included in an annex, and/or whether the list should be developed by the Conference of the Parties and, if so, the timeline for the list's development. A question was also raised regarding the process for amending the list.

6.2.4.6 *Monitoring and Review*

Turning to monitoring and review, the need for some review relating to capacity-building and the transfer of marine technology was generally recognized. There also seemed to be some convergence on the aims of such a review. However, further consideration is needed as to whether any review should be voluntary or mandatory and whether reference should be made to monitoring in the agreement. Different views were also expressed regarding the intended

scope of the review, who would undertake such a review, and whether to provide for performance measurement. These issues require further consideration. In addition, delegations were invited to consider, going forward, what kind of reporting requirements would be needed, if any, and who would provide such reports. There was some convergence of views that any such reporting requirements should not be overly onerous. Delegations were encouraged to consider the various proposals put forward and whether progress could be made on the basis of those proposals.

6.2.4.7 *Clearing-House Mechanism*

The discussions on the clearing-house mechanism were divided between the cross-cutting Informal Working Group, which considered questions of design and modalities, and the Informal Working Group on capacity-building and the transfer of marine technology, which considered the functions of such a mechanism.

In the preliminary discussions that took place on the clearing-house mechanism, there appeared to be some convergence on the desirability of establishing such mechanism.

There was some support for including functions relating to each of the substantive parts of the agreement, as well as for the Conference of the Parties having a role in expanding those functions. Further discussions will be required on whether the functions should be specified in the article on the clearing-house mechanism or whether they should be placed in the relevant parts of the agreement. Further consideration should also be given to the need for and role of a network of experts and practitioners, whether the platform should store scientific data and information or merely provide links to other sources, and whether the mechanism should play an active role in, for instance, collecting information, facilitating cooperation and matching capacity-building needs with the support available.

6.2.4.8 *Definitions*

Finally, with regard to definitions, there was general support for reducing duplication and ensuring that definitions were consistent, including with regard to substantive provisions in the draft text. Further consideration is needed on whether specific definitions of capacity-building, marine technology and transfer of marine technology are necessary or useful, and whether definition-type language could be better placed in the provision on types of capacity-building and the transfer of marine technology. Going forward, delegations could consider whether consolidating conceptual language across different provisions would be possible.

6.2.5 Cross-Cutting Issues

Ambassador Lee summarized the work on cross-cutting issues at IGC-3 as follows:[34]

6.2.5.1 *Overall Progress*

At the outset, she said that she was very pleased with the readiness of delegations to engage with the text in a constructive manner in order to identify textual solutions to the issues before us. She noted that given the nature of the issues being discussed, the views expressed were preliminary in nature and there will be a need to circle back to these issues, in light of further discussions on the substantive elements. The discussions were very helpful in further clarifying the various approaches favoured by delegations and identifying areas where further streamlining or focused discussions could take place. A number of proposals were made during the discussions, which she did not repeat. She rather provided a brief overview of where we stand in respect of the main issues discussed and in terms of progress achieved and areas that require further consideration, taking into account progress in the substantive sections of the text.

6.2.5.2 *Objective*

Concerning the objective of the agreement, there seemed to be general support for referring to the "general" objective in the title, bearing in mind that substantive sections of the agreement may also include their own objectives. While support was expressed for this provision, a number of proposals to adjust the text will require further discussion, including whether the objective should be the "long-term" conservation and sustainable use of marine biological diversity beyond areas of national jurisdiction, noting concerns that this could exclude short-term measures. Further discussions will also be required on whether international cooperation and coordination should be part of the objective, in light of suggestions that references to international cooperation and coordination in the agreement could be consolidated. A suggestion was also made that the objective could be expanded to include a reference to the sharing of benefits.

6.2.5.3 *Application*

With regard to application, there was general convergence on applying the agreement to areas beyond national jurisdiction, while further discussions will

34 A/CONF.232/2019/10, Annex (V), pp. 20–23.

be required on the exact formulation of the relevant provision, including possible language regarding specific activities and non-application to enclosed or semi-enclosed seas or maritime areas within 200 nautical miles.

Further discussions will also be required on whether to address sovereign immunity, as well as on a proposal to include a new provision on non-retroactivity of the agreement.

6.2.5.4 *Relationship*

Concerning the relationship between the agreement and the United Nations Convention on the Law of the Sea and other existing relevant legal instruments and frameworks and relevant global, regional and sectoral bodies, there was general convergence towards deleting the word "existing", noting that this would apply throughout the agreement.

Support was also expressed for adding a reference to "sub-regional" bodies.

There was general support for the agreement to be interpreted and applied in the context of and in a manner consistent with the Convention. However, further discussions will be needed on whether to also add a requirement for consistency with other international law and on whether to specify that nothing in the agreement shall prejudice the rights, jurisdiction and duties of States under the Convention. There also seemed to be general support for a provision setting out the need to respect coastal States' rights and jurisdiction, possibly as a stand-alone provision. Discussions will be required on whether to specifically refer to the continental shelf within and beyond 200 nautical miles and the exclusive economic zone.

A number of proposals were made in relation to how to address the need to not undermine relevant instruments, frameworks and bodies, which she understood were aimed at further clarifying how this may work in practice. This issue will require further consideration.

While it was generally recognized that the agreement would not affect the legal status of non-parties to the Convention, further discussions will be required on whether or not to include a specific provision in the agreement, including its placement. In that regard, she noted some proposals to address this issue, including by reflecting this in the preamble.

6.2.5.5 *General Principles and Approaches*

There seemed to be general convergence towards the inclusion of some general principles and/or approaches of relevance to the agreement as a whole. Further discussion will be required concerning the content and placement of such principles and/ or approaches, with suggestions to separate them and to limit principles to those that are well-established in international law. There

seemed to be convergence towards not including accountability, flexibility, pertinence and effectiveness. A number of suggestions were made to include other principles and approaches, including the common heritage of mankind, equity, the precautionary principle/approach, an ecosystem approach, as well as other principles and approaches.

6.2.5.6 *International Cooperation*

With regard to international cooperation, there seemed to be broad support to set out the obligation for State Parties to cooperate for the conservation and sustainable use of marine biological diversity of areas beyond national jurisdiction, with drafting suggestions made to adjust the wording related to cooperation among existing instruments, frameworks and bodies. Further discussions will be required, however, on whether to highlight specific issues requiring international cooperation, such as marine scientific research and the transfer of marine technology, including by reference to specific articles of the Convention, and, if so, on the placement of such a provision. Views also differed on whether to address cooperation to establish new bodies.

6.2.5.7 *Institutional Arrangements*

6.2.5.7.1 Conference of the Parties

There was general support for the establishment of a Conference of the Parties and for it to be convened within one year of entry into force of the agreement. Further discussions will be required on the adoption of its rules of procedure and decision-making modalities, including on proposals to deal with issues concerning decision-making and transparency in stand-alone articles. There was also general support for setting out the main functions of the Conference of the Parties in the agreement, although further discussion will be required on these functions, including its role in reviewing the adequacy and effectiveness of the provisions of the agreement, in light of developments in the other parts of the agreement.

6.2.5.7.2 Scientific and Technical Body/Network

There seemed to be convergence towards the establishment of a scientific and technical body, although she also noted opposition. Support was expressed for the possibility for that body to draw on advice from other arrangements, scientists and experts, as well as for including a streamlined list of functions in the agreement. Further discussions will be required on the composition of the body and the main functions to be set out in the agreement, also in light of developments in other parts of the agreement.

6.2.5.7.3 Secretariat

General support was also expressed for a secretariat under the agreement, the functions of which would be set out in the agreement. Further discussion would be required on the designation of the secretariat and on its functions, noting that a preference was expressed to restrict these to administrative and logistical functions. The Under-Secretary-General for Legal Affairs and United Nations Legal Counsel was requested to provide information, at the next session of the Conference, on the resources that would be required for the Division for Ocean Affairs and the Law of the Sea, Office of Legal Affairs, to serve in this role.

6.2.5.8 *Clearing-House Mechanism*

The discussions on the clearing-house mechanism were divided between the cross-cutting Informal Working Group, which considered questions of design and modalities, and the Informal Working Group on capacity-building and the transfer of marine technology, which considered the functions of such a mechanism.

There seemed to be general convergence on the desirability of establishing a clearing-house mechanism, which could be a web-based platform, with the specific modalities to be determined by the Conference of the Parties, but bearing in mind the need to "future-proof" the mechanism. Further discussions will be required on the possible role of a network of experts and practitioners in the context of both a clearing-house mechanism and a scientific and technical body. There was general support for access to a clearinghouse mechanism to be facilitated for all States. While support was also expressed for recognition of the special circumstances of specific categories of States, further discussion will be needed as to the categories so recognized. Further discussion will also be required concerning which entity would manage the mechanism and whether to reflect a concern for the protection of confidential information.

6.2.5.9 *Financial Resources*

There was general convergence regarding the idea that funding could be provided through a range of sources. Further discussions will be required on whether funding should be voluntary only or mandatory as well in order to support the institutions under the agreement or also to assist developing States in the implementation of the agreement.

Further discussions will also be required on whether funding should be adequate, accessible, transparent, sustainable and predictable. Delegations seemed to converge towards the establishment of a voluntary trust fund. Divergent views were expressed, however, regarding the alternative options to establish a special fund or for State Parties to cooperate to establish an appropriate

funding mechanism, with a further view expressed that such matters should be decided upon by a Conference of the Parties. Concerning access to funding, further discussions will be required on whether developing States should be granted preference by international organizations in the allocation of funds and technical assistance, as well as the recognition of the special circumstances of certain categories of States.

6.2.5.10 *Implementation and Compliance*

Regarding implementation and compliance, further discussions will be required on whether or not to include provisions on implementation, including on whether these should also address compliance, and, if so, how. Views were expressed that these issues would need to be considered at a later stage, once the substantive obligations in the agreement have been agreed upon. The most appropriate placement to address such issues would also need further consideration, with different views expressed that such provisions could be streamlined with the substantive obligations or the monitoring and review provisions in the respective parts of the agreement. Discussions would also be beneficial on how to address possible reporting requirements and ways to ensure that these do not become burdensome. A proposal was made to include a separate article on transparency.

6.2.5.11 *Settlement of Disputes*

There was general support for a provision recognizing the obligation to settle disputes concerning the interpretation or application of the agreement by peaceful means. There was also convergence regarding the inclusion of provisions concerning the procedures for dispute settlement. However, further discussions will be required on whether to use the procedure set out in Part XV of the Convention. In this regard, suggestions were also made that the International Tribunal for the Law of the Sea could serve as the default procedure for dispute settlement rather than arbitration, and that the Tribunal could be requested to provide advisory opinions. Views were also expressed that the situation of non-parties to the Convention must be accommodated in order to encourage universal participation in the agreement.

6.3 *President's Concluding Remarks*

Due to lack of time on the final day the President orally presented a very truncated report outlining the way forward following delegations' interventions.[35]

35 Interventions on the way forward are summarized in ENB No. 218, 2 September 2019, pp. 19–20.

She announced that IGC-4 will be held 23 March–3 April 2020. Responding to requests for a revised draft text, she confirmed that she would seek input from the Facilitators on the content of the revised text; include discussions at IGC-3, including areas of convergence; and circulate the revised text as soon as possible. On the modalities of work for IGC-4, she indicated support to continue the current format, including parallel informal-informals to "step up the pace", and the possibility of convening stocktaking plenary sessions rather than informal working groups, to address more holistically the four elements of the 2011 package.[36]

In her written report, the President summarized the events at IGC-3, some of which have been noted above in section 6.1. Of particular note in her report, the President addressed the following:

In their general statements, delegations noted with appreciation the preparation of the draft text of an agreement under the United Nations Convention on the Law of the Sea (the Convention) on the conservation and sustainable use of marine biological diversity of areas beyond national jurisdiction (A/CONF.232/2019/6) and commended its timely release. They affirmed that the draft text would serve as a valuable tool for addressing substantive matters on the topics identified in the package agreed in 2011 and would also provide a solid basis for negotiations. Delegations reiterated the importance of the Convention, recalled that the agreement should be fully consistent with the Convention, and called for an effective, practicable and future-proofed agreement. Several delegations called for the agreement to foster cross-sectoral cooperation and coordination and recalled that it should not undermine relevant legal instruments and frameworks and relevant global, regional and sectoral bodies. It was recalled that neither participation in the negotiations nor their outcome may affect the legal status of non-parties to the Convention or any other related agreements. Some delegations underscored the need to respect sovereign rights over the continental shelf, whether or not delineated or delimited, and over the exclusive economic zone, even if not yet proclaimed. The need to ensure the universality of the agreement was emphasized. It was stressed that the principle of the common heritage of mankind was a bedrock for achieving the goal of conserving and sustainably using marine biological diversity of areas beyond national jurisdiction.

Several delegations recalled that, in accordance with General Assembly resolution 72/249, the Conference should complete its work by its fourth session, in 2020. Other delegations noted the importance of taking the necessary time and effort to reach an agreement that would be universally accepted.

36 ENB No. 218, pp. 20–21.

Appreciation was expressed for the financial support received under the voluntary trust fund for the purpose of assisting developing countries, in particular the least developed countries, land-locked developing countries and small island developing States.

Concern was expressed that a lack of funding might affect the ability of smaller delegations to participate actively and effectively in the Conference and the need to increase support to the trust fund to facilitate the participation of a larger number of delegates from developing countries was underscored.

Looking at the work that had been done both in the run-up to the third session and during the session itself, it came as no surprise to her that progress was made on the draft text during this session. She was gratified by the number of proposals submitted by the delegations, and which reflected the careful consideration that delegations devoted to the issues.

She can see areas of progress in the development of the draft text. She thinks it is possible to eliminate some of the options that have won no support. There are also areas in the draft text where the text can be streamlined. However, there are also areas where there is much to be done to advance the work. In doing so, she encouraged everyone to study the proposals made during this session and use the proposals as a catalyst to spark creative solutions that can garner consensus in the room. On the whole, it was her belief that we are well-placed to make great strides towards the successful conclusion of our work. She hoped that intersessionally delegations will not only work within their own delegations but also reach out to the other delegations, to find ways forward that everyone can converge around.

Her full report, with the Facilitators' reports appended, has been uploaded on the BBNJ website.[37]

6.4 *Comments on Some Proposals*

During IGC-3 many proposals were introduced but none were debated. Many of the proposals are contradictory; others are inconsistent with the Convention.[38] Perhaps during the intersessional discussions some of the proposals will be consolidated and rationalized. A process for taking decisions on the many proposals will need to be provided at IGC-4.

37 A/CONF.232/2019/10, 13 September 2019, pp. 1–4. The unedited version was posted 11 October 2019. The final in all six UN languages was posted 25 October 2019.

38 For example, one amendment would define the high seas of "areas beyond national jurisdiction" as beginning at 200 NM from the baseline, whether or not an EEZ had been claimed. Others would make the compulsory decisions process in Part XV optional, or the default mechanism ITLOS rather than Annex VII arbitration specified in article 287(5). See further Sections 6.5.1 and 6.5.2.

Some of the concerns posed in section 5.1 above were addressed in the proposals. There seemed to be agreement to delete "existing" as many delegations proposed and noted by the Facilitators. There was little consensus on other proposals.

Sections 6.5.1 to 6.5.4 suggest and explain proposals on defining areas beyond national jurisdiction, clarifying procedures for the settlement of disputes, addressing non-parties to the agreement, and clarifying the draft provision on responsibility and liability.

6.4.1 Areas Beyond National Jurisdiction

The President's zero draft defined "areas beyond national jurisdiction" simply as "the high seas and the Area".[39] The zero draft did not define either term.

The one proposal would define "areas beyond national jurisdiction" as "the High Seas beyond 200 nm from the baselines from which the breadth of the territorial sea is measured and the Area".[40] A parallel proposal for article 3(1) would add "Nothing in this agreement can be interpreted as the geographical scope of this agreement applies to the maritime areas within 200 nm from the baselines from which the breadth of the territorial sea is measured".[41]

The EEZ must be claimed; if not claimed the high seas begins at the outer limit of the territorial sea.[42] In this respect the EEZ differs from the continental shelf which according to the customary rule in article 77(3) provides "The rights of the coastal State over the continental shelf do not depend on occupation, effective or notional, or on any express proclamation".

Useful definitions could be as follows:

> "Beyond areas of national jurisdiction" means those marine areas seaward of the outer limits of the territorial sea, exclusive economic zone where claimed, and continental shelf as those terms are defined in the Convention and whose outer limits are measured from baselines determined in accordance with the Convention.
>
> "High seas" means all parts of the sea that are not included in the exclusive economic zone, in the territorial sea or in the internal waters of a State, or in the archipelagic waters of an archipelagic State.[43]

---

39 A/CONF.232/2019/6, article 1(4).

40 A/CONF.232/2019/CRP.1, p. 21/813 (Turkey).

41 *Id.* at page 44/813.

42 Satya Nandan and Shabtai Rosenne (eds.), *United Nations Convention on the Law of the Sea 1982: A Commentary*, vol. III (Dordrecht: Martinus Nijhoff, 1993), para. V.2, p. 491.

43 Convention article 86 first sentence.

> "Area" means the seabed and ocean floor and subsoil thereof, beyond the limits of national jurisdiction, and its mineral resources.[44]

In addition, draft article 3(1) on application should be modified to exclude other treaties that apply beyond the limits of national jurisdiction:

1. The provisions of this Agreement apply to areas beyond national jurisdiction. With regard to areas beyond national jurisdiction south of 60°S, the rights and responsibilities of the parties to the Antarctic Treaty and to the Convention on the Conservation of Antarctic Marine Living Resources shall be respected. The rights and responsibilities of the parties to the Agreement to Prevent Unregulated High Seas Fisheries in the Central Arctic Ocean shall be respected.

Such an addition would clarify that this Agreement does not undermine those three treaties.

6.4.2 Procedures for the Settlement of Disputes

The procedures for the settlement of disputes in Part IX of the President's zero draft are considerably truncated from those in Part XV of the Convention and Part VIII of the Fish Stocks Agreement. Article 55(1) of the zero draft incorporates the provisions of Part XV *mutatis mutandis* into the ILBI. There was no consensus at IGC-3 on those procedures. Some delegations proposed accepting the zero draft article 55 *en toto*.[45] One delegation proposed that those procedures be voluntary.[46] Others proposed they be omitted all together.[47] Others proposed that the default choice of forum be ITLOS[48] rather than Annex VII arbitration as provided in the Convention. Others proposed authorizing ITLOS to form a special chamber for hearing disputes under the ILBI.[49] Another proposed a panel of experts for disputes of a technical nature,[50] as appears in article 29 of the Fish Stocks Agreement. One group proposed a new article excluding maritime disputes.[51] The PSIDS proposed that the Conference of the Parties be authorized to request that ITLOS issue advisory opinions on "any

44 Convention articles 1(1)(1) and 133.
45 A/CONF.232/2019/CRP.1, p. 799/813 (CARICOM), 805/813 (High Seas Alliance, with additional provisions).
46 A/CONF.232/2019/CRP.1, p. 803/813 (China).
47 A/CONF.232/2019/CRP.1, pp. 801/83 (Colombia and El Salvador), 803/813 (Turkey).
48 A/CONF.232/2019/CRP.1, p. 802 (South Africa and Algeria).
49 A/CONF.232/2019/CRP.1, pp. 800/813 (PSIDS), 805/813 (High Seas Alliance).
50 A/CONF.232/2019/CRP.1, p. 805/813 (High Seas Alliance).
51 A/CONF.232/2019/CRP.1, p. 806/813 (Core Latin American Countries (CLAM)).

legal question"[52] not just the interpretation or application of the ILBI as limited by the Convention Part XV.

6.4.3 Non-Parties to This Agreement

Part X article 56 of the President's zero draft provides "State Parties shall encourage non-parties to this Agreement to become parties thereto and to adopt laws and regulations consistent with its provisions".[53] This provision is identical to article 33(1) of the Fish Stocks Agreement.

One proposal would adapt article 33(2) of the Fish Stocks Agreement, which reads "State Parties shall take measures consistent with this Agreement and international law to deter the activities of vessels flying the flag of non-parties which undermine the effective implementation of this Agreement", by adding as a second paragraph to article 56 "State Parties shall take measures consistent with this Agreement and international law to deter the activities of vessels flying the flag of non-parties which undermine the effective implementation of this Agreement".[54] This seems to be a sensible proposal. However, as discussed below Article 56 also omits Article 17(3) of the Fish Stocks Agreement regarding fishing entities' participation in RFMOs.

6.4.4 Responsibility and Liability

The President's zero draft contained no provision on responsibility and liability. One proposal would add article 56*bis*, a provision duplicating article 35 of the Fish Stocks Agreement: "State Parties are liable in accordance with international law for damage or loss attributable to them in regard to this Agreement".[55] Article 304 of the Convention provides "The provisions of this Convention regarding responsibility and liability for damage are without prejudice to the application of existing rules and the development of further rules regarding responsibility and liability under international law".

As forecast in Article 304, further rules regarding responsibility and liability under international law have developed. The differences between responsibility and liability were clarified in the ILC's Draft Articles on Responsibility of States for Internationally Wrongful Acts, 2001,[56] the ITLOS seabed disputes

52 A/CONF.232/2019/CRP.1, p. 712/813 (PSIDS).

53 A/CONF.232/2019/6, article 56. The article as a whole is in brackets.

54 A/CONF.232/2019/CRP.1, p. 807/813 (High Seas Alliance).

55 A/CONF.232/2019/CRP.1, p. 807/813 (High Seas Alliance).

56 <http://legal.un.org/docs/?path=../ilc/texts/instruments/english/draft_articles/9_6_2001.pdf&lang=EF>.

chamber advisory opinion,[57] and the ITLOS advisory opinion submitted by the Sub-Regional Fisheries Commission.[58]

A clearer provision thus might read as follows:

1. State Parties and competent international organizations shall be responsible for ensuring that activities in marine areas beyond the limits of national jurisdiction, whether undertaken by them, on their behalf, or by persons under their jurisdiction and/or control, is conducted in accordance with this Agreement.
2. State Parties and competent international organizations are liable in accordance with international law for damage or loss attributable to them, or to those subject to their jurisdiction and/or control, in contravention of this Agreement, and shall provide full reparation or other remedies for the injuries caused in accordance with international law.
3. State Parties and competent international organizations shall be responsible and liable for the measures they take in contravention of this Agreement in respect of marine activities beyond the limits of national jurisdiction conducted by other States, their natural or juridical persons, or by competent international organizations, and shall provide full reparation for the injuries caused or other remedies in accordance with international law.[59]

6.5 *Issues Not Addressed in the Proposals*

A number of issues raised in section 5.1 above were not addressed in the many proposals at IGC-3: title of the agreement; definitions of conservation, sustainable use, marine biological diversity, regional bodies, sectoral bodies, Convention and the 1994 and 1995 Implementing Agreements, traditional knowledge; provisional measures; and entry into force of amendments. They should

57 ITLOS, *Responsibilities and obligations of States with respect to activities in the Area*, Advisory Opinion, 1 February 2011, ITLOS Rep. 2011, p. 10 <https://www.itlos.org/fileadmin/itlos/documents/cases/case_no.21/advisory_opinion_published/2015_21-advop-E.pdf>.

58 ITLOS, *Request for an Advisory Opinion submitted by the Sub-Regional Fisheries Commission* (*SRFC*), Advisory Opinion (2015), paras. 146 & 148, online: <https://www.itlos.org/fileadmin/itlos/documents/cases/case_no.21/advisory_opinion/C21_AdvOp_02.04.pdf>.

59 Adapted from article 263 of the Convention, article 35 of the 1995 Agreement, and articles 28–31 of the 2001 ILC Articles on the Responsibility of States for Internationally Wrongful Acts. See further Nicholas Gaskell, 'Liability and Compensation Regimes: Pollution of the High Seas,' in Beckman, McCreath, Roach and Sun (eds.), *High Seas Governance: Gaps and Challenges* pp. 263–272 (Leiden|Boston: Brill Nijhoff, 2019).

be addressed during IGC-4. Suggest texts are set out in sections 6.5.1 to 6.5.4 immediately below.

6.5.1 Title

The zero draft does not formally propose a title for the new agreement, although the zero draft is headed:

> Draft text of an agreement 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

Since the agreement will be "under the Convention", a suitable title could be adapted from the title of the Fish Stocks Agreement:

> Draft Agreement **for the Implementation of the provisions of** ~~under~~ the United Nations Convention on the Law of the Sea **relating to** ~~on~~ the Conservation and Sustainable Use of Marine Biological Diversity of Areas beyond National Jurisdiction

6.5.2 Definitions

The zero draft does not provide definitions for the operative terms in the draft agreement, and no proposals were submitted to IGC-3 to clarify the scope of the agreement despite several requests.[60] The following definitions of those terms are suggested.

6.5.2.1 Conservation

"Conservation" means actions to ensure the sustainability of the resources being exploited.[61]

6.5.2.2 Sustainable Use

"Sustainable use" means the use of components of marine biological diversity in a way and at a rate that does not lead to the long-term loss of biological diversity, thereby maintaining its potential to meet the needs and aspirations of present and future generations.[62]

---

60 Japan (19 August 2019); CARICOM (on article 16 criteria for identification of areas requiring protection, 21 August 2019).

61 FAO, *Marine Fisheries and the Law of the Sea: A Decade of Change*, Fisheries Circular No. 853 (FIDI/853) at 28 note 12 (1993).

62 Convention on Biological Diversity (CBD) article 2.

6.5.2.3 Marine Biological Diversity

"Marine biological diversity" means the variability among living organisms from marine ecosystems and the ecological complexities of which they are part, including diversity within species, between species, and of ecosystems.[63] "Marine biological diversity" thus includes more than marine genetic resources from fish. Focus on MGR limits scope of the negotiations and draft agreement to commercial fish species to the exclusion of 95% of deep-sea fish species which need to be monitored and protected.[64]

6.5.2.4 Regional Bodies

"Regional bodies" include regional fishery management organizations (RFMOs), regional fisheries management arrangements, regional seas programs (RSPS) and OSPAR.

6.5.2.5 Sectoral Bodies

"Sectoral bodies" include the IMO, FAO, ISA, ICAO, UNEP, WMO and WHO, many of which may be included in "global bodies".

6.5.2.6 Convention

The definition of the "Convention" provided in the zero draft refers only to the 1982 treaty.[65] It does not include either of the two implementing agreements both of which address areas beyond national jurisdiction.[66] The 1994 Part XI Implementing Agreement is in effect an amendment of Part XI of the Convention, which is to be "interpreted and applied together as a single instrument", and in the event of any "inconsistency" between them, the 1994

63 Adapted from CBD article 2.

64 Guillermo Ortuño Crespo, Daniel C. Dunn, Matthew Gianni, Kristina Gjerde, Glen Wright and Patrick N. Halpin, 'High-seas fish biodiversity is slipping through the governance net,' *Nature Ecology & Evolution*, 26 August 2019 <https://www.nature.com/articles/s41559-019-0981-4> (95% of non-targeted deep seas fish species are not assessed by RMFOS and should be covered in the BBNJ ILBI). For a summary see *Eurasia Review*, 'New UN High-Seas Treaty Must Close Gaps In Biodiversity Governance' <https://www.eurasiareview.com/02092019-new-un-high-seas-treaty-must-close-gaps-in-biodiversity-governance/> and *Eco*, September/October 2019 at 9.

65 A/CONF.232/2019/6, article 1(5).

66 The International Seabed Authority intervened to suggest adding the 1994 Implementing Agreement to paragraph 1 of article 4 of the zero draft during the informal working group afternoon session on 28 August 2019. During the same session, South Africa said it required more time to reflect on the implications of that proposal. No written proposal for amending "Convention" was submitted during IGC-3. The text that follows provides a rationale for including both the 1994 and 1995 Implementing Agreements.

Agreement prevails. The 1995 Fish Stocks Implementing Agreement expands on articles 63 and 64 of the Convention in part with regard to conservation of certain fish stocks in areas beyond national jurisdiction. The ILBI is tasked with not undermining these agreements which are "existing relevant legal instruments". Modification of the savings clause, Article 4(1) of the zero draft, to include both implementing agreements, would clearly require the ILBI to be "interpreted and applied in the context of and in a manner consistent" not only with the Convention but also the 1994 and 1995 implementing agreements.

One possible solution would be to include all three definitions in the zero draft of "Convention", as follows:

> "Convention" means the United Nations Convention on the Law of the Sea of 10 December 1982, the 1994 Agreement relating to the Implementation of Part XI of the United Nations Convention on the Law of the Sea of 10 December 1982, and the 1995 Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea of 10 December 1982 relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks.

Alternatively, the two earlier implementing agreements could be separately defined and inserted in the text as appropriate.[67]

6.5.2.7 State Parties

State Parties are defined in article 1(12)(b) of the zero draft to include (i) any entity referred to in article 305, paragraph 1 (c), (d) and (e), of the Convention, and (ii) subject to article 67, to any entity referred to as an "international organization" in annex IX, article 1, of the Convention that becomes a Party to this Agreement, and to that extent "States Parties" refers to those entities. While referencing only the 1982 Convention, this subparagraph also follows article 1(2) of the Fish Stocks Agreement. If the Fish Stocks Agreement were added to the definition of "Convention", then as noted below paragraph 3 of article 1 of the Fish Stocks Agreement should be added to article 1(12)(b) of the draft ILBI, which reads "This Agreement [the Fish Stocks Agreement] applies *mutatis mutandis* to other fishing entities whose vessels fish on the high seas".

67 Consideration should be given to amending "Convention" where it appears in articles 9(1) (MGR), 14(1)(b) & (l) (ABMT), 15(5), 20(8) and 23(1) (EIAs).

6.5.2.8 Fishing Entities

As noted above, the zero draft presently only includes the 1982 Convention and not the two implementing conventions. As also noted above, the zero draft does not define "marine biological diversity". Further, the zero draft presently does not address most fishing on the high seas, which it should if it is to meet the requirements of resolution A/72/249. The 1995 Fish Stocks Agreement applies to fishing activities on the high seas and thus for the reasons stated above should be added to the zero draft definition of "Convention".

At the second session of the fish stocks conference in 1993 a FAO report noted the major problem caused by non-parties engaged in high seas fishing:

> 45. The treatment of non-contracting parties is an important and real issue that should be addressed in the context of high-seas fisheries management. Some nations or *other entities* operating in a fishery may not opt to participate in a high seas management body or they may be excluded from it (e.g., for political or other reasons). The effectiveness of high seas management will therefore be significantly reduced if a *major entity in a fishery* does not participate in determining management decisions and in turn is not bound by those decisions.
>
> 46. The exclusion of parties from management bodies for political or other reasons poses particular difficulties. Taiwan (Province of China) is a major international fishing entity. Its high seas fishing capacity is extensive and likely to increase, especially in the Indian and South Pacific Oceans. However, due to political non-recognition, Taiwan (Province of China) does not participate fully in any fishery management bodies.
>
> 47. The non-contracting parties problem must be addressed. This is because, despite efforts to manage high seas fisheries, attempts to achieve sustainable use may be thwarted by unregulated fishing by non-contracting parties. Such unregulated activity will erode benefits accruing from measures designed to promote rational exploitation.[68]

68 Report of the Technical Consultations on High Seas Fishing and the Papers Presented at the Technical Consultation on High Seas Fishing, A/CONF.164/INF/2, 14 May 1993, reproduced in *United Nations Conference on Straddling Fish Stocks and Highly Migratory Fish Stocks: Selected Documents*, compiled and edited by Jean-Pierre Lévy and Gunnar G. Schram 355 (The Hague/Boston/London: Martinus Nijhoff, 1996) (emphasis added). This reasoning is equally applicable 25 years later to the BBNJ negotiations.

This problem was addressed in the Fish Stocks Agreement which specifically applies to fishing entities whose vessels fish on the high seas (article 1(3))[69] and provides for their participation in relevant RFMOs/RFMAs (article 17(3)).[70]

Article 17(3) provides:

> States which are members of a subregional or regional fisheries management organization or participants in a subregional or regional fisheries management arrangement shall, individually or jointly, request the fishing entities referred to in article 1, paragraph 3, which have fishing vessels in the relevant area to cooperate fully with such organization or arrangement in implementing the conservation and management measures it has established, with a view to having such measures applied de facto as extensively as possible to fishing activities in the relevant area. Such fishing entities shall enjoy benefits from participation in the fishery commensurate with their commitment to comply with conservation and management measures in respect of the stocks.

Three later agreements also provide for "entities" or "fishing entities" to participate in their work: the 2000 Convention on the Conservation and Management of Highly Migratory Fish Stocks in the Western and Central Pacific Ocean (article 9(2) and Annex I);[71] the 2003 Convention for the Strengthening of the Inter-American Tropical Tuna Commission established by the 1949 Convention between the United States of American and the Republic of Costa Rica ("the Antigua Convention") article XXVIII (as Chinese Taipei),[72] and the 1993 Convention for the Conservation of Southern Bluefin Tuna, as revised by resolution in 2013.[73] The BBNJ ILBI should similarly so provide both for RFMOs and

69 A/CONF.164/37, 8 September 1995. This provision was introduced by the Chairman of the Conference in his negotiating text issued at the conclusion of the first substantive session as document A/CONF.164/13*, 23 November 1993, page 16 note 1. The Chairman first included this provision in his draft agreement A/CONF.164/22, 23 August 1994, at the beginning of the fourth session <https://www.un.org/Depts/los/fish_stocks_conference/fish_stocks_conference.htm>. This provision was agreed in 1993 as a placeholder between the Chairman of the Conference and China, and was retained thereafter in preference to more specific reference to Taiwan fishing vessels.

70 This provision first appeared in article 17(3) of the Chairman's draft text A/CONF.164/22/Rev.1, 11 April 1995, at the beginning of the fifth session.

71 <https://www.wcpfc.int/convention-text>.

72 <https://www.iattc.org/PDFFiles/IATTC-Instruments/_English/Antigua_Convention_Jun_2003.pdf>.

73 <https://www.ccsbt.org/en/content/basic-documents-commission>.

also for management measures for high seas areas not managed by RFMOs/RFMAs.

In summary, the definition of "Convention" should be expanded, the definition of "fishing entities" should be added to the article defining "States Parties" and participation by fishing entities should be added to article 56 on non-parties by adapting article 17(3) of the Fish Stocks Agreement and including management measures for high seas areas not managed by an RFMO/RFMA.

6.5.2.9 Traditional Knowledge

The term "traditional knowledge" is used in a dozen articles, while the phrase "traditional knowledge of indigenous peoples and local communities" is used in two articles (16(1) and 17(3)); a third formulation "indigenous peoples and local communities with relevant traditional knowledge" is used in article 18(2)(c); and a fourth phrase "holders of traditional knowledge in local communities" is used once (in article 52(5)(e) Alt. 1). There should be a consistent formulation, perhaps by adding a definition to article 1.

However, there does not appear to be a recognized definition of "traditional knowledge" at the international level.[74] WIPO defines the term "traditional knowledge" as "knowledge, know-how, skills and practices that are developed, sustained and passed on from generation to generation within a community, often forming part of its cultural or spiritual identity".[75] The phrase "indigenous and local knowledge" is used in the preamble to the Central Arctic Ocean fishing agreement.[76] The undefined term "traditional knowledge" is used in article 31(1) of the 2007 UN Declaration on the Rights of Indigenous Peoples.[77] A definition of "traditional knowledge" could adopt the WIPO definition, as follows:

> "Traditional knowledge" means knowledge, know-how, skills and practices that are developed, sustained and passed on from generation to generation within a community, often forming part of its cultural or spiritual identity.

74 <https://www.wipo.int/tk/en/tk/>.

75 *Id.*

76 <https://eur-lex.europa.eu/resource.html?uri=cellar:24702f31-6e24-11e8-9483-01aa75ed71a1.0017.02/DOC_2&format=PDF>.

77 A/RES/61/295, 13 Sept. 2007 <http://www.un.org/Docs/journal/asp/ws.asp?m=A/RES/61/295>.

6.5.3 Provisional Measures

The zero draft does not contain a separate article on provisional measures. Rather article 55(1) seeks to incorporate *mutatis mutandis* all of Part XV into the zero draft. Such an approach is insufficient to enable non-parties to the Convention that are party to the ILBI to seek provisional measures. Article 31 of the Fish Stocks Agreement addresses this situation in article 31(3):

> A State Party to this Agreement which is not a Party to the Convention may declare that, notwithstanding article 290, paragraph 5, of the Convention, the International Tribunal for the Law of the Sea shall not be entitled to prescribe, modify or revoke provisional measures without the agreement of such State.

Drawing on article 31 of the Fish Stocks Agreement, the ILBI should have an article on provisional measures, such as the following:

1. Pending the settlement of a dispute in accordance with this Part, the parties to the dispute shall make every effort to enter into provisional arrangements of a practical nature.
2. Without prejudice to article 290 of the Convention, the court or tribunal to which the dispute has been submitted under this Part may prescribe any provisional measures which it considers appropriate under the circumstances to preserve the respective rights of the parties to the dispute.
3. A State Party to this Agreement which is not a Party to the Convention may declare that, notwithstanding article 290, paragraph 5, of the Convention,[78] the International Tribunal for the Law of the Sea shall not be entitled to prescribe, modify or revoke provisional measures without the agreement of such State.

78 Article 290(5) reads: "Pending the constitution of an arbitral tribunal to which a dispute is being submitted under this section, any court or tribunal agreed upon by the parties or, failing such agreement within two weeks from the date of the request for provisional measures, the International Tribunal for the Law of the Sea or, with respect to activities in the Area, the Seabed Disputes Chamber, may prescribe, modify or revoke provisional measures in accordance with this article if it considers that *prima facie* the tribunal which is to be constituted would have jurisdiction and that the urgency of the situation so requires. Once constituted, the tribunal to which the dispute has been submitted may modify, revoke or affirm those provisional measures, acting in conformity with paragraphs 1 to 4."

6.5.4 Entry into Force of Amendments

The provision on entry into force of amendments in the zero draft (article 65) does not address the situation of a State which becomes a Party to the ILBI after the entry into force of amendments. Article 45(7) of the Fish Stocks Agreement addresses this situation, as follows:

> A State which becomes a Party to this Agreement after the entry into force of amendments in accordance with paragraph 5 shall, failing an expression of a different intention by that State:
>
> (a) be considered as a Party to this Agreement as so amended; and
> (b) be considered as a Party to the unamended Agreement in relation to any State Party not bound by the amendment.

A similar provision should be added to article 65 of the zero draft as a new paragraph 6.

6.6 *Submarine Telecommunications Cables*

The International Cable Protection Committee (ICPC), a private organization, obtained consultative observer status with the United Nations Economic and Social Council (ECOSOC) in 2018. Accordingly, it participated as an observer at IGC-3[79] and submitted proposals to amend 11 articles of the zero draft.[80] Perhaps the most important amendments are to obtain recognition of the concept of "sectoral stakeholder" to be a participant in the BBNJ process, in addition to the global, regional and sectoral bodies mentioned in A/RES/72/249, paragraph 7,[81] as well as in the Conference of Parties. Other amendments addressed cables in the context, *inter alia*, of environmental impact assessments.

6.7 *Common Heritage of Mankind*

One fundamental difference continuing to divide delegations is the scope of the principle of "common heritage of mankind" which article 136 applies to Area and its (mineral) resources. The G-77 argues it should also apply to marine genetic resources found in the Area as they were unknown to the UNCLOS negotiators to exist. Others argue that the freedom of the seas

79 Pursuant to A/RES/72/249, para. 13.

80 ICPC proposed amendments to articles 14, 15, 17, 23, 27, 29, 31, 32, 35, 48 and 49, A/CONF.232/2019/CRP.1, pp. 196, 225, 269, 397, 450, 471, 497, 511, 571, 721 and 735, respectively.

81 ICPC proposed amendment to article 15(3) of the zero draft. A/CONF.232/2019/CRP.1, p. 226/813.

should apply to them as well as to the high seas as MGR are not expressly included in article 136 of the Convention. During IGC-3, Algeria speaking on behalf of the African Group, noted that a 2003 study for the CBD provided a rationale for extending the concept of common heritage of mankind to the living/genetic resources found in the Area.[82] These differences of views will be difficult to resolve.

7 Preparations for the Fourth Substantive Session IGC-4

As at the end of October 2019 the following documents have not been posted on the BBNJ website: revised zero draft, agenda and proposed method of work.

8 Future Substantive Sessions

IGC-5

At IGC-3 there was talk of a fifth session in 2020 as some delegations felt agreement on the ILBI would not be achievable at IGC-4. Resolution A/74/249 did not preclude additional sessions, but if needed a new UNGA decision would be required. It is likely before the end of 2019 that the GA will authorize an IGC-5 in the latter half of 2020.

82 'Study of the relationship between the Convention on Biological Diversity and the United Nations Convention on the Law of the Sea with regard to the conservation and sustainable use of genetic resources on the deep seabed (decision II/10 of the Conference of the Parties to the Convention on Biological Diversity),' UNEP/CBD/SBSTTA/8/INF/3/Rev.1, with Annex, 22 February 2003, pp. 32–33, paras. 128–129 <http://www.cbd.int/doc/meetings/sbstta/sbstta-08/information/sbstta-08-inf-03-rev1-en.pdf>. The study was limited to the Area and excluded consideration of the water column. The study erroneously asserted that military activities are prohibited by article 141 of the Convention (which only mentions "peaceful purposes"). Peaceful purposes only exclude activities contrary to UN Charter articles 2(4) and 51.

CHAPTER 5

Area-Based Management Tools, Including Marine Protected Areas—Reflections on the Status of Negotiations

Lisa Eurén Höglund

Abstract

The negotiations on Area-based management tools and Marine Protected Areas (MPAs) are well advanced. There are several points most positions have in common, such as consultations before a decision on a new MPA, and why the strict division between the "global approach" and the "regional approach" may be misleading.

This paper is based on a presentation that was presented shortly after the second substantive session of negotiations. States were anxiously waiting for the President of the conference, Ambassador Rena Lee, to publish the next document to guide the negotiations. The aim of the presentation was to illustrate the status of the negotiations on the topic "Area-based management tools, including marine protected areas", by providing some examples of the different ideas proposed during the negotiations.

Keywords

area-based management tools – marine protected areas – treaty negotiations – marine biological diversity – decision-making – conservation

There are today several organizations where States decide area-based management tools (ABMTs) and marine protected areas (MPAs). Some of these also have mandates in marine areas beyond national jurisdiction (IMO, OSPAR and CCAMLR for example). The cooperation within these organizations is operationalizing the obligation of States to cooperate to protect and preserve the marine environment found in several articles of the UN Convention on the Law of the Sea, including articles 192 and 197. However, the existing organizations are mostly limited in geographical scope (as OSPAR) or to a specific sector (as IMO). The sector can be as narrow as one marine animal or stock. Large oceans areas are not covered by any management organizations. This is

 | DOI:10.1163/9789004422438_006

the very reason for the intergovernmental conference – to bridge the gap between areas and measures to create a comprehensive and coherent system for the conservation and sustainable use of marine biodiversity in areas beyond national jurisdiction.

After two substantive sessions of the negotiations, the discussions on area based management tools, including marine protected areas, were well advanced compared to other parts of the negotiations. States had presented developed positions and proposals. However, a number of issues still needed clarification and definition for the negotiations to move forward.

However, some issues would need further consideration and work to move negotiations forward from this point. Two of the main issues that would need further discussions were:

First – what do we mean by area-based management tools (ABMTs) and marine protected areas (MPAs)? Second – how do we characterize the "global approach" vs the "regional approach"?

1 What Do We Mean by ABMTs and MPAs?

Looking at existing treaties, there are some definitions of MPA and ABMT. The Convention on Biological Diversity (CBD) art 2 defines a Marine Protected Area as a "geographically defined marine area which is designated and regulated and managed to achieve specific conservation objectives". The CBD SBSSTA defined ABMT in 2018 as "a geographically defined area other than a Protected Area, which is governed and managed in ways that achieve positive and sustained long-term outcomes for the *in situ* conservation of biodiversity, with associated ecosystem functions and services and, where applicable, cultural, spiritual, socioeconomic, and other locally relevant values".

In the EU, an MPA is defined as an area with a higher level of protection for marine biodiversity than the surrounding areas. The EU-position in the negotiations has been based on this definition with some additions. For the negotiations the EU and its member states define an MPA as comprehensive management for a specific maritime area, whereas an ABMT is decided by a competent organisation for a specific sector or activity but without a specific management objective (a PSSA decided by IMO would be an example of an ABMT).

Also, national legislation contains different definitions.

The differences in definition and understanding may be a reason for some blockages in the negotiation. To overcome these blockages and move negotiations forward, there is a distinct need to reach a common understanding on what is what when talking about ABMTs and MPAs.

2 Global Approach vs Regional Approach

At the second substantive session of the negotiations, there was already a convergence forming on several points. All positions presented aimed to create a system to guarantee enhanced and strengthened coherence and cooperation between existing actors and pointed to a need to fill the gaps in management.

Early during the negotiations negotiatiors talked about two distinct approaches, the global approach and the regional approach, and these were seemingly irreconcilable. However, with the advancement and increased detail of positions, this strict division no longer characterizes the status of negotiations.

However, by breaking down the positions it can be argued that, rather than placing position either in the "global" or the "regional" camp, positions sit on a sliding scale, or a spectrum, instead of a clear-cut regional or global division. A breakdown of some proposals presented during negotiations illustrates this:

1.
The agreement shall contain criteria for the designation of MPAs;
Proposal by states individually or collectively;
Consultations with all states, relevant organizations and civil society;
Scientific assessment; and
Decision by decision-making body. The decision is made on the basis of a management plan and States shall promote necessary measures in competent organizations

2.
The agreement shall contain criteria for the designation of MPAs;
Proposal by State or other actor;
Decision shall be made by a regional organization where existing;
Consultation before decision;
Scientific advice; and
Present to COP for discussion and comments.

3.
Coherence by cooperation between States and organisations;
Consultation before designation;
Decision and implementation by regional organization where existing; and
Global body where no competent organization.

By breaking down positions this way, one can identify several common elements: many positions contain the idea of identifying criteria; all include consultation before decision-making, and all include cooperation. The solution to a successful negotiation outcome would therefore be found in the proper balance between decision-making, coordination and cooperation. An agreement that is too heavy risks being too slow and too expensive. If the agreement is too general, there will still be no coherence in management, and it would be a long time until all ocean areas were covered by effective management structures.

Another central issue in the negotiations is the issue of "not undermining" existing organizations. This stems from the importance States place on existing organizations and their mandates to regulate and manage ocean areas. As mentioned in the beginning of this paper, large oceans areas are not covered by any management organization. The proposal has been made during the negotiations to include a provision in the Agreement to encourage the creation of regional organizations. The creation of such organisations would likely strengthen the ownership of marine management in ocean areas currently without regional management. For such organisations to succeed, capacity building is central. It is advisable therefore to consider making the creation and operation of regional organisations an objective for capacity building under the Agreement.

Finally, one must not forget the central role played by States as the actors within each relevant forum. Organizations cannot be effective and successful without the capacity and political will from the States that are their members.

PART 2

Marine Genetic Resources, Access & Benefit Sharing

CHAPTER 6

Benefit Sharing

Combining Intellectual Property, Trade Secrets, Science and an Ecosystem-Focused Approach

Marcel Jaspars and Abbe E. L. Brown

Abstract

This contribution develops a new approach to benefit sharing in areas beyond national jurisdiction. It has regard to a breadth of relevant legal regimes, sustainability, the needs of science, analogies with Farmers Rights and the prospect of increased involvement of the commercial sector. Proposals are made for the benefit sharing regime to cover digital sequences of marine genetic resources; for restrictions to be imposed on the rights of IP owners and controllers of trade secrets to enable delivery of a balanced approach to benefit sharing; for an open sharing of the results of research cruises; for a pragmatic and deliverable approach to tracing use of marine genetic resources across present and future development pipelines; and for different approaches to be taken to benefit sharing in respect of ecologically sustainable technologies and to encourage their pursuit. The proposals are marked in *italics.*

Keywords

benefit sharing – intellectual property – bioprospecting – ecosystem-focused approach – sustainability – marine genetic resources – areas beyond national jurisdiction – traceability – trade secrets – science – *Mare Geneticum*

1 Introduction

This interdisciplinary contribution made from law and science develops proposals to deliver a pragmatic means to share the benefit arising from marine genetic resources (MGR). Benefit sharing of MGR is one of the issues covered by a commitment under the United Nations Convention on the Law of the Sea

(UNCLOS)[1] to create an internationally binding legal instrument (ILBI) on the conservation and sustainable use of marine biological diversity of areas beyond national jurisdiction (ABNJ).[2] This proceeds in the context of MGR's importance being highlighted at the Intergovernmental Panel on Climate Change meeting in Monaco in 2019, given its potential contribution to industry transition and nature-based solutions.[3] This and other uses of MGR require work with unexplored and extreme environments such as the cryosphere, deep oceans and thermal vents[4] – and all of these can be found within ANBJ.[5]

Benefit sharing will be developed here by taking an ecological and ecosystem approach, reflecting the climate change intersection just noted; by including genetic sequence information about MGR, as well as physical MGR samples, which reflects evolving scientific realities; by engaging with intellectual property (IP) rights and trade secrets reflecting the contribution these rights can make to delivery (and non delivery) of benefit sharing; by engaging more deeply with tracing and digital identifers; and by evaluating how widely benefit sharing could and should extend along the research and commercialisation pipeline, which reflects the need to reward, incentivise and increase knowledge development, information sharing and coordination as well as investment. A new means of benefit sharing will be put forward which combines respect for sustainability, different relevant laws and scientific reality and workability.

---

1 United Nations Convention on the Law of the Sea 1833 UNTS p. 3. For a general discussion of marine environmental protection under UNCLOS see J. Harrison, *Saving the Oceans through Law: The International Legal Framework for the Protection of the Marine Environment,* (Oxford, Oxford Univeristy Press, 2017) 17–63.

2 *Ibid.* 296–9; R. Warner, 'Oceans of Opportunity and Challenge: Towards a Stronger Governance Framework for Conservation and Sustainable Use of Biodiversity in Marine Areas Beyond National Jurisdiction' 3 *Asia-Pacific Journal of Ocean Law and Policy* (2018) 157 (Warner). See also United Nations webpage Intergovernmental Conference on Marine Biodiversity of Areas Beyond National Jurisdiction https://www.un.org/bbnj/ accessed 2 November 2019 (UN site). Reference is made below (see n. 24–7) to specific resolutions made in this process.

3 IPCC, 'Special Report on the Ocean and Cyrosphere in a Changing Climate' (2019) https://www.ipcc.ch/srocc/home/ accessed 2 November 2019.

4 See e.g., Industrial Biotechnology Innovation and Growth Team, 'Maximising UK Opportunities from Industrial Biotechnology in a Low Carbon Economy: A report to the government by the Industrial Biotechnology Innovation and Growth Team' (IB 2025, May 2009) http://beaconwales.org/uploads/resources/Maximising_UK_Opportunities_from_Industrial_Biotechnology_in_a_Low_Carbon_Economy.pdf accessed 2 November 2019.

5 J. Cone, *Fire under the Sea. The Discovery of the Most Extraordinary Environment on Earth – volcanic hot springs on the ocean floor* (New York, William Morrow and Co., 1991); Royal Society, 'Future ocean resources: metal-rich minerals and genetics – evidence back' (2017) https://royalsociety.org/~/media/policy/projects/future-oceans-resources/future-of-oceans-evidence-pack.pdf accessed 2 November 2019 (Royal Society) 39–41.

2 The Journey to the Sharing of Benefits from MGR in the ABNJ

2.1 *The Scientific Pathway*

UNCLOS, adopted in 1982, did not address MGR, even though deep sea biodiversity has been known since the Challenger expeditions explored the north and south Atlantic and the Pacific in 1872–6.[6] It has been suggested that UNCLOS's position arose from the fact that the value of deep-sea marine biodiversity was not generally appreciated until the 1990s, with technology not being available to exploit the resources;[7] and conversely that MGR was deliberately not addressed because of uncertainty as to how to balance the interests of the commercial sector with enabling all (in particular scientists) to benefit in different ways from the use of these resources.[8]

Access to deep sea biodiversity is indeed challenging because of the level of engineering and financial input (including research vessels, deep sea sampling systems and remotely operated vehicles) which is needed to collect MGR.[9] Yet awareness of the commercial and societal gain which could arise as a result grew over time.[10] From 1969 onwards, there was work on reef organisms such as sponges, seasquirts and soft corals and from the early 1990s scientists investigated marine bacteria from marine sediments (which are easier and less expensive to collect) for microbially-derived compounds to provide novel bioactive molecules.[11] In the early 21st century, there were some successes in use of MGR-derived clinical applications of anti-cancer medicines, but industrial natural product drug discovery was then de-emphasised as industry pursued,

6 The Challenger Society for Marine Science, 'The History of the Challenger Expedition' https://www.challenger-society.org.uk/History_of_the_Challenger_Expedition accessed 2 November 2019.

7 D. Freestone, 'The UN Process to Develop an International Legally Binding Instrument under the 1982 Law of the Sea Convention: Issues and Challenges' 3–5 in D. Freestone (ed.) *Conserving Biodiversity in Areas Beyond National Jurisdiction* (Leidon, Brill Nijhoff, 2019) (Freestone).

8 A landmark piece is L. Glowka, 'The Deepest of Ironies: Genetic Resouces, Marine Scientific Research, and the Area' 12(1) *Ocean Yearbook Online* (1996) 154. See also R. Tiller *et al.*, 'The once and future treaty: Towards a new regime for biodiversity in areas beyond national jurisdiction' 99 *Marine Policy* (2019) 239–242, 1.4; C. Correa, 'Access to and Benefit Sharing of Marine Genetic Resources Beyond National Jurisdiction: Developing a new Legally Binding Instrument' South Centre Research Paper 79 Sept. 2017 (Correa).

9 A. Jamieson, *The Hadal Zone: Life in the Deepest Oceans* (Cambridge, Cambridge University Press, 2015), Part I.

10 K. ten Kate and S. A. Laird, *The Commercial use of biodiversity: access to genetic resources and benefit-sharing* (London, Earthscan, 1999) (Kate/Laird) 3.3.3, 9.

11 See Midwestern University, 'Clinical Pipeline: Marine Pharmacology: Approved Marine Drugs' https://www.midwestern.edu/departments/marinepharmacology/clinical-pipeline.xml accessed 2 November 2019.

fairly unsuccessfully, more technological paths such as combinatorial chemistry and high-throughput screening methods.[12] This, and growing understanding of the molecular mechanisms by which bioactive natural products are made, means that natural product drug discovery is experiencing a resurgence at the time of writing in 2019.[13] It has been observed that "sustainable use of these novel resources could have significant benefits … The high biodiversity in the ocean, including species adapted to a range of extreme environments provides a substantial resource for development of new chemicals, including antibiotics and cancer treatments".[14] Opportunities also lie in delivering bioenergy and ecological solutions, cosmetics, household products and nutraceuticals.[15]

2.2 *Legal Pathways*

Uncertainty continues about the extent to which these opportunities will come about – consider that in 2017, 30,000 relevant molecules had been identified and nine related products had been brought to market – however, the pipeline appears to be becoming more productive.[16] Given this prospect of greater commercial interest in MGR, it is timely that the United Nations is addressing conservation and sustainable use of MGR, including the sharing of benefits derived from MGR. Industry has met nature before – on land and in ocean areas which are within national jurisdiction, leading to the Convention on Biological Diversity 1992[17] and then the Nagoya Protocol on fair and equitable sharing of

12 See T. Kodadek, 'The rise, fall and reinvention of combinatorial chemistry' 55 *Chemical Communications* (2011) 47, 9757–9763.

13 S. Pearce, 'A Resurgence in Natural Product-Based Drug Discovery: Advances in analytical technology are making the screening of natural products and their substructures more viable' 13(2) *PharmTech* (2018) http://www.pharmtech.com/resurgence-natural-product-based-drug-discovery accessed 2 November 2019.

14 Royal Society, above n. 5 at 5, and more detailed analysis of MGR 32–6, with discussions of uses from 43.

15 R Blasiak *et al.*, 'The Ocean Genome: Conservation and the Fair, Equitable and Sustainable Use of Marine Genetic Resources' (High Level Panel for a Sustainable Ocean Economy) https://oceanpanel.org/ocean-genome-conservation-and-fair-equitable-and-sustainable-use-marine-genetic-resources accessed 2 November 2019 (Blasiak).

16 Royal Society, 42–3; see also Correa n 8, 4, 6 referring to Pharmasea project on which Jaspars was involved, see http://www.pharma-sea.eu/ accessed 2 November 2019; D. Skropeta, 'Deep-sea natural products' 25 *Natural Products Reports* (2008) 1131–1166 reviewing 390 marine natural products from deep water to 2007; E. Heafey 'Access and Benefit Sharing of Marine Genetic Resources from Areas beyond National Jurisdiction: Intellectual Property--Friend, Not Foe' 14(2) *Chicago Journal of International Law* 2014, Article 5 (Heafey), 495–6; Correa, 15–6 referring to 2015 report of National Institute of Genetics https://www.nig.ac.jp/nig/pdf/about_nig/youran2014.pdf accessed 2 November 2019.

17 Convention on Biological Diversity 1992 1760 UNTS p. 39, arts. 1, 15 (in particular (3) and (7)), 16, 19, 20, 21.

benefits.[18] Nagoya does not address the needs of MGR in ABNJ as it takes in the main a bilateral approach and under UNCLOS no one can own or transfer resources from the ABNJ.[19] Yet a common theme in these UNCLOS discussions is the risk of taking an approach to benefit sharing in ABNJ which is too radically different to Nagoya; this is because it could create extra burdens on capacity, given that some forms of MGR (say the larvae from sponges) may be found within and outside national jurdsictions or move from one to the other.[20]

For MGR in ABNJ, the international policy start came in 2004 when the UN General Assembly[21] established an *Ad Hoc* Open-Ended informal Working Group (Working Group) to study issues relating to the conservation and sustainable use of marine biological diversity beyond areas of national jurisdiction.[22] The Rio+20 meeting in 2012 of the United Nations Conference on Sustainable Development referred to the Working Group and called for the ABNJ to be addressed at UNCLOS.[23] In 2015 a United Nations General Assembly resolution[24] established a Preparatory Committee to make recommendations on elements of a text, taking into account reports of the Working Group.[25] In 2018, the UN General Assembly[26] convened an Intergovernmental Conference (IGC) to consider the recommendations of the Preparatory Committee and to develop the text of an IBLI to address ensuring sustainable use of biodiversity, in particular "together and as a whole",[27] MGR and access and benefit sharing (the

18 See text https://www.cbd.int/abs/text/ accessed 2 November 2019. See in particular art. 10 and analysis in E. Morgera, E. Tsiomani and M. Buck, (eds.) *Unraveling the Nagoya Protocol – A Commentary on the Nagoya Protocol on Access and Benefit-sharing to the Convention on Biological Diversity* (Leiden, Brill, 2014) (Morgera *et al.*).

19 Nagoya Protocol, art. 6(1) prior informed consent although note art 10 regarding discussion about a global multilateral benefit-sharing mechanism, 6(3), 7, 8 regarding mutually agreed terms; UNCLOS art. 137(2) – there are possibilities in respect of minerals.

20 M. R. Muller, *Genetic Resources as Natural Information: Implications for the Convention on Biological Diversity and Nagoya Protocol* (Abingdon, Earthscan/Routledge, 2015) (Muller), 39–41, 67.

21 GA59/24 para 73.

22 See https://www.un.org/Depts/los/biodiversityworkinggroup/biodiversityworkinggroup.htm accessed 2 November 2019.

23 Rio+20 Future We Want Outcome Document https://sustainabledevelopment.un.org/index.php?menu=1298accessed 2 November 2019, para 16.

24 A/Res/69/292 (6 July 2015): Development of an international legally binding institution 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.

25 See webpage of Preparatory Committee https://www.un.org/depts/los/biodiversity/prepcom.htm accessed 2 November 2019.

26 A/Res/72/249.

27 *Ibid.*, art. 2.

focus here), area based management tools including marine protected areas, environmental impact assessments, technology transfer and capacity building.[28] The first draft ILBI text was published in June 2019[29] after negotiations at two IGCs.[30] At the time of writing in late 2019, this draft has been discussed by states, IGOs and NGOs at IGC3,[31] and a further draft is awaited. There will be a fourth IGC in March-April 2020 and a meeting at the General Assembly to adopt the ILBI later in that year.

3 *Mare Geneticum* and Beyond

This proposal uses as a base a proposal *Mare Geneticum*, developed in the context of the ILBI by scientists (including one of the authors), lawyers and policy makers. It provides a fair means of encouraging and rewarding research and development into MGR from ABNJ, and of sharing the benefits resulting from this work.[32] Points of particular interest here relate to the sharing of the results of all research cruises through the deposition of data in a series of linked public databases to enable further scientific activity, capacity building and later commercial product development, and to the initial researchers having an exclusivity period – and also the option of a paid extension to it (with amounts

28 See analysis in E. Morgera, 'Competence or Confidence? The Appropriate forum to Address Multi-Purpose High Seas Protected Areas' 16 *Review of European, Comparative and Internanational Environmental Law* (2007) 1 and Warner, above n. 2, 162–4.

29 Intergovernmental Conference on Marine Biodiversity of Areas Beyond National Jurisdiction, 'Draft text of an agreement 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', 17 May 2019 A/CONF.232/2019/6 (June 2019 draft ILBI).

30 President's aid to discussions for IGC 1 A/CONF.232/2018/3 and Aid to Negotiations for IGC 2 A/CONF. 232/2019/1*; E. Mendenhall, E. De Santo, E. Nyman, R. Tiller, 'A soft treaty, hard to reach: The second inter-governmental conference for biodiversity beyond national jurisdiction' 108 *Marine Policy* (2019) 103664 for a valuable review of the negotiation process at IGC 2 – 4.1.1 on MGR noting the "plodd[ing] by delegates" through a detailed "Aid to Negotiations" which contained various options; and D. Leary, 'Agreeing to disagree on what we have or have not agreed on: The current state of play of the BBNJ negotiations on the status of marine genetic resources in areas beyond national jurisdiction' 99 *Marine Policy* (2019) 21–29 (Leary).

31 See resources via "Third substantive session" https://www.un.org/bbnj/content/third-substantive-session and reports via Earth Negotiations Bulletin https://enb.iisd.org/oceans/bbnj/igc3/ both accessed 2 November 2019.

32 T. Vanagt, A. Broggiato, L.E. Lallier, M Jaspars, G. Burton and D Muyldermans, 'Mare Geneticum: Towards an Implementing Agreement for Marine Genetic Resources in International Waters' 27 in Freestone, above n. 7.

to be established with reference to the sector) with proceeds from this going to a biodiversity fund. Compliance with these information and payment provisions could be through a system of digital identifiers. In addition, *Mare Geneticum* proposed that the biodiversity fund would support capacity building for scientists from developing areas and that there would be prior electronic notification of research activity (alongside separate requirements for environmental impact assessments) in advance of the research cruise, with the details to be updated afterwards.[33] Elements of *Mare Geneticum* are included in the ILBI draft text.[34]

Mare Geneticum was put forward in the context of provisions in UNCLOS regarding the rights to states to engage in marine scientific research,[35] and that carrying out that marine scientific research is to be subject to the freedom of the high seas,[36] which could mean that anyone could have access to the MGR on a first come first served basis and profit from it without the need to share any benefit arising.[37] Yet UNCLOS also provides that ABNJ, (and importantly their resources) are the common heritage of mankind.[38] These two different approaches have given rise to significant debate regarding the legal basis for benefit sharing with respect to MGR.[39] *Mare Geneticum* provides a pragmatic solution. Further, *Mare Geneticum* is consistent with some other proposals for a holistic approach to benefit sharing in relation to MGR

33 See June 19 draft ILBI, above n. 29, arts. 22–39.

34 See June 19 draft ILBI, above n. 29, arts. 10.1, 11.3 (a), 52.5.

35 UNCLOS, art. 238 see also art 240(d) referring to the rest of UNCLOS.

36 Although this is not an unfettered provision, see UNCLOS, art 87(1)(f) and art 87(2) referring notably to rights in respect of activities in ABNJ.

37 Leary, above n. 30, 3.1; Glowka, above n. 8, 155 suggesting that MGR falls under freedom of the high seas.

38 UNCLOS, arts. 133, 136, 137(2), 140.

39 C. Salpin, 'The Law of the Sea: A before and after Nagoya' (Salpin) in Morgera *et al.*, above n. 18, 153–6; D. Tladi, 'Conservation and sustainable use of marine biodiversity in areas beyond national jurisdiction: towards an implementing agreement' in R. Rayfuse (ed.) *Research Handbook on International Marine Environmental Law* (Cheltenham, Edward Elgar, 2015) 259, 260–3; Heafey, above n.16, 508–9; K. Marciniak, 'Marine Genetic Resources: do they Form Part of the Common Heritage of Mankind Principle?' in L. Martin, C. Salondia, C. Hioureas (eds.), *Natural Resources and the Law of the Sea: Exploration, Allocation, Exploitation of Natural Resources in areas under National Jurisdiction and Beyond* (JuristNet, 2017) engaging in particular with treaty interpretation under the Vienna Convention on the law of Treaties and levels of awareness of scientific opportunities, and concluding that MGR in the ABNJ is subject to freedom of the high seas but that there is a place for Part XI of UNCLOS regarding common heritage in regulation of these MGR.

with a focus on technology transfer and capacity building and data sharing[40] and for the generation of a common fund.[41] There are also new arguments for benefit sharing to be a theorised, independent concept grounded in equity[42] and one which delivers "deeper and cosmopolitan international cooperation".[43]

These proposals for benefit sharing, particularly from the theoretical perspective, could empower the taking of new positions to MGR in the ILBI. These new positions could draw on other benefit sharing regimes (beyond Nagoya)[44] and also address issues which are arising from evolving attitudes and technology.[45] An example of such a point is the challenge to *Mare Geneticum*'s period of exclusivity on the basis that it entrenches the first mover advantage of the initial researcher, and in the view that there should rather be a sharing with all, from the start, of the information and samples gained from research cruises.[46] This would undoubtedly increase the transfer of knowledge and opportunites for collaboration between scientists.

---

40 H. Harden-Davies and K. Gjerde, 'Building Scientific and Technological Capacity: A Role for Benefit-sharing in the Conservation and Sustainable Use of Marine Biodiversity beyond National Jurisdiction' 33(1) *Ocean Yearbook Online* (2019) 377 (Harden-Davies and Gjerde), 394–5.

41 Heafey, above n. 16, 518–21, building on the initiatives of the Global Commons Trust.

42 E. Morgera, 'The Need for an International Legal Concept of Fair and Equitable Benefit Sharing' 27 *The European Journal of International Law* (2016), 353 (Morgera, Need), 354, 357, 359, 368, 373, 380–3; E. Morgera, 'Fair and equitable benefit-sharing in a new treaty on marine biodiversity: A principled approach towards partnership building?' (BENELEX Working Paper No.16, 2018) (Morgera, Fair and Equitable), pp. 6–11, 48, 54–7.

43 Morgera, Fair and Equitable, above n. 42, 51.

44 Notably the International Treaty on Plant Genetic Resources for Food and Agriculture 2400 UNTS p. 303 (Plant Treaty) and steps taken at the World Health Organization in relation to the sharing of viruses and pandemic supplies, and/or the First Global Plan of Action for Forest Resources 2014 http://www.fao.org/policy-support/resources/resources-details/en/c/469497/ accessed 2 November 2019. See Morgera, Fair and Equitable, above n. 42, 54; C. Chiarolla, 'Intellectual property rights and benefit sharing from marine genetic resources in areas beyond national jurisdiction: current discussions and regulatory options' 4(3) *Queen Mary Journal of Intellectual Property* (2014) 171–194 (Chiarolla), 190; Correa, above n. 8; Harden-Davies and Gjerde, above n. 40; A. Bonfanti and S. Trevisanut, 'TRIPS on the High Seas: Intellectual Property Rights on Marine Genetic Resources' 37 *Brooklyn Journal of International Law* (2011) (Bonfanti and Trevisanut) 215–220 and 223–6.

45 Muller, above n. 20 66, 70; Bonfanti and Trevisanut, above n. 44, 232.

46 S. Thambisetty, "Marine Genetic Resources beyond National Jurisdiction: Elements of a New Internationally Legally Binding Instrument" *LSE Law Policy Briefing* 32 2018 (Thambisetty), in particular value 6 "property begets property".

An open approach to sharing with scientists can draw from the Plant Treaty,[47] which created an opportunity (but not an obligation)[48] for states to create Farmers' Rights. There is also an African Model Law for the protection of farmers and regulation of access to biological resources.[49] These instruments reflect a recognition of an equitable and sustainable base for special treatment to be accorded to farmers, in the light of the fact that they have stewarded the land over generations as primary custodians.[50] Farmers' Rights have been referred to as a possible analogy in the context of rewarding past conduct, in proposals for a new specific IP right to protect the needs of investors and bioprospectors.[51] A different perspective to using Farmers' Rights is pursued here. Scientists can fulfil a similar role to farmers – looking after nature and bringing about benefits for all – through their objective analysis of the MGR, and the sharing of this information (which will be considered further below). Accordingly, scientists should be accorded rights in the ILBI, and these should move beyond the peripheral, optional rights in the Plant Treaty. *There should be a mandatory benefit sharing*[52] *mechanism regarding the sharing of information, payments for and provision of opportunities to participate in cruises.* This should enable the virtuous cycle of activity to continue with contributions from scientists throughout the world.

47 See details, above n. 44, and B. Fedder, *Marine Genetic Resources, Access and Benefit Sharing: Legal and biological perspectives* (Abingdon, Routledge, 2013) (Fedder), 115–6.

48 Plant Treaty art. 9; C. Chiarolla, S. Louafi and M. Schloen, 'An Analysis of the Relationship between the Nagoya Protocol and Instruments relating to Genetic Resources for Food and Agriculture and Farmers' Rights' in Morgera *et al.*, above n.18.

49 Organization of African Unity model law https://www.wipo.int/edocs/lexdocs/laws/en/oau/oau001en.pdf accessed 3 November 2019, art. 4, 8, 12, 14 in particlar art. 15 restricting use bio resource and the risks of loss of the ecosystem.

50 Plant Treaty, arts. 9, 13, 18; African model law art 21–6; C. Chiarolla, 'Right to food and intellectual property protection for plant genetic resources' in C. Geiger (ed.) *Research Handbook in Human Rights and Intellectual Property* (Edward Elgar 2015) 539–50; C. Guneratne, *Genetic Resources, Equity and International Law* (Edward Elgar 2012) 92–102; T. Adebola, 'Access and benefit sharing, farmers' rights and plant breeders rights: reflections on the African Model Law' 9(1) *Queen Mary Journal of Intellectual Property* (2019) 105–121 (Adebola), 106; Morgera, Need, above n. 42, 378–9.

51 Federal Agency for Nature Conservation and IUCN, 'A possible way forward' (2011) https://www.bfn.de/fileadmin/MDB/documents/service/Skript_301.pdf accessed 3 November 2019 39-42.

52 Compare June 2019 draft ILBI n29 reflecting uncertainty, art 11.3 (a)(b). See also study 4 on how domestic measures address benefit sharing prepared pursuant to Conference of Parties of the Convention on Biological Diversity Decision 14/20 exploring some existing national requirements https://www.cbd.int/dsi-gr/2019–2020/studies/#tab=1 accessed 30 November 2019.

Such a cycle would accord less reward and arguably a reduced incentive to the initial researcher (including investors in them and any related companies). Yet in addressing ABNJ there have been calls for more ambition and a focus on nature and the climate.[53] From this starting point, and reflecting the points made above challenging a exclusivity-based approach, this contribution will explore some pathways to bring about a more open and also more sustainable approach.

4 The Need to Have Ecosystem and Ecological Perspectives

Conservation and sustainable use, included in the title of the ILBI, have ecological dimensions.[54] Ecosystems undergo constant evolution. Populations of species (which include MGR) are components of larger ecosystems, and ecosystems interact with other species and the non-living environment, contributing to the functioning of that larger ecosystem and its living components.[55] An ecosystem's resilience – its ability to retain its structure and functions in the face of disturbance – can be impaired by human and natural stressors, which could render it a simpler ecosystem, less able to support a high diversity of species.[56] Warning signs currently abound that all ecosystems are under threat. Climate change is taking place against a backdrop of significant and accelerating

53 A.Vaughan, 'David Attenborough on climate change "We cannot be radical enough" ' (*New Scientist* 9 July 2019) https://www.newscientist.com/article/2209126-david-attenborough-on-climate-change-we-cannot-be-radical-enough/ and David Attenborough documentary, 'Climate Change – the Facts' (May 2019) https://www.bbc.co.uk/programmes/m00049b1 https://www.bbc.co.uk/news/entertainment-arts-47988337 all accessed 29 October 2019 and Pacific Islands Forum, 'Forum Calls for Increased Level of Ambitions in New BBNJ Treaty' https://www.forumsec.org/forum-calls-for-increased-level-of-ambitions-in-new-bbnj-treaty/ accessed 2 November 2019.

54 J. M. Blair, S. L. Collins and A. K. Knapp, 'Ecosystems as Functional Units in Nature' 14 *Natural Resources and Environment* (2000) 150; F. S. Chapin III, P. A. Matson and P. Vitousek, *Principles of Terrestrial Ecosystem Ecology* (2nd ed, Springer, 2011), 3–22.

55 S. A. Levin, 'Ecosystems and the Biosphere as Complex Adaptive Systems' *Ecosystems* (198) 431; G. Harris, *Seeking Sustainability in an Age of Complexity* (Cambridge, Cambridge University Press, 2007), 19–26.

56 C. Folke, 'Resilience: The Emergence of a Perspective for Social-Ecological Systems Analyses'16 *Global Environmental Change* (2006) 253, 257, 557, 570–1; C. S. Holling, 'Understanding the Complexity of Economic, Ecological and Social Systems' 4 *Ecosystems* (2001) 390; R.Biggs, G. D. Peterson and J. C. Rocha, 'The Regime Shifts Database: A framework for analysing regime shifts in social-ecological systems' 23 *Ecology and Society* (2018) 9.

global ecological degradation,[57] with biodiversity loss equivalent to an extinction event[58] and other changes in planetary conditions such as ocean acidification at unprecedented levels.[59] The message of a 2019 report was that "nature and its vital contributions to people, which together embody biodiversity and ecosystem functions and services, are deteriorating worldwide".[60]

Accordingly, any use of MGR needs to interact with simultaneous efforts to reduce pressures on ecosystems. There should be a more visible, central place for regard to impact on ecosystems when working with MGR in addressing societal needs or commercial opportunities and in sharing the resulting benefits.[61] The June 2019 draft negotiating text for the IGC3 does display awareness of this issue. It includes a suggested provision in the general principles requiring all States to '[a]pply an approach that builds ecosystem resilience to the adverse effects of climate change and ocean acidification and restores ecosystem integrity'.[62] Such a provision could support regard to delivering resilience in the ILBI.

The first possible element of an ecological and ecosystem focussed approach would be for the ILBI to reflect current scientific practice, and its likely development, by engaging with MGR in a digital form. This would limit, to an extent, the need for physical samples.

5 The Meaning of MGR

The traditional starting point for relevant MGR activity was "*in situ*" – actually finding and working with the physical raw materials in ABNJ. Samples would then be taken to land where more work was done. There is a deep scientific

57 Millennium Ecosystem Assessment, *Ecosystems and Human Well-being: Synthesis* (Washington DC, Island Press, 2005); World Wildlife Fund, *Living Planet Report 2018: Aiming Higher* (World Wildlife Fund, 2018).

58 J Rockström *et al.*, 'Planetary Boundaries: Exploring the Safe Operating Space for Humanity' 14 *Ecology and Society* (2009) 32.

59 International Geosphere-Biosphere Programme, Ocean Acidification Summary for Policymakers, (2013, Report from the Third Symposium on the Ocean in a High-CO2 World, Stockholm).

60 IPBES, 'Global Assessment Report on Biodiversity and Ecosystem Services' IPBES/7/10/Add.1 p. 3 Key message A.

61 See further on this theme across the BBNJ and more widely, V. De Lucia, 'The Ecosystem Approach and the BBNJ Negotiations' (Working Paper 10 July 2019), available at SSRN: https://ssrn.com/abstract=3420988 or http://dx.doi.org/10.2139/ssrn.3420988 accessed 2 November 2019 and O. Woolley, *Ecological Governance. Reappraising Law's Role in Protecting Ecosystem Functionality* (Cambridge, Cambridge University Press, 2014).

62 June 2019 draft ILBI, above n. 29, art. 5(b).

cultural norm of samples being stored in respositories, say in oceanographic institutes or in museums such as the Natural History Museum in London. Working with MGR in these repositories can be termed "ex situ".[63] In theory, these materials are available for all to visit and use, consistent with the farming and stewarding analogy. In reality, lack of human resources, record keeping and taxonomic challenges (such as uncertainty as to whether this MGR is a species which has already been identified) has meant that not as many benefits are being taken from these MGR as would be desirable.[64]

Developments in chemistry, bioinformatics and computer science have created new opportunities for working with MGR.[65] Physical samples can be analysed and the genetic data (e.g., a short and unlikely unique example would be ATTCGTAAGC) established from individual organisms, metagenomes established from an assemblage of microorganisms such as planktonic species, or chemical structures of derivatives identified such as proteins and metabolites.[66] This genetic information could then be shared[67] in online databases such as the National Center for Biotechnology Information (NCBI, operated from the United States).[68] This would enable wider dissemination without access to the physical MGR, and the genetic information could be the subject of further research and synthetically used and modified, possibly leading to new commercial products – if, as ever, there is sufficient time and money.

In the past, the DNA was obtained on shore in a laboratory or on the research vessels after physical samples had been preserved. At the time of writing, however, DNA extraction and sequencing devices have been developed which float or sit on the seafloor. Examples are the MesoBot and devices using Oxford Nanopore sequencing systems.[69] Such products can be used to deliver enough

63 See discussion in Kate/Laird, above n.10, 3.6.2.

64 See M. Rabone *et al.*, 'Access to Marine Genetic Resoruces (MGR): Raising Awareness of Best-Practice Through a New Agreement for Biodiversity Beyond National Jurisidiction (BBNJ)' 12 *Frontiers in Marine Science* (2019) 520 https://doi.org/10.3389/fmars.2019.00520 (Rabone).

65 Morgera, Fair and Equitable, above n. 42, 67–71.

66 See e. g., M. E. Watanabe, 'The Nagoya Protocol: The Conundrum of Defining Digital Sequence Information' 69(6) *BioSciences* (2019) 480; T. E. Berry, B. J. Saunders, M. L. Coghan, M. Stat, S. Jarman, A. J. Richardson *et al.*, 'Marine environmental DNA monitoring reveals seasonal patterns in biodiversity and identifies ecosystem responses to anomalous climatic events' 15(2) *PLoS Genet* (2019) e 1007943.

67 Rabone, above n. 64.

68 See website https://www.ncbi.nlm.nih.gov/ accessed 2 November 2019.

69 See Woods Hole Oceanographic Institution, 'Mesobot' https://www.whoi.edu/what-we-do/explore/underwater-vehicles/auvs/mesobot/ accessed 2 November 2019, Oxford Nanopore Technologies https://nanoporetech.com accessed 22 November 2019.

information for scientists to then replicate DNA sequences in the laboratory and use them as the base for further research and commercial development, without the need for the physical sample at all. This process would also involve additional significant work, as this *in situ* analysis would only give unassembled sequence data. The data needs to be assembled to a high degree of accuracy to begin the process of annotation to ascribe function to genes and this may require laboratory work and access to other annotated gene sequences.

Looking forward, it is likely that there will be more *in situ* sequencing through the advent of next generation sequencing technologies and practices. The use of these technologies *in situ*, and their implications, will need to be considered as part of the environmental impact assessment framework being developed elsewhere in the ILBI.[70] Part of this will be the fact that these technologies could remove the need for raw materials to be collected, which would in turn reduce the scale of the environmental impact and ecosystem impact.[71] *Accordingly, the ILBI should cover data representing MGR samples from ABNJ, as well as the physical sample*.[72] If the ILBI does not, then the careful balances sought to be struck in it regarding benefit sharing will not apply to all MGR activity.[73] Some support for the inclusion of data has been put forward at the IGCs[74] and the issue is included as a possibility in the June 2019 draft ILBI, with definitions of MGR as "*in silico*", "[digital] [genetic] sequence data and [and information]".[75] Engaging with digital information in the ILBI would also align with the view that MGR should be seen as natural information (even when in its physical form). This is because genes contain information about heredity and future possibilities for functionality (even though as noted detailed work is needed to move from this to important research and commercial

70 See June 2019 draft ILBI n29, arts. 22–41.

71 K. D. Prathapan, R. Pethiyagoda, K. S. Bawa, P. H. Raven, P. D. Rajan *et al.*, Divakaran *et al.*, 'When the cure kills – CBD limits biodiversity research: national laws earning biopiracy squelch taxonomy studies' 360 6395 *Science Mag Policy Forum* (2018) 1405 (Prathapan).

72 See also C. Lawson and M. Rourke, 'Open Access DNA, RNA and Amino Acid Sequences: The Consequences and Solutions for the International Regulation of Access and Benefit Sharing' 24 *Journal of Law and Medicine* (2016) 96 (Lawson and Rourke) 11.

73 See Thambisetty, above n. 46.

74 See e.g., *Earth News Bulletin* 25.3.19 reporting on IGC 2: Caricom and Pacific Small Island Development States support the inclusion of resources, in situ, ex situ, in silio, digital sequence data and deriv, Turkey supports inclusion of digital sequence data.

75 June 2019 draft ILBI n29, arts 8 (2)(b) regarding application, 10(4) regarding access, 11(3)(a) and (b) regarding fair and equitable sharing of monetary and non monetary benefit, 13(3)(a) regarding monitoring, 42(c) (iii) regarding the objectives of capacity building and technology transfer and art 51(3)(c) regarding the clearing house. There is also the option that the ILBI would not cover this at all, art. 8(3)(b).

development), and there are calls for equal protection of the two forms of information.[76]

Existing benefit sharing regimes, notably Nagoya, focus on physical genetic resources, so the proposal made here raises the important issue of having dual regimes. The question of digital sequence information is, however, currently being discussed in multiple forums including at the Convention on Biological Diversity negotiations,[77] although uncertainty remains as to what definition and approaches will be chosen. For now, the discussion of new technology for genetic sequencing *in situ* raises another issue – the approaches taken to IP rights and to trade secrets.

6 The Approach to IP and Trade Secrets

6.1 *Context*

Increased technological development can bring with it more private-sector involvement. This can bring with it greater desire for private control of the results of research. This may seem unusual or heretical to scientists accustomed to norms (developed particularly in the context of human genome sequencing) of sharing data before and after publication.[78] Limiting access is, however, quite consistent with the values of property, immediate reward, and control, which are familiar to the commercial sector. This sector was also noted to have a role in developing natural products to address societal needs. Further, involving the commercial sector in the pipeline to develop new products (often termed bioprospecting) has led to the increased wider understanding of global

76 Muller, above n. 20 at 16, 18, 20–1, 23.

77 CBD, 'Digital sequence information on genetic resources' https://www.cbd.int/dsi-gr/2017–2018/ and Commission for Plant Genetic Resources For Food and Agriculture, 'Digital Sequence Information' http://www.fao.org/cgrfa/topics/digital-sequence-information/en/; WHO, 'Approach to Seasonal Influenza and Genetic Sequence Data under the PIP Framework', https://www.who.int/influenza/pip/8bAnalysis_Draft1_17Sep2018_EN_hyperlinks.pdf?ua=1. See also study 1 science-based fact finding study on the content and scope of digital sequence information prepared pursuant to Conference of Parties of the Convention on Biological Diversity Decision 14/20 https://www.cbd.int/dsi-gr/2019–2020/studies/#tab=1 accessed 30 November 2019.

78 Bermuda Principles 1996 and Report from Wellcome Trust meeting, 'Sharing data from large-scale Biological Projects: A System of Tripartite Responsibility' 2003 https://www.genome.gov/Pages/Research/WellcomeReport0303.pdf accessed 2 November 2019. Lawson and Rourke, above n. 72, 108. See also reflections of this in OECD Guidelines for the Licensing of Genetic Inventions 2005 http://www.oecd.org/sti/emerging-tech/36198812.pdf accessed 3 November 2019.

biodiversity as a whole.[79] This has been invaluable as funding for surveying biodiversity in itself is often very hard to obtain.

But even with this private-sector interest, it would be unwise to move to the other extreme and create an environment in which the commercial sector has too much power. This could have an overly negative impact on other scientific research, and on the benefits this other work could deliver[80] and which could then be shared.[81] Concern as the exercise and impact of private power has been seen in relation to human genes in the context of cloning (notably regarding the BRCA gene and expressed sequence tags),[82] synthetic biology[83] and, at a more downstream level, access to essential medicines.[84]

6.2 *Relevant Rights*

IP rights (notable ones being patents, copyright and trade marks) are held by private entities, pursuant to national legislation, in the context of an international treaty (TRIPS, 1994 under the WTO) which requires that WTO members have a system of IP rights.[85] TRIPS also requires protection of confidential

79 See e.g., R. J. Quinn, P. de Almedia Leone, G. Guymer and J.N.A. Hooper, 'Australian biodiversity via its plants and marine organisms. A high-throughput screening approach to drug discovery' 74(4) *Pure Appl. Chem.* 2002, 519–526; NatureBank at Griffith University https://www.griffith.edu.au/institute-drug-discovery/unique-resources/naturebank accessed 2 November 2019.

80 Prathapan, above n. 71, 1406.

81 C. Salpin and V. Germani, 'Patenting of research results relating to genetic resources from areas beyond national jurisdiction: The crossroads of the law of the sea and intellectual property law' 16(1) *Review of European community and international environmental law* (2007) 12–23 (Salpin and Germani), 16.

82 G. Matthijs and G-J B. Van Ommen, 'Gene patents: from discovery to invention. A geneticist's views' 311 (Matthijs and Van Ommen) and G. Van Overwalle, 'Of thickets, blocks and gaps' (Overvalle Thickets) 383, 453 both in G. Van Overwalle (ed.) *Gene Patents and Collaborative Licensing Models: Patent Pools, Clearinghouses, Open Source Models and Liability Regimes* (Cambridge, Cambridge University Press, 2009) (Overwalle); Nicola Lucchi, *The Impact of Science and Technology on the Rights of the Individual* (New York, Springer, 2016) (Lucchi) 99–103, 114–134, 141–162.

83 A. MacLennan, *Regulation of Synethic Biology: BioBricks, BioPunks and BioEntrepreneurs* (Cheltenham, Edward Elgar, 2018), 251 et seq.

84 H. Hestermeyer, *Human Rights and the WTO. The Case of Patents and Access to Medicines* (New York, Oxford University Press, 2007) chapters 1 and 4; F. Abbott, 'Managing the Hydra: The Herculean Task of Ensuring Access to Essential Medicines' 393; and H. Klug, 'Comment Access to Essential Medicines – Promoting Human Rights over Free Trade and Intellectual Property Claims' 481 in K. E. Maskus and J. H. Reichman (eds.) *International Public Goods and Transfer of Technology Under a Globalized Intellectual Property Regime* (Cambridge, Cambridge University Press, 2005).

85 Annex 1C of Marrakesh Agreement Establishing the World Trade Organization (1994) 1867 UNTS 154 (TRIPS), in particular art 9, 27.

information[86] and this is delivered in national laws as a mix of legislation and case law.[87] IP and trade secrets confer private power (with respect to IP rights for a limited period) over the results of innovation and creativity and over information if criteria are met for them to exist. In addition to the mandatory legal bases just mentioned, there are longstanding legal, economic and societal views in support of IP and trade secrets. Broadly, and reflecting some of the points made so far in this chapter, these are that IP rights and trade secrets encourage and reward innovation, and investment in it, to develop products for the benefit of all – and in the case of IP rights ensure disclosure of it, such that ultimately, there can be wider and unrestricted use of the innovation.[88] So legally, and from an incentive perspective, the existence of IP rights and trade secrets, and their power, should not be ignored.

States can and do, however, impose some limits on the power held by IP owners and on controllers of secret information. The key issue here is the extent to which the ILBI can and should impose obligations on states to do this to ensure that benefit sharing can come about. IP has long been seen as potentially having some place in the ABNJ MGR process. In 2007 the UN Secretary-General's report on Oceans and the Law of the Sea engaged with the work of the World Intellectual Property Organization (WIPO) on genetic resources regarding access and benefit sharing, disclosure of the origin of genetic resources and the links between this and the patent examination process to establish novelty – which is a necessary requirement for a patent to be granted – and also on the sharing of benefit. IP rights were included in the terms of the Working Group and information on IP was put before it.[89] The "President's Aid to

86 TRIPS, above n. 85, art. 39.

87 E.g., in England and Wales/ EU *Coco v AN Clark* [1968] FSR 415, EU Directive 2016/943/EU on the protection of indisclosed know know and business information *OJ L* 157/1 16 June 2016.

88 Lucchi, above n. 82, 10; Heafey, above n. 16, 502; F M Scherer, 'The Innovation Lottery' in R. C. Dreyfuss, D.L. Zimmerman and H First *Expanding the Boundaries of Intellectual Property. Innovation Policy for the Knowledge Society* (eds.) (Oxford, Oxford University Press, 2001); K. E. Maskus, 'The Economics of Global Intellectual Property and Economic Development: A Survey' in P. Yu (ed.) *Intellectual Property and Information Wealth* (Westport, Praeger, 2006); C. Greenhalgh and M. Rogers, *Innovation, Intellectual Property and Economic Growth* (Princeton, Princeton University Press, 2010); Commission on Intellectual Property Rights, 'Integrating Intellectual Property Rights and Development Policy' (2002) http://www.iprcommission.org/ accessed 30 October 2019.

89 C. Chiarolla, 'Intellectual Property Rights Issues' Paper 6, *IUCN Information Papers for Intersessional Workshop on Marine Genetic Resources 2–3 May 2013* (Chiarolla IUCN), 37 https://www.un.org/Depts/los/biodiversityworkinggroup/documents/IUCN%20Information%20Papers%20for%20BBNJ%20Intersessional%20Workshop%20on%20MGR.pdf accessed 2 November 2019.

Discussions" for IGC1 asks whether the relationship between the ILBI and IP should be set out and if so how;[90] the "President's Aid to Negotiations" for 1GC2[91] and the June 2019 ILBI draft for IGC include several options on IP, although they are restricted to patents[92] and have a focus on disclosure of origin.

This contribution will not address this issue further, however it raises an important perspective. There has been some reluctance at the IGC to engage with patents and disclosure of origin on the basis that patents were dealt with in other international fora.[93] Yet from the practical side, it has been clear in WIPO documents (including a 2019 draft from the chair) that it is not proposed that the outcomes will engage with resources from beyond national jurisdiction[94] and attempts to discuss the issue within TRIPS have stalled.[95] There are also more IP issues which should be raised in the ILBI, and failing to engage with them could lead to outcomes which are explicitly or implicitly more supportive of private sector control of MGR.[96] Further, engaging with IP in the ILBI would be consistent with an established body of scholarship and policy making which seeks to avoid fragmentation of legal regimes.[97] Indeed, the draft

90 PAD A/CONF.232/2018/3 25 June 2018 3.2.3.

91 PAN 3 December 2018 A/CONF.232/2019/1* 3.2.3 and IUCN Commentary on June 2019 draft ILBI https://www.iucn.org/sites/dev/files/iucn_comments_on_bbnj_draft_text_-_august_2019.pdf accessed 2 November 2019 (IUCN Commentary) p. 18, 19.

92 June 2019 draft ILBI, above n. 29, art. 12.2, 12.3, 12.4 and IUCN Commentary, above n. 91, p. 19 regarding risks of the ILBI being inconsistent with TRIPS regarding restrictions on approval of the grant of IP rights, in IGC 3 para 12.4 (c).

93 See e.g., *Earth News Bulletin* 25.3.19 from IGC 2 Caricom and PSIDS want a sui generis approach to IP; G77/ China, African Group, Iran, Tonga, Federated States of Micronesia, Turkey, PNG, Sri Lanka and Cuba want IP included in the ILBI; Singapore want IP to be addressed in in existing mechanisms at WIPO and WTO; the EU, Canada, US, Switzerland, Norway, the Holy See, Japan, Korea, the Russian Federation, and Australia do not support IP rights being in the ILBI.

94 WIPO/GRTKF/IC/28/4 (2014), art. 4.1(e); WIPO/GRTKF/IC/30/4 2016, art 3.1(e); WIPO/GRTKF/IC/34/4 2017, art. 4(1)(e); draft report prepared by Chair of WIPO IGC on IPGRTKF 30 April 2019.

95 See WTO review of art 27.3 (b) https://www.wto.org/english/tratop_e/trips_e/art27_3b_e.htm accessed 22 November 2019 and proposals for new article 29bis TN/C/W/59 of 2011. See also valuable discussion in C. Chiarolla, 'Intellectual Property from a Global Environmental Law Perspective: Key lessons from the implementation of patent disclosure requirements for genetic resources and traditional knowledge' Benelex Working Paper No 22 (Chiarolla Benelex) exploring whether requiring action is introducing another substantive requirement which is not clearly mandated under TRIPS, or or whether it is more of a procedural point therefore raising questions for the Patent Co-operation Treaty.

96 Salpin and Germani, above n. 81, 12–3.

97 L. R. Helfer, 'Regime Shifting: The TRIPs Agreement and the New Dynamics of International Intellectual Property Law Making' 29 *Yale Journal of International Law* (2004) 1; Morgera, Fair and Equitable, above n. 42, 58–9; G. Teubner and P. Korth, 'Two

ILBI already includes, as noted, a proposed engagement with climate change – which has its own regime.[98] So the fact that an issue could be addressed in other regimes should not mean that it should not be considered in the ILBI. From this starting point, the next section will explore other means by which IP rights could impose obstacles to benefit sharing; will identify opportunities to resolve this from within IP law; and will suggest how these points could be addressed within ILBI. These proposals will be consistent with, and also move beyond the suggested, less specific, wording in the draft ILBI, so that it is to be applied in a manner which respects the competences of relevant legal instruments and does not undermine them,[99] and so that it promotes coherence with those instruments, providing they are supportive of and do not run counter to the objective of UNCLOS and the ILBI.[100]

6.3 *Patents*

Firstly, there is an issue about the extent to which patents could be and are being granted over subject matter which is too close to MGR in its original form rather than, as is inherent in *Mare Geneticum*, MGR being the subject of innovation and transformed. Such patents would mean that there was private control over a fundamental natural resource from the very start. Others could then only use this with the consent of the patent owner, and this could reduce the innovation of these others in developing new commercial products and engaging in research.[101] There is uncertainty about present practices in this respect. Analysis of patents identifies references to MGR[102] with examples involving

---

Kinds of Pluralism: Collision of Transnational Regimes in the Double Fragmentation of World Society' in M. A. Young (ed.) *Regime Interaction in International Law: facing fragmentation* (Cambridge, Cambride University Press, 2012) 24, 41 with relevant challenges identified in conflicts between traditional approaches to confidentiality of indigenous groups and bringing about free use of information. For benefit sharing and farmers' rights outside the ABNJ, see C. Benelex, above n. 95, section 6 and Adebola, above n. 50, 112.

98 United Nations Framework Convention on Climate Change 1992 1771 UNTS p. 107, which arose from the Earth Summit as did the Convention on Biological Diversity.

99 June 2019 draft ILBI, above n. 29, art. 4(3) first part.

100 June 2019 draft ILBI, above n. 29, art. 4(3) second part.

101 Chiarolla IUCN, above n. 89, 40; Chiarolla, above n. 44, 178–9; Heafy, above n.16, 520–1.

102 Chiarolla, above n. 44, 177; P. Oldham, 'WIPO Patent Landscape report Marine Genetic Resources' (2019) https://www.wipo.int/edocs/pubdocs/en/wipo_pub_947_6.pdf accessed 2 November 2019 looking beyond patents to publications, and funding sources and species, though a data mining approach, exploring 391,191 scientific publications and 461,380 patents, data from Global Biodiversity Information Facility; R Blasiak, J-B. Jouffray, C.C.C. Wabnitz, E. Sunstrom and H. Osterblom et al., 'Corporate Control and global governance of marine genetic resources' *Sci Adv* 2018 exploring the ownership of patents.

Green Fluorescent Protein,[103] red algae[104] and sea cucumbers.[105] The mere existence of such patents does not mean, however, that the right to control covers the MGR itself. There is a need for detailed analysis of the substance of patents, moving beyond data mining and empirical reviews of the landscape, to establish the extent to which this is so. Patents over raw MGR should not in theory exist, as patents must be new and inventive, without excluding patents capable of industrial application.[106] The June 2019 ILBI draft included the valuable proposal that there shall be no patenting except when the MGR modified by human intervention results in a product capable of industrial application.[107]

This contribution develops this point in a new direction: in addition to clarifying when patents could be obtained, the ILBI could limit the power conferred by states. TRIPS provides that states can impose such restrictions on the rights of the patent owner, as long as they are limited, do not unreasonably conflict with a normal exploitation of the patent and do not unreasonably prejudice the legitimate interests of the patent owner, taking into account the legitimate interest of others ("the three step test").[108] *Given this, and the research issue identified above, the ILBI could provide that states should provide in their national laws that research must be able to be continued in relation to an MGR innovation which is the subject of a patent. It is also suggested that the ILBI should provide that states are to impose this limit even if research is done for commercial purposes or by a commercial entity.* This is because there is diversity across national laws regarding the scope of research exceptions regarding commercial activity.[109] The approach would also remove uncertainties about

103 Jellyfish green fluorescent protein expression in plants WO1996027651A1 (1996); B Verberue, 'Patent pooling for gene-based diagnostic testing' in Overwalle, above n. 82, 18.

104 Breeding method of high-temperature-resistant stichopus japonicus strain (2016 – CN106259067A; CN106259067B – China), which has led to product development by LBD Marine Technology, 'About Agar' http://en.libangda.com/products-and-service/about-agar/about-agar#bit_olwy3 accessed 2 November 2019.

105 Preparation method of marine bacteria-derived kappa-carrageenase gene and recombinase (2016 – CN105950640A; CN105950640B – China) which has led to product development, see X. Ru, L. Zhang, 'Development strategies for the sea cucumber industry in China' 37(1) *Journal of Oceanology and Liminology* 2019 300-312.

106 TRIPS, art. 27(1); Chiarolla IUCN, above n. 89, 37–8.

107 June 2019 draft ILBI, above n. 29, art. 12.3 first sentence.

108 TRIPS, art. 30.

109 *Monsanto v Stauffer* [1985] RPC 515 and *Auchinloss v Agricultural & Veterinary Supplies* [1997] RPC 649 compare German approach *Clinical Trials II* [1997] NJW 3092; see analysis in F. Humphries, 'Shellfish patents kill experimentation: defences for sharing patented aquatic general materials in aquaculture' 37(4) *European Intellectual Property Review* (2015) 210–224, 213–4.

what activities should properly be viewed as commercial. Non commercial activity could end up as commercial, in the immediate or longer term;[110] those who may traditionally be perceived as non commercial actors (say those from universities) may be encouraged by their universities or may simply choose to set up their own companies to develop products while also seeking collaboration and community.[111]

TRIPS also provides that states can require sharing of patented innovation through a compulsory licence to respond to national emergencies.[112] Given the discussion so far regarding the place of MGR-related innovation in responding to climate change, the ILBI should provide that *states must include in their national laws compulsory licensing of patents with respect to energy transitions or ecologically sustainable products*. TRIPS requires, however, that this licensing is in return for the payment of adequate remuneration.[113] Given the complex arguments regarding the positive (as well as problematic arguments) regarding the power of IP rights and the need for investment, it is unlikely that in the present context this could mean zero. Adequate does not, however, mean the same as a full commercial market rate.

The next section will explore the place of other IP and trade secrets in benefit sharing with respect to MGR. This issue is not recognised, or at least not directly, in IGC debate and in official documents generated so far. It is suggested that this should be addressed and this point has been made in contributions by the authors to the commentary of the International Union on the Conservation of Nature on the June 2019 draft ILBI.[114]

6.4 *Database, Copyright and Trade Secret: Repositories*

6.4.1 Problem

This wider IP inclusion argument will be developed here in the context of databases and repositories, which were explored above, particularly in the context of digital sequences. At present, DNA sequence data can be deposited at one of 3 global databases – NCBI[115] (in the United States, discussed above) under the term GenBank, European Bioinformatics Institute (EMBL – EBI,

110 Correa, above n. 8, 13–14.

111 Correa, above n. 8, 15–6.

112 TRIPS art. 31, in particular (b). This can also be argued to be necessary when there is no alternative e.g., Brigit Verberue, 'Patent pooling for gene-based diagnostic testing' in Overwalle n. 82, 17, 18, exploring Green Fluorescent Protein (see also n. 103) and also innovation in respect of rice and Huntingdon's disease.

113 TRIPS, art. 31(h).

114 IUCN Commentary, above n. 91, p 19.

115 See above n. 68.

Europe)[116] and DDBJ (Japan).[117] Together, these form the International Nucleotide Sequence Database Collaboration (INSDC) and they share all DNA sequence data on a daily basis. Each has different tools to interpret and process the data, meaning that data downstream from the DNA sequence will differ in each one of these in terms of format, content and processing. *A pragmatic outcome regarding the future of repositories would be for the existing arrangements for collecting and sharing DNA to continue and develop, with the ILBI requiring an overall metadatabase.* Within this, copyright[118] (and also related rights, such as the database rights which exist in the EU)[119] and trade secrets[120] can, as will be seen, be relevant to the manner of operation of these and other databases and to the level of benefit sharing which can occur.

Copyright, database rights and trade secrets do not require a registration process to exist. For copyright to exist, there must be a work. An individual piece of data would not be enough,[121] but there could be copyright in a report of a cruise or planned cruise with details of location and findings, as this would count as a literary work.[122] Further, depending on national laws, copyright could exist with respect to a collection of smaller pieces of information which is original in the sense of not copied and reflecting skill, labour and judgment in its collection;[123] in the EU member states a different test now applies, with the need for it to result from some intellectual creativity.[124] For database rights to exist for a set of information, including a collection of DNA, there must be substantial investment in obtaining, verifying or presenting existing information.[125] There will be a relevant trade secret if information is not in the public

116 See https://www.ebi.ac.uk/ accessed 2 November 2019.

117 See https://www.ddbj.nig.ac.jp/index-e.html accessed 2 November 2019.

118 For a wider introduction to copyright, see A Brown, S Kheria, J Cornwell, M Iljadica, *Contemporary Intellectual Property: Law and Policy* (5 ed.) (Oxford, Oxford University Press, 2019) (Brown), 31–203, 219–231.

119 For a wider introduction to database rights, see Brown, above n. 118, 238–251; EC Directive 96/9/EC on the legal protection of databases O.J. L 77 11 March 1996 20-28 (Database Directive).

120 For a wider introduction to trade secrets, see Brown, above n. 118, 697–725.

121 *Exxon Corporation v Exxon Insurance* [1982] Ch 119 – no copyright in the word "Exxon".

122 TRIPS, art. 9 encompassing Berne Convention arts. 1 and 2.

123 For the traditional position in the UK, see *Ladbroke v William Hill* [1964] 1 WLR 273, *Interlego AG v Tyco Industries* [1989] AC 217 compare US decision *Feist Publications v Rural Telephone Service* Co 499 US 340 finding no copyright in alphabetical listng of names.

124 *Infopaq International A/S v Danske Dagblades Forening* C-5/08 [2009] ECDR 16.

125 Database Directive, art. 7; *British Horseracing Board v William Hill Organization Ltd* Case C-203/02 [2005] RPC 13. and *Football Dataco Ltd v Sportradar* [2013] EWCA Civ 27.

domain, has value because it is secret and reasonable steps have been taken to make sure it is secret.[126]

Depending on the methods by which information is provided and stored on the repositories, the attitudes taken by the information supplier and the relevant national law, these three legal bases/rights could apply to material which the ILBI may state is to be in public databases or repositories.[127] Finally, copyright will also exist[128] (and indeed in some cases software patents may be granted)[129] over the software which actually operates the databases and repositories. In terms of impact, copyright confers the possibility of private control of the reproduction of the work containing the information;[130] database rights control the extraction or re-utilisation of whole or substantial parts of contents of the database;[131] trade secrets control the use of the information itself;[132] and copyright and patents over the database could control the ongoing method of operation. These rights could lead, then, to refusals to supply the information in the first place, to requests that there will be no onward disclosure without the making of a payment, or that the database can only continue with the payment of a fee.[133]

There are suggestions that this is already a reality, with arguments regarding the Convention on Biological Diversity that key information is not being shared fully as it is the subject of confidentiality claims and that it is therefore difficult to assess whether fair and equitable benefit sharing is being delivered.[134] Further, reflection on some existing databases and repositories with respect to DNA confirms that IP related issues could arise.[135] Careful analysis of existing genetic resources databases has explored arrangements which

126 TRIPS, art 39(2); *Coco v Clark,* above n. 87; Trade Secrets Directive, art 2(1).

127 Chiarolla, IUCN, above n. 89, 42; Chiarolla, above n. 44, 184; Lawson and Rourke, above n. 72,116.

128 TRIPS, art 10.

129 Lawson and Rourke, above n. 72,116. For a wider introduction to this complex issue and the different approaches taken across countries, see Brown, above n. 118, 435- 465 and in particular *Re Bilski* 545 F 3d 943 and *Alice Corporation v CLS Bank International* 572 US 208; *Symbian v Comptroller General of Patents Designs and Trademarks* [2008] EWCA Civ 1066; *G03/93 Programs for Computers* [2010] EPOR 36.

130 See e.g., UK Copyright Designs and Patents Act 1998, s16(1)-(3).

131 See e.g., UK Copyright and Rights in Database Regulations 1997 No. 3032 (implementing the Database Directive) 12(1).

132 *Coco v Clark,* above n. 87; Trade Secrets Directive, arts. 3, 4.

133 Fedder, above n. 47, 119–120.

134 Muller, above n. 20, 33, 39-41 67.

135 Chiarolla, above n. 44, 183; Lawson and Rourke, above n. 72, 103.

database operators have chosen to take to IP and trade secrets[136] and has identified strong themes of sharing across publicly funded databases. Yet in this landscape there is also a place for IP. The terms and conditions of NCBI's GenBank provide that material which is uploaded to GenBank may be the subject of IP rights although no restrictions are imposed on further use of information which is uploaded.[137] The combined INSDC has a policy of free and unrestricted access to the records in their databases.[138] Looking more widely, the BioBricks Initiative involves standard interchangeable DNA parts that have defined functions and that can be used in the construction of synthetic biology systems. Its goal is for "all genes and vectors that are synthesized and distributed through the 10k genes project [to] be solidly in the public domain and free of third-party rights".[139] Further, BioBricks makes genes available free of charge and checks that they are not the subject of sequence-specific patent claims.[140] Yet BioBricks' terms and conditions provide that if IP rights exist then they are to be respected and that if submissions to it are the subject of IP rights, then the details of this are to be provided.[141]

The above discussion reveals some wide embracing of sharing but also alongside it instances of models with an embedded respect for IP rights. Further, the sharing approach – which is so positive for science – cannot be relied upon to continue. Funding arrangements may come to an end,[142] government

136 C. Lawson, H. Burton and F. Humphries, 'The important place of information in the evolving legal and policy framework for the conservation and sustainable use of the world's plant genetic resources for food and agriculture' EIPR 2018 40(4), 243–259, 247, 249–50, 251, 253, 255–6 and table 1; Lawson and Rourke, above n. 72, 100–2, 104, 111–2; see also study 3 Combined Study on Digital Sequence Information in Public And Private Databases and Traceability prepared pursuant to Conference of Parties of the Convention on Biological Diversity Decision 14/20 exploring some existing national requirements CBD/DSI/AHTEG/2020/1/4 31 January 2020.

137 See webpage 'GenBank submission types' https://www.ncbi.nlm.nih.gov/genbank/submit_types/ accessed 3 November 2019.

138 INSD 'Collaboration Policy' http://www.insdc.org/policy.html accessed 3 November 2019 rules 1–3.

139 K. Kendall, S. Pownall, L. Kahl, 'Bionet 10k Genes Project Documentation v1.0' https://www.reddit.com/r/bionet/comments/7b07gz/bionet_10k_genes_project_documentation_v10/ accessed 3 November 2019.

140 BioBricks Foundation, 'The Free Genes Project' https://biobricks.org/freegenes/ accessed 3 November 2019.

141 *Ibid.*, 'Explanation' 1 bullet 3, 'Submission' 1 bullet 2.

142 See e.g., the journey of the Arabidopsis Information Resource – funded by National Science Foundation, then the core staff group set up Phoenix Bioinformatics (not for profit) to subscription offering with different levels of access, all made available after one year https://www.arabidopsis.org/. For an example of a subscription database, see Marinlit http://pubs.rsc.org/marinlit/ both links accessed 3 November 2019.

policy may change regarding support of service, or a private provider may provide software to the database and then choose to take a new approach.

6.4.2 Solution

In the light of this, the ILBI should focus on the sharing and disclosure requirement of the suggested metarepository.[143] There has been some engagement with the issue, albeit without a focus on the underpinning legal issues just discussed. Calls have been made for databases to be open[144] and there are references in the June 2019 draft[145] for "a clearing house mechanism with a web based platform to provide open access to MGR".[146] The draft ILBI also suggests, however, that due regard is to be had to the confidentiality of information being provided to the platform.[147]

Building on the discussion above, this suggests that information provided could be incomplete. Further, there are a variety of positions regarding the meaning of "open access".[148] To a lawyer the word may suggest immediately available, for no fee – just as seen (up to a point) in relation to BioBricks. This approach to open access is used in the context of licensing models[149] which IP owners have chosen to embrace like CAMBIA Bios,[150] Creative Commons[151] and the Eco-Patent Commons (which is now closed).[152] These all provide specific licensing terms or conditions of use (for example, approaches taken to commercial use or acknowledgement) and have no licence fee. These frameworks operate on a voluntary level, however, so in this sense they do not deliver a base for a mandatory ILBI approach. It should also be borne in mind that

143 See discussion on this issue in Chiarolla, IUCN, above n. 89, 41–2, 43; Chiarolla, above n. 44, 181–3.

144 Fedder, above n. 47,122–176; Rabone, above n. 64.

145 June 2019 draft ILBI n29, art. 51, 51.2, 51.7.

146 See previous discussion in Leary, above n. 30, 21–29 and June 2019 draft ILBI n. 29, art. 11.3 (b).

147 June 2019 draft ILBI, above n. 29, art. 51.7 and IUCN Commentary, above n. 91, p 60.

148 See IUCN Commentary, above n. 91, pp. 17, 59.

149 E. van Zimmeren, 'Clearinghouse mechanisms in genetic diagnosis' in Overwalle, above n. 82, 71–9.

150 See http://www.copyleftlicense.com/licenses/cambia-plant-molecular-enabling-technology-bios-license-version-15/view.php accessed 3 November 2019; N. Berthels, 'Case 8. CAMBIA's Biological Open Source Initiative (BiOS)' in Overwalle, above n. 82.

151 See https://creativecommons.org accessed 3 November 2019.

152 See CEF Spotlight, 'Welcome to the Eco-Patent Commons' http://www.corporateecoforum.com/welcome-to-the-eco-patent-commons/ accessed 29 October 2019. Note debate about the value of the patent made available – B. H. Hall and C. Helmers, 'Innovation and diffusion of clean/green technology: Can patent commons help?' 6(1) *Journal of Environmental Economics and Management* (2013) 33–51.

"open access" can have a different meaning for scientists. The focus there is not on IP and payment, but on ensuring that the database provides the necessary information for scientists and interoperability with other databases, publications and networks.[153] Finally, the term "open access" can have a cultural meaning in terms of delivering fairness, equity and community sharing. This can be seen in the FLOSS (Free Libre and Open Source) Movement, which is deeply opposed to property rights and control.[154]

Debate, and ultimately clarification, is therefore needed on this point in the ILBI. If one wished to require fee-free access, IP and trade secrets issues could arise.[155] This is because requiring that the control conferred by IP rights and trade secrets could not be relied upon, could move beyond the relevant flexibilities within TRIPS.[156] TRIPS has no national emergency provision regarding copyright and trade secrets. *The proposal made above regarding patents could be adapted to cover patents over relevant software used by international metarepositories*. A version of the three-step test applies, however, to copyright.[157] It could be argued again that fee-free access[158] was too much of an interference with the power of the right and could be a disincentive for the development of valuable and needed software. A solution could be to *require mandatory sharing with a reasonable payment to be made to the owner of the copyright or database right*.[159] This could also build on arguments that IP rights can be seen not as a right to exclude but as a right to payment,[160] or as a right to distribute and bring about uses of technology.[161] To ensure that the payment can be made while also maximising the needs of benefit sharing and science,

153 Rabone, above n. 64.

154 See GNU Operating System at https://www.gnu.org/philosophy/floss-and-foss.en.html accessed 3 November 2019. A. S. Taubman, 'Several kinds of 'should'' (Taubman) 223 in Overwalle, above n. 82.

155 These issues were raised in IUCN Commentary in the context of clearing houses and check points, above n. 91, p. 20.

156 Building on points made in Chiarolla, above n. 44, 175–8.

157 See above n. 106, 108, 112–3 122; TRIPS, art 9, encompassing Berne Convention, art 9(2).

158 For other possibilities, see E. van Zimmeren, 'Clearinghouse mechanisms in genetic diagnosis' in Overwalle, above n. 82, 63, 68; Chiarolla, above n. 44, 190–1.

159 See also S. Dusollier, 'The commons as a reverse intellectual property' in H. Howe and J. Griffiths (eds.) *Concepts of Property in Intellectual Property Law* (Cambridge, Cambridge University Press, 2013) (Howe and Griffiths) 265–6 267, 268 seeing the role of exceptions to copyright as creating a functional public domain.

160 D. L. Burk, 'Critical analysis: property rules, liability rules and molecular futures. Bargaining in the shadow of the cathedral' in Overwalle, above n. 82.

161 Taubman, above n. 154, at 225, 226–7, 233, 239; D. Lametti, 'The concept of the anticommons. Useful, or ubiquitous and unnecessary?' in Howe and Griffiths, above n. 159, 251–2.

the ILBI could provide that these payments received could be passed on by the IP owner to the biodiversity fund to enhance further activity. For those unable to pay, the fund could make the payments to the IP owner. This would also be consistent with arguments for a more stewardship approach to be taken to IP.. It has been argued that the "patent owner-as-steward is not asked to 'conserve' the subject matter of his property in the same way as the landowner is required to conserve the natural world under this model, but there is no reason why they should not be expected to take environmental concerns into account in exploiting the invention".[162] The relevant environmental concerns here would be enabling the sharing of information about MGR and the enabling of further research which could, inter alia, contribute to ecologically sustainable development.

Trade secrets remain. TRIPS does not engage with defences to trade secrets. National laws do have established defences, notably in the United Kingdom, that use is in the public interest,[163] and this is reflected to an extent in the EU Trade Secrets Directive.[164] The inherent nature of trade secrets makes it a challenge, however, to construct a forward looking regime – defences can operate only in the context of a leak of information. The public interest defences could be a base for the ILBI requiring proactively that details are shared of information obtained on research cruises, as this would in turn enable further scientific research by others. This would also be consistent with obligations under UNCLOS for states to take steps to actively promote the transfer of information and knowledge resulting from marine scientific research.[165] The issue remains, however, of the level of interference with the incentive to be involved in marine biodiversity research, particularly given the more measured suggestions seen to be needed regarding IP rights. The binary nature of trade secrets makes it difficult to introduce a solution based on exceptions to the right. It is suggested, then, *that a period of secrecy can continue for a period (say 6–12 months),* similar to the existing *Mare Geneticum* proposal in respect of exclusivity, and then the information must be made available to all. *If there is disclosure of information within this initial period, there should be a defence if information is used to contribute to bringing about ecologically sustainable practices.*

162 H. R. Howe, 'Property, sustainability and patent law' in Howe and Griffiths, above n. 159, 299 (quote), 298–300; Blasiak, above n. 15.

163 *Attorney General v Observer Ltd* [1990] 1 AC 109 involving diaries of a member of security services.

164 Trade Secrets Directive, art. 5.

165 UNCLOS, art. 244.

6.4.3 Delivery

The draft ILBI of June 2019 shows some willingness to engage with IP as it has an IP clause, albeit with a focus on patents.[166] The more minimalist approach also remains (as also seen in the Aid prepared for IGC2),[167] with the draft having suggested clauses providing that implementation of the ILBI is to be in a manner consistent with the WIPO and the WTO, or ensuring that IP rights are supportive of and do not run counter to the IBLI' s objectives.[168] There is also the prospect of the parties choosing not to have an IP provision in the ILBI. Such an approach would bring about the fear expressed by some IGC delegates that if IP and MGR is not addressed in the ILBI, it may not be addressed anywhere.[169] The position discussed at WIPO suggests that this may be so in respect of disclosure of origin. IP appears, however, to be moving more into the mainstream. At IGC3 in August 2019, there was a confidential informal meeting on the place of IP[170] and there were a growing number of IP experts,[171] as well as a side event co-ordinated by the authors exploring the possible place of IP.[172]

The next section moves along the development and benefit sharing pipeline and evaluates how the use of MGR could be traced through IP and elsewhere.

7 Tracing

Patents and disclosure of origin are one form of doing this tracing. The focus here is more on the wider picture. The June 2019 draft ILBI refers to the possible assigning of an identifier to MGR collected *in situ*, *ex situ,* and digital sequence information.[173] Concerns have been raised that tracing would be burdensome and costly and a deterrent to scientific activity.[174] This is not

166 June 2019 draft ILBI, above n. 29, art. 12.

167 PAN 3 December 2018 A/CONF.232/2019/1* 3.2.3 Options II and III.

168 June 2019 draft ILBI, above n. 29, art 12.1, 12.2 first section. See IUCN Commentary, above n. 91, p 18–19, calling for specific engagement with flexibilities under TRIPS.

169 *Earth Negotiations Bulletin* 25 (2019) 25 March 2019 "in corridors", noting intense talk on IP and benefit sharing and frustrations about IP shifting from place to place in a "merry-go-round" of intellectual property fora.

170 A/CONF.232/2019/8/Rev.1.

171 Personal view of the authors from their own experience.

172 See Schedule of side events: https://www.un.org/bbnj/sites/www.un.org.bbnj/files/bbnj_igc_iii_side_events_schedule_final_eng.pdf accessed 3 November 2019, 22 August event 2, orgnaised by authors with IUCN and Deep Ocean Stewardship Initiative.

173 June 2019 draft ILBI n. 29, art. 11.3(3)(a) and see IUCN Commentary, above n. 91, p. 20.

174 See e.g., *Earth Negotiations Bulletin* 25 (2019) 25 March 2019 – Caricom wanted a non-intrusive track and trace system.

necessarily so.[175] There is existing technology through Global Positioning System data and use of digital object identifiers that would render tracing the journey of MGR along the scientific and commercial supply chain as both possible and best practice. Repositories can – and importantly already do – have an important role including in the allocation of identifiers. Further examples, in addition to those mentioned above, are ChemSpider[176] and metadatabases such as Ocean Biographic Information System (OBIS).[177] Each takes care of a different subset of the information and interlinks at different levels: they track MGR, taxonomy and publications (and also patents which are related to MGR) as part of established practice in sample management and scientific practice including through the requirements of funders and of journals.[178] Looking forward, evolving technology, such as blockchain and distributed ledgers may enable information to be traced more readily.[179]

So, a full technological solution would be possible to track and trace all MGR through the biodiscovery pipeline in its different forms. Yet this full solution is not yet available to all. There would be a need for existing practice to be made available globally, in a capacity building technology transfer effort, so that common standards for data can be shared fully. Work is ongoing on this already through OBIS through the Darwin Core Archive.[180] Nonetheless, *it is suggested that the ILBI should require a sample unique identifier and set out the functionality requirements which are to be delivered from time to time, with the method of this to be monitored through a new central body envisaged in the ILBI*.[181] The ILBI should not require the use of any particular product. The suggested functionality would not in fact make it possible to know where any MGR sample is at any given time or who is using a genetic sequence. The sample unique identifier would mean, however, that the sample can be to traced

175 Morgera, Fair and Equitable, above n. 42, 68–76; R. Wynberg and S. A. Laird, 'Fast Science and Sluggish Policy: The Herculean Task of Regulating Biodiscovery' 26(1) *Cell Press Review Trends in Biodiscovery* (2018) 1–3; M.A. Bagley and A. K. Rai, 'The Nagoya Protocol and Synthetic Biology Research: A Look at the Potential Impacts' *Virginia Public Law and Legal Theory Research Paper* No. 2014-05 (2014); Chiarolla, Benelex, above n. 95, section 4; Lawson and Rourke, above n. 72, 116, 117.

176 See http://www.chemspider.com/ accessed 3 November 2019.

177 See https://obis.org/ accessed 3 November 2019.

178 Lawson, Burton and Humphries, above n. 136; Rabone, above n. 64; see Database Study, above n. 136.

179 Lawson, Burton and Humphries, above n. 136, 247–8, 259; see Database Study, above n. 136.

180 See OBIS webpage https://obis.org/manual/dataformat/ accessed 3 November 2019.

181 June 2019 draft ILBI, above n. 29, art 48 and in particular art 48(d)(i), art 49.1, 4 Alt1 (c).

back to its origin, enabling payment into the biodiversity fund to be made from product sales or patent royalties.

The tracing and payment frameworks could fund the sharing of information and opportunities set out in this contribution, in addition to the payments which IP owners may choose to make to the biodiversity fund. This is important given that the International Nucleotide Sequence Database Collaboration (INSDC), has a combined annual global cost of US$ 50–60 million.[182] The fund could also, as noted, make payments to IP owners if the research user is not able to do so. From this base, the next section will consider the range of the benefit sharing obligations.

8 MGR and Benefit Sharing: Toward Future Proofing[183]

8.1 *Timing of Benefit Sharing*

As noted at the start of this contribution, *Mare Geneticum* raised the prospect of a period of exclusivity for the initial researcher, and this was seen to have been the subject of some criticism. It has been argued at the IGC that the ILBI should not condone or require a privatising approach to the samples.[184] Further, a more open approach to sharing would be aligned with an emerging cultural approach in science and in data curation, and that information should be FAIR (findable, accessible, interoperable and reusable).[185] Indeed, the proposals made above regarding metadatabases and sharing of information seek to deliver this later in the process.

It is suggested here that this mandatory sharing should apply from the start, with the requirement of exclusivity for the initial researcher set aside. *It is suggested that making MGR samples (physical and digital) openly accessible from the start will be possible in many cases and if so, this should be done*. With the physical sample, the collection may be limited depending on the amount

182 See Database Study, above n. 136.

183 IUCN Closing Statement for IGC 3 and see IUCN, 'Future-proofing protections for the high seas'(5 September 2019) https://www.iucn.org/news/marine-and-polar/201909/future-proofing-protections-high-seas accessed 3 November 2019.

184 Earth Negotiations Bulletin 25 (2018)12 September 2018 at IGC 1 arguments by PSIDS.

185 European Marine Biological Research Infrastructure Cluster (EMBRIC), 'ABS principles for preserving, accessing, exploring and sharing marine genetic resources' (April 2019), http://www.embric.eu/node/1759 accessed 3 November 2019; S. Stall *et al.,* 'Make all scientific data FAIR' 570 *Nature* (6 June 2019) 27–29; H. Pierce *et al.*, 'Credit data generators for data refuse' 570 *Nature* (6 June 2019) 30–32.

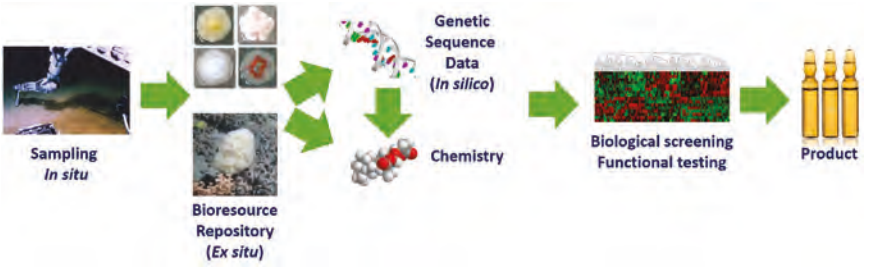

FIGURE 6.1 A simplified schematic showing the steps in the marine biodiscovery process. Sampling *in situ* is the first step, and this can be to collect a whole organism (such as a sponges or seacucumber) or a sediment which contains millions of microorganisms. A whole organism can be extracted to obtain bioactive compounds, or alternatively, pure microbial cultures are isolated from a marine sediment. These pure cultures can be grown at a larger scale to obtain bioactive compounds. In parallel, many studies now obtain genetic sequence data on organisms which allows the identification of what the organism might be able to produce. Eliciting the production of such compounds can be difficult as the factors needed to do this are not well understood. Extracts and pure compounds are subjected to biological screening (e.g., against cancer, infections or inflammation) or functional screening (e.g., as enzymes for washing powders or cosmeceuticals). Taking products to market can be a long and difficult process, as for pharmaceuticals, or it can be quicker for products for which regulation is less stringent.

which the scientists recovered from the research cruise – and from an ecological and ecosystem focussed approach, the samples removed should be as limited as possible. *In such cases, it is proposed that the researchers that instigated the collection should be given the first chance to work on the limited physical samples*. Given the points made in *Mare Geneticum*, it is hoped that this would include researchers from developing nations. *When there is ample material collected, in a manner which means that it could be used in other projects, it is proposed that this should be shared between researchers for multiple non-competing research uses*. This would reflect a practice used by the Norwegian Marine Biobank, MarBank.[186] This approach would be efficient and equitable for the environment and for science. It would make the best use of existing materials, reduce the need to repeat collection and generate overlapping collections, and enable data to be acquired in parallel on the same sample, thus increasing knowledge of biodiversity (Figure 6.1).

186 See https://www.imr.no/marbank/en accessed 3 November 2019.

8.2 *Scope of Benefit Sharing*

A second issue is when in the pipeline the obligations to share benefits that build on work with the MGR should end. Should the obligation only cover basic collection and genetic analysis? Should it encompass all research and development building on the MGR to any extent in its different forms? Should it extend to commercial activity[187] which started with the MGR, modified the MGR, and/or which used products and research which had been based on work with the MGR? They may be a long way down a development pipeline away from the MGR, yet this phase of commercialisation could be said not to have been possible without the MGR.

The challenges of identifying what is commercial has already been seen above in respect of research. There is also the question of how far one should seek to gain benefit from, or indeed users should seek to recognise and repay, what they have gained from MGR – even if they have also added to it through significant financial investment, time and expertise. A later drawing of the line would mean that more activities would be subject to the benefit sharing regime. This could be objected to on the basis that by this time there would already have been a fair and equitable return to all from the earlier use made of the MGR and benefit sharing in respect of it.

When there is an IP right, it has been suggested, building on existing theories of "bounded openness", that there should be sharing of financial benefit in respect of the natural information discussed above.[188] This draws not on the nature of the activity (such as commercial or non commercial, *in* or *ex situ*, physical or information) but on the fact that the MGR information does and should flow freely. This proposal then is that payments could be made, therefore, of a fixed royalty from the IP right into a fund, with the amount to depend, with echoes of *Mare Geneticum*, on utilisation levels and the industry involved.[189] Alongside this, again with echoes of *Mare Geneticum*, this work proposes that details are to be shared of where the MGR was found so that the increased information will create more choice between useable MGR – which would lead in turn to more demand and also more cooperation, more complementarity and less overlap and so less damage to fragile ecosytems from activity.[190]

The draft ILBI of June 2019[191] explored what activities would be covered by utilization of resources. Yet the location in the pipeline of the activities, and how

187 June 2019 draft ILBI n. 29, art. 1.15 varying approaches.
188 Muller, above n. 20, 24, 117.
189 Muller, above n. 20, 8, 66, 88.
190 Muller, above n. 20, 73–4, 77, 79 figure 5.1, 80.
191 IUCN Commentary n. 91, p. 7, art. 1.15 Alt 2.

the work on MGR has been the subject of say second or third generation activity, has not been explored in the negotiations. IP rights will not always exist, so it is proposed that they should not be the base for a solution. Proposals made in the context of animal and plant breeding at the Convention on International Trade in Endangered Species of Wild Fauna and Flora limited regulation from this perspective to the first, second, third and fourth generations.[192] This genetic perspective does not, however, map directly on to product development. The pharmaceutical products which are ultimately approved by regulators may have gone through 10 or so developments beyond the original MGR. *It is suggested, therefore, that benefit sharing will only apply to the first three generations of a product by each innovator which are brought to market drawing on MGR*. Issues could of course arise about innovators moving from one company to another and of businesses restructuring. For now, however, we consider that this provides a useful starting point.

9 Delivering an IP-Based Ecosystem Approach to Benefit Sharing

The final step of this contribution is to draw together, and enhance, the delivery of an ecosystem and ecological approach to benefit sharing. As noted, there could be compulsory licensing of patented inventions to deal with national emergencies which could include ecologically sustainable products in exchange for an adequate payment which could be paid into the diversity fund; an option for reasonable payments made for use of copyright and database works in relation to repositories to be paid into the diversity fund; and for use of secret information to pursue ecological goals to be covered by a public interest defence. This provision of some ongoing reward for the innovator and IP owner engages with one of the incentive strands set out at the start of this chapter. The sharing of the information and payments in some cases to the biodiversity fund to support activity by developing-country scientists engages with the second strand.

Further incentives could be included in the ILBI to encourage choices for MGR to be used to develop ecologically sustainable technologies rather than, say, other health treatments and cosmetics. "Ecologically sustainable technologies" could be defined by the central body likely to be established under the ILBI or through a new role given to an existing body. This could draw from work under the United Nations Framework Convention on Climate Change in respect of "environmentally sound technologies",[193] from the European Patent

192 CITES Resolution Conf. 10.17 (Rev.CoP14) on Animal Hybrids, art. 1(a) and (d).

193 UNFCCC 1992 UNTS vol 1771 p107, art 4(5), Kyoto Protocol 1997 https://unfccc.int/resource/docs/convkp/kpeng.pdf art 10, see also Paris Agreement 2015 UNFCCC Paris

Office regarding categorisation and "sustainable technologies,"[194] and from work by several patent agencies (including the UK and Brazil) for fast track examination of "environmentally friendly" and "green" innovation.[195]

One pathway to do this may appear surprising, given the points made above. The ILBI could impose fewer requirements to share the innovation or public interest defences in respect of these technologies and rely on the fact that, based on a traditional incentive and innovation approach to IP, the more power conferred, the more incentive there would be to choose to innovate in this area. Yet even if this approach did encourage more research, the issue would remain of the limits on the innovation and activity which the rights would impose on the activity of others during the term of the patent or while the information was secret. There could be the hope that the instances explored across this contribution of patent owners choosing to share their innovation could lead to increased use by others of ecologically sustainable technology. Yet a key theme across this contribution has been that this approach to sharing cannot and should not be relied upon.

A preferable approach, then, which is indeed also rather market based, would be for a *decreased payment to be made to the biodiversity fund by those developing and selling ecologically sustainable solutions*. This could encourage innovation in this space. It could also be justified on the basis that such innovators are through this innovation choice already paying debts to the ecosystem which were incurred by removing the MGR or going down to the seabed to analyse it and establish its digital sequence information.

10 Conclusion

The ILBI negotiations move closer to a solution. The closing remarks of the facilitator of the MGR discussions at IGC3 noted key issues to include how the

---

Agreement Annex to Decision FCCC/CP/2015/L/9/Rev.1 art 10(1); Technology Mechanism https://unfccc.int/ttclear/support/technology-mechanism.html and Global Environment Facility under the Poznan Strategic Programme on Technology Transfer Webpage https://www.thegef.org/topics/technology-transfer and Case Studies https://www.thegef.org/sites/default/files/publications/GEF-TechTransfer-lowres_final_2.pdf, https://unfccc.int/resource/docs/publications/tech_for_adaptation_06.pdf all accessed 4 November 2019.

194 Class Y02 and Y04S – EPO webpage, 'Sustainable technologies' https://www.epo.org/news-issues/issues/classification/classification.html.

195 UKIPO Green Channel https://www.gov.uk/guidance/patents-accelerated-processing; A. Dechezlepretre and E. Lane, 'Fast-tracking green patent applications' WIO Magazine (2013), https://www.wipo.int/wipo_magazine/en/2013/03/article_0002.html accessed 4 November 2019.

definition of MGR engages with digital information, whether benefit sharing and its modalities and triggers should be mandatory and whether to address IP rights and if so how.[196] This contribution has sought to contribute to these issues for marine diversity in the ABNJ.

The prospect of commercial development with MGR, private activity in respect of new technologies and increased argument for regard to the protection of ecosystems require a new approach to MGR and benefit sharing. If this is not done, then activity will fall outside the ILBI. This will render the ILBI at best incomplete and at worst undeliverable, with the option to engage more directly with ecological approaches being lost. This contribution has developed a new ecosystem and ecologically-focused approach building on the intersections between law and science, property and openness, commercial products and scientific research, physical and digital, the past and the future, and normative and workable. It has provided a new contribution which can be of use in the ILBI negotiations, in future legal and scientific debates which involve public and private perspectives, and in the development of benefit sharing and its intersection with sustainability, science and other areas of law.

Proposals have been made regarding definitions of MGR; engagement with IP and trade secrets; tracing the place of exclusivity; the timing and funding of activities covered by benefit sharing and a market-based system to encourage innovation in ecologically sustainable areas. They have avoided fragmentation and engaged in intersystemic dialogue. The proposals made here are consistent with existing laws and would ensure that the benefit-sharing goals can be delivered, rather than being cast aside through an unquestioning acceptance of the power of private rights. The proposals do not change IP law, rather they engage with opportunities which exist within IP law for states to introduce some permitted exceptions and require sharing.

It is a challenge to "future proof" entirely the ILBI. But the proposals made here are an important step towards this, for science and for law.

The authors are delighted to acknowledge the significant contribution made to this piece by Dr Olivia Woolley (School of Law University of Aberdeen, shortly to be of Durham University, and research assistance provided by Jack Cameron (graduate of the School of Law University of Aberdeen). We also acknowledge the invaluable contribution to scholarship and to the ongoing negotiations by Arianna Broggiato, Thomas Vanagt, Laura E. Lallier, Geoff Burton and Dominic Muyldermans - authors, alongside Jaspars, of the Mare Geneticum piece to which reference is made in this chapter.

196 Earth Negotiations Bulletin 25 (2018) 2 September 2019.

CHAPTER 7

Biodiversity Beyond National Jurisdiction

(*Intellectual*) *Property Heuristics*

Siva Thambisetty

Abstract

BBNJ negotiating positions on marine genetic resources are best understood in light of a number of hidden (intellectual) property heuristics at play – arising from the diverging relevance of tangibility and place when it comes to genetic resources and the asymmetry in IP norms in multilateral settings. This short paper sets out in outline, the normative implications of these heuristics and identifies a 'no harm' principle that ought to find a place in any new legally binding framework.

Keywords

biodiversity – areas beyond national jurisdiction – intellectual property – heuristics – benefit-sharing – marine genetic resources – convention on biological diversity – negotiations – digital sequence information – marine scientific research

Negotiations over biodiversity beyond national jurisdiction (BBNJ) negotiations up until the second intergovernmental conference (IGC2) and to a lesser extent in the third, (IGC3) were awash with the canoe metaphor – that we are all in the same canoe perhaps a Pacific vaka, and needed to find direction and destination together. The canoe however, is a red herring, as it evokes the image of being together in warm seas with clear blue skies. A competing metaphor of an iceberg is more accurate because of the way the BBNJ negotiations subsume vastly significant, yet hidden, motivations. These hidden heuristics are important because they become short cuts for processing information and making judgments on negotiating positions. The subject matter of the BBNJ negotiations are complex, technical and difficult to fathom in their entirety for even seasoned negotiators. In this context it is critical that we bring much needed attention to the rules of thumb that are being used as a necessary

 | DOI:10.1163/9789004422438_008

aspect of understanding where progress might be made and to highlight textual limitations that threaten an ambitious Treaty.

In this paper I touch on two such heuristics in outline related to the (intellectual) property framework that is emerging in the text-based negotiations around marine genetic resources, excluding those related to capacity-building and technology transfer although some of these remain relevant. The first arises from the use of terms including 'genetic resources', 'access' and 'utilization'. The second heuristic is the long shadow cast by the skewed nature of intellectual property norms in multilateral settings and whether the consequences can and should be addressed or ameliorated in the BBNJ instrument or outside of it.

1 Use and Non-Use of Terms

In 1997 Laurenschlasger in an influential essay proclaimed 'Biodiversity is dead' to explain that the term 'biodiversity' was meaningless because of the ambiguity and breadth of the subject matter it refers to.[1] For similar reasons it may be time to proclaim the death of 'genetic resources'. Evolving technologies have made this term a weighty anchor to the past hindering clarity and transparency of legal positions.

The Convention on Biological Diversity (CBD) is the ideational precursor to any BBNJ framework. Here use of the term 'genetic resources' is tied to the land, to sovereignty and control by possession by State Parties. Genetic resources today exist in many different forms, physical and tangible but also dissociated, dematerialized and intangible in the form of digitized sequence data.[2] What a particular negotiating party understands by the term 'genetic resources' depends on whether they see the putative international legally binding instrument (ILBI) as a relatively light touch instrument of environmental law dealing with biodiversity that is static, tied to place and tangibility; or an instrument of intellectual property law associated with functional information – manipulatable, free from geography and place and a function of the scientific and commercial benefits implied.

1 Laurenschlasger, 'Biodiversity is Dead', *Wildlife Society Bulletin* (*1973–2006*) 25(3) (Autumn, 1997), pp. 679–685.

2 See A Kostakis, 'Change and Subjectivity in International Environmental Law: The Micro-Politics of the Transformation of Biodiversity into Genetic Gold' *Transnational Environmental Law*, 3:1 (2014), pp. 127–147 and M Bagley, 'De-Materializing Genetic Resources: Synthetic Biology, Intellectual Property and the ABS By-pass' in C McManis and B Ong, *Routledge Handbook on Biodiversity and the Law* (Routledge 2018).

The chasm between the old way of looking at biodiversity and the new, malleable way of characterizing genetic resources is hinted at in the definition of 'utilisation of genetic resources' in Art 2 of the Nagoya Protocol[3] with its reference to 'the application of biotechnology'. There is currently a robust process underway initiated by the Conference of the Parties (COP) to examine the terminology and implementation of the CBD with reference to digital sequence information (DSI), itself a term used as a placeholder;[4] other international bodies and frameworks are also realizing if not actively exploring, the significance of DSI under their own frameworks.[5]

There is wide divergence in how domestic measures that implement 'DSI'-related measures under the CBD emerge and are applied in practice. The two extremes of the spectrum are marked by State Parties who see DSI as associated with physical and tangible resources such that contractual measures such as PIC and MAT would equally apply to them even though it is not clear how digitized sequence information that cannot contemporaneously be associated with a physical resource (for instance those stored or accessed *ex situ* in databases prior to entry into force of the Nagoya Protocol) will be governed. At the other end of the spectrum are those who see digitized sequence information as liberating the information from awkward and restrictive sovereign property rights.

The variance in domestic governance models that result is startling.[6] It is in this context that the continued use of the term 'genetic resources' and replication of the confusion in 2020 in any BBNJ instrument, in so far as it signals dissociation from digitized forms of information would be unhelpful and regressive.

---

3 "The Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization to the Convention on Biological Diversity" (CBD) is a 2010 supplementary agreement to the 1992 Convention on Biological Diversity.

4 *Report of the Ad Hoc Technical Working Group on Digital Sequence Information on Genetic Resources*, 20 February 2018, UN Doc. CBD/SBSTTA/22/INF/4 Available here < https://www.cbd.int/doc/c/4f53/a660/20273cadac313787b058a7b6/dsi-ahteg-2018-01-04-en.pdf> and more recently Bagley, Karger, Mueller, Perron-Welch and Thambisetty, 'Fact-finding Study on How Domestic Measures Address Benefit-sharing Arising from Commercial and Non-commercial Use of Digital Sequence Information on Genetic Resources and Address the Use of Digital Sequence Information on Genetic Resources for Research and Development' (October 2019) Available here < https://www.cbd.int/dsi-gr/2019–2020/studies/#tab=2> (Hereafter, 'Study 4 on Digital sequence Information on Genetic Resources').

5 The FAO this year invited submission of views on DSI, Available here < http://www.fao.org/plant-treaty/overview/mypow/dsi/en/>. Also see Welch, Bagley, Kuiken, and Louafi, 'Potential Implications of New Synthetic Biology and Genomic Research Trajectories on the International Treaty for Plant Genetic Resources for Food and Agriculture (ITPGRFA or 'Treaty')' *Emory Legal Studies Research Paper* (2017).

6 Study 4 on Digital Sequence Information on Genetic Resources n 4 above.

TABLE 7.1 Access, utilization & benefit-sharing: an instrument in three acts

	Scope→ MGR↓ related Act	Geographic Position range between		Material Positions range between		Temporal Positions range between		Normative Scope Position range between	
1	Access	Selective	ABNJ	Not determinative	Identifier of relevant MGR	In situ only and after entry into force	In situ, entry into force, & ex situ	'absence of ownership'/ Possession/ Not finite	Common ownership/ management/ Accession Finite resource/No harm
2	Utilization	In association with benefit sharing	Freestanding & linked to access	Valuable data/ tech excluded; non proprietary information as result of R&D	All data, sequence information	Negated if access prior to date of instrument	Irrespective of access	MSR not to be impeded:	Basis of fair and equitable benefit-sharing Finite resource/No harm
3	Benefit-sharing	Specific, agreed acts of benefit sharing	Global multiateral benefit sharing & bilateral	Depends on material scope		Material scope of both access & utilization		Non-mometary modalities globalized	Fairness and equity Owenership Art 241 UNLCOS Finite resource/No harm

2 Access, Utilization and Benefit-Sharing: An Instrument in Three Acts

The zero-draft[7] of the BBNJ instrument and ensuing negotiations are framed by three performative acts with potential legal implications – access, utilization and benefit-sharing. The geographical, temporal, material and normative scope of the instrument is distributed over these acts as laid out in Table 7.1. (see shaded boxes). In each case non-acceptance of DSI as an aspect of marine genetic resources of areas beyond national jurisdiction amplifies the complexity and incoherence of any frameworks put in place. In light of Table 7.1 and with respect to the state of negotiations in IGC3 it appears that the parties cannot agree on the scope of what it is that they are negotiating.

For example if DSI is not included within the scope of marine genetic resources being accessed, the conversion of a physical resource to digitized sequence information breaks the legal link between genetic resources accessed from areas beyond national jurisdiction (ABNJ) and the sequence information. In effect any use of genetic resources accessed prior to the the entry into force of the ILBI will not be covered under it in its digitized form. Yet modern day utilization of genetic resources with some exceptions,[8] can scarcely proceed without sequencing and digitization.

The above would be the case unless the 'utilization' of genetic resources undertaken after the entry into force of genetic resources accessed prior to the entry into force was an explicit trigger for the instrument to apply.[9] When it comes to the utilization of genetic resources, State Parties to the Nagoya Protocol who choose not to associate DSI with physical genetic resources in effect negate the need to address benefit-sharing through the application of biotechnology under the Convention on Biological Diversity (CBD)[10] (unless there are mutually agreed terms). This has cast a long shadow over any potential

7 Draft text of an agreement 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 (A/CONF.232/2019/6) Available here < https://undocs.org/en/a/conf.232/2019/6>.

8 For example, taxonomy or conservation measures.

9 It is critical to note here that utilization of genetic resources accessed prior to entry into force will not necessarily amount to retrospective application of the instrument. The rule against retroactivity in Art 28 of the Vienna Convention only applies in the absence of a different intention that can be established by the parties.

10 Although this can still happen through compliance measures designed to ensure that provider country laws that do reference DSI are followed. See discussion of EUR 511/2014 in 'Study 4 on Digital sequence Information on Genetic Resources' n 4 above.

benefit-sharing in the BBNJ negotiations with several negotiating parties such as the EU and Japan taking the view that 'utilization' of genetic resources need not find a place in the text of the ILBI.[11] If 'utilization' remains undefined, then benefit-sharing arising from the utilization of genetic resources cannot possibly be pinned down.

Problems defining benefit-sharing go beyond a mere question of use of terms. There is the issue of monetary and non-monetary benefit-sharing, and determining commercial and non-commercial contexts.[12] The more acute problem here however is the lack of agreement on the meaning and status of benefit-sharing, which in the language of both UNGA Resolutions that set the stage for the negotiations is one of four key questions the instrument must address.[13]

Benefit-sharing or in some cases 'fair and equitable benefit-sharing', as the third performative act related to marine genetic resources from ABNJ appears to be used both as short-hand for a principle of international law and as a mere modality. There are some indications that benefit-sharing is now of sufficient heft and weight that it should be regarded as a principle of international law. Equitable benefit-sharing so far has been recognised as 'a Treaty objective, obligation and mechanism under biodiversity laws, a component of the human right to science, and relevant to international biodiversity law as well'.[14] Yet we do not have an explicit or principled approach to what it means to 'share' and when such sharing is 'fair and equitable'.

Alternatively to view benefit-sharing as a functional modality is to restrict its scope to specific, enumerated contexts that inherently limit any ambitions for multiple avenues of justice that may flow from a more open-textured principle of international law. We see this play out in the context of the CBD, where benefit-sharing can be difficult to enforce. The bilateral architecture of the Convention means benefit-sharing is essentially a modality that is subject to international contract law, with all the difficulties of performance and enforcement that entails.[15] An approach that takes into

11 Based on IGC3 negotiations on MGRS.

12 C von Kries and G Winter, 'Defining commercial and non-commercial research and development under the Nagoya Protocol and in other contexts', in E Chege Kamau, G Winter, P-T. Stoll, (eds.), *Research and Development on Genetic Resources: Public Domain Approaches in Implementing the Nagoya Protocol* (Routledge 2015).

13 Resolution 69/292 (19 June 2015) and Resolution 72/249 (24 December 2017).

14 E Morgera, 'Fair and Equitable Benefit-Sharing: History, Normative Content and Status in International Law' in 'Benefit-sharing' in E Orlando and L Krämer, (eds.), *Encyclopedia of Environmental Law: Principles of Environmental Law* (EE 2017).

15 T Young and M Tvedt, *Drafting Successful Access and Benefit-Sharing Contracts* (Brill Nijhoff 2018).

account human rights, the achievement of UNSDGs, and the status of the resources of ABNJ could see Equitable Benefit-Sharing (EBS) as a principle of public international law designed to further equity and open to evolving interpretation.

The legal weight of this international legal principle in the making is set to be a matter of discussion for some time to come. The BBNJ instrument will inevitably act as a bridge between those who see benefit-sharing as merely instrumental to a subjective vision of the framework and others who see it as a necessary requisite for justice and progress for '*all* peoples of the world'.[16] In the interests of coherence, negotiators must anticipate and reduce the potential for dissonant approaches.

3 Intellectual Property Norms

IP norms are often presented in the form of simplistic heuristics, heightened by asymmetry in the way they originate and are applied in multilateral settings and due to their perceived consequences. This asymmetry has played out for instance in the loss of regulatory sovereignty related to domestic innovation policies[17] and an increasing inability to mediate public policy related to the intersection of IP with environmental, social and economic policies derived from other multilateral settings.[18] It is also hard to ignore critiques of the failings of intellectual property frameworks in domestic contexts in leading jurisdictions like the United States and in EU law.[19] The asymmetry has led some academics, including Professors Ruth Okediji and Jerome Reichman, to call for a moratorium on the further harmonization of intellectual property at

16 United Nations Convention on the Law of the Sea, Preamble, emphasis added.

17 See Declaration on Patent Protection: Regulatory Sovereignty under TRIPS, available here <https://www.mpg.de/8132986/Patent-Declaration.pdf>; G Shaffer, 'How the WTO Shapes Regulatory Governance' University of California, *Legal Studies Research Paper Series* No. 2014–53.

18 Braga, Fink and Sepulveda, 'Intellectual Property and Economic Development' World Bank Discussion Paper 412 (2000).

19 K Aoki, 'Distributive and Syncretic Motives in Intellectual Property Law (with Special Reference to Coercion, Agency, and Development)'40 *U.C. Davis L. Rev*. 717- 801 (2007); A Jaffe and J Lerner, *Innovation and Its Discontents: How our Broken Patent System is Endangering Innovation and Progress, and What to Do About it* (Princeton University Press 2007); J Bessen and M Muerer, *Patent Failure: How Judges, Bureaucrats, and Lawyers Put Innovators at Risk* (Princeton University Press 2009); D Guellec and B V Pottelsberghe de la Potterie, *The Economics of the European Patent System: IP Policy for Innovation and Competition* (OUP 2007).

regional and multilateral levels, a call fueled at least partially by the 'tentative and divergent ideas about how best to treat a daunting array of new technologies'.[20] For the BBNJ process the question is whether there is a constructive way to acknowledge these developments in the negotiations, and whether not doing so is in effect an explicit acceptance of the skewed nature of some of these norms.

In the text-based negotiations, there seem to be four different scenarios emerging:

(a) ***The 'no text' Option – Intellectual Property Law Is Not Addressed in the ILBI with Respect to Marine Genetic Resources***

As Table 7.1 tries to convey, not addressing arrangements that govern valuable data and technology (see shaded boxes) threatens coherence of the eventual instrument. Resolving the 'value' that arises from the utilisation of marine genetic resources is best done through a deeper engagement with means of control over information – predominantly through intellectual property, but also through careful management of the public domain and open access measures. To negotiate only the latter without addressing the former through IP arrangements cuts away a sizeable chunk of the potential scope of the instrument.

The place and precarity of intellectual property rights over genetic resources have shadowed the growth of biotechnology right from the start. The CBD does not address intellectual property rights over genetic resources, but this may be seen as a function of the fact that it predates the TRIPS agreement and the efforts to harmonise IP standards globally. Unequivocal sovereign rights granted to State Parties over genetic resources in their territories preserved a semblance of control over the use and circulation of genetic resources, in a world not yet enthralled with global intellectual property rules. Contemporaneoulsy, the human genome project, accompanied by studies on ELSI – ethical, legal, social issues – was shadowed right from the start by the implications of commodifying genes, and the facilitation of it via patents and exclusionary licensing terms.[21] Subsequent developments in synthetic biology have served

20 J H Reichman & R C Dreyfuss, 'Harmonization Without Consensus: Critical Reflections on Drafting a Substantive Patent Law Treaty', 57 *Duke L.J.* 85, 86 (2007); Ruth Okediji, 'Does Intellectual Property Need Human Rights' 51 *NYU J Int'l & Pol* 1 (2018).

21 See D Dickenson, 'Consent, Commodification, and Benefit-Sharing in Genetic Research', *Dev World Bioethics* 2004 4(2):109–24; and Goulding, Marden, Manion, Levy, 'Alternative Intellectual Property for Genomics and the Activity of Technology Transfer Offices: Emerging Directions in Research', 16 *BU J Sci & Tech L* 194 (2010).

to heighten concerns over the distributive effects of patents, and the widening technology capability gap.[22]

The 'no text' viewpoint is often accompanied by a non-specific suggestion that other institutions and entities are better suited to address the question of intellectual property rights over marine genetic resources of ABNJ, despite the fact that the two main contenders, the World Intellectual Property Office (WIPO) and the World Trade Organisation (WTO), have shown no appetite to take on the issue of marine genetic resources in ABNJ. Recent negotiations at the WIPO on declarations of origin include text that specifically excludes MGRs of ABNJ.[23] The WTO also has shown little disposition towards overextending its legitimacy in unconventional ways,[24] and it is extremely unlikely that the Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS) Council will see the ABNJ origins of these marine genetic resources as being reason enough to amend provisions of the TRIPS Agreement.

Given that: 1) in most jurisdictions it is possible to patent microrganisms, genomic DNA[25] and gene sequence fragments, and that such patents amount to exclusive monopolies over the use and commercial exploitation of genes and associated digital sequence information; 2) there is continuing pressure to harmonise intellectual property standards worldwide; 3) ABNJ has unprecedented legal status, the 'no text' option under the rubric of Article 12 of the zero draft is in effect an endorsement of the status quo. It would be fair to say that those endorsing such status quo are the State Parties where individuals and corporations benefit most from existing arrangements around the monopolisation of genetic resources. The long-standing nature of the problems over

22 Welch, Bagley, Kuiken and Louafi, 'Potential implications of new synthetic biology and genomic research trajectories on the International Treaty for Plant Genetic Resources for Food and Agriculture (ITPGRFA or 'Treaty')' n 5 above.

23 WIPO/GRTKF/IC/40/6 (April 9, 2019) see text under draft Article 5.

24 A Lang, *World Trade Law after Neoliberalism: Reimagining the Global Economic Order* (Oxford: Oxford University Press, 2011). Also see M Fakhri, 'Reconstruing WTO Legitimacy Debates' (2011) 2 *Notre Dame J of Int'l & Comp L,* 64.

25 R Cooke-Degan and C Heaney, 'Patents in Genomics and Human Genetics' *Annu Rev Genomics Hum Genet* 2010 Sep 22; 11: 383–425; The US Supreme Court in 2013 recognised that genomic DNA ought not to be monopolised through patents in *Association for Molecular Pathology v, Myriad,* 569 U.S. 576 (2013); however the position in most jurisdictions is harmonised to the contrary. See 'Genetics, Genomics and the Patenting of DNA: Review of Potential Implications for Health in Developing Countries' (WHO 2005).

such monopolisation however, makes acquiescing in this way problematic and should give all negotiating parties pause for thought.

(b) ***The 'tinkering' Option – Ameliorating Existing Frameworks***

If there is some misgiving about how IP will apply, particularly over DSI and patent office actions, then it makes sense to find measures that ameliorate some of the excesses of the system. A number of negotiating parties have spoken of measures such as declaration of origin or conditions of access that implement a form of 'track and trace' so that marine genetic resources accessed from ABNJ can be identified as such through the value chain. When speaking of track and trace it is important to acknowledge that it is both scientific and legal in character and that the scientific possibility need not be determinative of the latter.[26] In medical and scientific research, honour systems and codes of conduct policed by peers and self-regulatory measures are not uncommon. A similar system could supplement scientific tracing and give content to meaningful 'track and trace' but only if the ILBI sets out at least a nominal basis for it.[27]

Legal track and trace would need monitoring mechanisms. Under the Nagoya Protocol, intellectual property offices are the most commonly used checkpoints.[28] A different approach can also be taken by incorporating the international patent classification system. This is a system for examiners in patent offices or others to categorise, classify and code patent applications according to the technical features of their content, enabling technical data to be retrieved easily.[29] Modifications to the international classification system are made all the time, as technology develops or unprecedented innovations come up. With some basis in the ILBI to do so, it should be possible to explore a new sub-group classification referring to marine genetic resources from ABNJ. This

26 See discussion in S Thambisetty, 'Marine Genetic Resources Beyond National Jurisdiction: Elements of a New International Legally Binding Instrument', *LSE Law-Policy Briefing Paper* No. 32. Available here < https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3219995>.

27 For an in-depth analysis see B Kiliç, 'Patent Disclosure Requirements in Free Trade Agreements', paper commissioned by the Centre for WTO Studies for the International Conference on TRIPS-CBD linkages, Geneva (Switzerland), 7–8 June 2018, available at: http://wtocentre.iift.ac.in/workingpaper/WorkingPaper49.pdf.

28 Study 4 on Digital sequence Information on Genetic Resources n 4 above.

29 Established by the Strasbourg Agreement https://www.wipo.int/classifications/ipc/en/preface.html.

would have the advantage of being embedded in the patent system and be non-discriminatory of patent applicants.[30]

The ideal substantive legal basis in the ILBI would be for declaration of origin to be adopted as a non-monetary benefit-sharing measure on the bases that recording provenance is good science and enhanced patent disclosure measures can lead to positive information spill overs for everyone and facilitate benefit-sharing. Crucially, declaration of origin appears to reflect the direction of travel under the CBD and Nagoya Protocol.[31] It should also be noted that since none of the countries that have opted for some form of declaration of origin for patent applications have been taken to task at the WTO yet, such measures are conceivably compatible under the TRIPS Agreement.[32] In light of the ease with which some form of declaration of origin may be legally implemented in case of MGRs post entry into force of a putative instrument, the onus surely shifts to asking negotiating parties to justify the continued demand for non-disclosure of origin.

(c) *The 'no-IPR' Option: Precluding Intellectual Property*

The third option that is emerging is where some negotiating parties want to make the ownership structure over marine genetic resources of ABNJ fair and equitable by precluding intellectual property rights (IPR). The normative basis for this comes from UNCLOS Art 241, particularly as there now seems to be growing convergence on the view that marine scientific research (MSR) includes research on genetic resources.[33] It is supplemented by the common heritage of mankind principle put forward robustly by the G77 + China group as dispositive of the status of marine genetic resources beyond ABNJ.

This brings us to one of the most simplistic heuristics in the BBNJ negotiations – that the common heritage of mankind (CHM) and freedoms of the high

30 See discussion in C Chiorolla, 'Intellectual Property from a Global Environmental Law Perspective: Lessons from Patent Disclosure Requirements for Genetic Resources and Traditional Knowledge', *Transnational Environmental Law*, 8:3 (2019), pp. 503–521.

31 See references to check points in 'Study 4 on Digital sequence Information on Genetic Resources' and C Chiorolla, n 30 above on the 'quasi-extraterritorial application of ABS standards' at 512.

32 C Chiarolla, n 30 above [fn 74].

33 Based on negotiations at IGC3. Article 241 UNCLOS states that MSR 'shall not constitute the legal basis for any claim to any part of the marine environment or its resources'. See M Ysern (2003), 'Legal issues raised by profitable biotechnology development through MSR' *American Society of International Law* (www.asil.org/insights) p. 2 arguing that claims regarding intellectual property rights in these developments would in fact constitute a 'claim' under Article 241.

seas (FoHS) are mutually exclusive[34] – that you cannot opt for one without also denigrating the significance of the other. This is possibly at the heart of the recalcitrance to address normative principles in text-based negotiations over BBNJ, and the disappearance of the CHM and FoHS between the first President's "Aid to the Negotiations" document and the zero-draft text. Following conventional negotiating theory, it makes sense to agree on non-controversial aspects before tackling the main sources of divergence,[35] but the inability to resolve the status of these two principles is having a detrimental impact on normative coherence as it applies to intellectual property issues.

With respect to the status of marine genetic resources, CHM and FoHS do not occupy the same space. The former refers to the ethical and legal status of the subject area and resource (absence of private property rights being one aspect), and the latter is a freedom in relation to an area (beyond national jurisdiction) and should not be confused with a non-existent freedom to lay claim through property rights to the fruits of exercising that freedom (whether through MSR or otherwise), including through intellectual property rights. It is this necessary distinction that is captured by the restraint in Article 241 of UNCLOS.

The right to conduct MSR and access and utilise marine genetic resources from ABNJ as a seamless continuum only works if you acknowledge a facilitative normative basis that allows for possession of those resources. If we accept that the FoHS applies to MSR, then in so far as possession of MGRS resulting from MSR are concerned two potential possibilities follow – that biodiversity

34 See discussion for instance in P Taylor, 'Common Heritage of Mankind Principle' in K Bosselmann, D Fogel, and J. B. Ruhl, (eds.), *The Encyclopedia of Sustainability, Vol. 3: The Law and Politics of Sustainability* 64–69. (Berkshire Publishing); and D Tladi 'State Practice and the Making and Remaking of International Law: The Case of the Legal Rules Relating to Marine Biodiversity in Areas Beyond National Jurisdiction', (2014) 1 *J of State Practice and International L,* 97; and Z Chun, 'Challenges Facing the UN High Seas Treaty', *The Maritime Executive* (Editorial) 2018-09-07 Available here < https://www.maritime-executive.com/editorials/challenges-facing-the-un-high-seas-treaty (referring to traditional ideas around freedom of the high seas, and the halting recognition of biodiversity of the high seas).

35 For general discussion on ordering negotiating priorities see K Monheim, 'The management of multilateral negotiations: lessons from UN climate negotiations' February 2015 Policy Paper, Grantham Research Institute on Climate Change and the Environment, Available here <http://eprints.lse.ac.uk/64534/1/Managment-of-multilateral-negotiations_Monheim_final.pdf> and N Kteily, T Saguy, J Sidanius, and D M Taylor, 'Negotiating Power: Agenda Ordering and the Willingness to Negotiate in Asymmetric Intergroup Conflicts', *J of Personality and Social Psychology* 2013 105(6), 978–95.

beyond national jurisdiction is regarded as being under common ownership, or that no ownership rights exist whatsoever.

Purely on the basis of precedent, CHM is *de facto* an unconvincing practical basis for precluding intellectual property rights. As a principle it is widely seen as enabling distributive justice for developing countries and facilitative of benefit-sharing. In international law there is no definition of CHM as such, only an agreement on constituent elements. The UN Framework Convention on Climate Change and the Convention on Biological Diversity both water down the principle to 'common concern of mankind'; and the UNESCO Declaration on the Human Genome and Human Rights refers to the human genome as 'heritage of humanity in a symbolic sense'. These sorts of depictions do not prevent the private ownership of genomic data (human, plant or animal) through patents and incorporation in privately owned databases. As a principle of international law, it is an ambiguous placeholder that lends itself to dilution and multiple interpretations.

The FoHS and uninhibited access works best within the assumption that BBNJ is 'owner-less' but this appears to go against the language of UNGA Resolutions 72/249 and 69/292 which set out the need for a 'comprehensive global regime' to better address conservation and sustainable use of marine biological diversity of areas beyond national jurisdiction. The language is redolent of managed 'common ownership', rather than a *laissez faire*, 'no-ownership' scenario. In order for the FoHS to be compatible with the wording of the relevant UNGA resolutions in a way that ties that principle to access and utilisation of MGRs, the status of these resources in law, and intellectual property rights, we need persuasive arguments that I believe have not been put forth yet.

(d) *Moderation and Regulatory Sovereignty: Intellectual Property Limitations*

Limiting intellectual property rights rather than precluding these rights allows for the moderation of the scope of these rights. A BBNJ instrument could have a choice of being either prescriptive or leaving the precise contours of such limitations to domesticate regulatory sovereignty. This is for instance reflected in the language put forth by the PSIDS group in its position on Article 12 of the zero-draft.[36]

36 Article 2 *bis* The access, utilization and commercial exploitation of marine genetic resources under this Agreement and protected by intellectual property rights shall be subject to limitations that further the objectives of this Agreement and this Part, including equitable benefit sharing and capacity building and technology transfer. (Conference Room Papers Aug 30 2019).

The architecture of limitations is internal to intellectual property law internationally and is therefore not likely to damage the coherence of the transnational application of the ILBI. These limitations would apply to the post grant exploitation of intellectual property rights such as patents, could be automatic (such as 'fair use' terms in copyright law), or be an effective means to control price, access (through licensing terms), or availability (through measures that demand local working of patented inventions for example.) They may apply in a time-limited way – for instance granting least developed countries and small island developing states, a longer period to apply IP rules taking into account their special circumstances. Whether such limitations would be compatible with TRIPS is a critical question, but on balance such measures could be seen as furthering the objectives of Articles 7 and 8 of TRIPS, consistent with socio-economic differences and technological development amongst countries.[37] Such limitations would take into account the disputed normative basis of BBNJ without needing to resolve it and give weight to Art 241 UNCLOS.

A helpful precedent can be seen in the Marrakesh Treaty[38] negotiated at WIPO, which allows countries to institute a limitation or exception in copyright laws to facilitate books to be converted into a format that is accessible to people who are visually impaired. This removes barriers faced by persons with visual impairments from accessing published works, ending a "book famine" for people with such disabilities. Less than 5% of all books ever published in the world are available in formats that can be accessed by the visually impaired.[39]

That process analogous to the one we are contemplating here, was driven by the need to achieve 'equal opportunities including the freedom to seek, receive and impart information and ideas of all kinds on an equal basis with others, including through all forms of communication of their choice, their enjoyment of the right to education and the opportunity to conduct research and to share scientific progress and its benefits'.[40] There are lessons in the way the world came together then for the BBNJ instrument now, as some negotiating parties try to pre-empt an impending 'marine technology famine' by improving access to valuable technologies and products that result from MSR conducted in ABNJ.

37 Article 7, 8.1 and 8.2 of the TRIPS Agreement.

38 Treaty to Facilitate Access to Published Works for Persons Who Are Blind, Visually Impaired, or Otherwise Print Disabled (2013).

39 L Ayoubi, 'The Marrakesh Treaty: Fixing International Copyright Law for the Benefit of the Visually Impaired Persons', (2015) 13 *NZJPIL*.

40 Marrakesh Treaty to Facilitate Access to Published Works for Persons Who Are Blind, Visually Impaired or Otherwise Print Disabled, Preamble. Available here <http://www.wipo.int/wipolex/en/treaties/text.jsp?file_id=301019>

4 No Harm Principle

These four emerging positions are set out within the rubric of Articles 10, 11, 12 and 13 of the zero-draft treaty. Through this suite of Articles, the ILBI will form a link between the normative basis of control over the physical resources and the intangible information that is an integral part of marine genetic resources. Whichever side of the spectrum – 'common ownership' or 'no ownership' – the dust ultimately settles, I submit that it must be guided by a 'no harm' principle which must apply across the board.

One of the most detrimental impacts and a very well-hidden heuristic of focussing solely on the physicality of marine genetic resources is that they are seen as replenishable, inexhaustible and 'not finite' as a resource. This is the basis of assertions such as Japan's in open session in IGC2 – that a bucket of water in order to conduct genetic sampling is not going to 'harm' the marine environment. However, if we view marine genetic resources as a combination of physical and intangible, then monopoly rights over dematerialised resources make them finite, exhaustible and liable to monopolistic use. This is where the potential 'harm' is located – in the information deprivation caused by intellectual property rights that assign exclusive rights to informational, functional or contextual content of genetic resources. To ensure that the ILBI does not facilitate such impoverishment, it is important for the framework to ensure a 'no harm' principle – that when MSR is conducted, 'enough and as good' is left over for others that come after.[41] This is patently incompatible with unrestricted intellectual property rights over marine genetic resources of the ABNJ.

To third party observers, it can seem as if the BBNJ negotiations are a *performance* of justice, of process and of reasonableness rather than a meeting of minds over outcomes. Whether a balanced textual outcome can result from the multilateral negotiating process remains to be seen. What I have tried to show in this short paper is the need to bear in mind existing frames of understanding out of which the new governance regime will inevitably be fashioned. Even if we cannot all agree on ideal outcomes, we should be able to agree on the need for coherence and relevance in the text, as a consequence of which just outcomes may perhaps, become possible.

41 This clause in Ch 5 of Locke's *Second Treatise* is widely seen as a necessary restriction on private acquisition of the natural world (ABNJ) by application of one's labour (MSR). For discussion of this orthodoxy on the principles of first appropriation and challenges to it see J Tomasi, 'The Key to Locke's Proviso', *British Journal for the History of Philosophy*, 6:3, 447–454 DOI: 10.1080/09608789808571006.

PART 3

Environmental Impact Assessments (EIAs), Scientific Data and Databases, Sensor Technology

∴

CHAPTER 8

The Quest to Completely Map the World's Oceans in Support of Understanding Marine Biodiversity and the Regulatory Barriers We Have Created

Larry Mayer and J. Ashley Roach

Abstract

This paper reviews the current poor state of our knowledge of the bathymetry of the seafloor (only approximately 15% has been mapped by modern bathymetric sonars) and discusses the efforts being made under the auspices of the Nippon Foundation GEBCO Seabed 2030 program to rectify this situation and to produce a publically available, complete map of the ocean basins that can be used to support UN Sustainable Development Goal 14 by 2030. It will be impossible to achieve the targeted level of sustainable development without a comprehensive map of the ocean floor, a fact recognized by the planners of the Decade of Ocean Science for Sustainable Development who have identified "mapping the entire ocean floor and its processes" as a proposed priority area for the Decade. For this ambitious undertaking that will benefit all mankind to be achieved, we will need to ensure that the collection of the data needed to produce such maps will not be impeded. There are serious fiscal and technological challenges in trying to map the remaining unmapped 85% of the world's oceans by the target date, but these can be overcome by collective efforts and technological innovation. Less obvious are the sometimes arbitrary regulatory barriers to achieving complete mapping of the seafloor that coastal states may present in their interpretation of Marine Scientific Research under the 1982 UN Convention on the Law of the Sea. The recognition that the collection of bathymetric data in support of such a publicly-available global map is not categorized as MSR under the context of Part XIII of the Law of the Sea Treaty would go a long way to help meet this critical goal.

Keywords

oceans – mapping – marine biodiversity – regulations – bathymetry – seafloor – marine scientific research – United Nations Convention on the Law of the Sea – Seabed 2030

1 Introduction

In concert with its establishment of The Sustainable Development Goals, the United Nations has recently proclaimed a **Decade of Ocean Science for Sustainable Development (2021–2030)** "to support efforts to reverse the cycle of decline in ocean health and gather ocean stakeholders worldwide behind a common framework that will ensure ocean science can fully support countries in creating improved conditions for sustainable development of the Ocean."[1] The proclamation of the Decade of Ocean Science is a clear recognition of the critical role that the ocean plays in sustaining life, moderating climate and contributing to the overall physical and economic well-being of humankind. It also recognizes the serious threats to the health of the oceans and that action is urgently needed to ensure a sustainable future. In proclaiming the Decade of Ocean Science for Sustainable Development, on December 5, 2017, General Assembly Resolution 72/73[2] provided:

> 283. *Notes* that the depth of a significant percentage of the world's oceans, seas and waterways has yet to be measured directly and that bathymetric knowledge underpins the safe, sustainable and cost-effective execution of almost every human activity in, on or under the sea;
>
> and
>
> 285. *Encourages* Member States to consider contributing to mechanisms that encourage the widest possible availability of all bathymetric data, so as to support the sustainable development, management and governance of the marine environment

In making these statements, General Assembly Resolution A/72/73 recognized that a critical first step in establishing the knowledge needed to understand, manage and sustain biodiversity and other marine resources is establishing the geospatial context of the oceans – i.e., maps that accurately depict depths, the distribution of seamounts, ridges, trenches, and the nature of the seafloor substrate (e.g., sand, rock, mud, manganese nodules, coral, etc.), all critical aspects of understanding critical habitat. This fundamental geospatial context also provides insight into the paths of deep-sea currents, controlling the global distribution of heat and a key component of climate modeling. Mapping can

1 https://en.unesco.org/ocean-decade.

2 Oceans and the Law of the Sea: General Assembly Resolution A/72/73 adopted 5 December 2017. Distributed 4 January 2018. Identical texts appear as paragraphs 286 and 288 of the 2018 omnibus oceans resolution A/RES/73/124.

provide insight into the stability of the seafloor and other key processes that impact habitat and biodiversity. Knowledge of bathymetry is also an essential component for the accurate prediction of where tsunamis will have the greatest impact and where storm surge will do the greatest damage. Modern mapping systems also allow us to image the water column, mapping the distribution of fish, gas seeps, and hydrothermal vent communities. General Assembly Resolution A/72/73 also recognized, however, that despite many years of effort, only a small fraction of the world ocean's seafloor has been mapped by modern sonar systems, limiting our ability to explore and understand these critical ocean and seafloor processes. As will be outlined below, direct measurements of bathymetry using modern mapping techniques is available for only about 15% of the world's oceans. Thus, for almost 85% of the world's ocean's seafloor, no direct depth measurement is available. To state paragraph 285 of G.A. Resolution A/72/73 in a different way – *how can we manage and protect what we do not yet know and understand?*

This paper will review the current poor state of knowledge of the bathymetry of the seafloor and discuss the efforts being made to rectify this situation and to produce a complete, publicly-available map of the ocean basins that can be used to support UN Sustainable Development Goal 14 – "Conserve and Sustainably Use the Oceans, Seas and Marine Resources for Sustainable Development." It will be impossible to achieve this sustainable development goal without a comprehensive map of the ocean floor, a fact recognized by the planners of the UN Decade of Ocean Science for Sustainable Development who have identified "mapping the entire ocean floor and its processes" as a proposed priority area for the Decade. This paper will also discuss the fiscal and technological challenges of trying to map 85% of the world's oceans by a target date of 2030, challenges that are formidable but obvious; less obvious, however, are the regulatory barriers to achieving complete mapping of the seafloor that coastal states may present in their interpretation of Marine Scientific Research under the 1982 UN Convention on the Law of the Sea.

2 Mapping Earth

Our ability to map Earth, and with this mapping understand a variety of Earth processes, including biodiversity, has advanced at tremendous pace through developments in remote sensing. Satellite-deployed sensors can collect topographic data and produce digital elevation models (3-D models of topography) with sub-meter accuracy depicting landforms (and thus the geospatial context) in remarkable detail. Optical, infrared and multi-spectral sensors

can instantly map with high resolution, over large areas, the distribution of land cover (e.g., forests, agricultural areas, deserts), the nature of the land cover (species of trees, plants, etc.) and even the health of the vegetation. Any five-year old using Google Earth, can, with a few keystrokes, zoom into most anywhere on earth and see detailed imagery of our planet. The value of this ability with respect to understanding earth processes, exploring, navigating, planning, building and carrying out a host of other activities is immeasurable. Yet our ability to image the earth with this incredible detail is limited to the approximately 29% of the earth that is terrestrial. If we attempt to use the same imaging techniques to map the 71% of the planet that is covered by seawater, we will see nothing but a blue surface. This is because the electromagnetic waves (e.g., light waves) that are used by satellite remote sensing systems cannot penetrate far through seawater.

Because light does not propagate very far in the ocean, if we are interested in mapping the seafloor at the same scale at which we can map the land surface, we need to bring our camera and lighting systems very close (within a few meters) to the seafloor. Fortunately, we have developed the technology to do this using towed camera systems, remotely operated vehicles (ROVs) or autonomous underwater vehicles (AUVs), but imagery collected from such systems, particularly in the deep sea, comes at a very slow pace. In deep water, it can take several hours for a system to get close to the seafloor and once there, these vehicles move at very slow speeds (a few knots or less) and cover a very small area (1–3 square meters) with each image. Given that the area of the seafloor is approximately 360 million square kilometers,[3] and estimating the coverage of a typical deep-sea image to be approximately 4 square meters, we can estimate that to cover the world ocean with detailed optical imagery (i.e., create a Google Ocean at a scale commensurate with Google Earth), it would take about 90,000,000,000,000 images. Factoring in the time it takes to bring a vehicle down and back from the seafloor and the time it takes to capture the images, we are looking at something like 200 million years to completely image the seafloor using optical techniques – clearly an impossible task.

3 Costello, M.J., Cheung, A., De Hauwere, N., 2010, "Surface Area and Seabed Area, Volume, Depth, Slope and Topographic Variation for the World's Seas, Oceans and Countries," *Environmental Science and Technology*, v. 44, no. 23, pp. 8821–8828.

3 Tools to Map the Seafloor

Given the limits of optical techniques, other means have had to be developed to map the oceans' depths. For thousands of years, depths were measured by lowering a weight at the end of a line and then measuring the length of the line (lead-line). While such a technique can provide a reasonably accurate measurement of depth in shallow water (less than about 200m), lead-line measurements in deep-water (roughly 200m – 11,000m)[4] are very inaccurate (if at all possible) and very time-consuming (many hours for a single measurement). Such measurements are also very sparse and, in reality only representative of the single point that the lead-line landed on. With the invention of sonar between the First and Second World Wars, a new technique of "echo-sounding" was developed that allowed a much more rapid and accurate determination of ocean depths. Unlike electromagnetic waves, sound waves propagate extremely well in ocean water and thus a sound pulse at an appropriate frequency generated by a surface vessel can travel to even the deepest depths of the ocean, bounce off the seafloor and return to a sonar receiver on the vessel. If the speed of sound in seawater is known (it is easily measured), then the travel time of the sound wave from the seafloor and back can be converted to an estimate of depth. At the speed at which sound travels in seawater (nominally 1500 m/sec), even measurements in the deepest parts of the ocean take only a few seconds to make. With the advent of ships' echo-sounders, (single beam sonars) hydroacoustic measurements of ocean depths became much more frequent. Ships transiting the world's oceans standardly ran their echo-sounders in order to support safe navigation.

As the technology to collect bathymetric data evolved, so too did the desire to compile these measurements into maps of the seafloor. In 1903, Prince Albert I of Monaco, in collaboration with Professor Julien Thoulet of the University of Nancy created the General Bathymetric Chart of the Ocean (GEBCO), a Monaco-based organization dedicated to the production of publicly available charts of the world's oceans. GEBCO continues to this day as a project of the International Hydrographic Organization (IHO) and the Intergovernmental

4 For this discussion, "deep" water will be considered depths greater than 200m (typically deeper than the edge of the geological continental shelf) to depth of 11,000m – the approximate depth of the deepest known point in the oceans – the Challenger Deep of the Marianas Trench. The depth of the trench as measured by modern multibeam sonar was 10,984m +/-25m (Gardner, J., Armstrong, J.V., Calder, B.R., and Beaudoin, J., 2014, "So How Deep is the Mariana Trench," *Marine Geodesy*, 37:1–13, 2014 Copyright© Taylor & Francis Group, LLC ISSN: 0149-0419 print / 1521-060X online DOI: 10.1080/01490419.2013.837849).

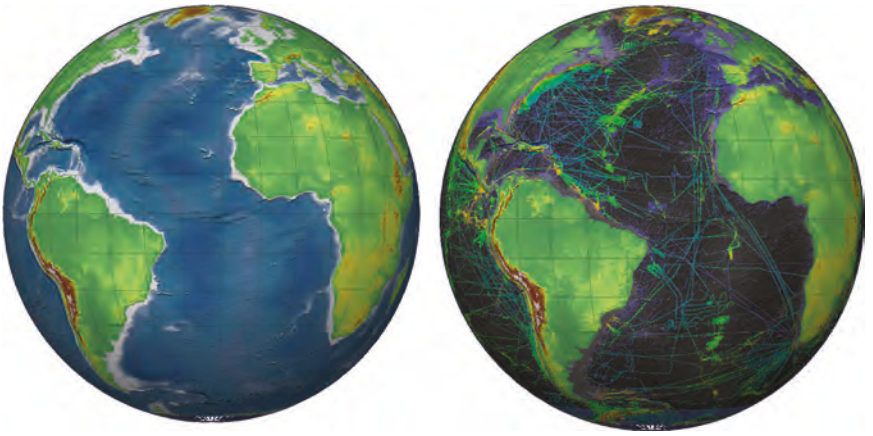

FIGURE 8.1 "Bathy-Globe", an application developed at the Center for Coastal and Ocean Mapping that shows the world ocean bathymetry derived from satellite altimetry and other data (left) and the sparse multibeam sonar data that actually exists (right)

Oceanographic Commission (IOC) and is still supported by the royal family of Monaco. The products of GEBCO have evolved over the years from charts containing a few sparse lead-line soundings to charts based on single-beam echo-sounder data and finally, since 1994, the incorporation of multibeam echo-sounder data. As mentioned above, however, the latest release of the GEBCO map (GEBCO 2019[5] – now a digital product), despite attempts to compile as much data as is available, has modern multibeam echo-sounder data coverage for only approximately 15% of the world ocean, meaning that most of the seafloor has never been directly mapped at adequate resolution.

4 Where Do Those Beautiful Maps of the World's Ocean Seafloor Come From?

If high-resolution multibeam echo-sounder data exists for only approximately 15% of the world's oceans, where then do the beautiful maps we often see of the ocean basins come from? (Figure 8.1 – left).

5 GEBCO_2019, "Gridded Bathymetry Data" <https://www.gebco.net/data_and_products/gridded_bathymetry_data/>.

Maps like those shown in Figure 8.1 (left) are typically derived from compiling all available single- and multibeam echo-sounding data (again covering only about 15% if the world's seafloor) and then combining that with a background that is "predicted" bathymetry from satellite altimetry. Predicted bathymetry from satellite altimetry is based on the fact that the sea surface will respond to the gravitational attraction of features on the seafloor. If a large mountain (seamount) on the seafloor contains excess mass, the gravitational attraction of the feature pushes the sea surface up above its neutral level. If there is a deep trench in the seafloor, the absence of mass, also creates a change in the gravity signal that results in a depression of the sea surface. Sensitive altimeters that measure the height of the sea surface can then be used to provide a rough indication of the depth of the ocean.[6] The bathymetry derived from this approach has offered an unprecedented global view of the major features of the ocean basins (ridges and deep trenches). However, this approach can only resolve features that are very large (on the order of 10 – 15 km laterally) with a depth accuracy of a few hundred meters or worse.[7] And so while predicted bathymetry from satellite altimetry offers a beautiful image of the major ocean features, the resolution and accuracy it provides is not enough to support many needs for seafloor mapping data, including the detail needed for understanding benthic habitat and biodiversity, for understanding deep-sea hazards, for predicting tsunami and storm surge inundation and many other applications (Figure 8.2).

In addition to high-resolution bathymetry, modern multibeam echo-sounders are also capable of collecting another type of information that directly relates to the nature of the seafloor (i.e., the seafloor bottom type). This information, called "backscatter," is a measure of the strength or amplitude of the echo returned from the bottom. The backscatter will vary as a function of seafloor type (rock, mud, sand, gravel, etc.) and while the interpretation of backscatter is complex, it can be used to gain important insight into the nature

6 Smith, W. H. F., and D. T. Sandwell, "Global seafloor topography from satellite altimetry and ship depth soundings," *Science*, v. 277, p. 1957–1962, 26 Sept. 1997.

7 When Malaysian Air Flight MH370 was lost over the Indian Ocean, the only maps available for the region were based for the most part only on predicted bathymetry from satellite altimetry. When multibeam echo-sounders were brought in to map the region they found that in some areas the predicted bathymetry was as much as 1000m different from the actual depths – see: Picard K., Brooke B.P., Harris P.T., Siwabessy P.J.W., Coffin M.F., Tran M., Spinoccia M., Sullivan J. 2018, "Malaysia Airlines flight MH370 search data reveal geomorphology and seafloor processes in the remote southeast Indian Ocean" *Marine Geology*, 395, pp. 301–319.

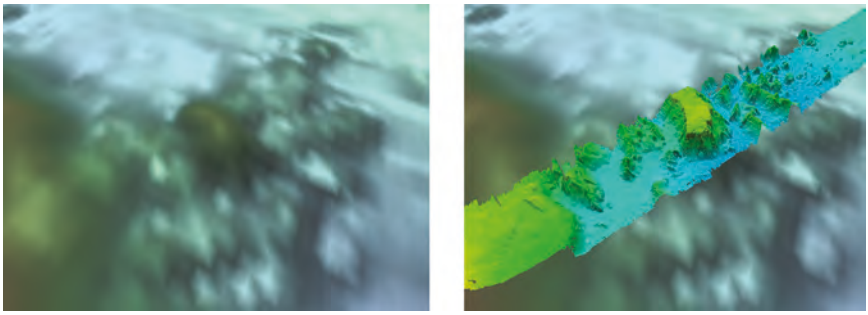

FIGURE 8.2 Comparison of predicted bathymetry from satellite altimetry for 200 km x 200 km area of seafloor (left) with single swath of multibeam sonar data (right) from same area. Note detail on seafloor structure provided by multibeam sonar data that is not available in the predicted bathymetry.

of the seafloor, another key parameter in understanding benthic habitat and biodiversity. Finally, the latest generation of multibeam echo-sounders also offer the opportunity to directly map targets in the water column. Water-column mapping has provided the ability to directly measure the distribution and behavior of fish and plankton, has been used to measure natural and man-made gas seeps (playing an important role in efforts to control the Deepwater Horizon spill), and can even discern fine-scale oceanographic structure in the water column.[8] (Figure 8.3)

5 How Feasible Is It To Map the Entire Seafloor?

And so we have a suite of hydroacoustic tools that can map the seafloor and the water column at the scale needed to support efforts for sustainable development of the oceans and to meet the primary objectives outlined in the UN Decade of Ocean Science for Sustainable Development. However, as previously discussed, only about 15% of the world's oceans have been mapped with

8 Mayer, L.A., Li, Yanchao, and Melvin, G., 2002, "3-D visualization for pelagic fisheries assessment and research," *ICES Journal of Marine Science*, vol. 59, pp. 216–225; Weber, T. C., Mayer, L., Jerram, K., Beaudoin, J., Rzhanov, Y., and Lovalvo, D. (2014), "Acoustic estimates of methane gas flux from the seabed in a 6000 km² region in the Northern Gulf of Mexico," *Geochem. Geophys. Geosyst.*, 15, 1911–1925, doi:10.1002/2014GC005271; Stranne, C., Mayer, L.A., Weber, T.C., Ruddick, B.R., Jakobsson, M.J., Jeram, K., Weidner, E., Nilsson, J. and Gardfeldt, K., 2017, Acoustic mapping of thermohaline staircases in the Arctic Ocean, Nature Scientific Reports, 7:15192, DOI:10.1038/s41598-017-15486-3.

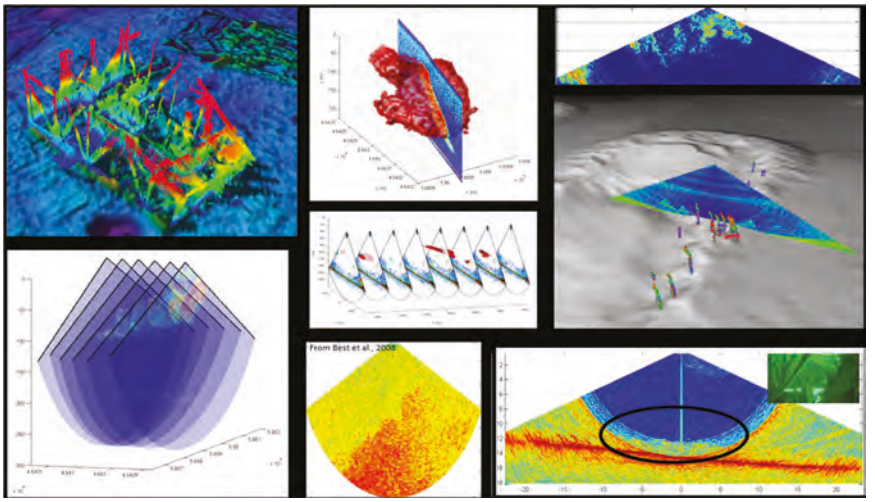

FIGURE 8.3 Water column capabilities of multibeam sonar including depiction of rig structure on seafloor (upper left), fish aggregations – middle two upper (Atlantic herring, upper; and walleye pollock lower) and lower left (Atlantic herring), bubbles in breaking waves (upper right), gas seeps (mid right) and eel grass (lower right)
SOURCE: FROM TOM WEBER, CCOM UNH

these tools. Recognizing this poor state of our knowledge of ocean depths and the critical role such knowledge plays in understanding and maintaining our planet, GEBCO and the Nippon Foundation have joined forces to establish the Nippon Foundation/GEBCO Seabed 2030 Project, an international effort with the objective of producing the definitive map of the world's oceans by 2030.[9] The Seabed 2030 Project has established globally distributed regional data assembly and coordination centers (in Sweden, New Zealand, Germany and the United States) that are actively identifying existing data that are not currently publicly available and working to make these data available. A Global Data Assembly and Coordination Center (in the United Kingdom) is integrating the data into a global grid (called the GEBCO grid) for freely available, worldwide distribution.[10] At the start of the Seabed 2030 project in late 2017, the GEBCO database contained modern multibeam echo-sounder data from only about 6% of the deep-sea floor. With the first update of the GEBCO grid processed by Seabed 2030 and made public in early May 2019, the data holdings have

9 <https://seabed2030.gebco.net/>.
10 <https://seabed2030.gebco.net/data_centers/>.

more than doubled, but as outlined above, still only represent about 15% of the seafloor. The effort will continue to identify existing data but there will soon be little more of these data available. In the coming years efforts must turn to encouraging and facilitating the collection of new data in the many regions of the world that have yet to be surveyed.

The complete mapping of the yet unsurveyed regions of the world's oceans is an ambitious task. Modern multibeam echo-sounders capable of mapping the deep sea are large and expensive and are typically mounted on large (> 50m) vessels that are in themselves expensive to operate. It has been estimated that to map the deep (>200 m) portions of the world's ocean seafloor using current day technology would take more than 300 ship years and cost on the order of three to five billion dollars.[11] While this may seem an implausible amount to be directed to the mapping of the world's oceans, it is on the order of the cost of a single Mars mission of which there have been many, including missions that have mapped Mars to far better resolution and coverage than our own earth. In this context it should not be unthinkable that an international effort can be mounted to see our own planet mapped, particularly in light of the growing recognition of the critical need to map the entire seafloor in support of UN Sustainable Development Goal 14.

One approach to fulfilling this goal is to take advantage of the fact that several hundred research and commercial vessels are currently equipped with modern multibeam echo-sounding equipment but do not necessarily collect mapping data when transiting from one work area to another. One of the goals of the Seabed 2030 program is to ensure that these vessels do collect data during these transits and make these data freely available to the general public. Progress has already been made in this area with several commercial entities agreeing to provide transit data to the Seabed 2030 project.[12] Additionally, the Seabed 2030 project has been able to place operators on research vessels that, in transit, had not planned on collecting mapping data.[13] Another aspect of bringing the goal of mapping the world's oceans to reality is to call upon technological innovation. The estimate for the cost and level of effort associated with the complete mapping of the world ocean was made using current technology and thus is a conservative approach. New technologies, however, may lead to gained efficiencies and lower costs. Leading among these is the

11 Mayer – *Geoscience* – 2018.

12 For example, the global survey company Fugro has already submitted more than 450,000 sq. km of transit mapping data to Seabed 2030 and has committed to continue to continue to do so.

13 https://seabed2030.gebco.net/get_involved/partners/five_deeps.html.

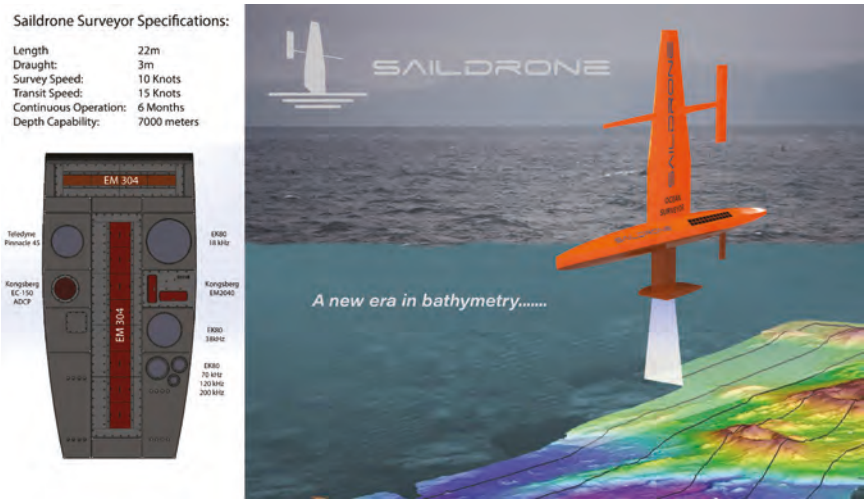

FIGURE 8.4 Autonomous Saildrone equipped with deep water multibeam mapping system

potential use of autonomous vehicles (including autonomous sailing vessels) that can be deployed for many months, surveying the most remote areas of the oceans 24 hours per day (without the need to return to port) and transmitting data via satellite back to a control center (Figure 8.4). Using such technology, the overall cost of mapping the entire deep-sea floor may be reduced and the logistical and financial challenges of meeting this ambitious goal lessened.

6 Will Interpretation of the Law of the Sea Convention Stand in the Way of Mapping the World Ocean?

While the technical, logistical, and fiscal details of mapping the entire world ocean's seafloor are challenging, they are manageable, and with technological innovation may make the ambitious goal of collecting the full geospatial context for the ocean basins feasible. A more difficult barrier to provide this important information to the global community, however, may lie in how coastal states interpret the Marine Scientific Research regime of the Law of the Sea Convention. The fundamental problem lies with the interpretation by some coastal States that the collection of underway bathymetry, no matter what the purpose of the collection, represents Marine Scientific Research (MSR). Such an interpretation requires that those collecting bathymetric data while on passage through either the Exclusive Economic Zone (EEZ) or the Continental Shelf (we will refer to the juridical continental shelf as the Extended

Continental Shelf or ECS to distinguish it from the geological continental shelf) receive consent from the coastal state under the provisions of Part XIII of the Law of the Sea Convention.[14] While article 246 of the Convention states that:

> 3. Coastal States shall, in normal circumstances, grant their consent for marine scientific research projects by other States or competent international organizations in their exclusive economic zone or on their continental shelf to be carried out in accordance with this Convention exclusively for peaceful purposes and in order to increase scientific knowledge of the marine environment for the benefit of all mankind. To this end, coastal States shall establish rules and procedures ensuring that such consent will not be delayed or denied unreasonably.[15]

The reality of practice is that, as discussed by Long,[16] the process for seeking and receiving clearances from most coastal states, even within the EU, is cumbersome and time-consuming; globally the problem is far worse. The request for clearance to do MSR can be manageable for a research expedition that works in the EEZ or ECS of one or two coastal States, but consider the situation where a vessel is transiting from Japan to Indonesia. In this case, the vessel would travel through the EEZs (and ECSs) of six or seven coastal states (depending on the route taken, see Figure 8.5). If the collection of bathymetric data in support of the production of a global map of the seafloor to serve as the foundation for long-term management and protection of the oceans is considered MSR, current process and practice would make this task an extremely difficult one.

We are thus faced with a serious quandary. On the one hand, the United Nations has clearly stated that the complete mapping of the world's oceans is a critical component of achieving UN Sustainable Goal 14 and a primary goal

14 The FAQ section of the Seabed 2030 Project states that "initial efforts will focus on mapping the 93% of the ocean deeper than 200 meters, leaving national hydrographic agencies to cover waters closer to shore." <https://seabed2030.gebco.net/faq/#q6>. MSR in the territorial sea requires the express consent of the coastal State. LOS Convention article 245.

15 UN Convention on The Law of the Sea, Montego Bay, Dec. 10, 1982, entered into force Nov. 10, 1994, 1833 UNTS 397, Part XIII, Article 246.

16 Long, Ronán, "Regulating Marine Scientific Research in the European Union: It Takes More than Two to Tango," in: Myron Nordquist, J. Norton Moore, Alfred A. Soons, and Hak-So Kim (eds.), *The Law of the Sea Convention: US Accession and Globalization.* Leiden/Boston: Martinus Nijhoff Publishers, 2012, pp. 428–491.

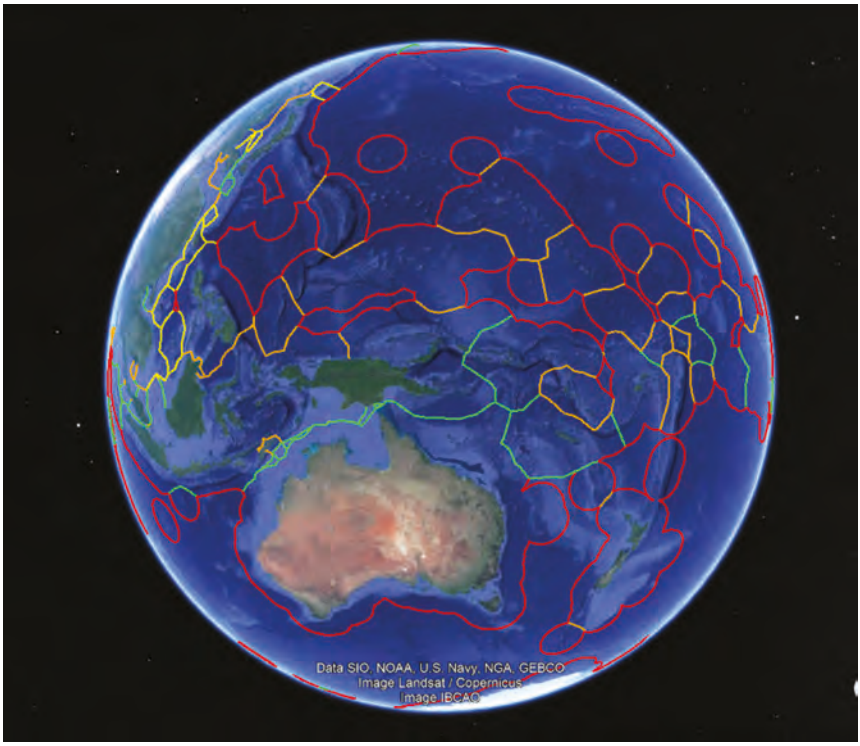

FIGURE 8.5 EEZs in the western Pacific, from Google Earth

of the UN Decade of Ocean Science for Sustainable Development. On the other hand, certain interpretations of Part XIII of the Convention on the Law of the Sea may greatly impede the achievement of this goal. The MSR regime of the Convention on the Law of the Sea is irrefutable; however, there may be an approach that fully respects the tenants of Part XIII, but still allows the collection of data critically needed to improve our ability to manage and sustain our oceans.

7 Is the Collection of Underway Bathymetry in Support of a Freely Available Map of the World's Oceans MSR?

The key to the solution of this quandary lies in the absence of a definition of MSR in the Convention on the Law of the Sea. In not defining MSR in the Convention, the drafters created an ambiguous situation that has led to a wide range of interpretations of the meaning. These ambiguities and their broad

implications have been addressed in detail by several authors.[17] Interpretation of what is and is not MSR varies broadly amongst coastal States, ranging from those that support the concept of full freedom of research to those that very strictly enforce coastal State consent with respect to most any data collection conducted in their EEZ and/or ECS.

In presenting the US perspective on MSR, Roach[18] has offered powerful arguments that certain types of marine data collection should not be considered MSR under the Convention on the Law of the Sea. Among the data collection types that Roach proposes are NOT MSR are hydrographic surveys. In *Definitions for the Law of the Sea*,[19] hydrographic surveys are defined as:

> the science of measuring and depicting those parameters necessary to describe the precise nature and configuration of the seabed and coastal strip, its geographical relationship to the land mass, and the characteristics and dynamics of the sea. … Hydrographic surveys may be necessary to determine the features that constitute baselines or basepoints and their geographical position.

In determining that hydrographic surveys are not MSR, Roach's arguments focus on the distinction between survey activities and MSR, citing Article 19(2)(j) of the Law of the Sea Convention which explicitly distinguishes between "research or survey activities" and Article 21(1)(g) which again distinguishes between "marine research and hydrographic surveys" in discussing innocent passage in the territorial sea. Also, Article 40 distinguishes between "research and survey activities" both in its title and in its discussion of "marine scientific research and hydrographic survey ships" which may not carry out "any research or survey activities in straits without prior coastal state authorization." As Roach points out, the drafters of the Convention thus clearly knew the distinction between research and surveys and used this distinction to ensure limits on survey activity in some regimes (straits used for international navigation,

17 Soons. A, 1989, "Marine Scientific Research Provisions in the Convention on the Law of the Sea: Issues of Interpretation" in Brown and Churchill (eds.) *The UN Convention on the Law of the Sea: Impact and Implementation* (Law of the Sea Institute, William S. Richardson School of Law, Honolulu, HI); Roach, J.A., "Marine Scientific Research and the New Law of the Sea," 1996, *Ocean Development and International Law,* pp. 59–72.

18 Roach, J.A., 2015 "Marine Data Collection: U.S. Perspectives" in M. Nordquist, J.N. Moore, R. Beckman, and R. Long, (eds.), *Freedom of Navigation and Globalization*, (Brill-Nijhoff), pp. 285–302.

19 Walker, G.K. (ed.), *Definitions for the Law of the Sea: Terms Not Defined by the 1982 Convention*, Leiden/Boston, Nijhoff, 2012, p. 227.

territorial seas, and archipelagic sea lanes) but put no such limitations on survey activity in the EEZ or ECS.

Thus, there is strong evidence that hydrographic surveys are not MSR and thus should not be regulated by the MSR regime of Part XIII of the Convention. If we accept this premise, then one of the key barriers to the collection of bathymetric data in support of the creation of a publically available map of the world's oceans to support sustainable development will be removed. Research or other vessels, whether manned or autonomous, may conduct surveys in transit across broad stretches of the oceans including the EEZ and ECS of coastal States and collect bathymetric data in support of the creation of a freely available global map. Additionally, many modern vessels equipped with multibeam echo-sounders use these systems as their primary tool for fulfilling their SOLAS Chapter Five, Regulation 19, carriage requirements for shipborne navigational systems and equipment.

8 It's Probably Not That Simple

While the solution proposed above would be a simple step towards providing the global community with a complete map of the world's oceans (much like we have for the terrestrial parts of the Earth), and one that we hope would be widely accepted, experience gleaned from records of the negotiations at UNCLOS III[20] and current practice demonstrate that there will inevitably be some coastal States that will not easily accept the proposition that hydrographic surveying in their EEZ or ECS should be without prior consent. Recognizing this to be the case, we offer a compromise solution that accepts that hydrographic surveying is not MSR (and thus does not require consent) but involves prior notification of activity through a central database and the ability of a coastal state to assert some level of control over the distribution of data collected in their EEZ or ECS should they deem it sensitive. Such an approach would remove the long lead times and cumbersome processes (which vary from state to state) necessary to receive consent, and would greatly enhance our ability to serve the needs of the global community in providing a freely available map of the world ocean.

The approach we propose is similar to that developed for the Argo Float Program, an international effort that has deployed almost 4,000 free-floating

20 UNCLOS III, Vol. VI, Summary Record of Meetings Third Committee, 30th Meeting, Sept. 14, 1976, pp. 95–100 <https://legal.un.org/docs/?path=../diplomaticconferences/1973_los/docs/english/vol_6/a_conf62_c3_sr30.pdf&lang=E>.

devices that profile the ocean continuously collecting environmental data like temperature and salinity.[21] The observations made by Argo floats are critical components of global ocean and weather forecast models and, like a global bathymetric database, are essential to understanding and modeling current and future oceanic and climatic conditions. These floats are deployed from surface vessels and then drift freely for several years, submerging themselves to collect profiles of environmental data and then transmitting the data by satellite to a data reception center. While most often deployed in regions beyond national jurisdiction, they can often drift into the EEZ or ECS of a coastal state. The Intergovernmental Oceanographic Commission of UNESCO (IOC) spent several years debating the legal framework for the collection of data from Argo floats and eventually adopted guidelines for their operation.[22] The guidelines basically provide that those deploying Argo floats must coordinate the deployment of floats through an Argo Information Center (AIC – a body specifically established by the IOC to coordinate the deployment of floats), which in turn will notify, if notification is requested,[23] a designated point of contact in the coastal State that an Argo float may enter its EEZ. Guideline 4 states that all data collected by the Argo floats will be freely available, though the coastal State may restrict the release of data for a limited amount of time if the data are of direct significance to the exploration and exploitation of living or nonliving natural resources. (The legal aspects of the Argo Float Program and a discussion of the IOC guidelines can be found in Maeos and Montserrat (2010).)[24]

With respect to bathymetric surveying during transits, a similar mechanism can easily be established. In the bathymetric case, the GEBCO/Nippon Foundation Seabed 2030 program already offers a structure that can easily implement a notification system. As outlined earlier, the GEBCO/Nippon Foundation Seabed 2030 program will be the focal point for data collection for the creation of the definitive map of the world oceans. Its Global Data Center, hosted at the British Oceanographic Data Centre, National Oceanography Centre, Southampton, U.K.,[25] will serve to distribute data products (GEBCO grids) but at the same time will establish a series of web-based tools that provide information on existing bathymetric coverage so that precious ship time is not wasted by duplicating tracks where data already exists. It can also easily become the

21 http://www.argo.ucsd.edu/About_Argo.html.

22 IOC Executive Council Resolution EC-XLI.4 Annex (2018) <http://ioc-unesco.org/index.php?option=com_oe&task=viewDocumentRecord&docID=21855>.

23 It is understood that very few coastal States have requested to be notified.

24 See Maeos, A., and Montserrat, G-Y, 2010, *SEAS*, Issue 8, v. 14.

25 <gdacc@seabed2030.org>.

focal point for dissemination of information on planned bathymetric survey transects in support of its global mapping effort. As a project of the IHO and the IOC, the GEBCO/Nippon Foundation Seabed 2030 project can coordinate these efforts with the Member States with the point of contact in each Member State being their representative to the IHO. A website can be provided that shows current and planned ship tracks for all bathymetric surveys associated with the project and those Member States that specifically request notification can be alerted by the Global Data Center of upcoming transits that may be in their EEZ or ECS. The Global Data Center can also arrange for the coastal State to review the data before it is included in the global mapping product and make arrangements for the management of those data (e.g., only include it at reduced resolution) if deemed sensitive to the coastal State.

The importance of the collection of hydrographic survey data has long been recognized by the UN and the global community. In 2012, well before the statements made about the need for global ocean mapping to support UN Sustainable Goal 14 and the UN Decade of Ocean Science, the UN General Assembly in its annual resolutions on oceans and the law of the sea noted:[26]

> Recognizing further that hydrographic surveys and nautical charting are critical to the safety of navigation and life at sea, environmental protection, including the protection of vulnerable marine ecosystems, and the economics of the global shipping industry, and encouraging further efforts towards electronic charting, which not only provides significantly increased benefits for safe navigation and management of ship movement, but also provides data and information that can be used for sustainable fisheries activities and other sectoral uses of the marine environment, the delimitation of maritime boundaries and environmental protection. …

The same resolution also encourages efforts to build capacity in the area of surveying for developing States, as follows:

> Encourages intensified efforts to build capacity for developing countries, in particular for the least developed countries and small island developing

26 UNGA resolution A/RES/67/78, Dec. 11, 2012. Similar statements appear in earlier resolutions A/RES/66/231, A/RES/65/37A, A/RES/64/71, A/RES/63/111, A/RES/62/215, A/RES/61/222, A/RES/60/30, A/RES/59/24 and A/RES/58/240, *available through links at* <https://www.un.org/Depts/los/general_assembly/general_assembly_resolutions.htm>.

States, as well as coastal African States, to improve hydrographic services and the production of nautical charts, including electronic charts.

The proposed approach to gathering bathymetric data and making it publicly available would serve to provide key bathymetric data and products to all developing States. In addition, through the Seabed 2030 Global Data Center, developing States would be able to make requests for the collection of transit bathymetric data in regions of particular relevance to them and then work with those collecting the data to include young surveyors on the transits to build local capacity. The contribution of local data to a publicly available high-resolution bathymetric database can be of tremendous benefit to developing States as it can be used by modelers world-wide to generate more accurate models of potential tectonic activity and tsunami inundation in their waters.

9 Concluding Statement

The well-being of mankind is inextricably linked to the health of the oceans. Our ability to maintain ocean health is dependent on our understanding of the complex physical, chemical and biological interactions that take place in the vast ocean system. But as we embark on the UN Decade of Ocean Science in Support of Sustainable Development and global ocean observation programs that try to understand these interactions, we are trying to do so with only a minimal understanding of the geospatial context within which our observations are made. Imagine trying to predict weather patterns without knowing where the mountains and valleys are, or predict where flooding will occur without a topographic map. This is the situation we face in the oceans. We have high-resolution mapping data for only about 15 percent of the three quarters of our planet that is covered by water. Recognizing this situation, an international effort, Seabed 2030, has been undertaken to attempt to produce a freely available comprehensive map of the world ocean by the year 2030. This is an ambitious undertaking that will benefit all of mankind; but for this goal to be achieved we will need ensure that the collection of the data needed to produce such maps will not be impeded. The recognition that the collection of bathymetric data in support of such a global map is not MSR under the context of Part XIII of the Law of the Sea Treaty would go a long way to help meet this critical goal.

CHAPTER 9

Mitigating Human Impacts on Marine Biodiversity Beyond National Jurisdiction

Potential Benefits of the International Legally Binding Instrument

Robin Warner

Abstract

Environmental impact assessment (EIA) is a critical element in the suite of tools for biodiversity conservation, and its application to activities affecting the marine environment is endorsed in many international law instruments, policy statements by governments and international organisations and the decisions of international tribunals. While governance structures will generally exist to facilitate environmental assessment in marine areas within national jurisdiction closer to the shore, these structures are still developing for marine areas beyond national jurisdiction (ABNJ). This chapter reviews the existing international law and policy framework for EIA in ABNJ highlighting key gaps in legal and institutional coverage at global, regional and sectoral levels. It explores the complex challenges involved in implementing EIA in ABNJ and the steps that have been taken within particular sectors to develop a more comprehensive and robust legal framework for EIA in these extensive areas of the ocean. Finally, it discusses the options for incorporating EIA provisions in the internationally legally binding instrument for conservation and sustainable use of marine biodiversity in ABNJ currently being negotiated in the United Nations.

Keywords

Marine biodiversity – areas beyond national jurisdiction – environmental impact assessment – conservation – marine environment – international law – United Nations Convention on the Law of the Sea – Convention on Biological Diversity

1 Introduction

Assessing the impact of human activities on the marine environment introduces additional challenges to those confronted on land. Many of these

 | DOI:10.1163/9789004422438_010

differences stem from the three-dimensional nature of the marine environment with its great depths, pressure and lack of light beneath the photic zone. Others relate to the slow growth rates of many marine organisms leading to delays in recovery from impacts and the extensive interconnections between marine ecosystems compounding the adverse effects of the initial impact. In addition to these physical challenges, there are practical challenges in assessing the impacts of activities which occur in remote locations far from land with scant logistical support.

Notwithstanding these significant challenges, global and regional organizations and national governments have devised some governance structures to underpin the measurement of human impacts on the marine environment. These encompass legally binding instruments at global and regional levels and national legislation supplemented by non-binding guidelines and other policy documents. In addition, customs of practice have developed for environmental assessment in different marine sectors.

2 International Law Framework for Environmental Assessment[1] in ABNJ[2]

Environmental impact assessment is acknowledged as a key element in the suite of tools for biodiversity conservation, and its application to activities affecting the marine environment has been endorsed in many international law instruments, policy statements by governments and international organisations and the decisions of international tribunals.[3] For ABNJ, however, many of these instruments and decisions discuss general obligations to conduct EIA

1 In this chapter, the term "environmental assessment" is used to refer to all facets of measuring the impact of human activities on the environment. This includes the typical process of prior environmental impact assessment and extends to through and post activity monitoring of environmental impacts. Within those processes the term environmental assessment also encompasses the conduct of environmental baseline studies and the measurement of single as well as cumulative impacts on marine environments over time. Cross jurisdictional application of EIA and strategic environmental assessment (SEA) of plans, programmes, and policies likely to impact the marine environment over longer periods and broader geographical areas are also included in the term environmental assessment.

2 Marine areas beyond national jurisdiction (ABNJ) include both the high seas water column and the deep seabed beyond national jurisdiction (the Area).

3 These instruments include the regional seas conventions, the 1982 United Nations Convention on the Law of the Sea (LOSC), the 1991 Protocol on Environmental Protection to the Antarctic Treaty (Madrid Protocol), the UN Fish Stocks Agreement (UNFSA) and the International Seabed Authority's Regulations for exploration contractors.

rather than specific implementing provisions or underpinning institutional infrastructure.

2.1 *Global Instruments*

2.1.1 United Nations Convention on the Law of the Sea (LOSC)

The 1982 United Nations Convention on the Law of the Sea (LOSC) imposes a general obligation on States Parties to assess the potential effects of activities under their jurisdiction or control that may cause substantial pollution of, or significant and harmful changes to, the marine environment. Although the general obligation to conduct environmental assessment of activities with the potential for significant and harmful impacts on the marine environment is well established in both customary and conventional international law, implementation of this obligation for marine areas beyond national jurisdiction (ABNJ)[4] is fragmented between different sectors and regions. There is no overarching international agreement which develops in more specific terms the obligation contained in Article 206 of the LOSC to assess the potential effects of planned activities under States' jurisdiction or control in ABNJ. The LOSC obligations are broad in scope extending to all parts of the marine environment but there are no detailed methodological or procedural requirements specified for environmental assessment in marine and coastal areas. States Parties have a duty to publish reports of assessments to "competent international organizations," but these organizations are not specified and the timescale for provision of reports is not prescribed. Similarly, institutional coverage for ABNJ under the LOSC is far from comprehensive with no global body having overarching responsibility for protection and preservation of the marine environment or conservation of marine biodiversity beyond national jurisdiction. The International Seabed Authority (ISA) has comprehensive environmental protection powers for seabed mining activities affecting the Area, but this advanced environmental governance situation for the deep seabed beyond national jurisdiction is not matched by a global institution with comparable environmental protection powers for the high seas water column. These general obligations to conduct environmental assessment and monitoring under the LOSC must therefore be read in conjunction with the more specific environmental principles and procedural provisions which have been developed in international environmental law instruments such as the Convention on Biological Diversity (CBD) and its EIA-associated guidelines.

4 Marine areas beyond national jurisdiction (ABNJ) include both the high seas water column and the deep seabed beyond national jurisdiction (the Area).

2.1.2 Convention on Biological Diversity (CBD)

The Convention on Biological Diversity (CBD) establishes a link between the fundamental obligation of Contracting Parties to conserve biodiversity including marine biodiversity and the conduct of environmental assessment and monitoring. Contracting Parties must introduce appropriate procedures requiring EIA of proposed projects that are likely to have significant adverse effects on biodiversity with a view to avoiding or minimizing such effects (Article 14 (1)(a)). Having identified processes and activities which have or are likely to have significant adverse impacts on the conservation and sustainable use of biological diversity, Contracting Parties are also required to monitor their effects through sampling and other techniques (Article 7(c)). These obligations apply to processes and activities carried out under the jurisdiction or control of Contracting Parties in all parts of the marine and terrestrial environment, regardless of where their effects occur (Art. 4(b)) The critical importance of collaboration between States in minimizing adverse impacts to biodiversity in transboundary areas and areas beyond national jurisdiction is emphasized in Article 14(1)(c) which requires Contracting Parties to promote reciprocal notification, exchange of information and consultation on activities under their jurisdiction or control which are likely to significantly affect adversely the biological diversity of other States or areas beyond the limits of national jurisdiction. In the case of imminent or grave danger or damage, originating under their jurisdiction or control, to biodiversity under the jurisdiction of other States or in areas beyond the limits of national jurisdiction, Contracting Parties must notify immediately the potentially affected States as well as initiate action to prevent or minimize such danger or damage.

The obligations in the CBD have been elaborated in Voluntary Guidelines on Biodiversity-Inclusive Impact Assessment (CBD Guidelines) that emphasize the importance of including biodiversity-related criteria in the screening process.[5] The Guidelines reflect a best practice standard for EIAs of activities with the potential to significantly affect all aspects of biodiversity, including those components situated in ABNJ. They depend on a detailed level of knowledge of species, habitats and ecosystems and their interconnections in a particular marine area. A process has also been undertaken in the CBD to define the special considerations to be taken into account in EIAs of activities with the potential to significantly affect biodiversity in marine and coastal areas, including ABNJ. The Conference of the Parties of the CBD has also been proactive in

5 Biodiversity in Impact Assessment. Background Document to Decision VIII/28 of the Convention on Biological Diversity. Voluntary Guidelines on Biodiversity-Inclusive Impact Assessment, http://www.cbd.int/doc/publications/pubcbd-ts-26-en.pdf>.

investigating the scientific and technical aspects of EIA for activities in ABNJ. It convened an Expert Workshop on Scientific and Technical Elements of the CBD EIA Guidelines which focused on ABNJ in November 2009.[6] This highlighted some of the governance and practical challenges related to the implementation of EIA for activities in ABNJ.

It emphasised the practical difficulties associated with conducting EIAs including:

– The industry proposing the activity and the national flag State jurisdiction are often far from the marine area affected;
– The conduct of EIA and management, control, monitoring, surveillance and follow-up activity were likely to be more costly and may be less effective for a given budget; and
– Capacity building needs for EIA in ABNJ would be greater as customs of practice are less established, methodologies less mature, and multiple assessment cultures may converge in the same area.[7]

The complex and fragmentary nature of the law and institutions governing ABNJ were accentuated, including:

– The split legal framework for ABNJ – high seas (LOSC Part VII) and deep seabed beyond national jurisdiction – the Area (LOSC Part XI and Part XI Implementation Agreement);
– The diverse institutional framework for ABNJ including States, non-State actors and global and regional organizations and the need for cooperation between all these actors to conserve biodiversity;
– The fact that stakeholders are harder to define for ABNJ because communities do not have immediate proximity to these areas; and
– The variable standards of compliance among states with environmental assessment obligations in international conventions.[8]

The Workshop's Report was considered by the tenth Conference of Parties of the CBD in 2010 which endorsed the development of voluntary guidelines for the consideration of biodiversity in EIAs for marine and coastal areas drawing on the guidance from the Workshop.[9] Guidelines were then developed for all marine and coastal areas rather than simply for ABNJ emphasising the

6 Report of the Expert Workshop on Scientific and Technical Aspects relevant to Environmental Impact Assessment in Marine Areas beyond National Jurisdiction, UNEP/CBD/EW-EIA-MA/2, 20 November 2009, <http://www.cbd.int/doc/?metting=EWEIAMA-01>.

7 Ibid., Annex II, paras. 10–14.

8 Ibid., Annex II, paras. 7–9.

9 Report of the Tenth Meeting of the Conference of the Parties to the Convention on Biological Diversity, UNEP/CBD/COP/10/27, 20 January 2011, Annex, Decision X/29, para. 50, <http://www.cbd.int/cop10/doc/>.

interconnections between ocean ecosystems across jurisdictional boundaries and endorsed by the eleventh COP of the CBD in 2012.[10] This initiative represents an important step in defining the special characteristics of EIA for activities in ABNJ and provides an initial repository for scientific and technical information on EIA for all sectors operating in ABNJ.

2.1.3 UNEP Goals and Principles of EIA (UNEP Principles)

The 1987 UNEP Principles represent one of the earliest global elaborations of the objectives and fundamental procedures encompassed in EIA.[11] They provide an internationally accepted model of the minimum requirements for effective EIA. Principle 1 specifies that an EIA should include:

- A description of the proposed activity;
- A description of the potentially affected environment, including specific information necessary for identifying and assessing the environmental effects of the proposed activity;
- A description of the practical alternatives, as appropriate;
- An assessment of the likely or potential environmental impacts of the proposed activity and alternatives, including the direct, indirect, cumulative, short-term and long-term effects;
- An identification and description of measures available to mitigate adverse environmental impacts of the proposed activity and alternatives, and an assessment of those measures;
- An indication of gaps in knowledge and uncertainties that may be encountered in compiling the required information; and
- An indication whether the environment of any other state or of ABNJ are likely to be affected by the proposed activity or alternatives.

The general obligation to consult with interested stakeholders on an EIA before a decision is made to proceed with an activity is recognized in Principle 7 which provides that "… government agencies, members of the public, experts in relevant disciplines and interested groups should be allowed appropriate opportunity to comment on the EIA." For activities affecting the marine areas of ABNJ, this immediately raises the question of who qualifies as an interested stakeholder particularly for ABNJ and which global, regional or

10 Report of the Eleventh Meeting of the Conference of the Parties to the Convention on Biological Diversity, UNEP/CBD/COP/11/27, 5 December 2012, Annex, Decision XI/18, p. 7, <http://www.cbd.int/cop/?11=cop-11>.

11 UNEP, United Nations Environment Programme Goals and Principles of EIA (UNEP Principles) at http://www.unep.org/Documents.Multilingual/Default.asp?DocumentsID=1008ArticleID=1658 (28 April 2012).

national organization is responsible for administering and responding to such consultation.

In relation to decisions or actions taken by the proponent following an EIA, the UNEP Principles adopt a due diligence approach requiring the proponent to fully examine the potential environmental impacts of a particular project or activity and give due consideration to the interests of affected parties but not imposing a particular decision path on the proponent. Although the UNEP Principles do not extend the proponent's obligations beyond this due diligence approach, it could be argued that if an EIA concludes that significant harm is likely to marine areas, under the international law duty to prevent transboundary harm set out in Principle 21 of the Stockholm Declaration and Principle 2 of the Rio Declaration and confirmed by the ICJ in their Advisory Opinion on the Legality of the Threat or Use of Nuclear Weapons, the state conducting such an EIA would be under a positive obligation to mitigate that harm or refrain from the activity.[12]

2.2 *Decisions of International Tribunals*

The process of environmental assessment, particularly EIA, is one of the means by which States can implement a range of international environmental law principles. An EIA plays a fundamental role in discharging States' obligations to prevent transboundary harm, adopt a precautionary approach and promote sustainable development.[13] The customary international law status of EIA, including its marine components, has been discussed in a number of recent judgments of the International Court of Justice (ICJ) and an advisory opinion of the International Tribunal for the Law of the Sea (ITLOS). In the *Gabcikcovo-Nagymaros Case* the ICJ considered assessment, notification and consultation, effectively the elements of an EIA process, to be a necessary step in a State's implementation of the duty to prevent transboundary harm and the concept of sustainable development.[14] In the *Pulp Mills Case*, the ICJ found that:

---

12 *Declaration of the United Conference on the Human Environment*, Stockholm, 16 June 1972 (1972) 11 ILM 1416; *Rio de Janeiro Declaration on Environment and Development*, Rio de Janeiro, 3 to 14 June 1992, UN Doc A/CONF.151/5/REV.1 (1992) 31 ILM 876; International Court of Justice, Advisory Opinion on Legality of the Threat or Use of Nuclear Weapons, 8 July 1996, <http://www.icj-cij.org/docket/fi les/95/7495.pdf PHPSESSID=244d61421d993dcdd51859ee9c657b1b>, 241–242, para. 29; Neil Craik, *The International Law of Environmental Impact Assessment* (Cambridge University Press, 2008) 67.

13 Craik, above note 12, 54, 77 and 224.

14 *Gabcikovo-Nagymaros Project* (*Hungary/Slovakia*) (1997) ICJ Rep. 7, para. 141; Alan Boyle, "The Gabcikovo-Nagymaros Case: New Law in Old Bottles" (1997) 8 *Yearbook of International Environmental Law* 18; Craik, above note 12, 114.

> ..it may now be considered a requirement under general international law to undertake an environmental impact assessment where there is a risk that the proposed industrial activity may have a significant adverse impact in a transboundary context, in particular, on a shared resource.[15]

In the *Mox Plant Case*, ITLOS concluded that the United Kingdom had breached its obligations under Article 206 of the LOSC by failing to carry out an adequate assessment of the potential impacts of a nuclear fuel reprocessing plant in Cumbria on the marine environment of the Irish Sea.[16] The 2011 advisory opinion of ITLOS on the "Responsibilities and Obligations of States Sponsoring Persons and Entities with Respect to Activities in the Area" also acknowledged the customary international law status of the obligation to conduct EIAs for activities with the potential for significant impacts on the marine environment, including for ABNJ, specifically the Area.[17]

2.3 *Regional Instruments*

2.3.1 Regional Seas Conventions

There are broad obligations on environmental assessment in most of the UNEP and non-UNEP regional seas agreements, but only a few regional seas programs have specific environmental protection responsibilities for ABNJ areas.[18] Parties to the regional seas conventions are typically responsible for developing EIA guidelines, legislation and processes that prevent or minimize harmful effects on the Convention Area with the assistance of competent global, regional and sub-regional organizations. The conventions do not incorporate

---

15 *Pulp Mills on the River Uruguay Case* (*Argentina/Uruguay*) (*Provisional Measures*) (2006) ICJ Rep. para. 204.

16 *Mox Plant Case* (*Provisional Measures*) ITLOS No. 10 (2001), para. 82; Alan Boyle, "Environmental Jurisprudence of the International Tribunal for the Law of the Sea" (2007) 22(3) *International Journal for Marine and Coastal Law* 377; Marie Cordonnier Segger, Marcus Gehring and Andrew Paul Newcombe, *Sustainable Development in World Investment Law* (Kluwer Law International, 2011) 152.

17 *International Tribunal of the Law of the Sea, Advisory Opinion on Responsibilities and Obligations of States Sponsoring Persons and Entities with Respect to Activities in the Area,* 1 February 2011, <http://www.itlos.org/fileadmin/itlos/documents/cases/case_no_17/adv_op_010211.pdf>, p. 44, para. 145.

18 The scope of application of the 1986 Convention for the Protection of the Natural Resources and Environment of the South Pacific Region (Noumea Convention), the 1992 Convention for the Protection of the Marine Environment of the North-east Atlantic (OSPAR Convention) and the 1995 Convention for the Protection of the Marine Environment and the Coastal Region of the Mediterranean (Barcelona Convention) extend to ABNJ.

screening, scoping and content prescriptions for EIA, leaving this responsibility to the more detailed legislative enactments of their member states. Different versions of the duty to notify and consult on EIAs with other parties and the relevant regional seas organization appear in many of the conventions, but most are relatively loose prescriptions urging rather than obligating states to disseminate results of EIAs and consult with affected parties.

The 1995 Convention for the Protection of the Marine Environment and Coastal Region of the Mediterranean (Barcelona Convention) makes specific mention of notification and consultation among Contracting Parties where activities are likely to have a significant adverse effect on ABNJ. Article 4(3)(c) provides that:

> the Contracting Parties shall promote cooperation between and among States in environmental impact assessment procedures related to activities under their jurisdiction or control which are likely to have a significant adverse effect on the marine environment of other States or *areas beyond the limits of national jurisdiction* on the basis of notification, exchange of information and consultation.

This provision recognizes the mandatory responsibility of Contracting States to protect and preserve the marine environment beyond national jurisdiction in their region.

The OSPAR Commission established to implement the 1992 *Convention for the Protection of the Marine Environment of the North-east Atlantic* (OSPAR Convention) is moving towards more collaborative arrangements between competent regional and global authorities for EIA and SEA of activities, plans, programmes and policies affecting ABNJ marine protected areas (MPAs) within the convention's area of responsibility. The OSPAR Ministerial Meeting in 2010 established six MPAs in ABNJ encompassing four seamounts, an area of the deep seabed beyond national jurisdiction in the southern area of the Charlie Gibbs Fracture Zone and an area to the north of the Azores Islands in the Atlantic.[19] A collective arrangement between OSPAR and global and regional organizations with responsibilities for managing activities such as fisheries, deep seabed mining and ships routeing in these MPAs including the North East Atlantic Fisheries Commission, the International Seabed Authority and the International Maritime Organization is in the course of negotiation. Under

19 OSPAR Commission, *OSPAR Network of Marine Protected Areas*, <http:www.ospar.org/content/content.asp?menu=00700300100011_000000_000000>.

this arrangement, joint management plans will be prepared for each of the six MPAs including provisions for cooperation on EIAs and SEAs.[20]

2.3.2 Protocol on Environmental Protection to the Antarctic Treaty (Madrid Protocol)

The test applied for screening activities for EIA under the Madrid Protocol to the Antarctic Treaty is more complex and multi-layered than many other international instruments and clearly applies to ABNJ, although there are significant exceptions to its application to certain activities. The screening process has three levels – the preliminary assessment, initial environmental evaluation and comprehensive environmental evaluation.[21] A preliminary assessment is carried out at the national level for all activities subject to the Protocol with less than a minor or transitory impact. If an activity has no more than a minor or transitory impact, an initial environmental evaluation must be carried out, and if it has more than a minor or transitory impact, a comprehensive environmental evaluation must be carried out. All activities, both governmental and non-governmental, in the Antarctic treaty area (south of 60° S latitude) are subject to these provisions, except for fishing, sealing, whaling and emergency operations as these are covered by other international instruments.[22]

2.4 *Sectoral Frameworks for Environmental Assessment in ABNJ*

The principal sectors of activity in ABNJ, fishing, shipping, and deep seabed mining, have prescribed limited environmental assessment measures for some of their activities, however for some newer activities such as bio-prospecting, already taking place in ABNJ, there are no mandatory environmental impact assessment instruments or processes.

2.4.1 Fisheries Sector

Parties to the UN Fish Stocks Agreement must assess the impacts of fishing, other human activities and environmental factors on target stocks and species

20 "Designation and Management of OSPAR MPAs Beyond National Jurisdiction in the North-East Atlantic," Presentation by Dr. Henning von Nordheim and Tim Packeiser, IUCN/German Federal Agency for Nature Conservation Seminar on the Conservation and Sustainable Use of Marine Biodiversity beyond National Jurisdiction, 3–6 December 2011, Bonn, Germany.

21 Madrid Protocol, Article 8(1); K. Bastmeijer and R. Roura, "Environmental Impact Assessment in Antarctica," in K. Bastmeijer and T. Koivurova, *Theory and Practice of Transboundary Environmental Impact Assessment* (Martinus Nijhoff Publishers, 2008), 182.

22 Madrid Protocol, Article 8(2).

belonging to the same ecosystem or associated or dependent ecosystems and develop data collection and research programmes to assess the impact of fishing on non-target and associated or dependent species and their environment.[23] This obligation has been further elaborated in the 2009 FAO International Guidelines for the Management of Deep Sea Fisheries in the High Seas (Deep Sea Fishing Guidelines), which were developed to help states and RFMOs implement a call from the United Nations General Assembly (UNGA) to prevent significant adverse impacts on vulnerable marine ecosystems or not to authorize the bottom fishing activity to proceed (UNGA Resolution 61/105 paragraphs 80–91).[24] Significant adverse impacts are defined as those that compromise ecosystem integrity (i.e., ecosystem structure or function) in a manner that:

(i) impairs the ability of affected populations to repair themselves;
(ii) degrades the long-term natural productivity of habitats; and
(iii) causes, on more than a temporary basis, significant loss of species richness, habitat or community types.[25]

The Guidelines also specify that impacts should be evaluated individually, in combination and cumulatively.[26] They call for states to conduct assessments of individual bottom fishing activities and to adopt measures to prevent significant adverse impacts on vulnerable marine ecosystems (VMEs). These procedures include identifying areas or features where VMEs are known or likely to occur, identifying the location of fisheries in relation to these areas and features, and then developing data collection and research programmes to assess the impact of fishing on target and non-target species and their environment.[27] The Guidelines list the characteristics of VMEs that should be subject to assessments and give examples of potentially vulnerable species groups, communities and habitats, as well as features that potentially support them.[28]

2.4.2 Shipping Sector

In the shipping sector, only a limited number of activities that ships may engage in beyond national jurisdiction, such as dumping of wastes and ocean fertilization, are subject to risk and environmental assessment processes. For

23 UN Fish Stocks Agreement, Articles 5(d) and 6(3)(d).
24 FAO, *International Guidelines for the Management of Deep Sea Fisheries in the High Seas*, (2009), <http://www.fao.org/docrep/011/0816t/0816t00.htm>.
25 Ibid., 4, para. 17.
26 Ibid.
27 Ibid., 9–11.
28 Ibid., 4, paras.14–16.

States Parties to the London Convention, dumping of non-prohibited substances is only allowed subject to the requirements of prior environmental impact assessment, permitting and ongoing monitoring set out in Annex III of the Convention.[29] For States Parties to the London Protocol, dumping of all waste and other matter is prohibited, except for five listed categories of substances the dumping of which is nevertheless subject to the stringent assessment, permitting and ongoing monitoring requirements of Annex 2 of the Protocol.[30] Any application for a permit to dump these listed substances must be accompanied by an assessment of the sea disposal options, including information on waste characteristics, conditions at the proposed dump site, fluxes and proposed disposal techniques and specifications about the potential effects on human health, living resources, amenities and other legitimate uses of the sea. These assessments can apply to dumping of wastes in marine areas beyond national jurisdiction as well as to areas within national jurisdiction.

A statement adopted by the Scientific Groups of the London Convention and London Protocol in July 2007 "noted with concern the potential for ocean fertilization activities to have negative impacts on the marine environment and human health" and recommended that the parties to the London Convention and London Protocol consider the issue with a view to its regulation.[31] This statement was endorsed by the States Parties during their joint annual meeting in November 2007 where the parties agreed that while it was the prerogative of each state to consider proposals for ocean fertilization projects on a case-by-case basis in accordance with the Convention and/or Protocol, knowledge about the effectiveness and potential environmental impacts of open ocean fertilization was currently insufficient to justify large scale projects. They also agreed that ocean fertilization fell within their regulatory competence and that they would "further study this issue from scientific and legal perspectives with a view to its regulation."[32]

The ongoing discussions in the London Convention/London Protocol Scientific Groups concerning ocean fertilization prompted the Conference of

29 London Convention, Article IV and Annex III, available online: <http://www5.imo.org/SharePoint/blastDataHelper.asp/data_id%3D16925/LC1972.pdf>.

30 London Protocol. Article 4 and Annex 2, available online: <http://www.austlii.edu.au/au/other/dfat/treaties/2006/11.html>.

31 LC/LP Scientific Groups, "Statement of Concern Regarding Iron Fertilization of the Ocean to Sequester CO_2," Doc. LC-LP.1/Circ.14, 13 July 2007.

32 International Maritime Organization, *Report of the 29th Consultative Meeting of the Contracting Parties to the Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter, 1972 and 2nd Meeting of the Contracting Parties to the 1996 Protocol thereto*, IMO Doc. LC29/LP2 (2007).

the Parties of the Convention on Biological Diversity at their 9th meeting in May 2008 to request parties and urge other governments "in accordance with the precautionary approach to ensure that ocean fertilization activities do not take place until there is an adequate scientific basis on which to justify such activities, including assessing associated risks, and a global transparent and effective control and regulatory mechanism is in place for those activities; with the exception of small scale scientific research within national jurisdiction."[33] An exception was noted in the case of "small scale scientific research studies within coastal waters," which "should only be authorized if justified by the need to gather specific scientific data, and should also be subject to a thorough prior assessment of the potential impacts of the research studies on the marine environment, and be strictly controlled, and not be used for generating and selling carbon offsets or any other commercial purposes."[34] An intersessional Technical Working Group on Ocean Fertilization was established to develop an Assessment Framework for Scientific Research Involving Ocean Fertilization to provide a mechanism for assessing, on a case-by-case basis, whether proposals for ocean fertilization activities represent legitimate scientific research.[35] The draft Assessment Framework[36] was reviewed by the Scientific Groups in June 2009 and adopted as a work in progress.[37] The draft was tabled again during an extraordinary session of the Scientific Groups in October 2010[38] where further revisions were made and it was adopted, by consensus, in a non-binding resolution at the October 2010 meeting of the parties.[39] The Assessment Framework (AF) is described as a "tool … to determine if the proposed activity constitutes legitimate scientific research that is not contrary to the [LC/LP] aims." It sets out a two-stage process involving an initial assessment and an environmental assessment. The purpose of the initial

33 COP 9 Decision XI/16 on Biodiversity and Climate Change, (Presented at the Ninth Meeting of the States Parties to the Convention on Biological Diversity (COP 9), Bonn, 19–30 May 2008) Section C, <http://www.cbd.int/decisions/cop9/?m=COP-09&id=11659&lg=0> on 27 August 2008.

34 Ibid.

35 LC.30/16, para. 2.3.

36 LC/SG-CO2 3/5, annex 2.

37 LC/SG 32/15, paras. 2.18–2.29.

38 See Draft Assessment Framework for Scientific research Involving Ocean Fertilization Doc LC/SG/ES.2, 30 July 2010.

39 32nd Consultative Meeting of Contracting Parties to the Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter, 1972 (London Convention) and 5th Meeting of Contracting Parties to the 1996 Protocol thereto (London Protocol) Assessment Framework for Scientific Research Involving Ocean Fertilization, Resolution LC-LP.2 (2010).

assessment is to determine whether the proposed ocean fertilization activity constitutes legitimate scientific research. To qualify as such the proposed activity must have "proper scientific attributes," which means:

1. The proposed activity should be designed to answer questions that will add to the body of scientific knowledge. Proposals should state their rationale, research goals, scientific hypotheses and methods, scale, timings and locations with clear justification for why the expected outcomes cannot reasonably be achieved by other methods;
2. Economic interests should not influence the design, conduct and/or outcomes of the proposed activity. There should not be any financial and/or economic gain arising directly from the experiment or its outcomes. This should not preclude payment for services rendered in support of the experiment of the future financial impacts of patented technology;
3. The proposed activity should be subject to scientific peer review at appropriate stages in the assessment process. The outcomes of the scientific peer review should be taken into consideration by the Contracting Parties. The peer review methodology should be stated and the outcomes of the peer review of successful proposals should be made publicly available together with the details of the project; and
4. The proponents of the proposed activity should make a commitment to publish the results in peer-reviewed scientific publications and include a plan in the proposal to make the data and outcomes publicly available in a specified time frame.

Proposals that meet these criteria may then proceed to the next stage, the environmental assessment that includes requirements of risk management and monitoring. The environmental assessment stage entails a number of components including the problem formulation, a site selection and description, an exposure assessment, an effects assessment, risk characterization and risk management sections.[40] Only after completion of the environmental assessment is a decision made on whether the proposed activity constitutes legitimate scientific research that is not contrary to the aims of the London Convention or/London Protocol. If so, the activity is permitted to proceed. In October 2013, the Contracting Parties to the London Convention and London Protocol adopted an amendment to the Protocol which, when it enters into force, will make this risk assessment framework mandatory for all specified marine

40 Assessment Framework for Scientific Research Involving Ocean Fertilization, LC 32/15, Annex 6, pp. 5–19, <http://ww.imo.org/SharePoint/blastDataHelper.asp/data_id%3D30641/AssessmentFramework-annex6-LC-32-15.pdf>.

geoengineering activities.[41] The only marine geoengineering activity specified at this stage is ocean fertilization.

2.4.3 Deep Seabed Mining Sector

Deep seabed mining activities in ABNJ are subject to a well-developed framework of environmental assessment obligations. An exploration contractor must submit an assessment of the potential environmental impacts of proposed activities with an application for approval of a plan of work together with a description of proposed measures for the prevention, reduction, and control of possible impacts on the marine environment to the International Seabed Authority (ISA).[42] The Recommendations for the Guidance of the Contractors for the Assessment of the Possible Environmental Impacts Arising from Exploration for Polymetallic Nodules in the Area, issued by the Authority's Legal and Technical Commission in revised form in 2010, specify the particular activities of exploration contractors that are subject to EIA.[43] The sponsoring state for an exploration contractor is under a due diligence obligation to ensure that an exploration contractor fulfils all these obligations.[44]

3 Challenges to Implementing Environmental Assessment in ABNJ

The governance structures underpinning environmental assessment in marine areas are directly related to the scheme of maritime jurisdiction and different maritime zones prescribed in the LOSC. The ability of states to fulfil this obligation in ABNJ is largely dependent on individual flag States supplemented

41 Report of the Working Group on the Proposed Amendment to the London Protocol to Regulate Placement of Matter for Ocean fertilization and other Marine Geo-engineering Activities, LC Doc 35/WP.3, 17 October 2013; Philomène Verlaan, "Current Legal Developments: London Convention and London Protocol" (2011) 26(1) *International Journal of Marine and Coastal Law* 185–194.

42 *Agreement Relating to the Implementation of Part XI of the United Nations Convention on the Law of the Sea of 10 December 1982*, opened for signature 28 July 1994, 33 ILM 1309 (entered into force 28 July 1996) (*'Part XI Implementation Agreement'*), Annex, para. 7; Regulations for Prospecting and Exploration of Polymetallic Nodules (Polymetallic Nodule Regulations), <http://www.isa.org.jm/files/documents/en/Regs/pn-en.pdf>, Regulation 18(c) and (d).

43 Recommendations for the Guidance of Contractors for the Assessment of the Possible Environmental Impacts Arising from Exploration for Polymetallic Nodules in the Area, http://www.isa.org.jm/files/documents/EN/7Sess/LTC/isba_7ltc_1Rev1.pdf, para 10.

44 ITLOS Advisory Opinion, above note 17, 43–44, paras. 141–143; Polymetallic Nodules Regulation 31(6) and Polymetallic Sulphides Regulation 33(6).

by the limited collaborative institutions and mechanisms they have established for environmental assessment in ABNJ. Lack of an integrated system of environmental governance for ABNJ presents considerable problems for implementing comprehensive environmental assessment processes in these vast areas of the ocean. The predominant form of jurisdiction in ABNJ is flag state jurisdiction. For shipping transiting ABNJ, it falls to individual flag States rather than any regional or global body to regulate and enforce the activities of their flag vessels including their impacts on the marine environment. This results in variable levels of compliance with environmental standards, and no auditing of individual flag State performance or sanctioning of sub-standard performance. Many of the stages in an environmental impact assessment process require coordinating authorities which are conspicuously lacking in the fragmentary and disjunctive system of governance applicable to most ABNJ activities. These stages include the initial screening process to select which activities are subject to environmental assessment, the scoping process to decide the terms of reference for an environmental assessment, the public notification and consultation process to engage relevant stakeholders, the post EIA decision-making phase and the ongoing monitoring of environmental impacts.

4 Rationale and Objectives for Including EIA Elements in the International Legally Binding Instrument for Conservation and Sustainable Use of Marine Biodiversity in ABNJ (ILBI)

The BBNJ Working Group which preceded the Intergovernmental Conference negotiating the ILBI discussed reasons for including EIA as one of the key components in any future Implementing Agreement on the Conservation and Sustainable Use of Marine Biodiversity in Areas beyond National Jurisdiction.[45] A key plank of the rationale for including EIA elements is to capture activities occurring in ABNJ that are not already subject to sectoral EIA processes, in effect, to provide a default EIA system for activities such as bio-prospecting and marine geoengineering. Another reason for including EIA elements is to provide best practice standards for EIA in ABNJ where scientific knowledge of marine biodiversity is still nascent. Developing best practice standards for EIA in ABNJ may well entail the incorporation of new elements into the generally

45 Letter from the Co-Chairs of the Ad Hoc Open-ended Informal Working Group to study issues related to the conservation and sustainable use of marine biodiversity in areas beyond national jurisdiction to the President of the General Assembly, 30 June 2011, Annex, Section I, paras. (a) and (b).

accepted components of the EIA process. Rather than perpetuating a situation where EIA is simply a procedural hurdle for the proponents of a particular activity, a best practice standard could require a process that is biodiversity inclusive, transparent and subject to international scrutiny with associated powers to impose conditions in the interest of mitigating adverse impacts on the marine environment or to disallow the activity where there is the potential for substantial harm to the marine environment.

5 Options for Incorporating EIA Elements into the ILBI

Typical components of an EIA process include screening, scoping of the terms of reference for an EIA, public notification and consultation, reporting and post-report decisions on whether to impose conditions on the activity or to disallow it.[46]

5.1 *Screening*

The screening component of an EIA process determines whether particular activities or projects will be subject to an EIA. The threshold of significant effects on the environment as the trigger for subjecting activities to EIA has gained wide acceptance in global and regional instruments as well as national legislation.[47] The Environmental Protocol to the Antarctic Treaty (Madrid Protocol) is a notable exception to this generally accepted threshold with the screening process involving three levels – the preliminary assessment level, the initial environmental evaluation level and the comprehensive environmental evaluation level. A preliminary assessment is carried out at the national level for all activities subject to the Protocol with less than a minor or transitory impact.[48] If an activity will have no more than a minor or transitory impact, an initial environmental evaluation must be carried out at the national level.[49] If it has more than a minor or transitory impact, a comprehensive environmental evaluation must be carried out and submitted to the Committee on Environmental Protection (CEP) of the Madrid Protocol.[50] This is a potential option for screening thresholds in ABNJ, at least for activities intended to occur in

46 Craik, above note 12, 132.
47 Ibid., 133.
48 Madrid Protocol, Annex I, art.1(1).
49 Ibid., Annex I, arts. 2(1) and 3(1).
50 Ibid., Annex I, art.3(2).

sensitive areas of the ABNJ environment such as identified vulnerable marine ecosystems (VMEs) and ecologically and biologically significant areas (EBSAs).

In addition to threshold criteria, many EIA regimes list activities which will automatically be subject to EIAs and criteria to assist in determining which other activities should be subject to EIAs.[51] An indicative list of such activities for ABNJ would include deep sea fishing, aquaculture, dumping of waste, marine geoengineering, offshore hydrocarbon production, bio-prospecting, marine scientific research, laying of submarine cables and pipelines, ballast water exchange, deep sea tourism expeditions and ocean energy operations. Criteria to assist States in determining which other activities should be subject to EIAs could be modelled on the CBD Voluntary Guidelines for Biodiversity-Inclusive EIA,[52] particularly as the proposed international agreement will relate to conservation and sustainable use of biodiversity in ABNJ. These might include whether:

– The proposed activity is located in or close to an area of special environmental sensitivity or representative international importance;
– The intended activity would affect the biophysical environment directly or indirectly in such a manner that it will increase risks of extinction of genotypes, cultivars, varieties, populations of species or increase the chance of loss of habitat or ecosystems;
– The intended activity would surpass the maximum sustainable yield i.e. the carrying capacity of a habitat/ecosystem or the maximum allowable disturbance level of a resource, population or ecosystem; and/or
– The proposed activity would have particularly complex and potentially adverse effects including those giving rise to serious effects on valued species or organisms or those which threaten the existing or potential use of an affected area.

5.2 *Scoping*

Once the need for an EIA has been agreed, a scoping process follows that determines the focus, depth and terms of reference for the EIA. The fundamental objective of the scoping process is to identify those issues arising from the proposed activity which are most likely to have a significant impact on the environment and to describe alternatives that avoid, mitigate, or compensate for adverse impacts on the environment. The content of the EIA report or

51 Craik, above note 12, 134–135.

52 *Biodiversity in Impact Assessment. Background Document to Decision VIII/28 of the Convention on Biological Diversity. Voluntary Guidelines on Biodiversity-Inclusive Impact Assessment*, <http://www.cbd.int/doc/publications/pubcbd-ts-26-en.pdf>.

Environmental Impact Statement (EIS) is derived on the basis of these elements. The scoping stage of EIAs for activities in ABNJ while addressing the same issues could also incorporate examination of impacts and alternatives which take into account the shared interests of the international community such as the long term sustainability of marine resources, continuing marine scientific research and the stability of global climate.

5.3 *Reporting*

The EIS which is usually prepared by the proponent of the activity forms the basis for subsequent decisions by the relevant authorities on whether an activity should proceed and whether conditions should be imposed on the activity. The potential elements of an EIS for proposed activities in ABNJ could include:

- A description of the proposed activity including its purpose, location, duration and intensity;
- A description of the initial environmental reference state and a prediction of the future environmental reference state in the absence of the proposed activity;
- A description of the programme for oceanographic and environmental baseline studies that would enable an assessment of the potential environmental impact including but not restricted to the impact on biodiversity of the proposed activity;
- A description of the practical alternatives, including the alternative of not proceeding and the consequences of those alternatives;
- An assessment of the likely or potential environmental impacts of the proposed activity and alternatives, including the direct, indirect, individual and combined, cumulative, short-term and long-term effects of the proposed activity and alternatives in the light of existing and known planned activities;
- A description of the expected biophysical changes resulting from proposed activities, including a description of ecosystems lying within the range of influence of such changes and the spatial and temporal scale of influence of each biophysical change, identifying effects or connectivity between ecosystems, and potential cumulative effects;
- A determination of whether there will be adverse impacts on biodiversity or ecosystems affected by the expected biophysical changes in terms of composition, structure (spatial and temporal) and key processes highlighting any irreversible impacts and irreplaceable loss;
- Identification, in consultation with the scientific and technical advisory body to the Conference of the Parties (COP) of the Implementing Agreement of the current and potential ecosystem services provided by the

affected ecosystems and determination of the values these represent for the international community highlighting any irreversible impacts and irreplaceable loss;
- As complete a consideration as possible of effects involving impediments to migration, of transboundary effects on migratory species and of impacts on migratory patterns or migratory ranges;
- Definition of possible alternatives, including "no net biodiversity loss" or "biodiversity restoration" alternatives and location, scale, siting, lay out and technology alternatives;
- An assessment in consultation with the Intergovernmental Panel on Climate Change (IPCC) of the likely impacts on global climate of the proposed activity, whether positive or negative;
- A description of the methods, data and underlying assumptions used to forecast the impacts of the proposed activity;
- An identification and description of measures available to prevent or avoid adverse environmental impacts of the proposed activity and alternatives and an assessment of those measures;
- A description of the effects of the proposed activity on the conduct of scientific research and on other existing uses and values;
- An identification of whether the proposed activity will affect the proponent's compliance with its obligations under customary or conventional international law;
- An identification of gaps in knowledge and uncertainties encountered in compiling the information required for the EIA report; and
- A non-technical summary of the information provided under the previous clauses.

5.4 *Public Notification and Consultation*

The duty to notify and consult with affected parties is an integral component of environmental impact processes in both the national and transboundary arenas.[53] The general obligation to notify and consult, derived from the international law duty to cooperate and found in a variety of hard and soft law instruments, can be adapted to activities in ABNJ. When information provided as part of an EIA indicates that the environment of ABNJ is likely to be significantly affected by a proposed activity, the proponent of the activity being planned should notify and consult with potentially affected stakeholders and provide them with relevant information. In the ABNJ context, potential stakeholders

53 Craik, above note 12, 141.

could include States, members of the public, international and regional organizations, inter-governmental and nongovernmental organizations, industry representatives and corporate entities. Before a decision is made on whether activity proceeds and on what conditions, these stakeholders should be provided with an opportunity to comment. To assist in this process, States could be encouraged to notify other States and competent international organizations of planned activities under their jurisdiction or control which may have a significant effect on marine biodiversity in ABNJ. There is also the potential for a more enhanced role for the regional seas organizations as dissemination points and consultation hubs on EIAs and as technical advisers on mitigation measures.

5.5 *Post EIS Decision-Making*

Under most EIA regimes, the obligation on the final decision-maker is one of due diligence encompassing a full examination of the potential environmental impacts of a particular project and due consideration for the interests of affected parties.[54] The global commons status of biodiversity in ABNJ calls for a more stringent and inclusive standard of decision making on whether an activity should be allowed to proceed and on what conditions. This could involve developing a further set of criteria related to the permissible levels of impact on marine biodiversity in ABNJ and a decision-making structure which involves a level of international scrutiny over EIAs prepared by proponents of particular activities.

6 Links between EIA Elements and Other Components of the International Agreement

The EIA components of the ILBI should be consistent with the overarching objectives and general principles articulated in the agreement. For example, the EIA process prescribed in the agreement should be focused on the conservation and sustainable use of marine biodiversity in ABNJ. The institutional infrastructure required for the EIA process prescribed in the ILBI should utilise as far as possible existing global and regional organisations with the relevant expertise as well as the institutions of the international agreement itself. For example, the Conference of the Parties (COP) of the international agreement advised by a Subsidiary Scientific and Technical Body could function as the

54 Ibid., 150–151.

decision-making body for EIAs. Its functions would include setting standards for best practice EIA and reviewing EIAs undertaken by sectoral bodies for activities in ABNJ. It could have powers to impose conditions or disallow activities based on criteria developed around thresholds for adverse impacts on marine biodiversity in ABNJ. The Subsidiary Scientific and Technical Body and the COP could also function as default review and decision-making bodies for EIAs of new and emerging activities in ABNJ not covered by existing sectoral EIA regimes. In addition, the EIA screening criteria developed under an international agreement should take into account any network of MPAs designated by the COP of the agreement.

7 Conclusions

The obligation to identify the environmental impacts of human activities and to mitigate their adverse effects is equally critical to combating these threats to biodiversity in ABNJ as it is in marine areas under national jurisdiction. While legal and institutional frameworks for environmental assessment are well established in many countries for marine areas under national jurisdiction, collaborative structures and mechanisms to achieve the same objectives in ABNJ are still fragmentary and underdeveloped. Establishing these governance structures in ABNJ is a much more complicated endeavour involving multiple stakeholders including states, global and regional organizations, marine industries and non-governmental organizations focussed on protecting the marine environment. The negotiation of an international agreement for the conservation and sustainable use of marine biodiversity in ABNJ offers the opportunity to develop best practice standards for a biodiversity-inclusive EIA for all activities with the potential for adverse impacts on the marine biodiversity of ABNJ. With appropriate elaboration and adaptation from existing EIA regimes, it can provide a process for assessing the impacts of previously unexamined activities in ABNJ and new and emerging activities. An EIA regime for ABNJ also provides an opportunity for the shared interests of the international community in conserving and sustainably using marine biodiversity to be represented in a transparent and inclusive process which takes into account the interests of multiple ocean stakeholders of current and future generations. The development of an EIA regime for ABNJ is a fundamental prerequisite for the conservation and sustainable use of marine biodiversity across the whole spectrum of ABNJ activities.

CHAPTER 10

Not an Intractable Challenge

Geoengineering MSR in ABNJ

Karen N. Scott

Abstract

This chapter examines the rules relating to marine scientific research as they apply to marine geoengineering taking place in ABNJ. It will analyse the regime currently evolving under the 1996 London Protocol to the 1972 London (Dumping) Convention, which has been developed to manage ocean fertilization scientific research in the context of the regulation of marine scientific research under the 1982 United Nations Convention on the Law of the Sea (UNCLOS). As the Southern Ocean has been the location for several ocean fertilization experiments to date, the relevant rules under the 1991 Environmental Protocol to the 1959 Antarctic Treaty, particularly environmental impact assessments, will also be assessed. This chapter briefly assesses the relationship between these regimes and the future Agreement under UNCLOS on the conservation and sustainable use of biodiversity and concludes that this Agreement—whatever the outcome of the negotiations—will not operate as a panacea for managing activities in ABNJ. With respect to geoengineering MSR, the potential 'solution' to managing its risks lies in supporting and implementing the existing regime.

Keywords

geoengineering – environmental impact assessment – marine scientific research – areas beyond national jurisidiction

1 Introduction

Managing and mitigating the impacts of activities taking place beyond the jurisdiction of states comprises a significant (but hopefully not intractable) challenge for the negotiators of a legally binding agreement under the United Nations Convention on the Law of the Sea on the conservation and sustainable

 | DOI:10.1163/9789004422438_011

use of marine biodiversity.[1] While negotiations are far from being concluded, delegates have broadly agreed on three tools to manage the impacts of activities taking place beyond national jurisdiction: the application of general environmental principles (such as precaution and an ecosystem approach); area-based management and the regulation of activities taking place within protected areas; and environmental impact assessment.[2] All three tools are already used to a greater or lesser extent under existing instruments currently of application to areas beyond national jurisdiction (ABNJ). The most significant activities taking place in ABNJ to date—shipping, fishing and, to a lesser extent, mining—are all regulated under existing regimes and are unlikely to be significantly impacted by the BBNJ Agreement.[3] Less common activities, on the other hand, may well be subject to controls under the new Agreement.

This chapter explores one such activity, geoengineering scientific research, and examines the recent and emerging regime at both the international and the regional levels designed to regulate this controversial use of the ocean commons. It will focus on the law of the sea as developed under both the 1982 United Nations Convention on the Law of the Sea (UNCLOS)[4] and the 1996 Protocol[5] to the 1972 London Convention[6] as it relates to regulating geoengineering marine scientific research. In particular, this chapter will highlight the various underlying tensions associated with managing geoengineering as a scientific research issue. In light of the location of a number of geoengineering

1 A Formal preparatory committee to develop a binding instrument was established in 2016 pursuant to General Assembly Resolution 69/292, *Development of 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*, A/RES/69/292 (19 June 2015) and formal negotiations were instituted by General Assembly Resolution 72/249, *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 Statement of financial implications*, A/RES/72/249 (24 December 2017). Both available at undocs.org.

2 At the time of writing a revised draft text of an agreement 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 is due to be discussed at the fourth negotiating session (New York, 23 March–3 April 2020). See A/CONF.232/2020/3 (distributed 18 November 2019) available at: https://undocs.org/en/a/conf.232/2020/3 (hereinafter, BBNJ March 2020 Draft Text).

3 It has been agreed that the BBNJ Agreement will not undermine existing instruments although at the time of writing the text of this provision (currently, Article 4) has not been agreed. See ibid.

4 1982 United Nations Convention on the Law of the Sea (UNCLOS) 21 (1982) *ILM* 1261.

5 1996 Protocol to the 1972 London Dumping Convention 36 (1997) *ILM* 7.

6 1972 Convention on the Prevention of Marine Pollution by Dumping of Wastes and other Matter (London) 11 (1972) *ILM* 1974.

experiments in the Southern Ocean, and the fact that this region accounts for 40 percent of the global uptake of anthropogenic carbon dioxide,[7] this paper will also examine the controls of scientific research developed under the 1959 Antarctic Treaty[8] and the 1991 Environmental Protocol to the Antarctic Treaty.[9] This chapter will critique the efficacy of the evolving regulatory framework for geoengineering research and assess its fitness for purpose in light of the risks this activity poses. It will conclude with some observations on the relationship between the geoengineering MSR regime and the BBNJ Agreement.

2 Geoengineering and the Oceans

The oceans and the atmosphere are intimately linked through natural processes. The oceans have sequestered approximately 25 percent of all anthropogenic carbon dioxide since 1750,[10] and, without this service, atmospheric concentration of carbon dioxide would be approximately 55ppm higher than current observations.[11] This is a service with a significant cost, however.[12] The upper ocean (above 700m) has warmed by an average of between 0.11° and 0.13° C per decade between 1971 and 2010, a trend which likely began in the late nineteenth century.[13] A warmer ocean (in addition to melting ice-shelves and glaciers) has resulted in a rise in an average sea level of 0.19m between 1901 and 2010.[14] Alteration in ocean salinity levels have led to changes in water circulation and ocean biochemistry. The pH level of the oceans has decreased[15] and it is estimated

7 Peter Landschützer, Nicolas Gruber, F. Alexander Humann et al., 'The reinvigoration of the Southern Ocean carbon sink' 349 (11 September 2015), *Science* 1221 –1224 at 1221.

8 1959 Antarctic Treaty 402 *UNTS* 71.

9 1991 Protocol to the Antarctic Treaty on Environmental Protection 30 (1991) *ILM* 1461.

10 Pierre Friedlingstein, 'Carbon cycle feedbacks and future climate change' (2015), 373 *Philosophical Transactions R. Soc* 20140421.

11 Christopher L. Sabine, Richard A. Feely and Nicolas Gruber et al., 'The Oceanic Sink for Anthropogenic CO_2' 305 (16 July 2004), *Science* 367 at 370.

12 See generally Edward H. Allison and Hannah R. Bassett, 'Climate change in the oceans: Human impacts and responses' 350 (13 November 2015), *Science* 778; Lisa A. Levin and Nadine Le Bris, 'The deep ocean under climate change' 350 (13 November 2015) *Science* 766; and Toby Tyrrell, 'Anthropogenic Modification of the oceans' 369 (2011), *Phil. Trans. R. A* 887.

13 M. Rhein et al., 'Observations: Ocean' in T.F. Stocker (ed.) et al., *Climate Change 2013: The Physical Science Basis. Contribution of Working Group I to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change* (Cambridge University Press 2013), 257 (hereinafter, IPCC 5th Assessment Report). See also John M. Lyman, Simon A. Good, Victor V. Gouretski et al., 'Robust warming of the global upper ocean' (2010), 465 *Nature* 334.

14 IPCC 5th Assessment Report, above n 4, at 258.

15 IPCC 5th Assessment Report, ibid., at 257–9.

that ocean acidity could increase 150 percent by 2050.[16] Ocean acidification constitutes a major threat to calcifying marine organisms, including coral, in addition to coastal defences,[17] and is likely to prove a particular threat to the Arctic Ocean ecosystem.[18] More generally however, climate change has already affected the distribution and abundance of phytoplankton[19] and fish.[20]

Some scientists and policy-makers however, regard the oceans as a solution to, rather than simply a victim of, climate change. By artificially enhancing the natural processes whereby carbon dioxide is naturally transferred from the surface to the deep ocean by means of the biological and solubility pumps, scientists have posited that the oceans can be exploited as a climate change mitigation measure. The artificial nature of the enhancement characterises this activity as 'geoengineering', which is commonly defined to mean the deliberate, large scale manipulation of environmental systems for the purposes of climate change mitigation.[21] As a technology and indeed a science in its early stages of development, it is unsurprising that to date the initial regulatory focus has been on managing geoengineering research-related activities.

Geoengineering techniques are designed either to remove CO_2 from the atmosphere or to deflect or reflect solar radiation from the earth. Technologies aimed at atmospheric carbon dioxide removal (CDR) focus on enhancing natural processes that normally perform this function. CDR includes afforestation or reforestation,[22] soil-carbon sequestration,[23] the use of CO_2 absorbing

16 Ibid.

17 Scott C. Doney et al., 'Ocean Acidification: A Critical Emerging Problem for the Oceans' (2009), 22 *Oceanography* 16, at 18.

18 C.P.D. Brussard, A.A.M. Noordeloos, H. Witte et al., 'Arctic microbial community dynamics influenced by elevated CO_2 levels' (2013) 10 *Biogeosciences* 719.

19 Séverine Alvain, Corinne Le Quéré, Laurent Bopp et al., 'Rapid climatic driven shifts of diatoms at high latitudes' (2013), 132 *Remote Sensing of Environment* 195.

20 M.J. Salinger, 'A brief introduction to the issue of climate and marine fisheries' (2013), 119 *Climatic Change* 23.

21 David W. Keith, 'Geoengineering the Climate: History and Prospect' (2000), 25 *Annual Review of Energy and the Environment* 245, at 247.

22 See Josep G. Canadell and Michael R. Raupach, 'Managing Forests for Climate Change Mitigation' (2008) 320 *Science* 1456; Leonard Ornstein, Igor Aleinov and David Rind, 'Irrigated afforestation of the Sahara and Australian Outback to end global warming' (2009), 97 *Climatic Change* 409; Kenneth R. Richards and Carrie Stokes, 'A Review of Forest Carbon Sequestration Cost Strategies: A Dozen Years of Research' (2004), 63 *Climatic Change* 1; Brent Sohngen, 'Forestry Carbon Sequestration' in Bjørn Lomborg, *Smart Solutions to Climate Change: Comparing Costs and Benefits* (CUP 2010), 114; Massimo Tavoni, Brent Sohngen and Valentina Bosetti, 'Forestry and the carbon market response to stabilize climate' (2007), 35 *Energy Policy* 5346.

23 See Raj K. Shrestha and Rattan Lal, 'Ecosystem carbon budgeting and soil carbon sequestration in reclaimed mine soil' (2006), 32 *Environment International* 781.

algae on building surfaces[24] and even the capture and storage of atmospheric CO_2 by artificial 'trees'.[25] Solar radiation management (SRM) techniques by contrast, do not attempt to alter the balance of carbon dioxide between the atmosphere, biosphere and hydrosphere but, instead, are designed to offset increases in temperature caused by climate change through management of solar radiation. Such techniques include urban albedo enhancement,[26] marine cloud brightening[27] and whitening the stratosphere.[28] Beyond reflecting sunlight back into space, the most radical ideas associated with SRM seek to actually deflect sunlight from the Earth through the placement of strategic mirrors between the earth and the sun or in orbit around the earth.[29]

---

24 Eduardo Jacob-Lobes, Carols Henrique Gimenes Scoparo and Telma Teixeira Franco, 'Rates of CO_2 removal by *Aphanothece microscopic Nägeli* in tubular photobioreactors' (2008), 47 *Chemical Engineering and Processing* 1365.

25 K.S. Lackner, 'Capture of carbon dioxide from ambient air' (2009), 176 *The European Physical Journal, Special Topics* 93.

26 Hashem Akbari, Surabi Menon and Arthur Rosenfeld, 'Global cooling: increasing world-wide urban albedos to offset CO_2' (2009), 94 *Climatic Change* 275, at 277 and Robert M. Hamwey, 'Active Amplification of the Terrestrial Albedo to Mitigate Climate Change: An Exploratory Study' (2007), 12 *Mitigation and Adaptation Strategies for Global Change* 419.

27 John Latham et al., 'Global temperature stabilization via controlled albedo enhancement of low-level maritime clouds' (2008), 366 *Phil. Trans. R. Soc. A* 3969; Stephen Salter, Graham Sortino and John Latham, 'Sea-going hardware for the cloud albedo method of reversing global warming' (2008), 366 *Phil. Trans. R. Soc. A* 3989.

28 P. J. Crutzen, 'Albedo Enhancement by Stratospheric Sulfur Injections: A Contribution to Resolve a Policy Dilemma?' (2006), 77 *Climatic Change* 211; Robert E. Dickinson, 'Climate Engineering: A Review of Aerosol Approaches to Changing the Global Energy Balance' (1996), 33 *Climatic Change* 279; Yu A. Izrael, 'Field Experiment on Studying Solar Radiation Passing through Aerosol Layers' (2009) 34 *Russian Meterology and Hydrology* 265; Philip J. Rasch et al., 'An overview of geoengineering of climate using stratospheric sulphate aerosols' (2008), 366 *Phil. Trans. R. Soc. A* 4007; Alan Robock, Luke Oman and Georgiy L. Stenchikov, 'Regional climate responses to geoengineering with tropical and Arctic SO_2 injections' (2008), 113 *Journal of Geophysical Research* D16101; A.F. Tuck, et al., 'On geoengineering with sulphate aerosols in the tropical upper troposphere and lower stratosphere' (2008), 90 *Climatic Change* 315.

29 See Roger Angel, 'Feasibility of cooling the Earth with a cloud of small spacecraft near the inner Legrange point (L1)' (2006) 103(46), *PNAS* 17184; James Early, 'Space-based Solar Shield to Offset Greenhouse Effect' (1989),42 *Journal of the British Planetary Society* 567; Takanobu Kosugi, 'Role of sunshades in space as a climate control option' (2010) 67 *Acta Astronautica* 241; D. J. Lunt et al., ' "Sunshade World": A fully coupled CGM evaluation of the climatic impacts of geoengineering' (2008) 35 *Geophysical Research Letters* L12710; C.R. McInnes, 'Space-based geoengineering: challenges and requirements' (2010), 224(3) *Proceedings of the Institute of Mechanical Engineers, Part C: Journal of Mechanical Engineering Science* 571; Jerome Pearson, John Oldson and Eugene Levin, 'Earth rings for planetary environment control' (2006), 58 *Acta Astronautica* 44.

Given the ocean's role as a natural sink for carbon dioxide, it is unsurprising that marine geoengineering has largely focused on CDR rather than SRM.[30] The CDR technique that has been subject to greatest scientific and regulatory focus to date has been termed 'ocean fertilization'. This technique, as its nomenclature implies, seeks to fertilize[31] those parts of the ocean—such as the Southern Ocean and the Equatorial Pacific—that are relatively unproductive owing to a relative dearth of nutrients.[32] This is to stimulate biological productivity and enhance the ocean's biological pump whereby carbon dioxide is transferred from the surface to the deep ocean by means of phytoplankton and sequestered for hundreds if not thousands of years.[33] The basic hypothesis of ocean fertilization has been proven in that surface levels of carbon dioxide are temporarily reduced as a consequence of artificial fertilization with iron or other nutrients.[34] However, whether ocean fertilization constitutes a viable climate change mitigation measure is far from clear. Although thirteen official ocean experiments have taken place to date there is no consensus on how long the carbon dioxide is sequestered[35] and how extensive the fertilized

30 It has nevertheless been suggested that the albedo of the ocean's surface may be enhanced through the creation of reflective microbubbles in the sea. See Russell Seitz, 'Bright water: hydrosols, water conservation and climate change' (2011), 105 *Climatic Change* 365.

31 The most commonly suggested fertilizer is iron but other options include volcanic ash, phosphate and urea. See Svend Duggen, P. Croot, Ulrike Schacht et al., 'Subduction zone volcanic ash can fertilize the surface ocean and stimulate phytoplankton growth: Evidence from biogeochemical experiments and satellite data,' (2007), 34 *Geophysical Research Letters*, L01612; Richard S. Lampitt, E.P. Achterberg, T.E. Anderson et al., 'Ocean fertilization: a potential means of geoengineering?' (2008) 366 *Philosophical Transactions of the Royal Society A,* 3,919, 3,923; and Julia Mayo-Ramsay, 'Environmental, legal and social implications of ocean urea fertilization: Sulu Sea example,' (2010) 34 *Marine Policy* 831.

32 H. J. W. de Baar and P. W. Boyd, 'The Role of Iron in Plankton Ecology and Carbon Dioxide Transfer of the Global Oceans' in Roger B. Hansen et al. (eds.) *The Changing Ocean Carbon Cycle: A Midterm Synthesis of the Joint Global Ocean Flux Study* (CUP 2000) 61, 107; Robert A. Duce and Neil W. Tindale, 'Atmospheric Transport of Iron and Its Deposition in the Ocean' (1991), 36 *Limnology & Oceanography* 1715.

33 John H. Martin, 'Glacial-Interglacial CO_2 Change: The Iron Hypothesis,' (1990), 5 *Paleoceanography* 1. See also, Nicolas Cassar et al., 'The Southern Ocean Biological Response to Aeolian Iron Deposition,' (2007), 317 *Science* 1067 and P.W. Boyd, J. Jickells, C.S. Law et al., 'Mesoscale Iron Enrichment Experiments 1993–2005: Synthesis and Future Directions,' (2007), 315 *Science* (2007), 315 612.

34 See George A. Wolf, David S.M. Billett, Brian J. Bett et al., 'The effects of Natural Iron Fertilization on Deep-Sea Ecology: The Crozet Plateau, Southern Indian ocean' (2010), 6(6) *PLoS One* e29697 and Philip Williamson, Douglas W.R. Wallace, Cliff Law et al., 'Ocean Fertilization for geoengineering: A review of effectiveness, environmental impacts and emerging governance' (2012), 90 *Process Safety and Environmental Protection* 475.

35 S. Blain, 'Effect of Natural Iron Fertilization on Carbon Sequestration in the Southern Ocean' (2007) 446 *Nature* 1070; P. Boyd et al., 'A Mesocale Phytoplankton Bloom in the

area must be for the technique to constitute a viable climate change mitigation measure.[36] Moreover, there are concerns as to the unintended consequences of artificial fertilization including oxygen depletion and ocean acidification,[37] impacts on the food chain,[38] introduction of toxic algae[39] and even the exacerbation of climate change through the release of greenhouse gases including methane and nitrous oxide.[40]

In addition to the artificial introduction of fertilizer to the oceans to stimulate biological productivity, other geoengineering techniques include the artificial transfer of natural fertilizers and nutrients from the deep ocean to the surface by means of vertical pipes,[41] the storage of carbon dioxide in artificially created/enhanced macroalgal forests (including kelp and seaweeds)[42] and even the disposal of baled crop residues in the deep ocean.[43] Alternative options seek to enhance the solubility pump through increasing ocean alkalinity by artificially adding limestone powder or soda ash to the oceans, a technique known as 'weathering'.[44] A positive impact of weathering is that an increase in ocean alkalinity potentially reduces the effects of ocean acidification.[45]

Polar Southern Ocean Stimulated by Iron Fertilization' (2000), 407 *Nature* 695; K. Caldeira and P. Duffy, 'The Role of the Southern Ocean in Uptake and Storage of Anthropogenic Carbon Dioxide' (2000), 287 *Science* 620.

36 K. Buesseler et al., 'The Effects of Iron Fertilization on Carbon Sequestration in the Southern Ocean' (2004) 304 *Science* 417.

37 Phillip Williamson, Douglas W. R. Wallace, Cliff Law et al., *op cit.* n. 31, 480–482. See also H. Damon Matthews et al., 'Sensitivity of ocean acidification to geoengineered climate stabilization' (2009), 36 *Geophysical Research Letters* L10706 doi: 10.1029/2009/GL037488.

38 A. Strong, 'Ocean fertilization: time to move on' (2009), 461 *Nature* 347.

39 Q. Schiermeier, 'The Oresmen' (2003), 421 *Nature* 109, 110.

40 J. Furhman and D. Capone, 'Possible Biogeochemical Consequences of Ocean Fertilization' (1991), 36 *Limnology & Oceanography* 1951; M. Lawrence, 'Side-effects of Ocean Iron Fertilization' (2002), 297 *Science* 1993.

41 See J. Lovelock and C. Rapley, 'Ocean pipes could help the Earth to cure itself' (2007), 449 *Nature* 403; A Yool et al., 'Low efficiency of nutrient translocation for enhancing oceanic uptake of carbon dioxide' (2009), 114 *Journal of Geophysical Research* 114.

42 Antione de Ramon N'Yeurt, David P. Chynoweth, Mark E. Capron et al., 'Negative carbon via Ocean Afforestation' (2012), 90 *Process Safety and Environmental Protection* 467.

43 S. Strand and G. Benford, 'Ocean Sequestration of Crop Residue Carbon: Recycling Fossil Fuel Carbon Back to Deep Sediments' (2009), 43 *Environ. Sci. Technol.* 1001.

44 L.D.D. Harvey, 'Mitigating the atmospheric CO_2 increase and ocean acidification by adding limestone powder to upwelling regions' (2008), 113 *Journal of Geophysical Research* C04028; Haroon S. Kheshgi, 'Sequestering Atmospheric Carbon Dioxide by Increasing Ocean Alkalinity' (1995), 20 *Energy* 915.

45 Jennie C. Stephens and David W. Keith, 'Assessing geochemical carbon management' (2008) 90 *Climatic Change* 217, at 228.

What is apparent from the scientific literature to date is that all proposed techniques are at the research stage with most subject to desk-top trials only. The extent to which field trials can and should take place very much depends on the freedoms and constraints associated with scientific research at sea as well as the ethics of research itself.[46]

3 Defining Marine Scientific Research

Marine scientific research (MSR) is officially designated a freedom of the high seas by Article 87(1)(f) of UNCLOS, and Article 238 confirms that "all States, irrespective of their geographical location, and competent international organizations have the right to conduct marine scientific research subject to the rights and duties of other States as provided for in this Convention." Those rights and duties include those set out in Parts VI, XII and XIII of UNCLOS in addition to the general duty of 'due regard' to the interests of other states.[47] Notably however, UNCLOS fails to define the term 'marine scientific research' and this omission was deliberate, a definition being deemed "unnecessary" under the 1977 Informal Composite Negotiating Text.[48] Nevertheless, during the UNCLOS III negotiations, several definitions of MSR were proposed, debated and ultimately, rejected. For example, in the 1973 negotiating round, marine scientific research was defined to comprise:[49]

> … any fundamental or applied research and related experimental work, conducted by States and their juridical and physical persons, as well as by international organizations, which does not aim directly at industrial exploitation but is designed to obtain knowledge of all aspects of the natural processes and phenomena occurring in the ocean space, on the seabed and subsoil thereof, which is necessary for the peaceful activity of States for the further development of navigation and other forms of utilization of the sea and also utilization of the airspace above the world ocean.

46 See generally Karen N. Scott, 'Engineering and the "Mis-Anthropocene": International Law, Ethics and Geoengineering' 29 (2015), *Ocean Yearbook* 61–84.

47 1982 UNCLOS, Article 87(1)(f) and 87(2).

48 Patricia Birnie, 'Law of the Sea and Ocean Resources: Implications for Marine Scientific Research' 10 (1995), *International Journal of Marine and Coastal Law* 229, at 242.

49 Committee on the Peaceful Uses of the Seabed and the Ocean Floor beyond the Limits of National Jurisdiction, vol. 8, Subcommittee III, A/AC.138/SC.III/L.31 (Bulgaria, Poland, Ukrainian SSR and USSR), Articles 1 and 2.

This definition of research expressly included what today is described as 'pure' and 'applied' research but nevertheless excluded research aimed 'directly at industrial exploitation'. The negotiators further broadened this definition the following year in their development of draft Article 1:[50]

> (a) Marine Scientific Research is any study or investigation of the marine environment and experiments related thereto; (b) Marine Scientific Research is of such a nature as to preclude any clear or precise distinction between pure scientific research and industrial or other research conducted with a view to commercial exploitation or military use.

Some states expressed concern over the expansive definition and subsequent debates focused on whether research associated with the immediate exploitation of resources should be similarly treated to research designed to increase knowledge.[51] Later definitions attempted to constrain the definition of scientific research to activities designed to increase humankind's knowledge. In 1975, MSR was defined as "any study of, or related experimental work in, the marine environment that is designed to increase man's knowledge and is conducted for peaceful purposes"[52] or alternatively "… any study and related experimental work conducted in the marine environment designed to increase mankind's knowledge thereof."[53] This definition was minimally adapted and included in the 1976 Informal Single Negotiating Text as "any study or related environmental work designed to increase mankind's knowledge of the marine environment."[54] The definition undoubtedly covered pure scientific research but was ambiguous as to whether it included applied scientific research.

---

50 *Official Records of the Third United Nations Conference on the Law of the Sea*, vol. III (United Nations publication, Sales No. E.75.v.5), Trinidad and Tobago: draft articles on marine scientific research, Article 1, paras. (a) and (b), p. 252.

51 UN, Division for Oceans and the Law of the Sea, *The Law of the Sea. Marine Scientific Research: A revised guide to the implementation of the relevant provisions of the United Nations Convention on the Law of the Sea* (UN New York, 2010) 5.

52 *Official Records of the Third United Nations Conference on the Law of the Sea*, vol. IV (United Nations publication, Sales No. E.75.v.10), Bulgaria, Byelorussian Soviet Socialist Republic, Czechoslovakia, German Democratic Republic, Hungary, Mongolia, Poland, Ukrainian Soviet Socialist Republic and Union of Soviet Socialist Republics: draft articles on marine scientific research, Articles 1 and 2, para. 4.

53 Ibid., Colombia, El Salvador, Mexico and Nigeria: draft arts. on marine scientific research, Articles 1 and 2.

54 *Official Records of the Third United Nations Conference on the Law of the Sea* vol. V (United Nations publication, Sales No. E.76.v.8), draft Part III, Article 48.

As noted above, in 1977, the definition of MSR was ultimately omitted altogether from UNCLOS. Nevertheless, Article 240(b) of the Convention requires that MSR "be conducted with appropriate scientific methods" and the Convention accords 'pure' scientific research a privileged position in the presumption that coastal states will normally consent to research carried out in their exclusive economic zones or on their continental shelves where it is for "peaceful purposes … in order to increase scientific knowledge of the marine environment for the benefit of all mankind."[55] Post-UNCLOS there has, until recently, been very little appetite to further develop a working definition of MSR. Even the International Court of Justice in the 2014 *Whaling in the Antarctic Case* declined to define scientific research notwithstanding the centrality of the notion to the dispute between Japan, Australia and New Zealand over Japanese so-called 'scientific' whaling activities.[56]

By contrast, the organisation to give most consideration to articulating the concept of MSR is the International Maritime Organisations (IMO) through the 1996 Protocol to the 1972 London Convention in the context of geoengineering itself. As will be discussed below, the parties to the Protocol have agreed to use the Protocol to regulate marine geoengineering activities, which is defined for the purpose of the Protocol as "a deliberate intervention in the marine environment to manipulate natural processes, including to counteract anthropogenic climate change and/or its impacts, and that has the potential to result in deleterious effects, especially where those effects may be widespread, long lasting or severe."[57] Geoengineering activities listed in the new Annex 4 to the Protocol are prohibited unless expressly permitted and authorised by a permit.[58] Currently the only permitted activity listed in Annex 4 is ocean fertilization[59] for legitimate scientific research.[60] Whilst 'legitimate scientific research' is not expressly defined in the Protocol, the Risk Assessment Framework, which is designed to guide the issue of permits, sets out a non-exhaustive list of the purposes of such research: to better understand the natural processes associated

55 1982 UNCLOS, Article 246(3).

56 *Whaling in the Antarctic* (*Australia v. Japan: New Zealand Intervening*) [2014] ICJ Rep. 226 at para. 86.

57 1996 Protocol to the 1972 London Convention, Article *5bis* (not yet in force).

58 Ibid., Article 6*bis* (not yet in force).

59 Ocean fertilization for the purposes of Annex 4 is defined as "any activity undertaken by humans with the principal intention of stimulating primary productivity in the oceans. Ocean fertilization does not include conventional aquaculture, or mariculture, or the creation of artificial reefs." (Annex 4, Article 1(1) (not yet in force).

60 1996 Protocol to the 1972 London Convention, Annex 4, Article 1(3) (not yet in force).

with geoengineering; to understand the potential impact of geoengineering on the marine environment; and to understand the extent to which geoengineering may be an effective climate change mitigation measure.[61] The Framework, which has been incorporated into a new Annex 5 of the Protocol, further sets out a range of factors that are integral to how 'legitimate scientific research' is described for the purpose of the Protocol:[62]

- the proposed activity is designed to answer questions that will add to scientific knowledge. Proposals should state their rationale, research goals, scientific hypotheses and methods, scale, timings, duration and locations with clear justification for why the expected outcomes cannot reasonably be achieved by other methods.
- the research methodology to be applied should be appropriate and based on best available scientific knowledge and technology. The methodology should be described in sufficient detail to allow a peer review.
- the proposed activity is subject to scientific peer review at appropriate stages in the assessment process.
- economic interests do not influence the design, conduct and/or outcomes of the proposed activity. There should not be any financial and/or economic gain arising directly from the experiment or its outcomes. This does not preclude payment for services rendered in support of the experiment or future financial impacts of patented technology.
- the proponents of the proposed activity make a commitment to publish the results in peer reviewed scientific publications and include a plan in the proposal to make the data and outcomes publicly available in an appropriate and specified time-frame.
- the proposed activity has the financial resources available before the work commences to fulfil the program of work.

This description does not distinguish between pure and applied scientific research *per se* but it emphasises its purpose, which is to add to scientific knowledge, and stipulates that it must not lead directly to financial or economic gain. It emphasises the importance of scientific methods including peer review and publication.

61 Ibid., Annex 5, paragraph 7 (not yet in force).
62 Ibid., Annex 5, paragraph 8 (not yet in force).

4 Marine Scientific Research and the 1982 UNCLOS[63]

As noted above, MSR was officially recognised as a freedom of the high seas by UNCLOS.[64] The Convention establishes a permissive regime regulating MSR whereby research is permitted subject to a number of broad principles set out under the Convention and limited coastal state control. In particular, all MSR should be conducted for exclusively peaceful purposes, use appropriate scientific methods, refrain from unjustifiable interference with other uses of the seas[65] comply with other provisions of UNCLOS including those designed to protect the marine environment,[66] to manage the Area,[67] and to promote cooperation and the dissemination of information and knowledge.[68] In light of the environmental risks posed by geoengineering activities deliberately designed to manipulate ocean processes and ecosystems, it is the environmental constraints under Part XII of the Convention—which, owing to space constraints are not discussed in detail in this chapter[69]—that are of particular relevance to geoengineering-related MSR, especially in areas beyond national jurisdiction. However, the relatively high threshold for harm and definition of pollution under UNCLOS,[70] in practice, limits the impact of these provisions on small scale scientific research.

In areas under the jurisdiction of states MSR remains under the exclusive jurisdiction of the coastal state[71] although where permission is sought to conduct research a coastal state is normally expected to consent to requests to carry out research in its EEZ, particularly where that research is intended to "increase scientific knowledge of the marine environment for the benefit of all mankind."[72] It is worth noting that consent may nevertheless be withheld

63 See generally, Tim Stephens and Donald R Rothwell, 'Marine Scientific Research' in Donald R. Rothwell, Alex G. Oude Elferink, Karen N. Scott and Tim Stephens (eds.), *The Oxford Handbook of the Law of the Sea* (Oxford University Press, 2015), 559.

64 1982 UNCLOS, Article 87(1)(f) and 238.

65 Ibid., Article 240.

66 Ibid., Article 240(d).

67 Ibid., Article 256.

68 Ibid., Articles 242 and 244.

69 See however, Karen N. Scott, 'Geoengineering and the Law of the Sea' in Rosemary Rayfuse (ed.), *Research Handbook on International Marine Environmental Law* (Edward Elgar Publishing, 2015), 451 and Karen N. Scott, 'International Law in the Anthropocene: Responding to the Geoengineering Challenge' 34 (2013), *Michigan Journal of International Law* 309.

70 Set out in Article 1(4) of the 1982 UNCLOS.

71 1982 UNCLOS, Articles 56(1)(b)(ii), 245 and 246.

72 1982 UNCLOS Article 246(3).

where the research involves the introduction of harmful substances into the marine environment,[73] which arguably would include iron or other nutrients associated with ocean fertilization.

Control of geoengineering-related scientific research under UNCLOS is therefore relatively light and it is unsurprising that other instruments provide direct or indirect regulation at a level that is more robust. Provided those other instruments do not create rights and obligations that are incompatible with UNCLOS or do not affect the enjoyment of UNCLOS rights by other parties to the Convention, those instruments may be applied alongside UNCLOS.[74] Moreover, UNCLOS expressly permits states to conclude agreements modifying UNCLOS provided that such agreements do not affect the application of the basic principles under the Convention or the basic rights and obligations of states party to UNCLOS.[75] The two instruments of primary application to geoengineering-related MSR in ABNJ are the 1996 Protocol to the 1972 Convention and the 1991 Protocol to the 1959 Antarctic Treaty. The provisions of both instruments are compatible with, and therefore should be applied alongside, UNCLOS.

An interesting question is whether ultimately, the provisions of the 1996 Protocol can actually be applied under UNCLOS itself. Article 210 of UNCLOS regulates dumping at sea and requires that national laws, regulations and measures are no less effective than "global rules and standards."[76] It is widely recognised that those global rules and standards refer to the 1972 London Convention[77] and UNCLOS currently lacks a mechanism for determining if and at what stage the 1996 Protocol replaces the Convention as providing those "global rules and standards". The Protocol thus far is supported by about half the number of states which have ratified the 1972 Convention and it would therefore seem premature to interpret Article 210(6) as referring to the Protocol rather than to the Convention. Moreover, the amendments to the Protocol, which create the regime for regulating geoengineering, are not yet in force. More fundamentally, Article 210 specifically refers to "dumping" which is defined in Article 1(5) of UNCLOS as the deliberate disposal of waste or other matter at sea and which explicitly excludes "placement of matter for a purpose other than the mere disposal thereof, provided that such placement is not contrary to the aims of

73 Ibid., Article 245(5)(b).
74 Ibid., Article 311(2).
75 Ibid., Article 311(3).
76 Ibid., Article 210(6).
77 R. R. Churchill and A. V. Lowe, *The Law of the Sea*, 3rd edn. (Manchester University Press 1999), 369.

the Convention."[78] Geoengineering for legitimate scientific purposes is categorised as placement rather than dumping and therefore arguably falls outside the scope of Article 210 of UNCLOS. On this basis, it is unclear whether the rules and standards relating to geoengineering authorised by the 1996 Protocol can be categorised as "global rules and standards" for the purposes of Article 210 of UNCLOS.

5 Geoengineering MSR under the 1996 London Protocol (as Amended)

As briefly described above, the 53 parties of the 1996 Protocol to the 1972 London Convention amended the Protocol in October 2013 in order to create a legal basis for the regulation of marine geoengineering.[79] The definition of geoengineering as set out above[80] is broad and arguably expands the aims and objectives of the Protocol in that it covers activities that do not constitute the abandonment, disposal or placement of matter in the oceans. Nevertheless, currently the scope of the regulatory framework for geoengineering is confined to activities involving the introduction of matter into the sea. Article 6*bis* (not yet in force) stipulates that Contracting Parties "shall not allow the placement of matter into the sea from vessels, aircraft, platforms, or other man-made structures at sea for marine geo-engineering activities listed in annex 4, unless the listing provides that the activity or the sub-category of an activity may be authorised under a permit."[81] The only activity listed in Annex 4 that may be authorised subject to a permit is ocean fertilization "constituting legitimate scientific research."[82] Both Article 6*bis* and Annex 4 of the Protocol require parties to comply with the detailed Risk Assessment Framework set out in Annex 5 of the Protocol.

The Risk Assessment Framework, which was adopted in a non-binding resolution in 2010,[83] and adapted with minor amendments for inclusion within a new Annex 5 of the Protocol, sets out the most detailed international

78 1982 UNCLOS, Article 1(5)(b)(ii).

79 Resolution LP.4(8) *On the Amendment to the London Protocol to Regulate the Placement of Matter for Ocean Fertilization and other Marine Geoengineering Activities* (18 October 2013).

80 See text at footnote 57.

81 Article 6*bis* (1) of the amended Protocol (amendment not yet in force).

82 Annex 4.1, 1996 Protocol as amended (amendment and Annex not yet in force).

83 Resolution LC.LP.2 (2010) *On the Assessment Framework for Scientific Research Involving Ocean Fertilization.*

assessment criteria relating to marine scientific research of any instrument to date. The Framework sets out a two-stage process whereby first, the proposed activity is assessed in order to ascertain whether it constitutes legitimate scientific research (and thereby complies with the criteria set out in Annex 4 of the Protocol) and second, assessed in order to determine that pollution of the marine environment is, as far as practicable, prevented or reduced to a minimum. The initial assessment focuses on the nature and purpose of the activity with a strong emphasis on scientific method.[84] These criteria were discussed above in the context of defining the term 'marine scientific research'.[85] Once a proposed activity is categorised as legitimate scientific research it is subject to a full environmental impact assessment, including an examination of the site selected for the experiment and the matter intended to be placed into the environment.[86] Parties are required to develop an "Impact Hypothesis", which is a statement of the expected consequences of the placement as well as the other potential impacts including transboundary effects.[87] Factors expressly identified for consideration include potential impacts on human health, on marine ecosystems, amenities and other uses of the sea as well as cumulative impacts.[88] Parties must also consider the risks of accidents, economic factors and exclusion of future uses.[89] The Risk Assessment Framework endorses an explicitly precautionary approach[90] and requires parties to minimise environmental risks through mitigation, contingency planning[91] as well as monitoring.[92] Most significantly "if the assessment reveals that adequate information is not available to determine the likely effects of the proposed placement activity *then this activity shall not be considered further*."[93] Finally, the Framework requires parties to consult and cooperate with other states or international organisations which may be affected by the research activities.[94] Furthermore, the Framework establishes a procedure for consultation with national and international stakeholders and to consider any advice provided by independent international experts or independent international advisory groups.[95]

84 1996 London Protocol, Annex 5, paragraphs 4–9 (not yet in force).
85 Discussed above in Part 4 of this chapter.
86 1996 London Protocol, Annex 5, paragraphs 14–15 (not yet in force).
87 Ibid., paragraph 16 (not yet in force).
88 Ibid., paragraph 17 (not yet in force).
89 Ibid., paragraph 18 (not yet in force).
90 Ibid., paragraph 20 (not yet in force).
91 Ibid., paragraphs 20–22 (not yet in force).
92 Ibid., paragraphs 23–25 (not yet in force).
93 Ibid., paragraph 18 (emphasis added) (not yet in force).
94 Ibid., paragraph 10 (not yet in force).
95 Ibid., paragraphs 11 and 12 (not yet in force).

Once the assessment has been completed, its outcome must be reported to the Protocol Secretariat and be made publicly available.[96] Where a state has failed to comply with the conditions of Annexes 4 or 5 of the Protocol, the matter may be referred to the Protocol Compliance Group, which was formally established in 2007 pursuant to Article 11 of the Protocol.[97] The Compliance Group has the power to make recommendations to support the state bringing its conduct into compliance with the Protocol. Currently, specific procedures relating to liability for environmental damage resulting from dumping or incineration at sea have yet to be developed under the Protocol, and it is worth noting that Article 15 of the Protocol as it stands refers to liability in respect of dumping or incineration at sea and not to other activities such as MSR or placement.[98] General rules of state responsibility in respect of environmental damage are of course applicable as a matter of international law.

In summary, the emerging regulatory regime for marine geoengineering under the 1996 London Protocol is robust, precautionary and supportive of international collaboration and consultation. Nevertheless, its scope is currently limited. The amendments to the Protocol are not yet in force (only five states have ratified the amendments: Estonia, Finland, Netherlands, Norway and the United Kingdom) and the Protocol itself currently binds only 53 states. Moreover, notwithstanding the broad definition of geoengineering in the Protocol, its scope is presently limited to activities involving the placement of matter on or into the marine environment.

6 Geoengineering MSR under the 1991 Protocol to the 1959 Antarctic Treaty

The Southern Ocean provides a promising environment for ocean fertilization research and deployment. In light of this, the majority of the experiments which have taken place to date have been located in the Southern Ocean.[99]

96 Ibid., paragraph 30 (not yet in force).

97 See the Report of the 29th Meeting of the 1972 London Convention LC29/17, Annex 7.

98 Article 15 of the 1996 Protocol stipulates that "[i]n accordance with the principles of international law regarding State responsibility for damage to the environment of other States or to any other area of the environment, the Contracting Parties undertake to develop procedures regarding liability arising from the dumping or incineration of wastes or other matter."

99 See Secretariat of the Convention on Biological Diversity, *Scientific Synthesis Report on the Impacts of Ocean Fertilization on Marine Biodiversity* (Technical Series No. 45) (Montreal: Secretariat of the Convention on Biological Diversity, 2009), at 24.

Whilst the Southern Ocean is not governed by a typical regional seas regime, the area south of 60° Latitude—which largely comprises ABNJ—is subject to the 1959 Antarctic Treaty and the 1991 Environmental Protocol to the Antarctic Treaty. Scientific research occupies a privileged position under the 1959 Treaty,[100] but is nevertheless subject to controls under both the Treaty and the Protocol relating to cooperation and, most significantly, environmental protection.[101] Much debate has been had over the years as to the extent to which the Treaty applies to the marine environment south of 60° Latitude but, notwithstanding the reservation that "nothing in the present Treaty shall prejudice or in any way affect the rights, or the exercise of the rights, of any state under international law with regard to the high seas within that area" under Article VI of the Treaty, the practice of parties has been to restrict and manage those high seas rights, including the rights relating to MSR,[102] which, it should be noted, are not formally defined under the Treaty. To date, all ocean fertilization experiments have taken place north of the Antarctic Treaty area and therefore arguably fall outside of the Treaty/Protocol requirements. However, the scope of the 1991 Environmental Protocol extends to not only the Antarctic Treaty area but also its "dependent and associated ecosystems".[103] Therefore this scope has the potential to include activities outside of the Antarctic Treaty area which may impact directly or indirectly on the Antarctic ecosystem. In light of the uncertainties associated with the impacts of ocean fertilization and the ostensible purpose of the activity to deliberately alter natural ocean ecosystems it is appropriate to consider the application of the 1991 Protocol to such research activities.

The protection of the Antarctic environment has emerged as a key objective of the Antarctic Treaty system. Article 3(1) of the 1991 Environmental Protocol stipulates:

> ... the protection of the Antarctic environment and dependent and associated ecosystems and the intrinsic value of Antarctica, including its wilderness and aesthetic values and its value as an area for the conduct of

100 1959 Antarctic Treaty, Articles II and III.

101 On science under the Treaty see generally Karen N. Scott, 'Scientific rhetoric and Antarctic security' in Alan D. Hemmings, Donald R. Rothwell and Karen N. Scott (eds.), *Antarctic Security in the Twenty-First Century* (Routledge, 2012), 284.

102 See Karen N. Scott and David L VanderZwaag, 'Polar Oceans and the Law of the Sea' in Donald R Rothwell, Alex G. Oude Elferink, Karen N. Scott and Tim Stephens (eds.), *The Oxford Handbook of the Law of the Sea* (OUP 2015), 724 at 741–742.

103 1991 Environmental Protocol, Articles 2, 3 and 8.

> scientific research, in particular research essential to the understanding of the global environment, shall be fundamental considerations in the planning and conduct of all activities in the Antarctic Treaty area.

Planning and environmental impact assessment is the core tool for environmental protection in the Antarctic, and Article 8 of the Protocol requires all activities subject to the advance notification requirement as set out in Article VII(5) of the Antarctic Treaty—including all expeditions to and within Antarctica—to prepare an environmental impact assessment where that activity is likely to have a minor or transitory impact on the Antarctic environment or its dependent and associated ecosystems.

Annex I of the Protocol sets out the environmental impact assessment requirements in detail, distinguishing between activities likely to have only a minor or transitory impact and activities likely to have more than a minor or transitory impact. In the case of the former, activities must undergo an initial environmental evaluation (IEE), which requires parties to describe the proposed activity and consider impacts, including cumulative impacts in light of existing and known planned activities.[104] Parties must consider alternatives to the proposed activity[105] and, if the activity goes ahead, must put in place appropriate contingency and monitoring procedures.[106] In contrast to the requirements under the 1996 London Protocol, there is no express obligation to consult with other parties or to seek expert advice on the proposed activity. Initial environmental evaluations are carried out at the state level and are not required to be assessed at the international level by the Committee on Environmental Protection[107] or the Antarctic Treaty Consultative Meeting (ATCM).[108] By contrast, activities likely to have more than a minor or transitory impact on the Antarctic environment are subject to a Comprehensive Environmental Evaluation (CEE) and draft CEE reports must be made publically available and circulated to all parties for discussion at the ATCM.[109] The range of factors that must be considered by parties is extensive and includes potential impacts, knowledge gaps and the identification of measures that may minimise

104 1991 Environmental Protocol, Annex I, Article 2(1).
105 Ibid., Article 2(1)(b).
106 Ibid., Article 2(2).
107 The Committee on Environmental Protection was established under Article 11 of the 1991 Environmental Protocol.
108 The Antarctic Treaty Consultative Meeting was established under Article IX of the 1959 Antarctic Treaty.
109 1991 Environmental Protocol, Annex I, Articles 3–5.

or mitigate impacts or support monitoring.[110] Although parties must address comments received in relation to a draft CEE in the final CEE,[111] the ATCM is given no formal power to prevent an activity from taking place or to attach conditions to that activity.

In contrast to the 1996 Protocol to the 1972 Convention, the 1991 Environmental Protocol does not provide for a formal non-compliance mechanism, although matters of non-compliance can be raised at the annual Antarctic Treaty Consultative Meeting.[112] However, the 1959 Antarctic Treaty and 1991 Environmental Protocol provide for an international system of inspection, and permit research vessels to be inspected within the Antarctic Treaty Area.[113] The Protocol has developed reasonably sophisticated provisions relating to monitoring and contingency planning[114] and has established a liability regime applicable to operators responsible for environmental damage within the Antarctic Treaty Area.[115] The liability regime, however, has not yet entered into force.

In summary, the regulatory regime for MSR under the 1991 Environmental Protocol is environmentally robust and complements the obligations under the 1959 Antarctic Treaty relating to collaboration and free dissemination of research findings.[116] However, the terms "minor" and "transitory" are not defined under the Protocol and it is the state concerned which determines whether an IEE or CEE is required in relation to any particular activity. Notably only one ocean fertilization experiment has been subject to the IEE process.[117] Moreover, international oversight and ultimate control of environmental impact assessments is limited and the requirements relating to consultation and peer review are noticeably weaker than those provided under the 1996 Protocol. As a regional regime, the Protocol currently binds only 40 states although its provisions, in contrast to the 1996 Protocol, are in force. Its greatest limitation however, is its geographical scope, which is confined to south of 60° south Latitude. Although the 1991 Protocol refers on numerous occasions to "dependent and associated ecosystems", and there has been discussion in the past about

110 Ibid., Article 3(2).
111 Ibid., Article 3(6).
112 1991 Environmental Protocol, Article 13.
113 1959 Antarctic Treaty, Article VII(1)–(4); 1991 Environmental Protocol, Article 14.
114 In particular within Annex VI to the Protocol (not yet in force).
115 1991 Environmental Protocol, Annex VI (not yet in force).
116 1959 Antarctic Treaty, Articles II and III.
117 An IEE was carried out by New Zealand in 1998 in respect of the voyage of the *Tangarora* in 1999, which supported research into the impact of iron on phytoplankton growth.

extending its remit to include the entire Antarctic ecosystem,[118] the practice of states thus far has been to confine its regulatory scope to activities taking place within the Antarctic Treaty area.

7 Concluding Remarks

Both the 1996 Protocol to the 1972 London Convention and the 1991 Environmental Protocol to the 1959 Antarctic Treaty establish relatively robust regimes designed to protect the environment from damaging MSR associated with geoengineering. Annex 5 of the 1996 Protocol builds on the 1991 Environmental Protocol which, until 2013, arguably provided the most precautionary regulatory regime of application to MSR. However, the Risk Assessment Framework incorporated in Annex 5 of the 1996 Protocol goes beyond the 1991 Protocol in its provisions relating to consultation and its express endorsement of the precautionary approach. Nevertheless, in practical terms both regimes are significantly limited in scope: the 1991 Protocol applies exclusively to the Antarctic Treaty area and the amendments to the 1996 Protocol are not yet in force. More fundamentally however, neither regime has attempted to engage with the broader ethical issues associated with geoengineering related to scientific research, focusing instead on managing the potential environmental impacts of such activities. This is a significant lacuna and demonstrates the limitations of both regimes to address the ultimate question of whether we *should* manipulate ocean processes in order to mitigate climate change and how we manage the relationship between geoengineering and other mitigation measures, including emissions reductions as well as the broader ethical issues arising from geoengineering.[119]

It is uncertain at this stage as to whether and to what extent the BBNJ Agreement may also apply to geoengineering MSR and constitute a 'potential solution' to some of the gaps and other issues identified above. MSR is not defined in the draft text although 'marine technology' is.[120] Much of the text relating to environmental impact assessment in the draft due to be debated at the third negotiating session in March 2020 remains in square brackets, and currently there is little consensus on important issues such as the threshold for assessment and the relationship between the BBNJ Agreement and other instruments. The threshold

118 See for example, Resolution 1 *Enhancement of Environmental Protection up to the Antarctic Convergence* (17 April 2009).

119 These issues are explored more fully in Karen N. Scott, *op. cit.* n. 46.

120 BBNJ March 2020 Draft Text, *op. cit.* n 2, Art 1 [11].

for an EIA ranges from 'minor and transitory',[121] which arguably would be triggered by geoengineering MSR to 'substantial pollution' or 'significant and harmful changes'[122] which would likely not be reached in respect of geoengineering for research purposes only. The relationship between the BBNJ Agreement and existing regimes that provide for EIA is similarly uncertain, with options ranging from no EIA where one is required by another body to mandating that all EIAs, including those under other regimes, meet the substantive requirements set out in the Agreement.[123] The Agreement, like the 1996 London Protocol and 1991 Environmental Protocol to the Antarctic Treaty, will not address the ethics of geoengineering but, notably, it is proposed that parties to the BBNJ Agreement be guided by '[a]n approach that builds ecosystem resilience to the adverse effects of climate change and ocean acidification and restores ecosystem integrity'.[124] It might be argued that at least some forms of geoengineering research, particularly ocean fertilization which increases carbon dioxide levels in the oceans, could be regarded as being contrary to this principle.

Nevetheless, what this case study on geoengineering MSR demonstrates is that the BBNJ Agreement is unlikely to be a pancea with respect to managing the environmental effects of activities taking place beyond the jurisdiction of states. Existing instruments remain important and need to be supported by states and by international organisations. With respect to geoengineering MSR in ABNJ, the challenge is far from intractable and the most important solution is the ratification and, thus, entry into force of the 2013 amendments to the 1996 London Protocol.

121 BBNJ March 2020 Draft Text, *op cit*. n 2, Art 24.
122 Ibid.
123 Ibid., Art 23[4].
124 Ibid., Art 5(h).

PART 4

Capacity Building and Transfer of Technology (CBTT)

∴

CHAPTER 11

Capacity Building in Marine Science–Added Value of the BBNJ?

Alf Håkon Hoel

Abstract

This chapter raises three questions regarding capacity building and technology transfer in marine science. First the main features of the existing global framework for capacity building and technology transfer is discussed before addressing lessons that can be drawn from on-going programs and experiences and then asking what the implications of the BBNJ process are in this respect. It is concluded that a comprehensive framework exists, based on UNCLOS, but that there appears to be scope for improvement when it comes to monitoring and evaluation of the functioning of this framework. Furthermore, a key issue is the Decade of Ocean Science for Sustainable Development which will provide a major opportunity for strengthening capacity building efforts in marine science and technology. Also, as regards the implications of the BBNJ for future developments in capacity building, a future agreement would certainly serve to complement and extend the global framework for oceans' governance.

Keywords

capacity building – marine science – areas beyond national jurisdiction – technology transfer – marine genetic resources

1 Introduction

The need for capacity building in ocean science and education has never been greater than now. We face two major challenges: On the one hand, oceans are under stress from climate change, pollution, overfishing and more (IPCC 2019, UN 2015). On the other, the need for food, minerals, transportation and other services the oceans provide has never been greater and is set to increase in the coming decades (Bogard *et al.*, 2019, Barange *et al.*, 2018). In both cases capacity

 | DOI:10.1163/9789004422438_012

building[1] in marine science and education are critical parts of the answer to how these challenges can be addressed.

As documented by the 2017 Global Ocean Science Report (GOSR) (Valdes 2017), the capacity to do ocean science is heavily concentrated in certain countries and regions in the world. In the UN Secretary-General's 2019 Report on Oceans and the Law of the Sea (A/74/70),[2] it is reported that "[g]aps in human and institutional capacity and a lack of resources still hamper developing countries from taking full advantage of ocean science. The importance of developing human and institutional capacity relating to ocean science cannot, therefore, be overstated" (para 50).

This state of affairs is nothing new, and early efforts at capacity building in marine science in developing countries dates back at least to the early post-World War II years.[3] A number of international instruments pertaining to the oceans, such as the 1982 Law of the Sea Convention (UNCLOS) and the 1995 UN Fish Stocks Agreement (UNFSA), addresses capacity building and transfer of technology. Also, a number of UN bodies with mandates in the marine realm, such as the International Oceanographic Commission (IOC), the International Maritime Organization (IMO), the International Seabed Authority (ISA), and the Food and Agriculture Organization (FAO) have major programs for capacity building, including in marine science and education. Importantly, preparations have now started for the UN Decade on Ocean Science for Sustainable Development (2021–30), which will be a global focal point in this respect for the coming years (IOC 2019, Claudet *et al.*, 2019).

This paper is an attempt at taking an outside look at capacity building in marine science and education in general, and to raise some questions to its application in the context of the Biodiversity Beyond National Jurisdiction (BBNJ) process currently taking place under UN auspices, intended to result in another implementation agreement under UNCLOS.[4] This is done by addressing three questions: 1) what are the main features of the existing global framework for capacity building and technology transfer? 2) What lessons can be drawn from on-going programs and experiences? and 3) What are the

1 I use the term "capacity building" as interchangeable with "capacity development".

2 https://undocs.org/en/A/RES/73/124.

3 Norwegian development aid in fisheries, for example, started in the 1950s.

4 The two existing implementation agreements are the 1994 Agreement Relating to the Implementation of Part XI of the United Nations Convention on the Law of the Sea of 10 December 1982 https://www.un.org/Depts/los/convention_agreements/convention_overview_part_xi.htm and the 1995 UN Fish Stocks Agreement https://www.un.org/Depts/los/convention_agreements/convention_overview_fish_stocks.htm.

implications of the BBNJ process in this respect? Regarding question 1, only a brief overview can be provided within the scope of a book chapter. The same goes for question 2, and the intent here is to review a few examples of fruitful efforts at capacity building from the IOC and others. When it comes to implications of the BBNJ process (this is written after the third round of negotiations and before their conclusion) for capacity building, the idea here is simply to raise some questions relating to its possible impact in this realm, not to provide fixed answers.

In what follows, the term "capacity building and technology transfer" is used loosely, taken to include marine science, technology transfer, and education, and not necessarily all at one time. The chapter is based on conversations with members of BBNJ delegations, IOC representatives, colleagues,[5] information from relevant websites (DOALOS and IOC in particular), and academic literature. Notably, the latter turned out to be surprisingly thin – while most aspects of the law of the sea has been subject to a vast literature (Nordquist 2012, Rothwell *et al.* 2015), relatively few academic publications appear to address capacity building explicitly.

2 The Global Framework for Capacity Building

Agenda 2030 and the Sustainable Development Goals (SDGs) comprise the current global political framework for addressing sustainable development concerns, including those relating to the oceans.[6] SDG 14 "Conserve and sustainably use the oceans, seas and marine resources for sustainable development", has a specific target for capacity building (14A) where countries are to:

> [I]ncrease scientific knowledge, develop research capacity and transfer marine technology, taking into account the Intergovernmental Oceanographic Commission Criteria and Guidelines on the Transfer of Marine Technology, in order to improve ocean health and to enhance the contribution of marine biodiversity to the development of developing countries, in particular small island developing States and least developed countries.[7]

5 I am grateful for comments from Kristine Kraabel, Ove Hokstad, and Terje Lobach.

6 https://sustainabledevelopment.un.org.

7 https://sustainabledevelopment.un.org/sdg14.

UNCLOS[8] provides the general framework for the governance of marine scientific research (Churchill and Lowe 1988, Stephens and Rothwell 2015), with marine science being one of the freedoms of the high seas on the one hand and subject to a qualified consent regime in areas under national jurisdiction (UN DOALOS 2010). UNCLOS Part XIII addresses marine scientific research and Part XIV deals with development and transfer of marine technology, including the development of scientific capacity. Generally, states are to cooperate in promoting the development and transfer of marine technology, and to promote the development of capacity in developing States with a view to accelerate social and economic development (art 266). Measures to achieve this, for example by the establishment of technical cooperation, are listed. UNCLOS furthermore has provisions on international cooperation (arts 270–274), national and regional marine scientific research centers (arts 275–277), and cooperation among international organizations in this regard (UN DOALOS 2010, Roach 1996).

The objective of UNFSA,[9] an implementing agreement to UNCLOS, is to ensure the long-term conservation and sustainable use of straddling fish stocks and highly migratory fish stocks. It strengthens the global oceans regime and is therefore of great importance for ensuring good governance of fisheries (Balton 1996, Lodge *et al.*, 2007). The agreement provides an important impetus to marine scientific research (Hoel 2017), and Part VII of the agreement deals with requirements of developing States, as states shall "give full recognition to the special requirements of developing States in relation to conservation and management of straddling fish stocks and highly migratory fish stocks and development of fisheries for such stocks" (art 24.1). The agreement addresses forms of cooperation (art. 25), including regarding stock assessment and scientific research (25.3b). There is also a provision regarding assistance in implementation of the agreement establishing a special fund to this end and the establishment of new organizations for fisheries management (art. 26).

The implementation of this legal framework for the oceans is overseen by the UN General Assembly, which adopts annual resolutions on oceans and the law of the sea and sustainable fisheries respectively.[10] The oceans resolution in particular has a major segment on capacity building, and its 2018 iteration states in paragraph 9 that the UN General Assembly:

8 https://www.un.org/Depts/los/convention_agreements/texts/unclos/closindx.htm.

9 https://www.un.org/Depts/los/convention_agreements/texts/fish_stocks_agreement/CONF164_37.htm.

10 https://www.un.org/Depts/los/general_assembly/general_assembly_resolutions.htm.

> Emphasizes that capacity-building is essential to ensure that States, especially developing countries, in particular the least developed countries, … are able to implement the Convention, benefit from the sustainable development of the oceans and seas and participate fully in the global and regional forums on ocean affairs and the law of the sea.[11]

The statements in the 2018 resolution on oceans and the law of the sea regarding capacity building go on for another 50 or so paragraphs, addressing among other things marine scientific research generally (para 16), as well as a number of concrete initiatives such as the World Maritime University (para 26) and efforts under the Convention on Biological Diversity (para 28).

Also, the environmental summits in 1992, 2002 and 2012 produced strong statements regarding capacity building. The Joint Plan of Implementation from the 2002 World Summit of Sustainable Development addresses capacity building in marine scientific research regarding protection of the marine environment (para. 32a), as well as in the context of the need to improve the scientific understanding and assessment of marine and coastal ecosystems as a fundamental basis for sound decision-making (para. 34). There is also a specific reference to the need to strengthen the ability of the Intergovernmental Oceanographic Commission of the United Nations Educational, Scientific and Cultural Organization, FAO, and other relevant international, regional and subregional organizations to build national and local capacity in marine science and the sustainable management of oceans and their resources (34d).[12]

The main outcome of the 2012 Earth Summit in Rio de Janeiro was the "The Future We Want" document. In the section on oceans and seas it provided:

> We recognize the importance of building the capacity of developing countries to be able to benefit from the conservation and sustainable use of the oceans and seas and their resources and, in this regard, we emphasize the need for cooperation in marine scientific research to implement the provisions of the United Nations Convention on the Law of the Sea and the outcomes of the major summits on sustainable development, as well as for the transfer of technology, taking into account the Intergovernmental Oceanographic Commission Criteria and Guidelines on the Transfer of Marine Technology (para 160).[13]

11 https://undocs.org/en/A/RES/73/124.

12 http://enb.iisd.org/2002/wssd/PlanFinal.pdf.

13 https://sustainabledevelopment.un.org/futurewewant.html.

In sum, a substantial body of legal instruments as well as soft law addressing capacity building and technology transfer in the marine realm exists. At the international level, this is implemented in a number of organizations and programs.

3 On-going Programs and Experiences

In addition to the general paucity of academic literature on capacity building in the marine realm, few global overviews exist of on-going efforts in capacity building in marine science. The UN Regular Process for Global Reporting and Assessment of the State of the Marine Environment has an inventory of capacity building activities on its website. While not complete, it nevertheless provides information on activities under a number of global organizations and regional bodies, as well as activities led by agencies at the country level.[14]

A significant contribution in respect of providing overview of the field was the 2010 meeting of the UN Informal Consultation Process on Oceans and the Law of the Sea (UNICPOLOS or ICP) which addressed "Capacity-building in oceans affairs and the law of the sea, including marine science". The report of the Secretary-General to that meeting contains a comprehensive review of needs as well as on-going efforts in capacity building.[15] In marine science, identified capacity building needs include development of skills, infrastructures, technology transfer, and access to data. A particular need exists in relation to the introduction of new principles for management, such as the precautionary approach and ecosystem-based management. Capacity-building initiatives in marine science are addressed in about 30 paragraphs in the report, including references to UNESCO/IOC (see below), the UN Industrial Development Organization (UNIDO), the Department of Oceans and the Law of the Sea (DOALOS) under the UN Secretary-General, the International Seabed Authority (ISA), the Regular Process for Global Reporting and Assessment of the Marine Environment,[16] the Food and Agriculture Organization (FAO), and the UN Environment Program (UNEP), as well as regional activities.

The report of the 2010 UNICPOLOS meeting contains additional material reflecting upon capacity building for marine science.[17] A main conclusion was

14 https://www.un.org/regularprocess/capacity-building-reports.

15 https://documents-dds-ny.un.org/doc/UNDOC/GEN/N10/296/54/PDF/N1029654.pdf?OpenElement.

16 https://www.un.org/regularprocess/.

17 https://undocs.org/A/65/164. Panel discussions at that meeting addressed: (a) assessing the need for capacity-building in ocean affairs and the law of the sea, including marine

that "… capacity-building was essential to ensure that all States, especially developing countries, were able to implement the Convention, benefit from the sustainable development of the oceans and participate fully in global and regional forums dealing with ocean affairs and the law of the sea."

The 2019 UNICPOLOS addressed "Ocean Science and the United Nations Decade of Ocean Science for Sustainable Development".[18] The Secretary-General´s report in preparation for the meeting addresses status and gaps in marine science, and measures in advancing ocean science and closing the gaps. Among the issues raised at the meeting were an underlining of the importance of the coming UN Decade on Ocean Science for Sustainable Development (see below), the role of science in achieving the targets under SDG 14, the need for a more comprehensive understanding of the oceans to ensure sustainable management of their resources, the importance of reliable and accessible ocean data, and the limited capacity of developing countries to conduct and benefit from ocean science.[19]

The 2021–2030 UN Decade on Ocean Science for Sustainable Development was proclaimed by the UN General Assembly in 2017.[20] The IOC is tasked with organizing the planning of the Decade, a process which is now underway, developing a framework meant to apply across the UN system in the work on the 2030 Agenda. The overarching goals of the Decade are to foster scientific knowledge and infrastructure for sustainable development and to provide science in support of the Sustainable Development Goals.[21] The decade sets the stage for a substantial effort in a number of areas of marine science, including a comprehensive ocean observing system, improved understandings of ecosystems and their functioning, and capacity building for marine science (Claudet *et al.*, 2019).[22] There are altogether seven priority areas, including capacity

---

science; (b) overview of capacity-building activities/initiatives in ocean affairs and the law of the sea, including marine science and transfer of technology; (c) challenges for achieving effective capacity-building in ocean affairs and the law of the sea, including marine science and transfer of technology; and (d) new approaches, best practices and opportunities for improved capacity-building in ocean affairs and the law of the sea.

18 The Secretary-General´s report in preparation for the meeting can be found at: https://undocs.org/a/74/70.

19 https://www.un.org/Depts/los/consultative_process/CoChair_summary.pdf.

20 Para 292–295 in the 2017 resolution on oceans and the law of the sea, A/RES/72/73 https://undocs.org/en/a/res/72/73 "Decides to proclaim the United Nations Decade on Ocean Science for Sustainable Development for the 10-year period beginning on 1 January 2021 …".

21 http://www.unesco.org/new/en/member-states/single-view/news/roadmap_for_the_un_decade_of_ocean_science_for_sustainable_d/.

22 https://oceandecade.org.

development and accelerated technology transfer, training and education, and ocean literacy.[23]

The International Oceanographic Commission (IOC, established 1960) of UNESCO is the competent international organization regarding marine scientific research. Its purpose is to promote international cooperation to enhance our scientific knowledge of the oceans and the resources there.[24] It plays a critical role in establishing and coordinating international ocean observation and monitoring programs and data management initiatives such as the Global Ocean Observing System (GOOS)[25] and the International Oceanographic Information and Data Exchange (IODE).[26] The IOC also has regional commissions for Africa, the Caribbean and the Western Pacific for the implementation of IOC programs there.[27]

The IOC also plays a critical role in the international work on capacity building in marine science. In 2003 IOC adopted the Criteria and Guidelines for the Transfer of Marine Technology, implementing the provisions of Part XIV of UNCLOS on development and transfer of marine technology.[28]

An IOC capacity building strategy was adopted in 2015, with a mission to "… undertake relevant actions to assist Member States with developing and sustaining the necessary capacity to undertake activities necessary to achieve the IOC vision at the national level as well as at the international cooperation level."[29] The strategy lists six outputs with associated activities, including development of human resources and infrastructure, as well as mechanisms for cooperation. A first meeting of a Group of Experts on Capacity Development was held in 2018 and included regional subgroups.[30]

Also, an Ocean Teacher Global Academy (OTGA) was started in 2015, building on earlier activities relating to training of ocean data managers and marine information managers. The OTGA aims to develop an international network of regionally based training centers.[31] The IOC has also engaged in partnerships

23 https://unesdoc.unesco.org/ark:/48223/pf0000265198.

24 http://www.unesco.org/new/en/natural-sciences/ioc-oceans/.

25 http://www.goosocean.org.

26 https://www.iode.org.

27 http://www.unesco.org/new/en/natural-sciences/ioc-oceans/about-us/ioc-worldwide/.

28 https://unesdoc.unesco.org/ark:/48223/pf0000139193.

29 http://www.ioc-cd.org/index.php?option=com_content&view=article&id=8&Itemid=104.

30 http://www.ioc-cd.org/index.php?option=com_content&view=article&id=152:summary-report-of-first-session-ioc-group-of-experts-on-capacity-development-now-available&catid=14&Itemid=188.

31 http://www.ioc-cd.org/index.php?option=com_content&view=article&id=4&Itemid=108.

with other international bodies such as the Global Environment Facility (GEF) to promote marine science in Large Marine Ecosystems (LME) off the coasts of developing countries.[32]

Another important UN agency providing capacity building initiatives in science is the UN Food and Agriculture Organization (FAO), the central global body for fisheries policy and development.[33] The FAO has played a leading role in capacity development for fisheries for decades, through among other means regional programs for the implementation of various aspects of its Code of Conduct for Responsible Fisheries,[34] as well as the 2009 Agreement on Port State Measures.[35] For the latter, the FAO is now running a global capacity development program to assist developing countries in implementing the agreement.[36]

Article 12 of the Code deals with fisheries research, laying down a set of global norms for how fisheries science is to be developed and implemented. A specific provision on fisheries science states that:

> States and relevant international organizations should promote and enhance the research capacities of developing countries, *inter alia*, in the areas of data collection and analysis, information, science and technology, human resource development, and provision of research facilities, in order for them to participate effectively in the conservation, management and sustainable use of living aquatic resources (art 12.18).

The FAO also runs the Aquatic Sciences and Fisheries Abstract database, a premier reference source for marine scientists worldwide.[37]

Among the FAO activities in support of this, the EAF Nansen program[38] is perhaps the most significant. Now aiming to strengthen the knowledge base

32 The GEF hosts an International Waters Learning Exchange & Resource Network which aims to provide a global forum for ecosystem-based management. https://iwlearn.net/marine/consultative-meetings There are on-going LME projects in a number of regions. https://iwlearn.net/marine.

33 http://www.fao.org/fisheries/en/.

34 http://www.fao.org/3/v9878e/v9878e00.htm.

35 http://www.fao.org/port-state-measures/en.

36 http://www.fao.org/port-state-measures/en This is part of a wider effort, the FAO Global Capacity Development Umbrella Programme, set up in 2016 to strengthen efforts in ensuring sustainable food systems. http://www.fao.org/port-state-measures/capacity-development/ongoing-capacity-building-efforts/en/.

37 http://www.fao.org/fishery/asfa/en.

38 http://www.fao.org/in-action/eaf-nansen/en/.

for and implementing an ecosystem approach to marine fisheries in developing countries, the project is a continuation of a long-standing effort (it started in 1975), now funded by the Norwegian "Fish for Development Program".[39] A key part of the Nansen program is the research cruises by the research vessel R/V *Fridtjof Nansen*, which collects data that are the basis for management plans and has provided training for hundreds of scientists in countries in Africa and Asia. Over the years the Nansen cruises has taken place in the waters of more than 60 countries, providing data to these countries as well as to regional initiatives.

The International Seabed Authority (ISA) was established by the Convention to manage the exploration and exploitation of minerals on the deep seabed in the area beyond national jurisdiction.[40] ISA has substantial engagement in capacity building in scientific and technical matters relating to deep seabed mining, providing seminars, training and other activities in this respect.

At the UN in New York, the Department of Oceans and the Law of the Sea (DOALOS) provides assistance to developing states on the implementation of various aspects of UNCLOS, including scientific and technical aspects.[41]

The regional level of cooperation is important to a number of capacity development initiatives, as many of the phenomena requiring greater scientific understanding and monitoring are regional in their nature. In fisheries, for example, this is reflected in the role of regional fisheries management organizations (RFMOs) (Lodge *et al.*, 2007, Haas *et al.*, 2019). In the North Atlantic, the International Council for the Exploration of the Sea (ICES) is both an institution for scientific cooperation (since 1902), as well as a mechanism for the development and provision of scientific advice to governments as well as to regional oceans bodies in that region.[42] Viewed in a global context, a particularly important aspect of ICES is that it is independent of those countries and organizations to whom it provides scientific advice, shielding scientific deliberations from political pressures.

In some developing country regions, a number of Large Marine Ecosystem projects address challenges relating to marine science with funding from the GEF. This includes the Benguela Current, the Canary Current, and the Caribbean and North Brazilian Shelf.[43]

39 https://norad.no/en/front/thematic-areas/climate-change-and-environment/fish-for-development/.

40 https://www.isa.org.jm.

41 https://www.un.org/Depts/los/TechAsst.htm.

42 http://www.ices.dk/Pages/default.aspx.

43 https://iwlearn.net/marine.

4 The BBNJ Process and Capacity Building

What to make of this in the context of the BBNJ negotiations? The BBNJ process, starting around 2004, was born out of two desires: that of the developing countries and the G7 being able to capture a share of the potential wealth that marine genetic resources are believed represent on the one hand, and that of some developed countries and the NGO community on the other for stronger protections of the marine environment – in particular biodiversity. While very different in terms of their objectives, these groups found common ground in wanting the negotiation of a third implementing agreement under UNCLOS. The interested groups eventually succeeding a decade later in the launching of the PrepCom[44] for what has become the Intergovernmental Conference on an internationally binding legal instrument under the Convention on the Law of the Sea on the conservation and sustainable use of marine biodiversity of areas beyond national jurisdiction.[45]

The concept of biodiversity has become increasingly important in the global oceans discourse, in particular in relation to fisheries (Garcia *et al.*, 2014). A critical juncture was the 2011 meeting in the informal, *ad hoc* working group that was debating the issue, where agreement was reached on the scope of the eventual negotiation: marine genetic resources, area-based management tools, environmental impact assessment, and capacity building and technology transfer (DOALOS).[46] The formal negotiations were initiated in 2018, with a view to arriving at an agreement in 2020 addressing these four themes.[47] As of November 2019, three of four mandated negotiation sessions have been conducted, consisting of discussions of these themes based on a president´s "aid to negotiations" rather than formal negotiating texts.

A "Revised draft text on an agreement 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" was issued in November 2019 as basis for the negotiation meeting to be held in March-April 2020, which was postponed due to Covid-19.[48] Compared to the president´s "aid to negotiations" for the second round of negotiations in April 2019, the revised draft

44 https://www.un.org/Depts/los/biodiversity/prepcom.htm.

45 https://www.un.org/bbnj/.

46 https://www.un.org/Depts/los/biodiversityworkinggroup/webpage_legal_and_policy.pdf and https://documents-dds-ny.un.org/doc/UNDOC/GEN/N11/397/64/PDF/N1139764.pdf?OpenElement.

47 In A/Res/72/249 the UN General Assembly decided that an agreement is to be developed "as soon as possible" (op1), during four meetings (op3) 2018, 2019 and 2020.

48 https://www.un.org/bbnj/content/fourth-substantive-session.

text of November 2019 is considerably more concise, although much language remains in brackets.

Part I of the revised text contains general provisions, including definitions, objectives and relationship to other instruments. Then the four themes of the agreement follow – marine genetic resources (part II), area-based management tools (part III), environmental impact assessments (part IV) and capacity building and transfer of marine technology (part V). The revised draft text also contains provisions on *inter alia* institutional arrangements (part VI) including a Conference of the Parties, a scientific and technical body (or network), a secretariat and a clearinghouse mechanism to provide access to information, implementation (part VIII), and settlement of disputes (part IX).

Part V of the revised draft text on capacity building and transfer of marine technology contains six articles running over six pages, in addition to an annex. The objective (article 42) of this part of the agreement is to assist developing State parties in implementing the agreement, enable participation in activities, promote access to technology, increase and share knowledge, and develop marine science and technological capacity of states with regard to conservation and sustainable use of biodiversity in these areas.

A provision on cooperation in capacity-building and transfer of marine technology (article 43) establishes a duty to cooperate and addresses the level and form of cooperation and special requirements of developing states. Modalities for capacity-building and transfer of marine technology are addressed in the following paragraphs (articles 44 and 45), as well as in greater detail in Annex II of the draft revised text.

Types of capacity-building and transfer of marine technology (article 46) refer to *inter alia* sharing data and information, development of relevant infrastructure, development and strengthening of regulatory frameworks, development and strengthening of human resources, and development of research programs, including biotech activities.

A final provision (article 47) reads that capacity-building and technology transfer under the agreement should be subject to monitoring and periodic review, aiming among other things to address needs and priorities, measure performance, and recommend ways forward in implementing the agreement.

The November 2019 revised draft text part VI on institutional arrangements also includes an article 49 on a Scientific and Technical Body "to be composed of experts". The body may also draw on "appropriate advice" from other institutions and expertise, and its main function will be to provide scientific and technical advice to the Conference of the Parties. The revised draft text lists functions for the Scientific and Technical Body relating to marine genetic resources, area-based management tools, and environmental impact

assessments, as well as the transfer of marine technology and implementation of capacity-building measures.

5 Discussion

Capacity building in scientific and technical aspects in the context of the BBNJ process is about the knowledge needed to address the distinct themes of marine genetic resources, area-based management tools, environmental impact assessments, and capacity building itself. These themes represent very different areas of marine science with limited overlap, as demonstrated *inter alia* by the workshops held at the United Nations in 2013 to improve the understanding of the issues at hand.[49] The themes are very different in a number of ways, including scientific constituencies, infrastructure requirements, costs of doing science, and commercial potential.

Marine genetic resources are seen as holding considerable commercial potential, although future benefits are decades and billions of dollars away in terms of investments required in the scientific and technical work required to explore and exploit these resources.[50] Aspects of benefit sharing, such as the sharing of results of marine scientific research (Yu 2019) or intellectual property rights over marine genetic resources, are important issues (Blasiak *et al.*, 2018). Science relating to area-based management tools is dominated by conservation biology (e.g., Stevenson *et al.*, 2019) and also contains a number of debates, for example on the effectiveness of such measures (Pendleton *et al.*, 2017). As regards environmental impact assessments, this is as well a distinct area of inquiry (e.g., Wright 2014).

In addition to the scientific dimensions of the themes explicitly stated in the negotiation mandate, there are also other concerns calling for additional scientific constituencies to contribute to capacity building in marine science related to BBNJ. This includes concerns such as integrated oceans management (Underdal 1980, Hoel and Olsen 2011), cumulative impacts (Hodgson and Halpern 2018), connectivity between ecosystems inside and outside areas beyond national jurisdiction (Popova *et al.*, 2019), and climate change and its impacts on marine ecosystems (Hollowed *et al.*, 2019).

Also, the scientific aspect of capacity building and technology transfer itself is one of the four areas of the negotiation mandate and is listed among the

49 https://www.un.org/depts/los/biodiversityworkinggroup/intersessional_workshop_2013.htm.

50 A. Doyle, "Who is in charge of the high seas?" *Financial Times* 11 November 2019.

functions that the Scientific and Technical body is to address. As pointed out at the outset, the academic literature in this field appears limited, although some works exist (e.g., Long 2007, Harden-Davies 2017 and 2018, Minas 2017). A limited literature on various impacts of a future BBNJ agreement is emerging, addressing for example specific areas such as the Arctic high seas (Balton 2019, De Lucia 2017) or specific themes such as diplomacy (Harden-Davies 2018).

The different scientific traditions and disciplines needed to address the different functions envisioned for the Scientific and Technical body raise a number of questions. Is it really possible to have one body addressing such a diverse and complex set of questions in a meaningful way, let alone provide scientific advice on them? The revised draft text provides for the establishment of subsidiary bodies as well as cooperation with scientific and technical bodies, and this could perhaps go some way to address this concern, but there are also questions relating to the size of such a body as well as the no doubt substantial costs such an enterprise would incur. It could also be argued that one would be better served by regional solutions that are more tailored to the needs in different regions of the world, such as the LME programs. The model represented by the International Council for the Exploration of the Sea (ICES) in the North Atlantic also has a lot going for it with its independence from political entities (governments and regional governmental bodies). This model nevertheless provides them with scientific advice and a carefully constructed science-policy interface.[51]

6 Conclusions

The BBNJ negotiations are about amending the governance framework for the two thirds of the global oceans that are beyond national jurisdiction. At the time of writing, three rounds of negotiations have concluded, and several more await. It is therefore premature to draw conclusions about how this is going to affect efforts at capacity building and technology transfer, but a few observations can nevertheless be made.

When it comes to devising effective mechanisms for the governance of the environment and natural resources, there are no silver bullets or quick fixes (Ostrom *et al.*, 2007). Considerable attention has to be devoted to contexts, available technologies, and synergies with existing institutions at global and regional levels of governance. Also, considering the two major challenges

51 http://ices.dk/Pages/default.aspx.

referenced at the outset—the urgency of conservation on the one hand (UN 2015) and the need to enhance our utilization of the oceans on the other—it can be asked what additional benefits an eventual BBNJ outcome will bring. In terms of food provision, for example, only about 5% of the world's fisheries are in the ABNJ (Sala *et al.*, 2019). An agreement could become important for the development of products derived from marine genetic resources, but most likely not in a near future. Areas inside national jurisdiction are easily accessible, less remote and hence less costly to engage.

As to the three questions raised at the outset of this chapter, the first related to the main features of the current global framework for capacity building and technology transfer. A comprehensive framework exists, based on UNCLOS, as well as much recent political attention through Agenda 2030 and the Sustainable Development Goals. There appears however to be scope for improvement when it comes to monitoring and evaluation of the functioning of this framework.

The second question concerned what on-going programs and experiences there are in capacity building for science that provide relevant lessons for the BBNJ process. A substantial number of programs and initiatives exist, most prominently in the IOC, but also in a number of other UN bodies. A key issue in this respect is the Decade of Ocean Science for Sustainable Development, proclaimed by the UN General Assembly in 2017. This will provide a major opportunity for strengthening capacity building efforts in marine science and technology (Ryabinin *et al.*, 2019). The IOC is currently leading a comprehensive global effort in planning the decade.

As regards the third question, the implications of the BBNJ for future developments in capacity building, a future agreement would serve to complement and extend the global framework for oceans governance. This is in itself valuable, demonstrating the importance of this framework and the ability of states to improve upon the existing framework in light of new and emerging issues. Also, efforts at capacity building in science and technology for the areas beyond national jurisdiction are likely to be beneficial also for the areas inside national jurisdiction, where the challenges relating to governance of oceans and seas are on a different order of magnitude than those outside.

A final thought. The focus of most capacity building efforts in science is on building infrastructure and developing the capacity for producing and utilizing scientific knowledge. However, education and human resource development should be an important part of any capacity development program.

References

Barange, M. *et al.* 2018 (eds.): *Impacts of Climate Change on Fisheries and Aquaculture: Synthesis of current knowledge, mitigation and adaptation options*. FAO Fisheries and Aquaculture Technical Paper 627. FAO, Rome. http://www.fao.org/3/i9705en/i9705en.pdf.

Balton, D.A. 1996: "Strengthening the Law of the Sea: The new Agreement on Straddling Fish Stocks and Highly Migratory Fish Stocks". 27 *Ocean Development and International Law*, pp. 121–151.

Balton, D.A. 2019: "What will the BBNJ agreement mean for the Arctic fisheries agreement?" *Marine Policy* 2019, https://doi.org/10.1016/j.marpol.2019.103745.

Blasiak, R. *et al.* 2018: "Corporate control and global governance of marine genetic resources". *Science Advances* 2018; 4:eaar5247.

Bogard, J.R. *et al.* 2019: "Will fish be part of future healthy and sustainable diets?" Thelancet.com/planetary-health, April 2019. E159-160. https://doi.org/10.1016/S2542-5196(19)30018-x.

Churchill, R. and A. Lowe 1988: *The Law of the Sea.* Manchester University Press, Manchester.

Claudet *et al.* 2019: "A roadmap for using the UN Decade on Ocean Science for Sustainable Development in support of science, policy, and action". *One Earth* 2, https://doi.org/10.1016/j.oneear.2019.10.012.

De Lucia, V. 2017: "The Arctic environment and the BBNJ negotiations: Special rules for special circumstances?" *Marine Policy* Vol 86, pp. 234–240.

DOALOS, undated: *Marine Biological Diversity in Areas Beyond National Jurisdiction*. https://www.un.org/Depts/los/biodiversityworkinggroup/webpage_legal_and_policy.pdf.

Garcia, S.M. *et al.* 2014 (eds.): *Governance of Marine Fisheries and Biodiversity Conservation*. Wiley Blackwell, Chichester.

Haas, B. 2019: "The influence of performance reviews on regional fisheries management organizations". *ICES Journal of Marine Science,* https://doi:10.1093/icesjms/fsz088.

Harden-Davies, H. 2017: "Capacity building and technology transfer for marine biodiversity in areas beyond national jurisdiction". *Proceedings of the ASIL Annual Meeting* Vol. 111, 243, pp 234–235. Cambridge University Press.

Harden-Davies, H. 2018: "The next wave of science diplomacy – biodiversity beyond national jurisdiction". *ICES Journal of Marine Science,* Vol. 75, pp. 426–434.

Hodgson, E.E. and B.S. Halpern 2018: "Investigating cumulative effects across ecological scales". *Conservation Biology* Vol. 33, pp. 22–32.

Hoel, A.H. 2017: "The Importance of marine science in sustainable fisheries: the role of the 1995 UN Fish Stocks Agreement", in Myron H. Nordquist, John Norton Moore,

and Ronán Long, (eds.), *Legal Order in the World's Oceans: UN Convention on the Law of the Sea*, Leiden/Boston: Brill/Nijhoff.

Hoel, A.H. and E. Olsen 2012. "Integrated Ocean Management as a Strategy to Meet Rapid Climate Change: The Norwegian Case." *AMBIO* 41 (1): 85–95. https://doi.org/10.1007/s13280-011-0229-2.

Hollowed, A.B. *et al.* 2019: "Recent advances in understanding the effects of climate change on the world's oceans". *ICES Journal of Marine Science*, Vol 76, pp. 1215–1220.

ICP 2010: *Report on the work of the United Nations Open-ended Informal Consultative Process on Oceans and the Law of the Sea at its Eleventh Meeting*. A/65/164. https://undocs.org/A/65/164.

IOC 2019: The Science We Need for the Ocean We Want (website). https://oceandecade.org.

IPCC 2019: *Special Report on the Ocean and Cryosphere in a Changing Climate*. https://www.ipcc.ch/srocc/.

Leary, D. 2007. *International Law and the Genetic Resources of the Deep Sea*. Martinus Nijhof, Leiden.

Levin, P. *et al.* 2009: "Integrated ecosystem assessments: developing the scientific basis for ecosystem-based management of the ocean". *PLOS Biology,* Vol 7, e1000014.

Lodge, M. *et al.* 2007: *Recommended Best Practices for Regional Fisheries Management Organizations*. Chatham House, London.

Long, R. 2007: "Marine science capacity building and technology transfer: Rights and duties go hand in hand under the 1982 UNCLOS", in Nordquist, M.H., *et al.* 2007 (eds.): *Law, Science and Oceans Management*, pp 299–308. Martinus Nijhoff Publishers, Leiden.

Minas, S. 2018: "Marine technology transfer under a BBNJ treaty. A case for transnational network cooperation". *American Journal of International Law Unbound*, Vol. 112, pp. 144–149.

Nordquist, M.H. 2012: *UNCLOS 1982 Commentary: Supplementary Documents*. Brill, Leiden. https://doi: 10.1163/97890042156 27.

Nordquist, M.H., *et al.* 2007 (eds.): *Law, Science and Oceans Management*, pp. 299–308. Martinus Nijhoff Publishers, Leiden.

Ostrom, E., Janssen, M.A., and Anderies, J.M. 2007: *Going beyond panaceas*. *PNAS* Vol 104, No 139, pp. 15176–15178. https://doi.org/10.1073/pnas.0701886104.

Pendleton, L. *et al.* 2017: "Debating the effectiveness of marine protected areas", *ICES Journal of Marine Science*, https://doi.org/10.1093/icesjms/fsx154.

Popova, E. *et al.* 2019: "Ecological connectivity between the areas beyond national jurisdiction and coastal waters – safeguarding interests of coastal states in developing countries". *Marine Policy*, Vol. 104, pp. 90–102.

Roach, A. 1996: "Marine scientific research and the new law of the sea". *Ocean Development and International Law* Vol 27, No 1–2, pp. https://doi.org/10.1080/00908329609546075.

Rothwell, D., A.G. Oude Elferink, K.N. Scott, and T. Stephens, eds. *The Oxford Handbook of the Law of the Sea*. Oxford: Oxford University Press, 2015.

Ryabinin, V., *et al.* 2019: The UN Decade of Ocean Science for Sustainable Development. Frontiers in Marine Science, https://doi.103389/fmars2019.00470.

Sala, E. *et al.* 2018: "The economics of fishing the high seas". *Science Advances*, Vol. 4, eeat2504, DOI: 10.1126/sciadv.aat2504.

Stephens, T. and Rothwell, D.R 2015: "Marine Scientific Research", in Rothwell, D., A.G. Oude Elferink, K.N. Scott, and T. Stephens, eds. *The Oxford Handbook of the Law of the Sea*. Oxford: Oxford University Press, 2015.

Stevenson, S.L. *et al*. 2019: "Testing the presence of marine protected areas against their ability to reduce pressure on biodiversity". *Conservation Biology* 2019 https://doi.org/10.1111/cobi.13429.

UN DOALOS 2010: *The Law of the Sea – Marine Scientific Research. A revised guide to the implementation of the relevant provisions of the United Nations Convention on the Law of the Sea*. United Nations, New York. https://www.un.org/depts/los/doalos_publications/publicationstexts/msr_guide%202010_final.pdf.

UN Secretary-General 2010 *Report on Oceans and the Law of the Sea*. (A/65/69). https://documents-dds-ny.un.org/doc/UNDOC/GEN/N10/296/54/PDF/N1029654.pdf?OpenElement.

UN Secretary-General's 2019 *Report on Oceans and the Law of the Sea* (A/74/70): https://undocs.org/a/74/70.

UN 2015: *The First Global Integrated Marine Assessment.* United Nations, New York. https://www.un.org/regularprocess/content/first-world-ocean-assessment.

Underdal, A. 1980: "Integrated marine policy – What? Why? How?" *Marine Policy* July 1980.

Valdes, L. (ed.) 2017: *Global Ocean Science Report – the Current Status of Ocean Sciences around the World*. International Oceanographic Commission, Paris. https://unesdoc.unesco.org/ark:/48223/pf0000250428.

Wright, G. 2014: "Strengthening the role of marine science in marine governance through environmental impact assessments – a case study of the marine renewable energy industry". *Ocean and Coastal Development*, Vol. 99, pp. 23–30.

Yu, C. 2019: "Implications of the UNCLOS marine scientific research regime for the current negotiations on access and benefit sharing of marine genetic resources in areas beyond national jurisdiction". *Ocean Development and International Law.* https://doi.org/10.1080/00908320.2019.1677018.

CHAPTER 12

Marine Technology Transfer

Towards a Capacity-Building Toolkit for Marine Biodiversity beyond National Jurisdiction

Harriet Harden-Davies

Abstract

The transfer of marine technology and capacity building are inextricably linked under the United Nations Convention on the Law of the Sea (UNCLOS). The UNCLOS framework for the transfer of marine technology includes several elements related to scientific research, such as: scientific training; access to research equipment; and sharing information, data and knowledge. These elements are important tools for capacity-building to enable a science-based approach to the conservation and sustainable use of biodiversity beyond national jurisdiction (BBNJ). However, there are well-known gaps and weaknesses in the international framework for implementing the transfer of marine technology. Several initiatives are already underway through the Intergovernmental Oceanographic Commission of UNESCO that attempt to close the gap in capacity. These initiatives could provide a basis for a BBNJ agreement to build on and to contribute to the imminent United Nations Decade of Ocean Science for Sustainable Development 2021–2030. This paper examines the UNCLOS framework for marine technology transfer and the challenges and potential opportunities to enhance the implementation of transfer of marine technology in order to build capacity for the conservation and sustainable use of BBNJ are proposed.

Keywords

marine scientific research – law of the sea – technology transfer – capacity building – biodiversity beyond national jurisdiction – high seas

1 Introduction

Science continues to be a critical ingredient in the ongoing development of a new international legally binding instrument for the conservation and

 | DOI:10.1163/9789004422438_013

sustainable use of marine biological diversity of areas beyond national jurisdiction (BBNJ agreement) under the United Nations Convention on the Law of the Sea (UNCLOS).[1] Scientific investigation has only just begun to unveil the full extent of biodiversity in areas beyond national jurisdiction (ABNJ). Rapid advances in science and technology have revealed new discoveries of species and ecosystems in the deep ocean, such as 120,000-year-old hydrothermal vents and 4,000-year-old corals.[2] Such discoveries of awe-inspiring natural wonders capture interest and imagination – from understanding the role of marine species in planetary function and stability to considering the possible utilisation of biological and genetic resources in research and development.[3] Potential bio-inspired research and development, utilising or mimicking marine species, include: wound healing using jellyfish collagen; drug development using marine sponges; and soft robotics development inspired by seastars.[4] Appreciation of the ecological, scientific, cultural and economic value of BBNJ, coupled with growing scientific evidence of catastrophic biodiversity loss and vulnerability to threats from human activities are driving mounting concerns about the conservation and sustainable use of BBNJ.[5]

Marine technology transfer and capacity building form one of the four pillars of the BBNJ negotiations. Globally, gaps exist in terms of scientific knowledge of ABNJ and technological capabilities to monitor human activities in ABNJ. Furthermore, there are stark discrepancies in regional and national capacity

1 United Nations General Assembly Resolution 72/249. Resolution adopted by the General Assembly. 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. 72nd Sess, Agenda Item 77. UN doc A/RES/72/249.

2 Ludwig et al., 2011, 'U–Th systematics and 230Th ages of carbonate chimneys at the Lost City Hydrothermal Field', *Geochimica et Cosmochimica Acta* 75(7) 1869–1888; Ramirez-Llodra, E., Brandt, A., Danovaro, R. et al., 2010, 'Deep, diverse and definitely different: unique attributes of the world's largest ecosystem', *Biogeosciences*, 7, 2851–2899; DOSI 2018. Deep Sea Fundamentals. Policy Brief September 2018. http://dosi-project.org/wp-content/uploads/2018/05/009-Policy-Brief-3-Deep-sea-Fundamentals-DOSI-V3.pdf.

3 Snelgrove, P. V. R., 2016, 'An Ocean of Discovery: Biodiversity Beyond the Census of Marine Life', *Planta Med*. 82(09/10), 790–799.

4 See for example Newman, D. J., 2016, 'Developing natural product drugs: Supply problems and how they have been overcome', *Pharmacology and Therapeutics* 162, 1–9; Pugliano, M., Vanbellinghen, X., Schwinte, P., Benkirane-Jessel, N., Keller, L., 2017, 'Combined Jellyfish Collagen Type II, Human Stem Cells and Tgf-β3 as a Therapeutic Implant for Cartilage Repair', *Stem Cell Res Ther* 7: 4 DOI: 10.4172/2157–7633.1000382.

5 Merrie, A., Dunn, D. C., Metian, M., Boustany, A. M., Takei, Y., Oude Elferink, A., Ota, Y., Christensen, V., Halpin P. N., and Osterblom H., 2014, 'An ocean of surprises – Trends in human use, unexpected dynamics and governance challenges in areas beyond national jurisdiction', *Global Environmental Change*, 27, 19–31.

to engage in marine scientific research and technological innovation, raising concerns about the ability of States to exercise their rights and fulfil their responsibilities under a future BBNJ agreement for example to implement area-based management tools and environmental impact assessments and to share in the benefits of marine genetic resources of ABNJ.[6]

As such, marine science and technology form the cornerstone of the discussions on capacity building and technology transfer. Other forms of capacity will also be important, such as policy and legal capacity, but the focus of this paper is the critical role of technology and scientific capacity in the development of the BBNJ agreement. First, the existing UNCLOS framework for marine technology transfer and the opportunities and challenges for scientific and technological capacity building for the BBNJ agreement is discussed. Second, the past experiences and potential future role of the Intergovernmental Oceanographic Commission of UNESCO (IOC) in matters relating to technology transfer under the BBNJ agreement are considered, using the clearinghouse mechanism as an example. Finally, opportunities to strengthen the implementation of UNCLOS through the BBNJ agreement and through initiatives such as the UN Decade of Ocean Science for Sustainable Development (2021–2030) are discussed.[7]

2 Opportunities and Challenges

The UNCLOS framework for the development and transfer of marine technology is established in Part XIV. Article 268 sets out the basic objectives of technology transfer, including:

a) the acquisition, evaluation and dissemination of marine technological knowledge and facilitate access to such information and data;
b) the development of appropriate marine technology;
c) the development of the necessary technological infrastructure to facilitate the transfer of marine technology;
d) the development of human resources through training and education of nationals of developing States and countries and especially the nationals of the least developed among them; and

6 Broggiato, A., S. Arnaud-Haond, C. Chiarolla, and T. Greiber, 2014, 'Fair and equitable sharing of benefits from the utilization of marine genetic resources in areas beyond national jurisdiction: Bridging the gaps between science and policy', *Marine Policy* 49, 176–185.

7 United Nations General Assembly Resolution 72/73. Resolution adopted by the General Assembly. Oceans and the law of the sea. 72 sess. Agenda Item 77(a). UN doc A/RES/72/73.

e) international cooperation, particularly at the regional, subregional and bilateral levels.

Based on this description, a very broad range of scientific and technological tools could be considered as relevant to technology transfer under the BBNJ agreement – ranging from scientific training and education, technological know-how, and access to infrastructure and equipment as well data, knowledge and information. There are provisions relevant to technology transfer and capacity building elsewhere in UNCLOS, including in Part XI (e.g., Article 143), Part XII (e.g., Article 202), and Part XIII (e.g., Article 244). Throughout, however, there a number of weaknesses and ambiguities that can be identified with respect to the UNCLOS framework for technology transfer and capacity building.

With the exception of the role for the International Seabed Authority that is specified in Part XI, UNCLOS does not provide any detail on the institutional mechanisms to deliver on technology transfer and capacity building. Nor does Part XIV provide: a financial mechanism to support technology transfer; modalities to identify technological need or request assistance; practical arrangements for information sharing, training opportunities and access to data; or a procedure to monitor the effectiveness of technology transfer programs, to strengthen and sustain components of the system and to promote long-term adoption. Rather, the measures referred to in Article 269 that are envisaged to achieve the basic objectives of technology transfer are heavily reliant on international science cooperation. Examples provided include conferences, exchanges and joint projects. This absence of implementation mechanisms is a concern for many States, given the fact that not all States have access to science and technology.[8]

For the BBNJ agreement, scientific knowledge is crucial to make informed decisions about the conservation and sustainable use of BBNJ, and to enable a science-based approach. Biodiversity knowledge is important to designate and implement area-based management tools, conduct strategic environmental assessments and monitor and evaluate environmental impact assessment. For example, genetic tools show that fish populations once thought to be a single species are in fact genetically distinct – such findings have strong implications for conservation and sustainable use measures. These tools also create opportunities to understand and potentially harness genetic resources and deliver on access and benefit sharing.[9]

8 IOC. 2017. *Global Ocean Science Report The current status of ocean science around the world*, L. Valdés et al. (eds.). Paris, UNESCO.

9 Harden-Davies, H., Gjerde, K., 2019, 'Building scientific and technological capacity: a role for benefit sharing in the conservation and sustainable use of marine biodiversity beyond

The accumulation of new findings underscores that much remains to be discovered about BBNJ. This in turn is driving the development of new technologies to investigate the dark, deep and distant areas of the global ocean. For example, new genetic tools and robotics are being developed to investigate the ocean twilight zone, between 200m and approximately 1,000m deep.[10] Submersibles and underwater robotics remain the purview of just a few research institutes worldwide – but technological innovation and the burgeoning field of open-source software and open-science are driving down costs and lowering the barrier to entry for States to engage in marine scientific research using new technologies.

Technology is also critical to monitor human activities, and to inform and support compliance measures. One such innovation is the use of the Automatic Identification System by governments, research organisations and civil society groups to monitor human activity at sea for applications relevant to the conservation and sustainable use of marine biodiversity. For example, AIS data has been used to address the impacts of anthropogenic noise, anchor scour and illegal, unreported, unregulated fishing.[11]

Public-private partnerships and philanthropic funding are playing a growing role in developing and transferring technology – as illustrated by examples such as the non-profit organisation Global Fishing Watch working with research institutes and government agencies in the use of AIS data. There is a need for business model innovation as much as technological innovation to fund the long-term development and deployment of ocean science and technology.

Ownership of scientific and technological infrastructure is not a prerequisite for accessing scientific knowledge. Access to data and knowledge is possible through decentralized data networks and information nodes. For

---

national jurisdiction', *Ocean Yearbook* 33(1), 377–400; Rabone, M., Harden-Davies, H., Collins, J. E., Zajderman, S., Appeltans, W., Droege, G., Brandt, A., Pardo-Lopez, L., Dahlgren, T., Glover, A. G. and Horton, T., 2019, 'Access to marine genetic resources (MGR): Raising awareness of best-practice through a new agreement for biodiversity beyond national jurisdiction (BBNJ)', *Frontiers in Marine Science*. 6 10.3389/fmars.2019.00520.

10 See https://twilightzone.whoi.edu/ accessed 20 September 2019.

11 Erbe, C., Williams, R., Sandilands, D., Ashe, E., 2014, 'Identifying Modeled Ship Noise Hotspots for Marine Mammals of Canada's Pacific Region', *PLOS ONE* 9(3): e89820.; Kroodsma, D. A., J. Mayorga, T. Hochberg, N. A. Miller, K. Boerder, F. Ferretti, A. Wilson, B. Bergman, T. D. White, B. A. Block, P. Woods, B. Sullivan, C. Costello and B. Worm, 2018, 'Tracking the global footprint of fisheries'. *Science* 359(6378): 904–908.; Davis, A. R., Broad, A., Gullett, W., Reveley, J., Steele, C., Schofield, C., 2016, 'Anchors away? The impacts of anchor scour by ocean-going vessels and potential response options', *Marine Policy*, 73, 1–7 https://doi.org/10.1016/j.marpol.2016.07.021.

example, a volume of biodiversity data is available via the Ocean Biogeographic Information System (OBIS), which is open-access and free of charge and the apparent fishing activity detected using AIS is available open-access on the website of Global Fishing Watch. Similarly, information and communication technology enables access to training opportunities via online courses and distance learning opportunities. As new technological opportunities develop, the importance of coordination and cooperation between the various national, regional and global nodes increases.

International science collaboration remains crucial to fund long-term sustained ocean observations, such as the Global Ocean Observing System (GOOS), and to deliver ambitious international programs in pursuit of policy objectives. Ocean observations are nationally funded, but coordinated via regional and global mechanisms linked under the Intergovernmental Oceanographic Commission of UNESCO (IOC). A clear example of the importance is the ambitious United Nations Decade of Ocean Science for Sustainable Development (2021–2030), currently in the preparation phase, designed to support the attainment of Agenda 2030 and Sustainable Development Goal 14 in particular. Though not the only UN agency with a role in marine science and technology transfer, the IOC is regarded as the primary competent international organisation for marine scientific research and plays a crucial role in coordinating international ocean science initiatives. In addition to GOOS and the Decade preparation phase, IOC also coordinates other ocean science initiatives, regional ocean science cooperation mechanisms, data sharing platforms such as OBIS, and training programs.

3 The IOC

The IOC has played an increasingly central role in the discussions on the topic of technology transfer and capacity building in the BBNJ negotiations – from the preparatory through to the current negotiation phase. As the lead international organisation for marine scientific research, the IOC also plays a role in technology transfer and capacity building, as illustrated by the Criteria and Guidelines on the Transfer of Marine Technology,[12] and the document prepared by the IOC in response to a request from the African Group during the third session of the Preparatory Committee for the development of the BBNJ

12 IOC. 2005. *IOC Criteria and Guidelines on the Transfer of Marine Technology*. Paris, UNESCO.

agreement.[13] The clearinghouse mechanism has been one of the key discussion areas in which the IOC has been engaged.

Although there is no single definition or vision for the clearinghouse mechanism as yet under the BBNJ agreement, a broad concept was laid out in the IOC CGTMT for a clearinghouse mechanism which, in essence, facilitates the sharing of information, access to expertise and promotes cooperation and coordination. It could also be considered to entail a proactive human element that actively facilitates connections between people and projects.[14] It is of particular interest in the context of the BBNJ negotiations given the gaps regarding access to information and opportunity, and the strong interest in a mechanism to improve the transfer of marine technology under the BBNJ agreement.

There are a series of initiatives under IOC that perform functions that could be drawn upon for the BBNJ instrument. For example:

- Ocean Teacher Global Academy is a globally coordinated network of training and other capacity development mechanisms;
- Ocean Expert shares information about individuals, events, projects and profiles;
- Ocean Best Practices advances and promotes best practices and quality in ocean observations and data and is linked to the digital repository 'Ocean Docs';
- Ocean Data and Information System links data centres; and the
- Ocean Biogeographic Information System harvests and integrates biodiversity and related ecosystem data from more than 2900 databases all over the world and trains scientists in data management and analysis.

Furthermore, the regional hubs of the IOC provide a pre-existing institutional coordination mechanism for ocean science and technology transfer programs, such as the Regional Training and Research Centres of IOC WESTPAC. However, the full potential role of IOC will be dependent on resources, something that has hindered the IOC in the past.[15] As noted in the intervention delivered

13 IOC. 2017. *Ad hoc* Report of the Intergovernmental Oceanographic Commission (IOC) of UNESCO to the 4th Session of the Preparatory Committee on Marine Biological Diversity of Areas Beyond National Jurisdiction (BBNJ Prepcom) (New York, 10–21 July 2017), IOC Strategy on Activities in Relation to Capacity Development and Transfer of Marine Technology. IOC/INF – 1347. Paris, UNESCO.

14 IOC. 2018. IOC Group of Experts on Capacity Development. First Session, Paris, 21–23 March 2018. IOC/GE-CD-I/3. Agenda Item 4.6. 63–65.

15 H. Harden-Davies, 2016, 'Marine Science and technology transfer: Can the Intergovernmental Oceanographic Commission advance governance of biodiversity beyond national jurisdiction?', *Marine Policy* 74, 260–267.

by the IOC to the third session of the intergovernmental conference for the development of the BBNJ instrument:

> All these systems currently operate on limited resources and a largely voluntary basis. Further operationalization will require resources and IOC is working on resource requirement identification.[16]

The BBNJ negotiations provide an important forum to discuss the potential opportunities and challenges of strengthening the legal, institutional and policy framework for technology transfer and building scientific capacity. The experiences of the IOC offer important guidance and lessons learned. Given that there are initiatives underway, yet still a sense that implementation must be strengthened, there is an apparent need to diagnose the problem behind gaps in technology transfer and capacity building. This is particularly timely given the opportunity provided by the UN Decade of Ocean Science for Sustainable Development to put a new paradigm of capacity building into practice and promote the implementation of the BBNJ instrument.

4 Conclusion

The technological tools of equipment, training materials and data access can be considered as a triple bottom line of scientific capacity building. However, the usefulness of these tools is largely dependent on scientific and technological capacity, and access to data and knowledge needs to be coupled with capacity development. The existing framework for the transfer of marine technology faces several challenges and gaps in implementation mechanisms that could be addressed by the BBNJ instrument. The experiences of the IOC in implementing the Criteria and Guidelines on the Transfer of Marine Technology can usefully inform the discussions on opportunities and challenges for the BBNJ agreement, including with regard to the clearinghouse mechanism. Making the most of opportunities requires knowledge of the capacity needs of States in addition to a procedure to monitor change.

16 Statement delivered by IOC-UNESCO on Monday 26 August 2019. Third session of the intergovernmental conference for the development of a new international legally binding instrument for the conservation and sustainable use of marine biological diversity of areas beyond national jurisdiction under the United Nations Convention on the Law of the Sea. Agenda Item 6: Consideration of the subject matter referred to in paragraphs 1 and 2 of General Assembly resolution. Informal Working Group on capacity-building and the transfer of marine technology. United Nations, New York.

PART 5

Cross-Cutting Issues

∴

CHAPTER 13

Beholding the Emerging Biodiversity Agreement through a Looking Glass

What Capacity-Building and Gender Equality Norms Should Be Found There?

Ronán Long

Abstract

Many developing countries do not have adequate scientific capability to benefit from the sustainable development of the ocean or to implement their international legal obligations under the Convention and related instruments. In light of this shortcoming, the chapter seeks to address fundamental questions pertaining to the adoption of new normative obligations in the BBNJ Agreement on education and training in marine scientific research (MSR), including the codification of gender-sensitive norms. The chapter concludes that the Agreement has the potential to be a game-changer on capacity-building if it results in the following: the establishment of a robust institutional setting for decision-making supported by the proposed clearing-house mechanism; codifies the requirements of undertaking a regular 'needs assessment'; provides a solid legal plinth for gender equality and the empowerment of women scientists; and most importantly of all establishes a mandatory and sustainable funding stream for capacity-building. Furthermore, the negotiators should bring about transformational change in the law of the sea by addressing these issues directly at the final session of the intergovernmental conference.

Keywords

intergovernmental conference – capacity-building – biodiversity – gender equality – inequalities – language – law of the sea – marine scientific research – United Nations Convention on the Law of the Sea – women

1 Introduction

The world is fighting a global pandemic associated with the relentless spread of the severe acute respiratory syndrome coronavirus 2.[1] The multiple causes of the pandemic are manifest with compelling and longstanding evidence pointing towards a confluence of factors including the rapid growth of urbanisation, air travel and the unsustainable exploitation of the natural environment, among others.[2] As we witness the fragility of human existence and the dire consequences of uninformed encroachment into nature, it is perhaps pertinent to recall how Lewis Carroll used a looking glass as a literary device in one of his celebrated novels to show an irrational world characterised by strange behaviour and unexpected outcomes.[3] Similarly, if we hold a mirror to the world that exists around us today then it also evident that the natural and societal environments are not as they should be or could be, mainly due again to a whole range of anthropogenic phenomena that are leading to the mass extinction of biodiversity including catastrophic losses of species and entire ecosystems in the world's largest repository, the ocean environment.[4] This escalating state of affairs is also putting the collective wellbeing of humanity and future generations at risk.[5]

The transnational responses of governments to the loss of biodiversity appear fragmented with just a handful of multilateral processes underway to safeguard community interests in the protection and preservation of the global environment.[6] Crucially however they include protracted efforts at the United Nations (UN) to negotiate a new legal instrument under the United Nations Convention on the Law of the Sea (the Convention) on the conservation and sustainable use of marine biodiversity beyond national jurisdiction (BBNJ).[7]

1 Editorial, 'COVID-19: learning from experience' 395(10229) *The Lancet*, March 28, 2020.

2 N. Madhav, B. Oppenheim, M. Gallivan, P. Mulembakani, E. Rubin, and N. Wolfe, 'Pandemics: Risks, Impacts, and Mitigation' in D. Jamison, H. Gelband, S. Horton, *et al.*, *Disease Control Priorities: Improving Health and Reducing Poverty* 3rd Ed., (Washington DC: World Bank, 2017), Chapter 17.

3 L. Carroll, *Through the Looking-Glass, and What Alice Found There*, 5th Ed (Oxford Companion to English Literature: 1986).

4 UN Environment (2019). Global Environment Outlook – GEO-6: Healthy Planet, Healthy People. Nairobi. DOI 10.1017/9781108627146.

5 Ibid.

6 See conservation related efforts pursuant to the following: UNGA 'Transforming Our World: The 2030 Agenda for Sustainable Development' UN Doc A/RES/70/1 (21 October 2015); Paris Agreement 2015 (into force 4 November 2016) FCCC/CP/2015/10/Add.1.

7 UN, Revised draft text of an agreement 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, A/CONF.232/2020/3, 18 November 2019. For commentary on the

At one level, the latter negotiations represent a rare chink of light on the relatively pedantic world of international law-making as it applies to the ocean. On another level, they also present a once in a generation opportunity for transformational change in the law of the sea through the codification of innovative provisions in the so-called 'BBNJ Agreement' (hereinafter the Agreement) on capacity-building and marine scientific research (MSR), including the codification of gender-sensitive norms for the first time in a law of the sea treaty.

2 Fundamental Questions

In framing the case supporting the inclusion of new normative obligations in the Agreement on such issues, perhaps it is best to start out by noting that state practice over the past four decades demonstrates that the provisions on MSR set forth in the Convention have served the interests of developed countries in the international community very well,[8] by-and-large it must be said, through the facilitation of scientific inquiry into ocean processes and resources that is multi-faceted and in many instances transnational in substance, scope and geographical application.[9] Despite the vital role that science plays in the management of ocean activities, it is also increasingly apparent that many developing countries, especially Small Island Developing States (SIDS) and

BBNJ processes up the time of writing; see *inter alia*: D Freestone (ed), *Conserving Biodiversity in Areas beyond National Jurisdiction* (Brill/Nijhoff 2019). On the preparatory phase of the negotiations, see: R. Long, J. Brincat, 'Negotiating a New Biodiversity Instrument at the United Nations: A European Union Perspective on the Preparatory Phase' in M. Nordquist, J. N. Moore, R Long, *Cooperation and Engagement in the South China Sea And Asia Pacific Region* (Leiden/Boston: Brill/Nijhoff, 2019) 443–468; R Long and M Rodríguez-Chaves, 'Anatomy of a New International Instrument for Biodiversity beyond National Jurisdiction: First Impressions of the Preparatory Process' (2015) 6 *Environment Liability* 214.

8 See *inter alia*: S. Rosenne, A.Yankov, M. Nordquist *et al*., *United Nations Convention on the Law of the Sea 1982: A Commentary* (Dordrecht/Boston/Lancaster, Martinus Nijhoff Publishers, 1991) Vol. IV, 429–657; K. Bartnstein, S. Hamamaton in A. Proelss (ed), *United Nations Convention on the Law of the Sea: A Commentary* (Beck, Hart and Nomos 2017) 1605–1761; M. Gorina-Ysern, *Marine Scientific Research* (Transnational Publishers, Inc., Ardsley, 2003); F.H. Wegelein, *Marine Scientific Research, The Operation and Status of Research Vessels and Other Platforms in International Law* (Martinus Nijhoff Publishers, Leiden/Boston, 2005); United Nations, *Guide for the Implementation of the Relevant Provisions of the UN Convention on the Law of the Sea* (United Nations, Office for Ocean Affairs and the Law of the Sea, New York, 1991); A. Soons, *Marine Scientific Research and the Law of the Sea* (Kluwer Law and Taxation Publishers, Deventer, 1982.

9 Ibid.

Least Developing Countries (LDCS), do not have adequate scientific capability to benefit from the sustainable development of the ocean or to implement their international legal obligations under the Convention and related instruments.[10] Indeed without enhanced access to scientific knowledge and skills, it is difficult to see how these countries can reap the benefits that are to be derived from sustainable uses of biodiversity or more pressingly through taking appropriate action to redress the existentialist dangers posed to their very existence by environmental damage and marine resource depletion.[11] Furthermore, these failings are compounded by the barriers that impede women scientists from participating in MSR and from equal representation at all levels in public and private spheres concerned with the conservation and sustainable use of biodiversity both within and beyond national jurisdiction. Again, this failing is most acute in relation to women scientists working in the global-south and in some of the world's poorest countries.

In light of the aforementioned shortcomings, the paper touches upon three fundamental questions, namely: (1) Is the law of the sea adequate to the task of capacity-building for BBNJ under existing international agreements; (2) What considerations are driving the adoption of new normative obligations in the Agreement on education and training in MSR, including the codification of gender-sensitive norms?, and following on from this; (3) Do the intergovernmental negotiations at the UN present an opportunity for a paradigm shift that will enhance the scientific capabilities of developing States, particularly those of SIDS and the LDCS?

3 Gender Rights: Research and Advocacy at the World Maritime University

At the outset, it ought to be noted that the discussion in this chapter is informed by the success of the capacity-building mission of the World Maritime University (WMU) over the past 37 years including the delivery of specialised post-graduate offerings in maritime and ocean affairs to students from developing

10 United Nations General Assembly, 'Report of the Secretary-General on oceans and the law of the sea'. UN Doc A/65/69 (2010); UNGA Preparatory process of the United Nations Conference to Support the Implementation of Sustainable Development Goal 14: Conserve and sustainably use the oceans, seas and marine resources for sustainable development: especially paras 323–325 at 88.

11 Ibid.

countries.[12] In addition, the chapter is shaped by the work of the University on the empowerment of women in the maritime sector.[13] This work extends to a specialist research and capacity-building programme underway at the WMU-Sasakawa Global Ocean Institute (GOI) on the empowerment of women scientists for the UN Decade of Ocean Science for Sustainable Development (2021–2030).[14] Supported by the Department of Fisheries and Ocean of Canada, the latter programme has its origin in Canadian G7 initiatives aimed at tackling gender inequality at a global level.[15] In launching the research programme and by way of highlighting some of the inequalities that needed to be tackled, the Hydrographer General of Canada, Dr. Genvieve Béchard, drew attention to the poor gender balance in the organisations of the member states that contribute to the work of the International Hydrographic Organization (IHO), with only five national hydrographic organisations led by women and none in developing countries.[16]

In order to explore how best to break down barriers that impede women in scientific careers, the first strand of the research programme explores the role of gender equality and the empowerment of women in the conduct of ocean science and the delivery of advisory services by the International Council for the Exploration of the Sea (ICES). The ICES is made-up of a community in excess of 6,000 marine scientists working in public and private settings including

12 R. Long, 'The World Maritime University – Sasakawa Global Ocean Institute: A New Institute in a Unique University' 50(2019) *Ocean Development and International Law* 225–234.

13 M. Kitada, 'Advancing 'Good Practices' that Promote Gender Equality in the Maritime Sector' in I. Papanicolopulu (ed.) *Gender and the Law of the Sea* (Leiden/Boston: Brill/Nijhoff, 2019) 302-317.

14 Sponsored by the Department of Fisheries and Oceans Canada. See: press release: Launch of Recruitment for Ph.D. Scholarship and Post-Doctoral Fellowship Programme – Empowering Women for the United Nations Decade of Ocean Science for Sustainable Development, 31 May 2019. Available at: https://wmu.se/news/launch-recruitment-phd-scholarship-and-post-doctoral-fellowship-programme-empowering-women.

15 Canadian were subsequently picked-up by the French G7 Presidency in 2019 and led to the establishment of G7 Gender Equality Advisory Council. See Biarritz Partnership, Recommendations of the Gender Equality Advisory Council for advancing gender equality and the empowerment of girls and women and Call to Action. Available at: https://www.elysee.fr/admin/upload/default/0001/05/cfb1e2ba2b9aa09c1660f1b6df2cabbc815eecc2.pdf.

16 Australia, Canada, Croatia, Denmark and Norway. See Report Third Conference on the Empowerment of Women in the Maritime Community, available at: https://safety-4sea.com/wp-content/uploads/2019/09/WMU-Third-WMU-International-Womens-Conference-Empowering-Women-in-maritime-community-2019_09.pdf.

universities.[17] This element also entails a study of gender equality in the ocean and freshwater science communities of Kenya, as well as women empowerments efforts undertaken within the framework of the Nairobi Convention for the Protection, Management and Development of the Marine and Coastal Environment of the Eastern African Region.[18] This is complemented by a second tangential thread of inquiry that entails an analysis of gender equality in the regulatory and ocean governance systems organisations that depend upon and deliver ocean science, with a particular focus on: the Food and Agriculture Organization (FAO), the International Seabed Authority (ISA), the Intergovernmental Oceanographic Commission of UNESCO (IOC-UNESCO); as well as non-governmental organizations involved in the BBNJ negotiation process at the UN.[19] One of the programme outputs is the design of an action plan on the empowerment of women within ocean science organisations and science dependent ocean governance systems that can be applied globally throughout the UN Decade of Ocean Science.[20]

In parallel with the aforementioned programme, researchers at the GOI are engaging in extra-mural advocacy initiatives at intergovernmental conferences and technical workshops hosted by UN system bodies including most notably at the penultimate session of the intergovernmental conference (IGC) on the conservation and sustainable use of BBNJ.[21] These advocacy opportunities

17 ICES has 20 member nations: Belgium, Canada, Denmark, Estonia, Finland, France, Germany, Iceland, Ireland, Latvia, Lithuania, The Netherlands, Norway, Poland, Portugal, Russian Federation, Spain, Sweden, United Kingdom, and the United States. Affiliate institutes with observer status are located in the following: Australia, Chile, Greece, Peru, and South Africa. Worldwide Fund for Nature and Birdlife International have formal observer status at meetings of ICES.

18 Nairobi Convention for the Protection, Management and Development of the Marine and Coastal Environment of the Eastern African Region, 21 June 1985, into force 30 May 1996, 91 RGDIP 1122, (1993) UNEP Register 228, amended 31 March 2010 (not in force); 1985 Protocol Concerning Protected Areas and Wild Fauna and Flora in the East African Region, into force 30 May 1996, 985 IELMT 47.

19 See: https://wmu.se/docs/phd-scholarship-and-post-doctoral-fellowship-programme-empowering-women-united-nations-decade.

20 Ibid.

21 The initiatives also include, *inter alia*: the inaugural meeting of the Commonwealth Action Group on Ocean Observation, Ottawa, Canada, 30 May 2019, the IOC General Assembly Meeting 2019, Side Event hosted by the Government of Canada on Empowering Women through the UN Decade of Ocean Science for Sustainable Development, Paris, France, 27 June 2019; Governing Science at Sea: The Legal Framework for Marine Scientific Research, Korea Institute Ocean science and Technology (KIOST), Berkeley Law, Law of the Sea Institute (LOSI), Busan, Republic of Korea, 16-17 July 2019; Regional Workshop,

have been used to draw attention to the importance of including gender sensitive norms in the Agreement and extended to co-hosting a side event on this subject with Ireland and Palau at the third session of the IGC in September 2019.[22] Surprisingly, this was the first side event on capacity-building and gender-sensitive norms since the intergovernmental dialogue on the conservation and sustainable use of biodiversity commenced over 15 years ago.[23] The event was well attended by negotiators and included a keynote address by the President of the World Maritime University, along with contributions from: the Secretary-General of the International Seabed Authority; the gender focal point scientist of the IOC-UNESCO; the Director of Legal and External Affairs at the International Maritime Organization: as well as commentaries from senior diplomatic representatives of the Pacific SIDS, the Caribbean SIDS and Indonesia.[24] Many participants voiced their concerns about the importance of moving from words to action in the international law-making process through the codification of new normative obligations on capacity-building, marine scientific research and the empowerment of women in the Agreement. The case and opportunity for doing so are reviewed below.

4 Language Matters

Building capacity or developing capacity in MSR: which is it? The answer to this question is not self-evident and in delving forth, it is therefore necessary to drill down on the meaning of some key terms used in this paper,

North Atlantic Ocean, UN Decade of Ocean Science for Sustainable Development (2021-2030), Halifax, Canada, 7-10 January 2020; the ISA International Workshop on Capacity Development, Resources and Needs Assessment, Kingston, Jamaica, 10-12 February 2020.

22 See: https://wmu.se/news/capacity-building-gender-empowerment-and-bbnj-agreement.

23 One can compare and contrast the progressive evolution of gender equality and women's empowerment initiatives at a range of international bodies since the 1980s including at IUCN, see: Gender Equality and Women's Empowerment Policy: Mainstreaming Gender-responsiveness within the IUCN Programme of Work Approved by the IUCN Council at its 95th Meeting, IUCN C/95/8, October 2018, available at: https://www.iucn.org/sites/dev/files/annex_9_to_c_95_8_iucn_gender_equality_and_womens_empowerment_policy.pdf. On women and international treaty law, see, H. Charlesworth, 'Women' in S. Chesterman, D. Malone, and S. Villalpando (Ed.) *Oxford Handbook of UN Treaties* (Oxford: OUP, 2019) 249-265.

24 R. Long and Z. Sun (eds.), Workshop Report: Biodiversity Beyond National Jurisdiction: Towards the Development of a Balanced, Effective and Universal International Agreement (Malmö: World Maritime University, 2020) at 76.

specifically: 'capacity-building', 'capacity-development', 'marine scientific research' and 'gender equality'.

Starting out with the penultimate term first, the Convention for well documented reasons does not attempt to define what constitutes MSR, or any other form of scientific research for that matter.[25] The Convention nonetheless has extensive provisions on MSR as well as references to 'survey activities', 'prospecting' and 'exploration and exploitation' in relation to seabed mining.[26] Moreover, despite science going to very heart of a dispute between Australia, New Zealand and Japan, the International Court of Justice did not offer a general definition of 'scientific research', or find it necessary to do so in rendering its judgment in the *Antarctic Whaling* case.[27] From a law of the sea viewpoint, the meaning of MSR thus remains open textured and can be viewed as a general term to describe activities undertaken in the marine environment that expand scientific knowledge of the ocean and its processes.[28]

Similarly to the absence of clarity on what constitutes MSR, the terms 'capacity-building' and 'capacity-development' are not terms of art under the Convention or related instruments.[29] The architects of the Convention did however use a formulation of words to describe measures that are aimed at providing technical assistance to developing States in a range of provisions addressing living resources, the Area, the marine environment, and marine scientific research.[30] Thus, for example, in the context of the provisions on the development and transfer of marine science and technology, Article 266 (2) refers to States, particularly developing States, which may 'need and request technical assistance in regard to the exploration, exploitation, conservation and management of marine resources, the protection and preservation of the marine environment, MSR and other activities in the marine environment compatible

25 R. Long, 'Regulating Marine Scientific Research in the European Union: It Takes more than Two to Tango' in M. Nordquist, J. N. Moore, F. Soons, and H. Kim (eds.) *The Law Of The Sea Convention: U.S. Accession And Globalisation* (Leiden/Boston, Martinus Nijhoff Publishers, 2012) 427-4 at 440-491.

26 Parts II, III, XI, XII, Annex III, as well as in the 1994 Agreement relating to the Implementation of Part XI, along with the mining code.

27 *The Whaling in the Antarctic* (*Australia V. Japan: New Zealand intervening*) 2014 I.C.J. General List No. 148 (March 31) at paras. 73- 86.

28 A. Roach, R. Smith, *Excessive Maritime Claims*, 3ed. (Leiden/Boston: Martinus Nijhoff, 2012) 414.

29 Article 266, Convention. See K. Bartnstein, 'Development and Transfer of Marine Technology' in Proelss (ed.), *United Nations Convention on the Law of the Sea: A Commentary* (Beck, Hart and Nomos 2017) 1765.

30 Articles 62(4)(j), 144, 2020, 203, 244, Convention.

with the Convention'.[31] The objective of technical assistance in this instance is the acceleration of the 'social and economic development of States',[32] a goal reflective of the debate on the establishment of a New Economic Order at the Third United Nations Conference (UNCLOS III).[33]

Outside of the domain of the law of the sea treaties, the use of the terms 'capacity-building' and 'capacity development' are all pervasive in UN documents, reports and instruments, particularly those emanating from the UN General Assembly.[34] The precise meaning of the terms is frequently difficult to discern, particularly so when they are used interchangeably in the specialist literature. That aside, the two terms are considered to have different connotations in different contexts.[35] The UNDP 'Practice Note on Capacity Development' for instance draws a number of distinctions regarding the two terms in that it provides that: 'capacity development commonly refers to the process of creating and building capacities and their (subsequent) use, management and retention. This process is driven from the inside and starts from existing national capacity assets'.[36] The Note goes on to state that 'capacity building' refers on the other hand to a 'process that supports only the initial stages of building or creating capacities and alludes to an assumption that there are no existing capacities to start from'.[37]

At what point does the initial capacity-building activities transform into the longer-term capacity-development? In answering this question, it is illustrative to note that the International Seabed Authority (ISA) considers its initial training activities after the coming into force of the 1994 Implementation Agreement as capacity-building initiatives.[38] Similar to the approach

31 Article 266(2), Convention.

32 Article 266(2), Convention.

33 See Recital 5, Preamble, Convention, as well as commentary by K. Bartnstein, in A Proelss (ed.), note 8, 1765.

34 For example, there are 13 references to capacity-building in UNGA resolution adopted 25 September 2015: A/RES/70/1 – Transforming our world: the 2030 Agenda for Sustainable Development including a specific call in Goal 17.9 for enhanced "international support for implementing effective and targeted capacity-building in developing countries to support national plans to implement all the SDGs, including through North-South, South-South and triangular cooperation."

35 UNDP, UNDP Practice Note: Capacity Development (New York, UNDP, 2008) at 5. Available at: https://www.undp.org/content/undp/en/home/librarypage/capacity-building/capacity-development-practice-note.html.

36 Ibid.

37 Ibid.

38 Secretariat of the ISA, Review of Capacity-Building Programmes and Initiatives Implemented by the ISA, Version 1.2, 5 February 2020, at 7.

advocated by the UNDP Practice Note on the subject, it considers the term capacity-development as a more accurate description of future training programmes and initiatives that will be undertaken by the Authority.[39] Indeed, the strategic plan of the ISA uses the term capacity-development to describe the technical training mission and mandate of the Authority for the period 2019–2023.[40] The trend of using the term 'capacity development' is also evident in the IOC-UNESCO publications on the Decade of Ocean Science, which aims to build global scientific capacity to achieve the objectives of the 2030 Agenda.[41]

In contrast to the approach adopted by IOC-UNESCO, the draft text of the Agreement does not refer to capacity development but addresses comprehensively 'capacity-building and the transfer of marine technology' in the same set of provisions (Part V, Articles 42–45), thereby presenting them as complementary activities that go hand-in-hand.[42] Although these provisions are highly prescriptive and reviewed further below, suffice to note here that the draft text does not define expressly the meaning of the term 'capacity-building', nor does it allude to the possibility of the latter evolving into 'capacity-development' at some future point during the course of implementation of the Agreement.[43]

39 Ibid.

40 ISA, Decision of the Assembly of the International Seabed Authority relating to the strategic plan of the Authority for the period 2019–2023ISBA/24/A/10, 27 July 2018. Available at: https://ran-s3.s3.amazonaws.com/isa.org.jm/s3fs-public/files/documents/isba24_a10-en.pdf.

41 IOC-UNESCO Draft Implementation Plan, Decade of Ocean Science for Sustainable Development (Paris: IOC-UNESCO, 18 March 2020) 17-20. Available at: file:///Users/rl/Downloads/Implementation_Plan_Zero_Draft_March_2020%20(1).pdf.

42 The United States is a longstanding and well-versed opponent to the transfer of technology provisions in Parts XIII and XIV of the Convention. The wisdom of this conjunctive approach linking capacity-building with the transfer of technology may yet prove to be a bridge-too-far in attracting US support for the putative Agreement. See Jon M. Van Dyke, David L. Teichmann (1984) 'Transfer of seabed mining technology: A stumbling block to U.S. ratification of the law of the sea convention?', *Ocean Development and International Law*, 13:4, 427-455, DOI: 10.1080/00908328409545736.

43 The group of Core Latin American States (CLAMS) submitted a definition in a proposal on capacity building on the 20 February 2020, which defines the term as meaning: 'any activity intended to enable or improve academic, professional and technical training; the exchange of knowledge and skills; access to physical infrastructure; institutional strengthening; communication between relevant actors; the exchange of scientific information, technological development and innovation; and raising awareness through public information and basic knowledge about marine biodiversity in areas outside of national jurisdiction'. This proposed definition draws from the concepts included in the IOC Capacity Development Strategy 2015-2021, available at: https://www.un.org/bbnj/sites/www.un.org.bbnj/files/textual_proposals_compilation_-_28_feb_2020.pdf.

Indeed, a practical perspective would suggest that a combination of the two would be more appropriate to the task at hand, that is to say initial and ongoing capacity-building and capacity-development, which may be a more beneficial avenue to improve the effectiveness of the Agreement in the fullness of time.

Finally, although the discussion is primarily concerned about inequalities among men and women pursuing marine scientific careers, it ought to be noted that the term 'gender' refers to a range of identities, which may not correspond to the binary characterisation of a person as male or female.[44] For the purpose of the chapter, gender equality is understood to mean that a person's rights and opportunities is not dependent on this characterisation but is about realising full human potential, human rights and social justice. According to *UN Women*:

> Gender Equality means that the rights, responsibilities and opportunities of individuals will not depend on whether they are born male or female. Equality does not mean "the same as" – promotion of gender equality does not mean than women and men will become the same. Equality between women and men has both a quantitative and a qualitative aspect. The quantitative aspect refers to the desire to achieve equitable representation of women – increasing balance and parity, while the qualitative aspect refers to achieving equitable influence on establishing development priorities and outcomes for women and men. Equality involves ensuring that the perceptions, interests, needs and priorities of women and men (which can be very different because of the differing roles and responsibilities of women and men) will be given equal weight in planning and decision-making.[45]

In essence, gender equality and the empowerment of women scientists necessitates engaging with all of humankind to meet the challenges encountered in ocean science and the law of the sea on the conservation and sustainable use of BBNJ.[46]

---

44 J. Archer, and B. Lloyd, *Sex and Gender*, 2ed., (Cambridge: Cambridge University Press, 2002).

45 *UN Women, Important Concepts Underlying Gender Mainstreaming* (New York: UN, 2001). Available at: https://www.un.org/womenwatch/osagi/pdf/factsheet2.pdf.

46 G. Goettsche-Wanli, 'Gender and the Law of the Sea: a Global Perspective' in I. Papanicolopulu (ed.) *Gender and the Law of the Sea* (Leiden/Boston: Brill/Nijhoff, 2019) 25-82.

5 Is the Law of the Sea Adequate to the Task of Capacity-Building?

Bearing in mind that the Agreement is an implementation instrument under the Convention, one can ask if existing provisions in the parent treaty are adequate to the task of capacity-building for BBNJ? There are over two dozen references in the Convention to providing technical assistance to developing States in various forms.[47] The Convention does not however identify which States qualify for such assistance, although various categories of States have been discussed during the course of the BBNJ processes including least-developed countries, landlocked developing countries, geographically disadvantaged States, SIDS, coastal African States and developing middle-income countries.[48]

Briefly stated, the technical assistance articles in the Convention can be grouped into four sets of the provisions addressing: seabed mining;[49] the protection and preservation of the marine environment;[50] marine scientific research;[51] and development and transfer of marine technology.[52] Many of the provisions are hortatory in nature and characterised by inherent weaknesses and ambiguities regarding the obligations that they impose on States Parties and other entities. For instance, apart from acknowledging that MSR is a freedom of the high seas,[53] there is little guidance on how research, prospecting and exploring of the International Seabed Area (the Area) are to distinguished in practice, bearing in mind that each of these activities are subject to different requirements under Annex III of the Convention, the 1994 Implementation Agreement, and the mining code.[54] That said, Annex III is unique in the law of the sea and has a rare strength in that it sets down an express obligation on mining contractors to provide practical programmes for the training of the personnel of the ISA and developing States.[55] Moreover, States Parties are compelled as a general rule under the 1994 Implementation Agreement to promote international technical and scientific cooperation with regard to activities in the Area.[56] This obligation is further elaborated upon in the

47 *Op. cit.* K. Bartnstein, in A. Proelss (ed.), note 8, 1765.
48 Article 7(b), Agreement.
49 Articles 144, 274, Convention.
50 Articles 202, 203, Convention.
51 Article 266, Convention.
52 Article 266, Convention.
53 Article 87, Convention.
54 R. Churchill, V. Lowe, *The Law of the Sea* 3rd Ed., (Manchester, Manchester University Press, 1999) at 404.
55 Article 15, Annex III, Convention.
56 Section 5, Annex, 1994 Agreement.

prospecting and exploration code for seabed mining, which provide that the training programmes must be drawn up and paid for by the contractor, working in cooperation with the Authority and the sponsoring State or States.[57] The legally-binding nature of the training obligations was also highlighted in the first Advisory Opinion handed down by the Seabed Disputes Chamber of ITLOS, which noted that the legal responsibilities of States Parties with respect to activities in the Area included ensuring that developing States received the necessary assistance including training.[58]

A number of general points can be made about the other provisions in the Convention on technical assistance. First, the provisions on the protection and preservation of the marine environment in Part XII are less compelling than those on seabed mining and very much couched in the language of promoting technical assistance programmes to aid developing States.[59] Crucially, they do not provide a solid legal basis for mandatory and legally binding obligations in relation to the delivery of capacity building resources or expertise to developing States. That said, the provisions in Part XII are premised on assistance having been provided directly or through the good offices of international organizations and extend to training, equipment, the development of facilities for research, monitoring, educational and other programmes.[60] In addition, appropriate assistance must be provided for pollution incidents and for the preparation of environmental assessments. In relation to pollution incidents, developing States are to be granted preference by international organizations in relation to financial support and technical assistance.[61]

Second, on a broader geographical scale, technical training programmes and initiatives for developing States on a voluntary basis are implicit in the provisions on living resources, as well as the rights of land-locked States and geographically disadvantaged States.[62]

---

57 See, for example, Regulation 3.i(a), Regulation 29, Section 8 of Annex IV, Regulations on Prospecting and Exploration for Cobalt-rich Ferromanganese Crusts in the Area, ISBA/18/A/11, 22 October 2012.

58 Responsibilities and Obligations of States Sponsoring Persons and Entities with Respect to Activities in the Area (Advisory Opinion) [2011] ITLOS Rep 10 (Seabed Mining Advisory Opinion), para. 163.

59 Article 202, Convention.

60 Article 202(a), Convention.

61 Article 202(a), Convention.

62 Article 70, 72(2), Convention. See, K. Bartnstein, S. Hamamaton in A. Proelss (ed.), *United Nations Convention on the Law of the Sea: A Commentary* (Beck, Hart and Nomos 2017) 1605-1761.

Third, the negotiators at UNCLOS III were aware of the importance of capacity-building for MSR and adopted a resolution on the development of national marine science, technology and ocean service infrastructures, which called for the promotion of programmes of scientific, educational, technical and other assistance to developing States for the protection and preservation of the marine environment and the prevention, reduction and control of marine pollution.[63] Indeed, the success of the provisions on MSR (Part XIII) and the transfer of marine technology (Part XIV) is almost entirely contingent upon the voluntary implementation of the resolution in practice by developed States Parties. Viewed in this light, the Agreement represents an opportunity to redress the shortcomings of the Convention in providing viable mechanisms for capacity building.

Fourth, the provisions on technical assistance and training in the Convention are complemented by other schemes in international law and ocean science.[64] They include a broad suite of initiatives implemented by UNEP in furtherance of its Regional Seas Conventions and Action Plans, which apply to ABNJ of the North East Atlantic, Pacific, Mediterranean and Southern Ocean (Antarctic) and are undertaken by Regional Coordination Units and Regional Activity Centres. Likewise, regional capacity-building is a cornerstone of fisheries management training programmes with several tailored initiatives delivered by the five tuna RFMOs and the eight deep-sea RFMOs. The International Maritime Organization has its own technical assistance programme valued at about 14 million USD per annum, which is funded from a variety of sources including the Global Environment Facility, the European Union and the Norwegian Agency for Development and Cooperation.[65] Specialised post-graduate education for students from developing countries is delivered by the World Maritime University in Sweden and by the IMO International Maritime Law Institute in Malta.[66]

63 Appended to the Final Act of the Conference as Annex VI.

64 There is an excellent summary of complementary initiatives in UN Doc A/65/69 (2010), *op. cit.* note 10. Also, Biliana Cicin-Sain (*et al.*), 'Policy Brief on Capacity Development as a Key Aspect of a New International Agreement on Marine Biodiversity Beyond National Jurisdiction (BBNJ)', August 2018. Available at: http://www.fao.org/fileadmin/user_upload/common_oceans/docs/policy-brief-on-bbnj-capacity-development-aug-2018.pdf.

65 IMO, Annual report on the technical cooperation activities implemented under the Integrated Technical Cooperation Programme during 2018, TC 69/3(a), 18 April 2019. Available at: http://www.imo.org/en/OurWork/TechnicalCooperation/ITCP/Documents/TC%2069-3(a)%20-%20Annual%20Report%20for%202018.pdf.

66 R. Long, *op. cit.* note 12.

All-in all, capacity-building under the Convention and related instruments falls well short of what is required to meet the needs of developing States in relation to the scientific aspects of decision-making on the conservation and sustainable use of BBNJ.[67] With the benefit of hindsight, it is also evident that the piecemeal approach and the lack of a strong thematic cross-cutting strand on technical assistance has undermined the effectiveness of the Convention as a capacity-building instrument over the past four decades.[68] Moreover, the MSR provisions in the Convention are dated in so far as they are primarily concerned with ship-based research and and refecting the era when they were negotiated say little if anything about the application of satellite technologies, autonomous sensors, as well as the use of artificial intelligence tools to the task of ocean observation and the sampling of biodiversity for scientific and other purposes.[69] Many of the latter tools do not require ocean scientists to spend long stints at sea and offer pathways to careers that are more amenable to scientists with family responsibilities.[70]

Outside of the domain of the seabed mining provisions, the absence of mandatory funding mechanisms and dedicated financial resources must also be viewed as major failings that completely undermine the practical utility of the capacity-building obligations that arise under the Convention.[71] These shortcomings are compounded by the absence of a legal basis for intergovernmental coordination on capacity-building pertaining to marine research including genetic research, along with undertaking the science associated with the establishment of MPAs and the conduct of EIAs.[72] Furthermore, although 25 years have passed since the coming into force of the Convention, no comprehensive assessment has been undertaken at a global level of the MSR needs of developing States.[73] This requirement is ever more pressing with the First

67 UN Doc A/65/69 (2010), *op. cit.* note 10. Also, Biliana Cicin-Sain (*et al.*) *op. cit.* note 64.

68 Ibid.

69 See *inter alia*: R. Long, "A European Law Perspective: Science, Technology and New Challenges to Ocean Law" in H. Scheiber, J. Kraska (eds.), *Science, Technology, And New Challenges To Modern Ocean Law*, (Leiden/Boston, Martinus Nijhoff, 2015) 65-123; J. Kraska, Y. Kil-Park (ed.), *Emerging Technology and the Law of the Sea* (Cambridge: Cambridge University Press, forthcoming).

70 See section 6.4 *infra*.

71 See section 7.4 *infra*.

72 UN Doc A/65/69 (2010), *op. cit.* note 10, paras 161-181. The report in footnote 212 mentions two initiatives undertaken by the IMO, the 'Global Programme on Integration of Women in the Maritime Sector', and the establishment of regional associations for women in the maritime sector.

73 Ibid., paras 295, 321 and 325.

Global Integrated Marine Assessment (the Assessment) drawing attention to major gaps in the MSR capacity of developing States, particularly in relation to the human skills and knowledge that can be applied in decisions concerning the conservation and sustainable use of BBNJ.[74] Specifically, the Assessment identified needs in taxonomy, genetics, as well as bio-physical and chemical research on the ocean environment, along with a number of related fields and skills.[75] The Assessment is largely silent on the gender bias in ocean science but makes detailed reference to the importance of gender considerations in fisheries and aquaculture industries.[76] Without quantifying the scale of the improvement, the Assessment does however allude to an ever-increasing number of women in technical, scientific and managerial careers in the latter two sectors.[77]

The weaknesses in the law of the sea on capacity-building can be partly explained by the negotiation period of the Convention itself, which is a treaty child of the 1970s. An obvious lacuna stems from the absence of express normative obligations on gender balance and the empowerment of women.[78] The supposedly gender-neutral norms set out in the Convention have been questioned on the basis that they perpetuate inequalities in the law of the sea institutions, particularly the International Tribunal on the Law of the Sea and the Commission on the Limits of the Continental Shelf, as well as in capacity-building programmes and more generally in relation to careers in the maritime domain, including within the sphere of MSR.[79] Clearly, the law of the sea as currently constituted is not adequate to the task of building-capacity in MSR or to advancing gender sensitive norms for the purpose of implementing the objectives of the Agreement.

---

74 United Nations, *The First Integrated Marine Assessment* (Cambridge University Press 2016), Chapter 53, 923-933. See discussion of clearing-house mechanism *infra.*

75 Ibid., 924.

76 Ibid. There are for instance 32 references to gender in the chapter on the social and economic aspects of sea-based food and fisheries, see especially pp 34-35. Available at: https://www.cambridge.org/core/services/aop-cambridge-core/content/view/C0FF1CAEC3D80892309BFBEC6A69364D/9781108186148c15_p229-238_CBO.pdf/social_and_economic_aspects_of_seabased_food_and_fisheries.pdf.

77 Ibid.

78 R. Long (unpublished paper), 'Gender and the Law of the Sea Convention: Is it All about Buoys?' delivered at an international conference, Exploring the human element of the oceans: the gender implications of the law of the sea, School of Law, University of Milano-Bicocca, 25 May 2017.

79 I. Papanicolopulu (ed.) *Gender and the Law of the Sea* (Leiden/Boston: Brill/Nijhoff, 2019).

6 Considerations Driving the Codification of New Norms

The scientific and policy considerations underpinning the law of the sea are continuously changing in response to new uses and pressures on the ocean environment, along with technological and economic developments, with some of the greatest changes occurring since the conclusion of the Convention in 1982. Four of the dynamics that are at play and that should have a bearing on the outcome of the BBNJ negotiations are briefly enumerated below.

6.1 *Reinforcing a Crucial Nexus: Science, Law and Capacity-Building*

Our knowledge of the ocean is extremely limited, particularly so in relation to BBNJ.[80] The capacity building provisions of the Agreement must therefore aim to strengthen the vital nexus that links the scientific and legal dimensions of the law of the sea. The importance of reinforcing this link cannot be understated as it is central to ensuring the conservation and sustainable use of the ocean, as well as to the stable and peaceful public order of maritime affairs. At a very practical level, many decisions in ocean governance need to be based on the best available science and empirical evidence derived from pure and applied MSR.[81] Within various ocean governance settings, scientists commonly bear the heavy burden of providing advice to decision-makers relating to the design and implementation of sector specific policies that apply both within and beyond national jurisdiction.[82] They also partake in and inform the work undertaken by intergovernmental organizations and regional seas and fisheries management bodies, including their efforts to manage living resources sustainably, to map the oceans for navigation and other purposes, to address the adverse impacts of climate change, and to ensure food security in the LDCs.[83] This work is frequently supported by the expert services of specialist regional

80 United Nations, *The First Integrated Marine Assessment* (Cambridge University Press 2016) 8, 936. Also see, T. Webb *et al.*, 'Biodiversity's big wet secret: The global distribution of marine biological records reveals chronic under-exploration of the deep pelagic ocean' (2010) 5 *PLoS One*, e10223.

81 Y. Tanaka, *The International Law of the Sea*, 3 Ed., (Cambridge: Cambridge University Press, 2019) 432-450. See also, in this volume, L. Mayer and J.A. Roach, 'The Quest to Completely Map the World's Oceans in Support of Understanding Marine Biodiversity and the Regulatory Barriers WE Have Created'.

82 On the science policy nexus, see for example, UNGA Res 72/72, paras 54–58. Also, D.F. Boesch, 'The role of science in ocean governance', 31 (1999) *Ecological Economics* 189–198.

83 For instance, the International Maritime Organization, the Food and Agriculture Organization (FAO), the International Seabed Authority (ISA), the Intergovernmental Oceanographic Commission of UNESCO (IOC-UNESCO), among many others.

scientific bodies, such as the International Council for the Exploration of the Sea (ICES) and the North Pacific Marine Science Organization (PICES),[84] which are mandated with collecting and exchanging scientific information, along with providing scientific advice concerning the planning and managing of offshore activities including activities that impinges upon the environmental status of BBNJ.[85]

The conservation and sustainable use of biodiversity under the Agreement must therefore be viewed first and foremost as a scientific challenge that needs to be resolved on the basis of the data and knowledge derived from MSR. Without appropriate scientific training and access to deep science capabilities, scientists from developing countries including women scientists will be curtailed in contributing to the institutional arrangements established by the Agreement, especially the proposed Scientific and Technical Body.[86] Furthermore, as pointed out previously, the capacity gap in MSR between developed countries and developing countries will continue to broaden with notable regional disparities regarding the resources and know-how available to scientists in the global-south.[87] Indeed, unless the link between science and law are strengthened and operationalised for developing States, it is difficult to see how they will derive tangible benefits from the Agreement. This explains why capacity-building is viewed by many negotiators attending the BBNJ intergovernmental conference as a cross-thematic strand of the negotiations, closely linked to the functioning of the clearing-house mechanism, as well as a key enabler for the successful implementation of the three substantive elements of the draft treaty pertaining to MGRS and benefit sharing, ABMTS including MPAS, and EIAS.[88] Looking to the future, the results of MSR will be crucial to improved understanding of the functioning of high seas ecosystems and the successful

84 Convention for The International Council for the Exploration of the Sea (ICES), 652 UNTS 237; Convention for a North Pacific Marine Science Organization (PICES) 207 UNTS 189, Amendment May 20, 1987.

85 Statement of Anne Christine Brusendorff on behalf of International Council for the Exploration of the Sea (ICES) at IGC 3. Available at: https://www.ices.dk/news-and-events/Documents/Press%20Room/Areas%20Beyond%20National%20Juristiction.pdf.

86 C. Salpin, V. Onwuasoanya, M. Bourrel, and A. Swaddling, (2016). 'Marine scientific research in Pacific Small Island Developing States', (2016) 95 *Marine Policy* 363-371.

87 *Op. cit*. note 8.

88 UN, Statement by the President at the closing of the third session, and the report of the Informal working group on capacity-building and the transfer of marine technology A/CONF.232/2019/10*, 13 September 2019, 17/23-19-23, especially the discussion on the clearing-house mechanism, paras 13-14.

implementation of the Agreement.[89] The draft treaty thus presents an exceptional opportunity to strengthen the international framework for deep-ocean science and to enhance the functional cooperation between States, as well as public and private bodies, including cooperation on the implementation of capacity-building programmes to meet the special needs of the LDCs and SIDS. The framework for transnational cooperation will be further bolstered by capacity development activities undertaken pursuant to the UN Decade of Ocean Science and to implement obligations arising under the 2030 Agenda.[90]

6.2 *Mitigating Environmental Risk and Enhancing Ocean Resilience*

At the heart of the Agreement are procedural and spatial management tools embedded in the provisions on EIA and ABMTs, which can be applied in mitigating environmental risk and to enhancing ocean resilience. They are also linked to capacity-building provisions in the Agreement that can help close the skills-gap in developing countries that are needed to design effective strategies that build resilience in ecological systems that provide essential services, as well as in addressing the factors that degrade biodiversity, both within and beyond national jurisdiction.[91] The scale of the capacity-building tasks is daunting because anthropogenic impacts on biodiversity are placing new demands on the MSR resources and scientific needs of both developed and developing States.[92] At the same time, there is a preponderance of evidence showing funding for ocean science remains at best 'modest' in general terms but is totally inadequate in meeting the needs of developing States.[93] This failing is compounded by the regional disparity in the geographical distribution, educational opportunities and resources that are available to ocean scientists in the LDCs and SIDs, particularly so when compared to developed countries.[94] The shortage in resources is most acute in relation to deep-ocean research vessels and the specialist equipment that is needed to evaluate environmental risk and to implement strategies at national and regional levels that

89 A. Rogers, U. Sumaila, S. Hussain, and C. Baulcomb, The High Seas and Us: Understanding the Value of High Seas Ecosystems (Oxford: Global Ocean Commission, 2014).

90 IOC-UNESCO Draft Implementation Plan, Decade of Ocean Science for Sustainable Development (Paris: IOC-UNESCO, 18 March 2020) at 19.

91 United Nations, *The First Integrated Marine Assessment*, *op. cit*. note 74 and UN Doc. A/70/112 at 13/60.

92 Ibid., and IOC-UNESCO, Global Science Report 2017.

93 IOC-UNESCO, Global Science Report 2017, at 27.

94 Ibid., at 28-31.

build ecological resilience.[95] Moreover, there are several other imperatives that need to be taken into consideration with several international reports pointing out that policy responses and regulatory action are not progressing sufficiently well to arrest the widespread decline of biodiversity in both the terrestrial and ocean environments.[96] The 'Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services Report 2019' ranks capacity-building and cross-sector cooperation as two of the principal interventions to redress the alarming deterioration of nature.[97] A similar finding is evident in the IPCC 'Special Report on the Ocean and Cryosphere in a Changing Climate' (SROCC), which states with high confidence that 'changes in the ocean have impacted marine ecosystems and ecosystem services with regionally diverse outcomes, challenging their governance'.[98] The SROCC points out that 'people with the highest exposure and vulnerability are often those with lowest capacity to respond'.[99] For this reason, the report recommends investment in education and capacity building at various levels and scales to reduce risk and enhance resilience.[100] Women in particular are disproportionately affected by environmental risks and according to the European Institute for Gender Equality (EIGE) are not taken into account in many decisions concerning recovery and adaptation strategies.[101]

The inclusion of appropriate norms on capacity-building and gender equality in the Agreement can help redress these shortcomings by ensuring ocean science is transformative in orientation and by establishing mechanisms to improve the uptake and use of science by future States Parities, including LDCs and and SIDS. By doing so, the Agreement will contribute to one of the core objectives of the Decade of Ocean Science, which is to 'distribute [scientific] capacity across the globe, across generations, and across genders and thus

95 Ibid., on the nationality and availability of research vessels for deep ocean science, at 66-73.

96 Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services, The Global Assessment Report on Biodiversity and Ecosystem Services (Bonn: IPBES Report 2019), available at: https://ipbes.net/global-assessment.

97 IPBES Report 2019, 'Summary for Policy Makers', D2 Five main interventions at 17. Available at: https://ipbes.net/sites/default/files/2020-02/ipbes_global_assessment_report_summary_for_policymakers_en.pdf.

98 IPCC, 2019: Summary for Policymakers. In: IPCC Special Report on the Ocean and Cryosphere in a Changing Climate, at SPM-17, available at: https://report.ipcc.ch/srocc/pdf/SROCC_FinalDraft_FullReport.pdf.

99 Ibid., at SPM-34.

100 Ibid., at 40-41.

101 EIGE, 'Gender in Environment and Climate Change', (Luxembourg: EIGE, 2016) available at: file:///Users/rl/Downloads/ti_pubpdf_mh0216901enn_pdfweb_20170124144008.pdf.

reverse asymmetry in knowledge, skills and access to technology'.[102] Ultimately, this approach will facilitate the participation and education of scientists from LDCs and SIDS in the design and implementation of decisions that mitigate environmental risk and build resilience of BBNJ.

6.3 *Implementing Sustainability and Blue Economic Objectives*

The wider sustainability and blue growth agendas are increasingly informing all aspects of the law of the sea.[103] The 2030 Agenda is universal and speaks to the needs of both developing and developed countries across a broad spectrum of thematic areas that are of critical importance to wellbeing of humankind and the future of the planet.[104] The Agreement must therefore be viewed through the prism of the 2030 Agenda and how it can contribute to the attainments of its 17 indivisible and interlinked SDGs.[105] In particular, the MSR, capacity-building and gender provisions therein have the potential to make a substantial contribution to the realisation of the SDGs on learning opportunities (SDG 4), gender equality (SDG 5), sustainable economic growth (SDG 8), climate action (Goal 13) and oceans (SDG 14). They will also add significant weight to the attainment of Target 14A of SDG 14, which sets down an obligation to increase scientific knowledge, develop research capacity and the transfer of marine technology.[106] The Agreement when it comes into force will be the very embodiment of Target 14.C, which aims to enhance the conservation and sustainable use of oceans and their resources by implementing international law as reflected in the Convention.[107] In doing so, it will bolster international efforts on the attainment of the SDGs by using science, education and gender empowerment as drivers for sustainable development, contributing at

102 IOC-UNESCO 'Draft Implementation Plan', *Decade of Ocean Science for Sustainable Development* (Paris: IOC-UNESCO, 18 March 2020) at 17.

103 M. Nordquist, J. N. Moore, R. Long (eds.), *The Marine Environment and UN Sustainable Development Goal 14: Life Below Water* (Leiden/Boston, Brill/Nijhoff, 2018).

104 M. Robinson in F. Dodds, D. Donoghue and J. Roesch, *Negotiating the Sustainable Development Goals: A Transformational Agenda for an Insecure World* (London/New York: Routledge, 2017) at xv, cited by R. Long, M. Chaves-Rodriguez, "Bridging the Water, Oceans and Climate Change Goals under the 2030 Agenda for Sustainable Development" in M. Nordquist, J. N. Moore, R. Long (eds.) *The Marine Environment And UN Sustainable Development Goal 14* (Leiden/Boston, Brill/Nijhoff, 2018) 83-110.

105 UN Resolution 70/1. Transforming our world: the 2030 Agenda for Sustainable Development, A/RES/70/1, 21 October 2015. See *inter alia:* M. Nordquist, J. N. Moore, R. Long (eds.) *The Marine Environment and United Nations Sustainable Development Goal 14: Life Below Water* (Leiden/Boston, Brill/Nijhoff, 2018).

106 UN Resolution 70/1, at 24/35.

107 Ibid.

the same time to the realisation of the strategic objectives of the Decade of Ocean Science.[108] According to IOC-UNESCO, the projected gains from the delivery of these objectives in the context of the SDGs are manifold and extend in theory to the following:

> ..the ocean has the potential to supply up to six times more food that it does today (SDG2 – zero hunger). New technologies in renewable energy or carbon storage could increase the capacity of the ocean to mitigate the worst effects of climate change (SDG7 – affordable and clean energy; SDG13 – climate action). New knowledge and tools for coastal nature-based solutions could increase the adaptive capacity of hundreds of millions of the most vulnerable people (SDG3 – good health and wellbeing; SDG10 – reduced inequalities).[109]

Instructively, political leaders in developing countries are increasingly aware of the significance of education and gender empowerment, ranking them as top priorities under the 2030 Agenda.[110] This ranking is unsurprising and accords very much with the finding of a World Bank report that investment in educational systems not only enhances employment but also pays a substantial dividend by fostering institutional capacity, social cohesion and human well-being, especially in SIDS.[111] Indeed according to the World Bank, the absence of capacity, skills and financial resources impede SIDs and LDCs from pursuing 'a low-carbon and resource-efficient path to economic growth and development designed to enhance livelihoods for the poor, create employment opportunities, and reduce poverty'.[112] Following on from this, the inclusion of capacity

108 IOC-UNESCO Revised Roadmap Appendix 2: Paris 8 June 2018, p 35.

109 Ibid., at 2-3.

110 Despite international efforts to raise awareness of the symbiosis that ought to exist between ocean science and sustainable development, the attainment of Goal 14 related targets is not a political priority in many developing countries, according to one major survey of leaders in low- and middle-income countries undertaken by at a social science laboratory at William and Mary University. See, AidData's 2017 'Listening to Leaders Survey'. Nearly 3,500 leaders working in 22 different areas of development policy shared their views via AidData's 2017 Survey. Available at: https://www.aiddata.org/data/the-2017-listening-to-leaders-survey-aggregate-dataset.

111 United Nations Department of Economic and Social Affairs, 'The Potential of the Blue Economy: Increasing Long-term Benefits of the Sustainable Use of Marine Resources for Small Island Developing States and Coastal Least Developed Countries' (Washington: World Bank, 2017).

112 Ibid., at ix.

building in MSR and gender norms in the Agreement should not be viewed solely as objectives in themselves but if formulated skilfully and constructively, can also make a vital contribution to the implementation of a broad swathe of SDGs, as well as generating the right conditions for sustainable economic growth of countries dependent on the ocean environment and on the sustainable use of marine resources.[113]

6.4 *Mainstreaming Gender Equality and Empowering Women*

The UN Secretary-General identifies gender equality and the empowerment of women as one of greatest human rights challenges faced by the world today.[114] Human rights consideration are also increasingly pervasive in the law of the sea with the International Tribunal for the Law of the Sea stating unequivocally that 'considerations of humanity must apply in the law of the sea, as they apply in other areas of international law'.[115] In practice, however, the law of the sea is male law to its very core.[116] There is nothing unusual in this as international law has been slow to engage with gendered dynamics outside of the field of human rights and international criminal law.[117] Hence, an important aspect of the Agreement is its potential to advance equality between women and men in international law of the sea. This in turn will bring this body of law into line with a discrete and delicate strand of UN treaty law on the elimination of gender discrimination more generally through the medium of authoritative prescription.[118]

The reasons for pursuing a gendered approach are many including marshalling of the widest pool possible of scientific and technical experts to undertake the many tasks associated with the conservation and sustainable use of

113 On the potential of MGRs to contribute to blue economic development, see J. Collins, Report of the Workshop "Marine genetic resources in areas beyond national jurisdiction: bridging policy, law, science and research and development" (Brussels: European commission, 2019). Available at: https://op.europa.eu/en/publication-detail/-/publication/aca8c05f-c875-11e9-9d01-01aa75ed71a1/language-en/format-PDF/source-104428893.

114 UN Secretary-General António Guterres, Remarks, 8 February 2020. Available at: https://www.un.org/sg/en/content/sg/speeches/2020-02-08/remarks-high-level-meeting-gender-equality-and-womens-empowerment.

115 ITLOS, *MV Saiga* (No. 2)(*Saint Vincent And The Grenadines V. Guinea*) case, (1999) 38 ILM 1355 at para. 155.

116 I. Papanicolopulu (ed.) *Gender and the Law of the Sea* (Leiden/Boston: Brill/Nijhoff, 2019).

117 C. MacKinnion, 'Creating International Law: Gender as Leading Edge', (2013) 36(1) *Harvard Journal of Law and Gender* 105-122.

118 H. Charlesworth, 'Women' in S. Chesterman, D. Malone, and S. Villalpando (eds.) *Oxford Handbook of UN Treaties* (Oxford: OUP, 2019) 249-265, especially 264.

biodiversity.[119] Education, training and capacity-building are vital pathways to improving gender equality and the empowerment of women scientists under the Agreement. There is considerable amount of work to be done in this regard with UNDP estimating that the number of women graduates in science, engineering and technology and mathematics is less than 15 per cent of the total number of third-level university graduates in most countries.[120] Furthermore, there is longstanding evidence that 'women are still under-represented in many research fields, generally receive lower salaries, are less likely to have full-time contracts and have fewer opportunities to gain influential positions than their male colleagues'.[121]

The case supporting the inclusion of specific provisions that empower women scientists in the Agreement is a compelling one because women are underrepresented in ocean science, particularly in the specialist fields related to ocean technology and engineering.[122] The data is incomplete but indicates that the total number of women scientists amounted to 38 per cent of the total cohort of ocean scientists in 2013.[123] One should exercise considerable care with this figure, as there is significant disparity within ocean regions such as the North Pacific Ocean,[124] as well as in countries such as Mauritania where women comprise four per cent of the total cohort of ocean scientists.[125] Furthermore, the IOC Report notes that there were fewer women in senior professional roles or management positions, a finding that is common in other scientific disciplines.[126] Overall, the findings presented by the Global Ocean Science Report reflect the well-established patterns of bias that limit women's choices, opportunities and active participation in science careers more commonly.[127]

---

119 See statement of IOC-UNESCO, See IOC-UNESCO, *Ad Hoc* Report of the Intergovernmental Oceanographic Commission (IOC) of UNESCO to BBNJ PrepCom-4, at 8 and 29. Available at: https://www.un.org/Depts/los/biodiversityworkinggroup/IOCreportforBBNJPrepCom-FINAL.PDF.

120 Cited in UNDP, 2020 Human Development Perspectives. *Tackling Social Norms: A game changer for gender inequalities* (New York: UNDP, 2020).

121 S. Palermo, E. Giuffra, V. Arzenton, M. Bucchi 'Gender and science', 2008;9(6) *EMBO Rep*. 494–495. Available at https://www.embopress.org/doi/pdf/10.1038/embor.2008.82.

122 IOC-UNESCO, *Global Ocean Science Report*, 2017. Available at http://unesco.org/gosr.

123 Ibid. The relatively high cohort of women scientists, reported by IOC at 38 per cent, appears to be derived from data on the number of women attending international conferences and workshops and not the total number of women participating in MSR more generally.

124 Ibid.

125 Ibid.

126 Ibid.

127 EIGE, Gender in Environment and Climate Change, *op. cit*. note 101.

Against this background, there is thus a corresponding need to improve the representation of women scientists in the various categories of ocean science, as well as in the geographical distribution of scientists across the world including most notably in the LDCs and SIDS. This will entail the adoption and strengthening of policies and laws that actively further the empowerment of women and girls in ocean science. A timely step in the right direction, can be undertaken under the mantle of the Agreement, if its provisions ensure the full and equal participation of women in all capacity-building initiatives, education and employment opportunities, as well as all decision-making processes pertaining to the conservation and sustainable use of biodiversity. The reasons for doing so are self-evident in so far as gender equality and the empowerment of women will bring in fresh perspectives and thereby increase the innovative capacity of ocean science. Furthermore, according to UNESCO, gender equality in science in general, encourages the search for new solutions and expands the scope of research and development. A similar approach under the Agreement that actively promotes gender balance will help attain many SDGs under the 2030 Agenda and at the same time ensure that gender equality and the empowerment of women scientists are realisable objectives of the UN Decade of Ocean Science for Sustainable Development.[128]

7 New Agreement, New Paradigm

Capacity-building and technology transfer is one for the four substantive topics in the Agreement package that was agreed at the United Nations in 2011 and has since been subject to extensive deliberations at the Preparatory Committee (2015–2017),[129] as well as at three sessions of the Intergovernmental Conference (2018–2019).[130] As mentioned above, the inclusion of comprehensive and enfranchising provisions on capacity-building are a prerequisite to a successful outcome to the negotiations.[131] A valid question therefore is how far the Agreement will codify new normative obligations on capacity-building, MSR and the empowerment of women. The answer to the question is very much contingent upon the provisions that the plenipotentiaries agree upon during the final session(s) of the IGC. Although it is not possible to draw any definitive conclusions while the negotiations are ongoing, the contours of what can be

128 IOC-UNESCO, Decade of Ocean Science Draft Implementation Plan, at 17-18.
129 *Op. cit*. note 7.
130 Ibid.
131 See statements by PSIDS, CARICOM and OASIS at IGC 3.

achieved are evident from a brief perusal of the various options canvassed in Part V of the draft text prepared by the President for the negotiators at IGC 4, along with additional elements addressed in Part I on use of terms, Part VI on the clearing-house mechanism, Part VII on financial resources, and Part VIII on Implementation and Compliance.[132] At the time of writing four general points can be made about the draft provisions.

7.1 *Narrow Objectives and a Dearth of Ambition*

The capacity-building objectives are relatively narrow and focused primarily on the twin-goals of aiding future States Parties in implementing their obligations under the Agreement and in providing them with the wherewithal to benefit from activities thereunder.[133] Other objectives relate to increasing and sharing knowledge on the conservation and sustainable use of biodiversity.[134] One of the most contentious aspects relate to the building and sharing of expertise on the collection, access and use of MGRS *in situ*, *ex situ* and digital sequence information, which will require innovative technical solutions if they are to be realised in practice.[135] The objectives also aim to empower developing States to undertake the tasks associated with the area-based management tools and environmental impact assessment and strategic environmental assessment, thereby linking the capacity-building provisions with the three other substantive parts of the Agreement. There was general recognition at previous sessions of the intergovernmental conference of the importance of the cross-thematic and relatively wide scope of the capacity-building provisions.[136] There is no reference however in the draft text to the wider sustainability or climate change related goals of capacity-building, which illustrates a dearth of ambition on the part of the negotiators and a disconnect with global environmental, sustainability and climate agendas. Similarly, gender equality and the empowerment of women scientists are not presented as goals in themselves or as central tenets of the capacity-building or other provisions in the Agreement. Furthermore, the need for improving such capacity is all the more evident when it is considered that the implementation of the Agreement

132 *Op. cit*. note 7.

133 Article 42(a) and (b), Agreement.

134 Article 42(d), Agreement.

135 Article 42(f)(i)-(iv), Agreement. In relation to the innovative solutions that are required, see chapter in this volume by Marcel Jaspers, '*Mare Geneticum* – Building Blocks Towards a Pragmatic Solution for ABS in ABNJ'.

136 Article 42(f)(v)(vi), Agreement. See Annex to the statement of the President of the Conference, Third Session, 19-30 August 2019, UN A/CONF.232/2019/5, available at: https://undocs.org/a/conf.232/2019/5.

will place a heavy responsibility on flag States, many of whom are Least Developed Countries and do not have the means or know-how to discharge their new found obligations in relation to deep ocean biodiversity.

7.2 *Enhanced Cooperation, New Institutional Settings, and a Clearing-House Mechanism*

Similar to other law of the sea instruments pertaining to the protection and preservation of the marine environment and in line with the jurisprudence of international courts and tribunals,[137] there is considerable emphasis on international cooperation as the very foundation of the obligations placed on future States Parties to the Agreement.[138] A novel aspect of the draft text is that it provides a legal basis for partnerships with the private sector, civil society and the holders of traditional knowledge.[139] The monitoring and review provisions are focused on reviewing the needs and gaps in capacity-building, along with measuring performance and making recommendations on how developing countries can fulfil their obligations under the Agreement.[140] The process is intended to be inclusive and one of the options canvassed by the draft text is a voluntary reporting requirement for States Parties.[141] A major development relates to the establishment of a new institutional setting for international decision-making on conservation and sustainable use of biodiversity including a possible role for the COP in establishing a subsidiary-body for capacity-building and a clearing-house mechanism.[142] One of the options envisaged is that the latter will operate as an open-access digital platform for the sharing of information and benefits, along with matching capacity-building needs with respect to each of the substantive parts of the Agreement.[143] The institutional provisions extend to the establishment of a Scientific and Technical Body/Network mandated with functions set out in the Agreement.[144]

---

137 Article 197, Convention; MOX Plant (*Ireland v. United Kingdom*) Provisional Measures, Order of 3 December 2001, ITLOS Reports 2001, para. 82; 'Case concerning Land Reclamation by Singapore in and around the Straits of Johor' (*Malaysia v. Singapore*), Provisional Measures, Order of 8 October 2003, ITLOS Reports; 2003, para. 92; Request for an Advisory Opinion Submitted by the Sub-Regional Fisheries Commission (SRFC), Advisory Opinion of 2 April 2015, ITLOS Reports 2015, para. 140.

138 Articles 2,6, 43, Agreement.

139 Article 43(2), Agreement.

140 Article 47, Agreement.

141 Article 47(5), Agreement.

142 Articles 48, 49 and 51, Agreement.

143 Article 51, Agreement.

144 Article 49, Agreement.

7.3 *Participatory, Cross-Cutting and Gender Responsive*

The issue of gender equality has arisen in the BBNJ negotiation almost by default if not somewhat surreptitiously. More specifically, promoting the role and participation of women was raised by the President of the Preparatory Committee in a non-paper to delegations on the elements of the draft text of the Agreement and identified as one principle and approach that ought to guide capacity-building and transfer of marine technology.[145] Although this option was not subsequently presented in the report of the Preparatory Committee to the United Nations General Assembly,[146] it was addressed by the intergovernmental conference at the third session and crucially there are two references to gender in the provisions on capacity-building (Part V) and in the institutional arrangements (Part VI) in the draft text prepared by the President for negotiation at the fourth and final session of the conference.[147]

From the perspective of providing a legal plinth for the training and education of women scientists, the first reference requires capacity-building to be 'participatory, cross-cutting and gender responsive', as well as meeting the needs and priorities of developing States.[148] Two of the options put forward is that the needs of States Parties may be assessed on the basis of self-assessment or facilitated through a process established by the Conference of the Parties.[149] Various types of capacity-building are enumerated in the draft text, as well as in Annex II, with the option of a role for the COP in developing the draft list further.[150] There are also provisions on the periodic monitoring and review of capacity-building.[151] The second reference to gender relates to the composition of the proposed Scientific and Technical Body and the need to reflect multidisciplinary expertise, gender balance and equitable geographical representation.[152]

Despite the absence of ambition alluded to previously, both references to gender if adopted will represent nonetheless remarkable milestones in the

145 The non-paper provided a reference document to assist delegations in their consideration of the issues addressed by the Preparatory Committee. Available at: https://www.un.org/Depts/los/biodiversity/prepcom_files/Chairs_streamlined_non-paper_to_delegations.pdf.

146 UN Doc. A/AC.287/2017/PC.4/2, 17 July 2017.

147 Article 44(3) and 49(2), Agreement.

148 Article 44(3), Agreement.

149 Article 44(4), Agreement.

150 Article 46, Agreement.

151 Article 47, Agreement.

152 Article 49(2), Agreement. Reference is also made in the draft provision to expertise in relevant traditional knowledge of indigenous peoples and local communities.

progressive development of the law of the sea so far as they acknowledge the importance of gender norms as essential elements in both capacity-building and in the composition of the institutional bodies established by the Agreement. The references do however fall well short of acknowledging gender equality as a fundamental human right or indeed the important role that the empowerment of women can play in achieving human capability, as well as in implementing the SDGs.[153] This shortcoming could for instance be redressed by making reference to gender equality and the empowerment of women scientists in cross-cutting provisions on principles and approaches that inform all other aspects of the Agreement,[154] thereby providing a solid legal plinth for the future implementation of gender equality objectives into concrete action and policy decisions. Similarly, a strong case can be made for the inclusion in Annex II of specific types of targeted gender training including education on gender mainstreaming for the appropriate science and governance bodies involved in the conservation and sustainable use of BBNJ. There is little doubt that the needs assessment and periodic review provisions have the potential to close longstanding *lacunae* highlighted in various science reports including by IOC-UNESCO in the Global Marine Science Report.[155] However, there was no agreement at the third session of the intergovernmental conference as to whether the monitoring and review should be voluntary or mandatory,[156] or indeed should such processes extend to the review of the gender empowerment performance of the various programmes and initiatives undertaken pursuant to the new Agreement. This could prove to be crucial because the response of many developing States to the advancement of gender norms by the Agreement may well be shaped in many instances by socio-economic and cultural considerations.[157]

7.4 *Financial Resources*

Although capacity-building is an essential element of the Agreement, the options set out in the text leave open a number of important issues regarding the modalities for doing so including whether they should be on a mandatory or voluntary basis.[158] This goes to the very crux of addressing a fundamental

153 *Op. cit*. section 6.4.
154 Article 5, Agreement.
155 *Op. cit.* section 6.3.
156 A/CONF.232/2019/5, 17/22.
157 S. Jayachandran, 'The Roots of Gender Inequality in Developing Countries', (2015) 7(1) *Annual Review of Economics* 63-88.
158 Article 52, Agreement.

weakness in the Convention, as highlighted previously. The Agreement does however table a range of funding options on capacity-building and again canvases both voluntary and mandatory options including public-private partnerships for supporting the institutions and also to assist developing States in the implementation of the Agreement.[159] Similar to the Convention, the draft text envisages that developing States parties shall be granted preference in the allocation of funds and technical assistance by international organizations.[160] Some of the options is the establishment of a voluntary trust fund for the purpose of funding participation of developing country participants in bodies under the agreement,[161] as well as a special fund to be used for a capacity-building project and to assist developing States Parties in among other matters with the implementation of the Agreement.[162] The Global Environment Facility and the Green Climate Fund, along with payments tied to access and use of MGRS are also mentioned as possible funding mechanisms.[163] Pointedly, delegations attending the third session expressed divergent views on the establishment of a special fund and on the role of a future Conference of the Parties in the allocation of funding.[164] As perhaps expected, there were strong calls from the developing countries at the session for mandatory funding for capacity building, which can be contrasted with the less enamoured views on mandatory funding mechanisms espoused by the delegations representing developed countries including the European Union. There was no discussion of possible pathways to engage with private sector and investment communities by linking for instance the finance provisions in the Agreement with new normative developments such as the UN's 'Principles of Responsible Investment' or the EU's 'Sustainable Blue Economy Finance Principles'.[165] Indeed, it is difficult to see how the Agreement will effectively bolster sustainability or growth if it lacks business practicality and appropriate funding mechanisms, especially for capacity-building.

159 Article 52(2), Agreement.
160 Article 52(3), Agreement.
161 Article 52(4), Agreement.
162 Article 52(5), Agreement.
163 Article 52(5) bis(e), Agreement.
164 UNGA, Statement by the President of the conference at the closing of the third session, UN doc. A/CONF.232/2019/10*, 13 September 2019.
165 See: https://ec.europa.eu/maritimeaffairs/sites/maritimeaffairs/files/2018-03-08-befp-press-release_en.pdf.

8 Carpe Diem

The answers to the first two questions posed at the start of this paper are relatively easy. That is to say the Convention and related instruments are not adequate to the task of capacity-building to ensure the conservation and sustainable use of BBNJ.[166] Moreover, there is a multiplicity of considerations driving the codification of new normative obligations in the Agreement on education and training in MSR including gender sensitive norms.[167] Key considerations are the need to strengthen the capacity and pool of scientists in developing States available to do science and to make informed decisions on the conservation and the sustainable use of BBNJ, as well as the pressing imperatives of creating regulatory and institutional mechanisms for greater integration and coordination of MSR.[168] Apart from the future Agreement, the policy and regulatory frameworks for doing so include the 2030 Agenda, the Decade for Ocean Science, the Global Ocean Assessment, the Paris Agreement, among many others instruments and processes.

Following on from this, a far more difficult question relates to the intergovernmental negotiations at the United Nations and whether it will result in a paradigm shift that enhances the scientific capabilities of developing States, particularly those of SIDS and the LDCs. The answer is not clear because it often appears at the BBNJ negotiations over the past 15 years that there are always equally strong but diametrically opposing points of view about everything including the putative provisions in the Agreement on capacity-building. Notably, there is no underlying provision in the Agreement concerning the application of capacity-building as an engine for ensuring more equitable uses of the ocean, or pointing towards why mutual benefit exists and can be derived by various ocean users, or how best to regulate modern technologies and especially those used by the public and private sectors. There appears however to be considerable consensus among the negotiators that the challenges faced in managing the conservation and sustainable use of biodiversity can only be tackled by undertaking and applying the results of MSR. There is also general agreement that the science and public policy contexts for capacity-building has changed and is changing, with a large number of delegations supporting a fundamental shift from the voluntary and piecemeal approach to more robust and mandatory provisions on capacity-building in the Agreement.[169]

166 *Op. cit*. section 5 *supra.*

167 *Op. cit*. Section 6 *supra.*

168 K. Kraabel, 'Institutional arrangements in a BBNJ treaty: Implications for Arctic marine science', *Marine Policy*, available online 9 January 2020.

169 *Op. cit.* section 6 *supra.*

As the international community approaches the end of the BBNJ negotiations it is tempting to paraphrase Greta Thunberg advice to global leaders in relation to human induced climate change that in order to solve a crisis, one needs to treat it as a crisis.[170] Similarly, the BBNJ negotiators can respond to the crisis in deep-ocean biodiversity by adopting and ensuring the entry into force of an effective legal instrument as soon as possible. The capacity development provisions therein will be essential to ensuring its universal acceptance by future States Parties, particularly those from developing countries. Moreover, many involved in the negotiations are acutely aware that the Agreement has the potential to be a game-changer on capacity-building if it results in the following: establishes a robust institutional setting for decision-making supported by the proposed clearing-house mechanism; codifies the requirements of undertaking a regular 'needs assessment'; provides a solid legal plinth for gender equality and the empowerment of women scientists; and most importantly of all establishes a mandatory and sustainable funding stream for capacity-building.[171] By doing so, the Agreement will also reflect four closely inter-related normative themes, namely: the obligation placed on States and others to cooperate; the concept of interdependence, that is to say that the strong should help the weak; and the principles of conservation and sustainable use of biodiversity.[172] Time is undoubtedly of the essence and there is no reason to wait. The plenipotentiaries should seize the opportunity at IGC 4 to bring about transformative change in the law of the sea on capacity-building, MSR and gender equality.

The author wishes to acknowledge comments from the following: S. Buckingham, C. Schofield, K. Hassanali, M. Rodriguez Chaves, E. Johannesen, and Z. Sun at the WMU-Sasakawa Global Ocean Institute, S. Whelan (*Observor Mission Holy See to the UN*)*, as well as gender research and capacity-building programme support from Fisheries and Oceans Canada and The Nippon Foundation of Japan.*

170 G. Thunberg, Address to UN Climate Change Conference, Katowice, Poland, 15 December 2018: 'Unpopular', *No one is too small to make a difference* (London: Penguin, 2019) at 16.

171 See IISD, Summary of the Third Session of the IGC, 3rd Session of the Intergovernmental Conference (IGC) on the Conservation and Sustainable Use of Marine Biodiversity of Areas Beyond National Jurisdiction, 19-30 August 2019, available at: http://enb.iisd.org/oceans/bbnj/igc3/.

172 R. Long, 'Enhancing the role of Women in Marine Scientific Research', International Workshop on Capacity Development, Resources and Needs Assessment, Kingston, Jamaica, 12 February 2020.

CHAPTER 14

A Few Words on the "Cross-Cutting Issue"—The Relationship between a BBNJ Convention and Existing, Relevant Instruments and Frameworks and Relevant Global, Regional and Sectoral Bodies

Ted L. McDorman

Abstract

Since the 1980s the architecture of international ocean governance has rested on the UN Convention on the Law of the Sea (LOS Convention) and a large number of the regional and global sectoral treaties most of which were contemplated in the LOS Convention. One of the central challenges in the negotiation of a BBNJ Convention is the "architectural fit" of a BBNJ Convention with the existing treaty-based law of the sea governance framework.

The primary focus of this presentation is on several selected legal relationship issues: the relationship of a BBNJ Convention with the LOS Convention, which has several aspects including the activities by a coastal State in the exercise of its jurisdiction over the resources in the continental shelf beyond 200nm; and the relationships issues that may/will arise from area-based management measures and existing treaty-based governance bodies such as regional fisheries management organizations (RFMOs) and the various IMO Conventions. Here the mantra is that a BBNJ Convention will not "undermine" existing instruments and frameworks.

Keywords

marine biological diversity – areas beyond national jurisdiction – treaty negotiations – United Nations Convention on the Law of the Sea – area-based management – regional fisheries management organizations – international treaties

1 Introduction*

In 2004, pursuant to the annual United Nations General Assembly Oceans Resolution, the *Ad Hoc* Open-ended Informal Working Group to Study Issues relating to the Conservation and Sustainable Use of Marine Biological Diversity Beyond Areas of National Jurisdiction was created.[1] Its first meeting came in 2006. Thus began the process that led first to the July 2015 UN General Assembly Resolution directing States to "develop an international legally binding instrument … on the conservation and sustainable use of marine biological diversity of areas beyond national jurisdiction"[2] referred to herein as the BBNJ Convention and then to the 24 December 2017 General Assembly Resolution deciding that an intergovernmental conference be convened to complete a BBNJ Convention.[3] The first session of the intergovernmental conference took place in September 2018,[4] the second in March-April 2019[5] and the third is scheduled for August 2019.

The first report of the *Ad Hoc* Open-ended Informal Working Group in 2006 noted:

> The cross-cutting nature of marine biological diversity, as well as the existence of numerous, and often competing, legal frameworks and bodies,

* This paper was prepared and presented prior to the release of the "Draft text on an Agreement 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," "Note by the President," A/CONF.232/2019/6, 17 May 2019 and prior to the Third session (August 2019) 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. However, some reference is made in the paper to the May 2019 Draft Convention.

1 UN General Assembly Resolution, "Oceans and the Law of the Sea," A/RES/59/24, 4 February 2005, (adopted 17 November 2014), para. 73. [THE CORRECT YEAR IS 2004.]

2 UN General Assembly Resolution, "Development of an Internationally 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," A/RES/69/292, 6 July 2015, (adopted 19 June 2015), para. 1.

3 UN General Assembly Resolution, "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," A/Res/72/249, 19 January 2018, (adopted 24 December 2017).

4 See: "Statement by the President of the Conference at the Closing of the First Session," A/CONF.232/2018/7, 20 September 2018.

5 See: "Statement by the President of the Conference at the Closing of the Second Session," A/CONF.232/2019/5, 18 April 2019.

> lead numerous delegations to stress the importance of improving coordination and cooperation among international organizations as well as among sectors and regimes. …[6]

It was also noted that: "most delegations re-emphasized that the Convention (on the Law of the Sea) provided the legal framework for the conservation and sustainable use of marine biological diversity beyond areas of national jurisdiction."[7]

The point of this walk down memory lane is simply to point out, that, as the architecture of international ocean governance rests on the UN Convention on the Law of the Sea (LOS Convention)[8] and a large number of the regional and global sectoral treaties, many of which were contemplated in the LOS Convention, one of the central challenges in the negotiation of a BBNJ Convention has always been the "architectural fit" of a BBNJ Convention within the existing treaty-based law of the sea governance framework.

It is generally accepted that a BBNJ Convention will be an implementing agreement of the LOS Convention in the same legal manner as the 1995 Fish Stocks Agreement[9] and the 1994 Agreement relating to the Implementation of Part XI of the LOS Convention.[10]

It is also generally accepted, as stated in both the 2015 General Assembly Resolution[11] and the 2017 Resolution,[12] that a BBNJ Convention "should not undermine existing relevant legal instruments and frameworks and relevant global, regional, and sectoral bodies."

While these two generally accepted understandings deal with different subjects they are often grouped together as being a so-called "cross-cutting element" – the relationship between a BBNJ Convention and the "United Nations Convention on the Law of the Sea and other instruments and frameworks and relevant global, regional and sectoral bodies."

---

6 "Report of the Ad Hoc Open-ended Informal Working Group to Study the Issues relating to the Conservation and Sustainable Use of Marine Biological Diversity beyond Areas of National Jurisdiction," A/61/65, 20 March 2006, para. 53.

7 *Ibid*., para. 22.

8 United Nations Convention on the Law of the Sea, 1833 *U.N.T.S.* 397.

9 Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea of 10 December 1982 relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks, 2167 *U.N.T.S.* 3.

10 Agreement relating to the Implementation of Part XI of the United Nations Convention on the Law of the Sea of 10 December 1982, 1836 *U.N.T.S.* 3.

11 Resolution, 69/292, *supra* note 2, para. 3.

12 Resolution 72/249, *supra* note 3, para 7.

The modest intention of this contribution is to say a few words respecting the "cross-cutting" issue of the "relationship of the LOS Convention on the Law of the Sea and other instruments and frameworks and relevant global, regional and sectoral bodies" with a potential BBNJ Convention.

This approach is primarily that of a technical international lawyer seeking to understand how various treaties may be affected or interact with a potential BBNJ Convention.

II Background on Relationships between International Treaties[13]

International law and practice provide little assistance respecting the abstract question of the relationship between treaties with similar content, mandates or goals.

The Vienna Convention on the Law of Treaties[14] provides an answer to the narrow question of precedence in the situation where treaty provisions can be said to conflict. First, Article 30 directs that where there is a conflict in or between two treaties and the parties to the treaties are the same, the more recently concluded convention prevails.[15] Second, where there is a conflict in two treaties and one State is a party to both and another State is a party only to one of the treaties, then it is the treaty that is common to both States that prevails.[16] The above provisions of the Vienna Convention are residual rules that only come into play where the treaties in collision are silent.[17]

Treaties often contain relationship clauses, sometimes called conflict or savings clauses, which seek to provide how treaties and/or provisions with similar subject matter interrelate. Such clauses:

---

13 This section is drawn, with modification, from T. L. McDorman, "A Note on the Potential Conflicting Treaty Rights and Obligations between the IMO's Polar Code and Article 234 of the Law of the Sea Convention," in Suzanne Lalonde and T.L. McDorman, eds., *International Law and Politics of the Arctic Ocean* (Boston/Leiden: Brill/Nijhoff, 2015), pp.146–148.

14 Vienna Convention on the Law of Treaties, 1155 *U.N.T.S.* 331.

15 *Ibid.* Articles 30(3) and (4)(a).

16 *Ibid.*, Article 30(4). More generally on these two provisions in the Vienna Convention, see: Mark E. Villiger, *Commentary on the 1969 Vienna Convention on the Law of Treaties* (Leiden: Martinus Nijhoff, 2009), at pp. 395–411 and Jan Klabbers, "Beyond the Vienna Convention: Conflicting Treaty Provisions" in Enzo Cannizzaro, ed., *The Law of Treaties: Beyond the Vienna Convention* (Oxford: Oxford University Press, 2011), pp. 192–205.

17 See Ian Sinclair, *The Vienna Convention on the Law of Treaties*, 2nd ed. (Manchester: Manchester University Press, 1984), at p. 97.

> are meant to avoid that treaties covering similar or at least partially overlapping subject matters contradict each other. Therefore, their primary objective is the safeguarding of a general coherence of international law.[18]

Obviously, such a clause is of limited effect where there is only one of the conflicting treaties common to both States. Article 30(2) of the Vienna Convention provides that: When a treaty specifies that it is subject to, or that it is not to be considered as incompatible with, an earlier or later treaty, the provision of that treaty shall prevail.

As suggested by these provisions, a direct legal question regarding the relationship of treaties only arises where there is a conflict of obligations or rights in two treaties. It is understood that treaties are to be read so as to be in harmony and, to the extent possible, to avoid conflicts. What constitutes a conflict between treaties is not precisely clear.[19] At its narrowest, a conflict exists between treaty provisions when "one obligation cannot be fulfilled without necessarily violating the other."[20] This view has been challenged as being "too restrictive," since "States are not only concerned when a State cannot abide by two treaties but also where one treaty frustrates the goals of another treaty."[21] There are other ways of understanding when treaties are in conflict.[22]

III The Relationship between a BBNJ Convention and the LOS Convention

As noted above, the 2015 and 2017 General Assembly Resolutions direct that a BBNJ Convention is to be "under" the LOS Convention,[23] which means that a BBNJ Convention is to be an "implementation" of the relevant parts of the 1982 LOS Convention in the same manner as the 1995 Fish Stocks Agreement[24]

---

18 Rüdiger Wolfrum and Nele Matz, *Conflicts in International Environmental Law* (Berlin: Springer, 2003), at p. 121.

19 Christopher J. Borgen, "Treaty Conflicts and Normative Fragmentation" in Duncan B. Hollis, ed., *The Oxford Guide to Treaties* (Oxford: Oxford University Press, 2012), at p. 455, notes that "there is no generally accepted definition of what constitutes a conflict."

20 Wolfrum and Matz, *supra* note 18, at p. 6 and Seyed Ali Sadat-Akhavi, *Methods of Resolving Conflicts between Treaties* (Leiden: Martinus Nijhoff, 2003), at p. 5.

21 Borgen, *supra* note 19, at p. 455.

22 See: Wolfrum and Matz, *supra* note 18, at pp. 6–12.

23 Resolution, 69/29, *supra* note 2, para. 1 and Resolution 72/249, *supra* note 3, para. 1.

24 Fish Stocks Agreement, *supra* note 9.

and the 1994 Agreement relating to the Implementation of Part XI of the LOS Convention.[25]

Article 4 of the Fish Stocks Agreement provides:

> Nothing in this Agreement shall prejudice the rights, jurisdiction and duties of States under the Convention. This Agreement shall be interpreted and applied in the context of and in a manner consistent with the Convention.

Not surprisingly, the above wording was copied in the Report of the Preparatory Committee elements of a BBNJ Convention[26] and in the Draft Text of a BBNJ Agreement (May 2019), prepared by the President of the BBNJ Conference.[27]

The clear intention of the wording is that the rights, jurisdiction and duties set out in the LOS Convention are to be unaffected by the contents of a BBNJ Convention which, in the vernacular of the Vienna Convention on the Law of Treaties, means that as between States a party to both the LOS Convention and a BBNJ Convention, should a conflict of rights, duties or responsibilities arise, the LOS Convention prevails over a BBNJ Convention.

For practical purposes, more important may be the second sentence: "The Agreement shall be interpreted and applied in the context of and in a manner consistent with the Convention." This directs States, courts and tribunals that are involved in the interpretation or application of a BBNJ Convention, to interpret and apply a BBNJ Convention "in a manner consistent with" the LOS Convention. Essentially, in this context, the interpretation of wording provision can be said to add an extra element, one that is binding on the State parties and courts and tribunals that have jurisdiction to resolve disputes regarding the interpretation or application of a BBNJ Convention.

If the provisions above are replicated as is or as in substance in a BBNJ Convention, such a provision can be understood as a non-interference provision or, perhaps more properly, as a coordination provision, as the wording would

25 Agreement relating to the Implementation of Part XI, *supra* note 10.

26 UN General Assembly, "Report of the Preparatory Committee established under General Assembly Resolution 69/292: Development of an Internationally 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," A/AC.287/2017/PC.4/2, 31 July 2017, at p. 8.

27 "Draft Text on an Agreement 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," "Note by the President," A/CONF.232/2019/6, 17 May 2019, Article 4(1).

act as a limitation on both the geographic and material scope and application of a BBNJ Convention.

One area where this can be seen as being of particular sensitivity for many States is regarding the rights and duties of a coastal State respecting the mineral resources (and sedentary species) in the continental shelf beyond 200 M over which the coastal State has exclusive rights.[28] While the conservation and sustainable use of marine biological diversity in the water column above the continental shelf of a State beyond 200 M is expected to be within the geographic and material scope of a BBNJ Convention, the Report of the Preparatory Committee[29] and the President of the BBNJ Conference May 2019 Draft Text of a BBNJ Convention indicate that the rights and jurisdiction of a coastal State regarding the shelf area beyond 200 M "shall be respected."[30]

A relationship clause constructed consistent with that envisioned above reinforces and protects the rights and jurisdiction of the coastal State to conduct activities on the shelf irrespective of the content of a BBNJ Convention. Having said this, a legally stronger and broader provision would be: "Nothing in this Convention shall interfere directly or indirectly with the rights and jurisdiction of a coastal State regarding the shelf area beyond 200 nautical miles."

Not explicitly noted in the Report of the Preparatory Committee or in the President of the BBNJ Conference May 2019 Draft Text of a BBNJ Convention is the relationship that is to exist between the 1995 Fish Stocks Agreement and the 1994 Part XI Agreement and a BBNJ Convention. Both of these Agreements deal specifically and primarily with resources located within areas beyond national jurisdiction. In the case of the Part XI Agreement it is the mineral resources that are subject to the "Common Heritage of Mankind."[31] In the case of the 1995 Fish Stock Agreement, the resources are fisheries subject to the freedom to fish with the 1995 Agreement having led to a proliferation of regional fisheries management organizations (RFMOs) which manage the stocks of selected fisheries on the high seas.

None of the above deals with a central dividing point in the BBNJ discussions, (again well-articulated in the 2006 First *ad hoc* Working Group Report): Are marine genetic resources subject to the LOS Convention freedom of the high seas regime with open access and freedom of marine scientific research? Or, are marine genetic resources covered by the Common Heritage wording of the

28 LOS Convention, *supra* note 8, Part VI.

29 "Report of the Preparatory Committee," *supra* note 26, at p. 8.

30 BBNJ Conference President, May 2019, Draft Text, *supra* note 27, Article 4(2).

31 See: LOS Convention, *supra* note 8, Article 1, Part XI and in particular Article 136.

LOS Convention such that there is no open access or freedom of the high seas or marine scientific research respecting marine genetic resources?

> [A] number of delegations stated that, in accordance with their understanding of the principle of the common heritage of mankind, access to genetic resources in the deep seabed beyond areas of national jurisdiction should be, in principle, like the mineral resources in the Area, subject to the sharing of benefits based on consideration of equity.[32]
>
> Referring to the legal status of genetic resources, a view was expressed that any measures taken in areas beyond national jurisdiction must be consistent with international law, including freedom of navigation and of marine scientific research. Some delegations stated that the resources were covered by the regime of the high seas, under part VII of the Convention. They argued that there was no legal gap with respect to living resources in the areas beyond national jurisdiction and that freedoms of the high seas were applicable to activities relating to marine genetic resources.[33]

IV The Relationship between a BBNJ Convention and "Existing Relevant Instruments and Frameworks and Relevant Global, Regional and Sectoral Bodies"

1 *Introduction*

As noted above, "the Relationship between a BBNJ Convention and Existing Relevant Instruments and Frameworks and Relevant Global, Regional and Sectoral Bodies" is a "cross-cutting" issue in the BBNJ Convention negotiations.

As part of the Preparatory Committee process two lists of treaties that either specifically have as their geographical scope areas beyond national jurisdiction or that deal with issues relating to the conservation and sustainable use of marine biodiversity of areas beyond national jurisdiction were created. The lists contain over 60 instruments.[34]

There are two sets of sectoral treaties that obviously may be impacted directly or indirectly by a BBNJ Convention as regards area-based management

32 "Report of the *Ad Hoc* Open-ended Informal Working Group, March 2006, *supra* note 6, para. 29.

33 *Ibid.*, at para. 30.

34 U.N. Division of Oceans and the Law of the Sea (DOALOS), "Indicative List of Regional Treaties," (undated), on the DOALOS website, at www.un.org/depts/los/.

measures. These are the treaties that create the RFMOs and the treaties adopted through the International Maritime Organization (IMO). The RFMOs have as their geographic scope areas of the high seas and focus on the sustainable management of the various fish stocks under their mandates and are not mandated to take into account or deal with the larger scope of the conservation and sustainable use of marine biological diversity beyond national jurisdiction. The IMO Conventions primarily deal with vessel standards that apply wherever a commercial vessel is operating, including on the high seas.

As a generality, the relative clarity of the relationship between the LOS Convention and the BBNJ Convention is missing as regards the relationship between a BBNJ Convention and the "existing relevant legal instruments and frameworks and relevant global, regional and sectoral bodies."

2 *"Undermine"*

As already noted, the 2015 and 2017 General Assembly Resolutions state that a BBNJ Convention "should not undermine existing relevant legal instruments and frameworks and relevant global, regional, and sectoral bodies." As Catherine Blanchard has noted: "the wording of the not undermining clause comes from recommendations of the Working Group, and the drafting history of these recommendations is very indicative of the political nature that surrounded the adoption of the clause."[35]

The Report of the Preparatory Committee indicated that a BBNJ Convention "… should be interpreted and applied in a manner which would not undermine" existing legal instruments and frameworks.[36] This wording may be seen as recognizing the legal primacy of the existing structures (for example, RFMOs) that deal directly or indirectly with the conservation and sustainable use of marine biological diversity beyond national jurisdiction. Other wording in the Report of the Preparatory Committee dealing specifically with area-based management tools (including marine protected areas) referred to "the importance of enhanced cooperation and coordination between legal instruments … without prejudice to their respective mandates."[37]

---

35 Catherine Blanchard, "Could 'Not Undermining' Undermine the BBNJ Process: Possible Interpretations of the Relationship between the 'Not Undermining' Clause and the Upcoming Legally Binding Instrument on the Conservation and Sustainable Use of Marine Biodiversity Beyond National Jurisdiction," paper at the Law of the Sea Interest Group of the European Society of International Law, in Naples, September 2017.

36 "Report of the Preparatory Committee," *supra* note 26, at p. 9.

37 *Ibid.* at p. 11.

The above is captured in Article 4(3) of the President of the BBNJ Conference May 2019 Draft Text of a BBNJ Convention:

> This Agreement shall be interpreted and applied in a manner that [respects the competences of and] does not undermine [existing] relevant legal instruments and frameworks and relevant global, regional and sectoral bodies and that promotes coherence and coordination with those instruments, frameworks and bodies, provided that they are supportive of and do not run counter to the objectives of the Convention and this Agreement.[38]

An expansive understanding of the term "undermine" could act as a significant limitation on the scope and application of a BBNJ Convention but would avoid or prevent undue interference by a BBNJ Convention with the existing global, regional and sectoral bodies. The opposite result occurs if "undermine" is understood in a narrow sense.

Article 31(1) of the Vienna Convention directs one to interpret treaty text by looking at "ordinary meaning."[39] The Oxford English Dictionary indicates that to undermine something is to make something weaker or less effective. This suggests a narrow approach such that it gives a BBNJ Convention opportunities to add to "existing relevant legal instruments and frameworks and relevant global, regional, and sectoral bodies." Others have undertaken more detailed studies of interpreting the "undermine" wording.[40]

3 *Legal Relationship*

The legal relationship between a BBNJ Convention and those "Existing Relevant Instruments and Frameworks and Relevant Global, Regional and Sectoral Bodies" that are treaties will depend primarily on the inclusion and wording of legal obligations on States in a BBNJ Convention. As pointed out above, only where there is a conflict of treaty rights and obligations is there a question of the legal relationship.

---

38 BBNJ Conference President, May 2019, Draft Text, *supra* note 27, Article 4(3).

39 Vienna Convention on the Law of Treaties, *supra* note 14, Article 31(1).

40 See: Blanchard, *supra* note 35; Zoe Scallion, "The Art of 'not Undermining': Possibilities within Existing Architecture to Improve Environmental Protection in Areas Beyond National Jurisdiction," (2018), 75 *ICES Journal of Marine Science* 405–416; A. Friedman, "Beyond 'Not Undermining': Possibilities for Global Cooperation to Improve Environmental Protection in Areas Beyond National Jurisdiction: Comment," (2019), 76 *ICES Journal of Marine Science* 452–456; and Vito De Lucia, "Reflecting on the Meaning of 'Not Undermining' Ahead of IGC-2," JCLOS Blog, 23 March 2019.

At least concerning area-based management measures, there does appear that there will be direct obligations on States party to a BBNJ Convention that can be said to conflict with, for example, measures adopted by RFMOs or with any of the obligations in the IMO Conventions. It is apparent that most of the output of a BBNJ Convention on area-based management measures will be accomplished through a Conference of the Parties (COP) with the BBNJ Convention wording providing guidance, direction and principles.

COPs in multilateral environmental agreements (MEAs) do not have the authority to adopt legally-binding measures or direct other bodies to adopt measures.[41] This is the case as regards the much-admired Convention on Biological Diversity,[42] for example, where the COP adopts "decisions" but such decisions are not legally binding on the State Parties to the CBD. That this legal nicety is often over-looked by commentators and CBD participants alike does not change the legal situation.

The result of the above regarding the legal-relationship question is that the "Existing Relevant Instruments and Frameworks and Relevant Global, Regional and Sectoral Bodies" that are treaty-based and contain treaty-based obligations and rights (such as under RFMOs and the IMO Conventions) are treaty rights and obligations that will be legally unaffected by a BBNJ Convention, in particular, unaffected by decisions that may emanate from a BBNJ COP.

V Conclusion

After 13+ years of heavy fog, the outlines of a possible BBNJ Convention are beginning to emerge. It is the case, however, that with respect to the "deal-breaker issues" a dense fog remains concerning access to marine genetic resources.

The wording that a BBNJ Convention is not to "undermine existing relevant instruments and frameworks and relevant global, regional and sectoral bodies," has been acceptably ambiguous (foggy) for high-level discussion and agreement. It is highly likely that "not to undermine" will continue to be

41 See: Annecoos Wiersema, "The New International Law-Makers? Conferences of the Parties to Multilateral Environmental Agreements" (2009), 31 *Michigan Journal of International Law* 231, at pp. 286–287 whose conclusion summarizes that: "COP activity does not create new stand-alone law. … Using conventional approaches for determining the sources of international law … COP activity would rarely be classified as hard international law." The author argues that such conventional approaches "fail to capture this activity's tight relationship with the underlying treaty obligations of the parties."

42 Convention on Biological Diversity, 1760 *U.N.T.S.* 79.

acceptably ambiguous and will appear in a BBNJ Convention (assuming one is completed).

Based on precedent, a BBNJ COP will not have the scope or authority to adopt measures that are legally binding on States and, therefore, will not supersede directly or affect indirectly legal obligations or rights that arise from regional or global sectoral treaties.

Pragmatically, one hopes that the BBNJ Convention will enhance coordination of global and regional governance of biodiversity beyond national jurisdiction while avoiding interference with intergovernmental regional and sectoral bodies.

CHAPTER 15

Biodiversity beyond National Jurisdiction and the Limits of the Commons

Spatial and Functional Complexities

Joanna Mossop and Clive Schofield

Abstract

This paper addresses spatial and functional complexities relating to biodiversity beyond national jurisdiction against the context of negotiations towards an international legally binding instrument on its conservation and sustainable use. A number of uncertainties are highlighted in relation to the extent of the maritime zones of coastal States and therefore the spatial scope of the Commons. These uncertainties include instability in coasts and therefore baselines from which maritime claims are predominantly measured, particularly in an era of sea level rise; excessive maritime claims to baselines and from islands, maritime disputes and the incomplete delineation of continental shelf limits seawards of 200 nautical miles from the coast. The issues raised by horizontal and vertical ecological connectivity are also explored. Potential options to deal with these challenges are then discussed.

Keywords

Biodiversity – areas beyond national jurisdiction – commons – maritime claims – baselines – maritime zones – sea level rise – maritime disputes – continental shelf limits – adjacency – connectivity – due regard

1 Introduction

As negotiations proceed for a new international legally binding instrument (ILBI) for the conservation and sustainable use of marine biodiversity in areas beyond national jurisdiction (BBNJ), it is becoming clear that a number of spatial and functional complexities exist that underpin and should inform

 | DOI:10.1163/9789004422438_016

the issues under discussion.[1] This chapter addresses two particular challenges. First, what the geographic and material scope of the agreement is with respect to activities in areas beyond national jurisdiction (ABNJ). This geographic definition, while seemingly straightforward, is in fact far from being so. This paper sets out some of the reasons why the spatial extent of ABNJ may be difficult to determine. Second, the vertical and horizontal ecological connectivity of the oceans means that management of activities in ABNJ without factoring in such connectivity will give rise to legal and practical issues in the future.

The continental shelf beyond 200 nautical miles (M) provides particular challenges in creating a coherent legal framework for ABNJ. First, the fact that many of the proposed outer limits to continental shelf areas seawards of 200 M have yet to be considered by the Commission on the Limits of the Continental Shelf (CLCS), leads to horizontal uncertainties in relation to the determination of the spatial scope of ABNJ. Maritime disputes and excessive maritime claims also serve to complicate the jurisdictional picture. Second, because the parts of the continental shelf that extend beyond the limits of the EEZ lie beneath the high seas, vertical connectivity issues arise in the layering and interactions between the legal jurisdiction of the coastal State with the BBNJ framework, especially where ecosystems transcend the divide between areas within national jurisdiction (AWNJ) and ABNJ.

What emerges is a complex layering of overlapping maritime zones in the context of an ocean characterised by horizontal and vertical connectivity between activities, zones, layers and ecosystems. This chapter first sets out the spatial uncertainties that may impact the extent of the ABNJ, including shifting baselines against the context of sea level rise, excessive maritime claims and disputes as well as issues concerning the delineation of the outer limits of the continental shelf. The chapter then considers what legal principles could be included in the ILBI to reflect horizontal and vertical connectivity. It also recommends that the ILBI include provisions that specifically respond to some of the complexities we have identified.

2 Spatial Uncertainties

As noted above the ILBI applies to activities in ABNJ. This begs the question, what are the limits of ABNJ?[2] The answer to this question is, in turn, dependant

1 This chapter was written after the third session of the Intergovernmental Conference and refers to documents and negotiations up to that date.

2 This section of the paper is adapted from part of an earlier paper. For greater detail see, C.H. Schofield and L. Bernard, 'The Limits of the Commons', in Diamond, J. (ed.), *Common*

on the limits of national jurisdiction. There are a number of reasons why uncertainty exists regarding the limits of national jurisdiction and therefore the spatial extent of ABNJ. These include issues related to: the instability of coastlines and therefore the baselines from which maritime claims are generally measured, especially in a period characterised by rising sea levels; the lack of certainty in the delineation of maritime limits as a result excessive maritime claims and maritime disputes; the slow progress in the delineation of the outer limits of the continental shelf seawards of 200 M EEZ limits; and uncertainties about entitlements to maritime zones generated by small and/or sparsely or uninhabited insular features.

2.1 *Changing Baselines*

The United Nations Convention on the Law of the Sea (LOSC)[3] provides for zones of maritime jurisdiction with the outer limits of maritime zones being generally defined by distance measurements from baselines along the coast. In particular, the limits of the territorial sea, contiguous zone and exclusive economic zone (EEZ) are all defined by reference to distance measurements. That is, to maximum distances of 12 M,[4] 24 M[5] and 200 M[6] respectively.[7]

Baselines are therefore fundamental to the delineation of the outer limits of national jurisdiction. More specifically, outer limits are generally constructed through the "envelope of arcs" method.[8] Consequently, it is the most seaward, critical basepoints along the baseline that are essential to delineating outer limits to national jurisdiction rather than a coastal State's baseline as a whole.

Currents: Examining How We Govern Ocean Commons, (Leiden/Boston: Martinus Nijhoff/Brill, 2020).

3 United Nations, *United Nations Convention on the Law of the Sea*, 1833 UNTS 3, opened for signature 10 December 1982, Montego Bay, Jamaica, entered into force 16 November 1994. Also available at: <http://www.un.org/Depts/los/convention_agreements/convention_overview_convention.htm> [hereinafter 'LOSC' or 'the Convention'].

4 *Ibid.*, arts. 3 and 4.

5 *Ibid.*, art. 33.

6 *Ibid.*, art. 57.

7 The delineation of the outer edge of the continental shelf where it exceeds a distance of 200 M from baselines along the coast is a more complex task that does not rely on distance measurements from baselines alone (see below). Nonetheless, distance measurements from baselines, notably the 200 and 350 M limits, remain essential to the delineation of outer continental shelf limits. LOSC, art. 76.

8 C.M. Carleton and C.H. Schofield, 'Developments in the Technical Determination of Maritime Space: Charts, Datums, Baselines, Maritime Zones and Limits', 3(3) *Maritime Briefing* (Durham, International Boundaries Research Unit, 2001) at 62.

The predominant type of baselines provided for under the LOSC are "normal" baselines that are coincident with "the low-water line along the coast as marked on large-scale charts officially recognized by the coastal State."[9] These are what can be termed the coastal State's "default" baselines in that they do not require express declaration.

As normal baselines coincide with the low-water line along the coast, they are dependent on the stability of coasts. However, it has long been recognised that coasts are inherently dynamic land/sea features which can both advance offshore through deposition or accretion of material or, alternatively, retreat to landwards as a result of coastal inundation and erosion. Consequently, the traditional view has been that normal baselines can change location or "ambulate" over time.[10] It follows that if the basepoints from which the outer limits of maritime claims are measured alter in position, then the maritime jurisdictional limits measured from them will also change.[11] Where the baseline advances the outer limits of the maritime claims measured from that baseline will expand seawards. Conversely, where the normal baseline recedes the coastal State may lose jurisdiction over maritime areas as the outer limits of their maritime zones are pulled back.

With respect to ABNJ, changes in the extent of this area will only occur if the critical basepoints controlling the 200 M limits of EEZ claims are impacted. In this context it is important to note that relatively few basepoints control 200 M as compared, for example, with the number of basepoints required to generate 12 M territorial sea limits.

Coastal and therefore normal baseline instability is, however, likely to be exacerbated by global sea level rise.[12] This is particularly the case in light of

9 LOSC, art. 5.

10 International Law Association, *Report of the International Law Association Committee on International Law and Sea Level Rise* (2019) <https://www.researchgate.net/publication/330938568_International_Law_and_Sea_Level_Rise_Report_of_the_International_Law_Association_Committee_on_International_Law_and_Sea_Level_Rise> (accessed 26 November 2019). Also of note in this context is that the ILA Committee on Baselines under the International Law of the Sea concluded that normal baselines are ambulatory. See, C.G. Lathrop, J.A. Roach and D.R. Rothwell (eds), *Baselines under the International Law of the Sea: Reports of the International Law Association Committee on Baselines under the International Law of the Sea*, Brill Research Perspectives on the Law of the Sea, (Leiden/Boston: Brill, 2019), at 58.

11 M.W. Reed, *Shore and Sea Boundaries: The Development of International Maritime Boundary Principles through United States Practice,* Volume 3 (Washington, DC, U.S. Department of Commerce, National Oceanic and Atmospheric Administration, 2000), p. 185.

12 The Intergovernmental Panel on Climate Change (IPCC) in its Fifth Assessment Report (AR5) of 2013 medium confidence-level projection is for global mean sea level rise of

the anticipated pace and scale of sea level rise as well as evidence that the rate of sea level rise is accelerating. Consequently, contractions in the scope of AWNJ, and corresponding increases in the scope of ABNJ, cannot be ruled out. Indeed, the Intergovernmental Panel on Climate Change (IPCC) found in its 2019 "Special Report on the Ocean and Cryosphere in a Changing Climate" that global mean sea level rise in the period 2006–2015 has been two and a half times the rate for the period 1901–1990, a rate of sea level rise stated with high confidence to be "unprecedented over the last century."[13] The counterpoint to this is that there are emerging efforts on the part of some States to fix maritime baselines, limits and boundaries in order to circumvent the contraction of national claims to maritime jurisdiction and thereby also to fix the extent of ABNJ.[14] These developments suggest that some progressive interpretation of the baseline provisions of the LOSC is underway.

2.2 *Excessive Baseline Claims*

It can also be observed that many coastal States consider all or part of their coastlines to be geographically complex enough to create systems of straight baselines. Article 7(1) of the LOSC provides that straight baselines should only be applied in localities "where the coastline is deeply indented and cut into, or if there is a fringe of islands along the coast in its immediate vicinity." Article 7 of the LOSC thus allows States to depart from the application of the normal baseline and measure maritime jurisdictional zones from straight baselines drawn along selected parts of their coastlines.[15] However, this exception to the

---

0.52–0.98 under its representative concentration pathways (RCP) 8.5 scenario which envisages continued very high greenhouse gas emissions and a resulting increase in global mean temperature likely to exceed 2°C. See, Intergovernmental Panel on Climate Change (IPCC), 'Climate Change 2013: The Physical Science Basis', Contribution of Working Group I, *Fifth Assessment Report of the Intergovernmental Panel on Climate Change* (Cambridge, and New York, Cambridge University Press, 2013), at 1139–1140, available online: <http://www.climatechange2013.org/images/report/WG1AR5_ALL_FINAL.pdf>.

13 IPCC, 'Special Report on the Ocean and Cryosphere in a Changing Climate', approved at its 51st Session held from 20–23 September 2019, available on the IPCC website at <https://www.ipcc.ch/srocc/home/>.

14 Notably on the part of Pacific Islands States. See, D. Freestone and C.H. Schofield, 'Islands Awash Amidst Rising Seas?: Sea Level Rise and Insular Status under the Law of the Sea', 34 *International Journal of Marine and Coastal Law*, 2019, 391, at 404–408; and, D. Freestone and C.H. Schofield, 'Republic of the Marshall Islands – 2016 Maritime Zones Declaration Act: Drawing lines in the sea', 31 *International Journal of Marine and Coastal Law*, 2016, 720. See also R. Frost *et al.*, 'Redrawing the map of the Pacific', 95 *Marine Policy,* 2018, 302.

15 See J.R.V. Prescott and C.H. Schofield, *The Maritime Political Boundaries of the World*, (2 ed., Martinus Nijhoff, 2005), at 137-166.

general rule of normal baselines along the coast was intended to deal with particularly complex coastal geography where the configuration of the coastline is such that using "highly irregular"[16] normal baselines would result in similarly irregular maritime limits.[17]

Unfortunately, Article 7 of the LOSC provides no objective tests by which to ascertain whether a particular stretch of coastline is deeply enough or frequently enough indented to warrant the application of straight baselines or, alternatively, whether a fringe of islands is numerous enough or close enough to the coast to justify the use of straight baselines.[18]

Consequently, many States have interpreted Article 7 in a very flexible and arguably excessive manner which serves not only to capture or enclose overly large marine spaces as internal waters and simultaneously advance the coastal State's starting point for measuring its maritime claims.[19] Of note here is that the ICJ, in its decision in the *Qatar/Bahrain Case,* stated unequivocally that the method of straight baselines in accordance with Article 7 of LOSC "must be applied restrictively".[20] Moreover, any system of straight baselines or other types of straight line baseline[21] still needs to be connected back to the low-water line.[22] Indeed, the United Nations Group of Technical Experts on Baselines concluded that a "straight baseline system must be closed" such that, "whether the baselines are drawn along the coast of an island or of the mainland, the system must start and finish on or above the low water line" and that where

16 International Hydrographic Organization (IHO) and the International Association of Geodesy (IAG) *Manual on Technical Aspects of the Law of the Sea* (TALOS Manual), Special Publication No.51, (Monaco: International Hydrographic Bureau, 2014), chapters 4 and 6.

17 United Nations, *Baselines: An Examination of the Relevant Provisions of the United Nations Convention on the Law of the Sea*, (New York: Office for Ocean Affairs and the Law of the Sea, United Nations, 1989).

18 While the United States has published its own guidelines on the proper application of Article 7, these guidelines are not binding on other States. See, United States Department of State, 'Developing Standard Guidelines for Evaluating Straight Baselines', *Limits in the Seas*, No.106, (Washington D.C.: Bureau of Oceans and International Environmental and Scientific Affairs, 31 August 1987). See also, J.A. Roach and R.W. Smith, 'Straight Baselines: The Need for a Universally Applied Norm', 31 *International Journal of Marine and Coastal Law*, 2000, 47; International Law Association, *Baselines under the International Law of the Sea: Final Report* (2018).

19 See Prescott and Schofield, *supra* n 15, 139–166.

20 *Case Concerning Maritime Delimitation and Territorial Questions Between Qatar and Bahrain* (*Qatar/Bahrain*), Merits, Judgment (2001) ICJ Reports 40, 103.

21 Such as river or bay closing lines or archipelagic baselines. See, LOSC, arts. 9, 10 and 47 respectively.

22 See also *Anglo-Norwegian Fisheries Case* (*United Kingdom v. Norway*), Order, [1951] ICJ 117, at 128–129.

straight baselines were drawn connecting a fringe of islands, "all the intermediate basepoints must be located on or above the low water line."[23] As a result, straight line types of baselines are not immune to changing location of normal baselines.

Where excessive baseline claims are made, uncertainty is added to the true scope of the ABNJ. However, unless such apparently excessive baseline claims are challenged by other States, there is a risk that the outer limits of maritime claims delineated from them may end up defining the spatial extent of ABNJ by default.[24]

2.3 *Incomplete Delineation of Outer Continental Shelf Limits*

The LOSC provides coastal States with sovereign rights over the EEZ out to a distance of 200 M from the coast, beyond which lie the high seas.[25] These rights relate to both the water column and the underlying seabed and subsoil, regardless of whether the continental margin actually extends that distance offshore, unless overlapping claims with neighbouring States exist.[26]

Where coastal States are positioned on broad continental margins, however, they are able to assert rights over those parts of the continental shelf beyond the 200 M EEZ limit forming part of their natural prolongation. These areas of continental shelf beyond the 200 M limit are sometimes referred to as the 'outer' or 'extended' continental shelf and are overlain by parts of the high seas.[27] Beyond the outer limits to the continental shelf, the deep seabed is referred to as "the Area"; exploration and exploitation of the mineral resources of the Area is under the jurisdiction of the International Seabed Authority (ISA).[28]

---

23 See United Nations, *Baselines, supra* n 18, at 23.

24 It can be observed, however, that many excessive baseline claims are subject to international protest, especially on the part of the United States through its Freedom of Navigation (FON) program. These protests are made to ensure that the United States maintains maritime mobility and to prevent the United States from acquiescing or tacitly accepting legal positions with which it disagrees. See, J.A. Roach and R.W. Smith, *Excessive Maritime Claims*, (3 ed., Leiden/Boston: Martinus Nijhoff Publishers, 2012), at 6–9 and 72–130.

25 LOSC, arts. 56–57, 76(1) and 86.

26 The coastal State's rights over the continental shelf within 200 M of the coast are, however, governed in accordance with Part VI (dealing with the continental shelf) of the Convention rather than Part V (dealing with the EEZ).

27 LOSC, art. 76(1). It can be observed that neither of the terms 'outer' or 'extended' continental shelf appears in the LOSC or is generally accepted – indeed tribunals have emphasised that the continental shelf is a single entity rather than an 'inner' and 'outer' shelf. *Barbados v Trinidad and Tobago*, Award (2006) XXVII RIAA 147, para. 213.

28 LOSC, Part XI. See also the ISA's website at <https://www.isa.org.jm/>.

Article 76 of the LOSC goes on to lay down a complex series of formulae through which the coastal State can establish its rights to the outer edge of its continental shelf areas seaward of the 200 M limit. Essentially, article 76 provides two formulae according to which coastal States can establishment existence of a continental margin beyond the 200 M limit,[29] together with two maximum constraints or 'cut-off' lines.[30]

To establish the outer limits of the continental shelf beyond 200 M, coastal States need to make a submission of information to the Commission on the Limits of the Continental Shelf (CLCS),[31] a body established under the LOSC comprised of technical experts. In order to make these calculations, and thus establish entitlement to outer continental shelf areas in accordance with Article 76, a coastal State is required to gather information related to the morphology of its continental margin and its geological characteristics as well as bathymetric information relating to water depth. Additionally, geodetically robust distance measurements are necessary to determine, for example, the location of 200 M and 350 M limit lines. Although complex, the fundamental point here is that Article 76 of LOSC, through the CLCS, delivers a definable outer limit to the continental shelf claims of coastal States – something that has been referred to as "the real achievement" of Article 76 of the LOSC.[32]

The CLCS will consider all the information and other material submitted by coastal States in proposing the outer limits of their continental shelf beyond 200 M.[33] The CLCS, however, lacks the mandate to consider any submission in which a land or maritime dispute exists,[34] unless prior consent has been given by the States that are parties to such a dispute.[35] Since these submissions cannot be considered by the CLCS, the coastal States involved are precluded from delineating the outer limits of their continental shelf beyond 200 M with certainty.

---

29 The two entitlement formulae are the 'Gardiner Line', based on reference to depth or thickness of sedimentary rocks overlying the continental crust, or the 'Hedberg Line' consisting of 60 M from the foot of the continental slope. See, LOSC, art. 76 (4)(a)(i and ii).

30 Either a distance of 350 M from relevant baselines or 100 M from the 2,500 metre depth isobath. See, LOSC, art. 76(5).

31 LOSC, art. 76(8).

32 See T. McDorman, 'The Role of the Commission on the Limits of the Continental Shelf: A technical body in a political world', 17 *International Journal of Marine and Coastal Law,* 2002, 301–324, at 307.

33 LOSC, Annex II, Art. 3.

34 Rules of Procedure of the Commission on the Limits of the Continental Shelf, CLCS/40/Rev.1, 17 April 2008, Annex I, Art. 5(a).

35 *Ibid.*

The existence of overlapping maritime claims, including to areas of continental shelf seawards of 200 M, therefore creates uncertainty over the location of the AWNJ/ABNJ divide and thus ambiguity over the scope of ABNJ. A further source of doubt over the spatial extent of ABNJ is caused by the fact that the CLCS has a very substantial backlog of submissions to address. At the time of writing submissions to the CLCS encompassed in excess of 37km^2 million,[36] with less than one third of the 84 full submissions made to the CLCS having received recommendations from the Commission.[37]

2.4 *Excessive Claims from Islands*

A further type of excessive maritime claims that can impact on the extent of ABNJ concerns claims to EEZ and continental shelf rights from insular features which may, in fact, be more appropriately categorised as "rocks" within the meaning of article 121(3) of the LOSC, which therefore "shall have no exclusive economic zone or continental shelf."[38] In general, coastal States have tended to advance broad maritime claims from often small, remote and uninhabited insular features. Such expansive maritime claims based on seemingly insignificant islands have been difficult to critique with conviction in light of the ambiguity in article 121(3) that the term "rock" only applies to islands "which cannot sustain human habitation or an economic life of their own."[39]

The first international judicial interpretation of article 121(3) featured in the arbitral award in the 2016 case brought by the Philippines against China under

36 Robert van de Poll, personal communication.

37 For a list of all submissions and recommendations, see the CLCS website at <http://www.un.org/Depts/los/clcs_new/clcs_home.htm>.

38 LOSC, art. 121(3).

39 *Ibid*. The interpretation of Article 121 has led to substantial scholarly debate among law of the sea scholars. See, for example, J.I. Charney, 'Rocks that cannot sustain human habitation', *American Journal of International Law*, 93, 4 (1999): 863–78; A.G. Oude Elferink, 'Clarifying Article 121 (3) of the Law of the Sea Convention: The limits set by the nature of international legal processes', *Boundary and Security Bulletin*, Vol.6, no.2 (Summer 1998): 58–68.; B. Kwaitkowska and A.H.A. Soons, 'Entitlement to maritime areas of rocks which cannot sustain human habitation or economic life of their own', *Netherlands Yearbook of International Law*, XXI (1990): 139–81; Prescott and Schofield, *supra* n 19, at 73–79; J.M. Van Dyke, J. Morgan and J. Gurish, 'The exclusive economic zone of the northwestern Hawaiian Islands: when do uninhabited islands generate an EEZ?', *San Diego Law Review*, 25, 3 (1988): 425–494; and J.M. Van Dyke and R.A. Brooks, 'Uninhabited islands: their impact on the ownership of the oceans' resources', *Ocean Development International Law Journal*, 12 (1983): 265–84.

the LOSC.[40] In its Award, the Tribunal set a high bar for island to generate EEZ and continental shelf rights. In particular, the Tribunal ruled that:

- the assessment of a feature should be based on its "natural capacity" to sustain human habitation "without external additions or modifications intended to increase its capacity" to do so;[41]
- "[t]he mere presence of a small number of persons on a feature does not constitute permanent or habitual residence there and does not equate to habitation";[42] and
- the capacity of an insular feature to generate EEZ rights depends on capacity to sustain either "a stable community of people"[43] or economic activity that "must be oriented around the feature itself and not focused solely on the waters or seabed of the surrounding territorial sea" and not dependent on outside resources or purely extractive in nature are capable of generating extended maritime claims.[44]

In establishing this high standard for fully entitled islands the Tribunal referred to the history of the Convention to reach the conclusion that Article 121(3) was included in the Convention as a "counterpoint" to the introduction of the EEZ, serving to prevent the expansion in maritime rights provided by the EEZ "from going too far" by disabling tiny features from:

> unfairly and inequitably generating enormous entitlements to maritime space that would serve not to benefit the local population, but to award windfall to the (potentially distant) State to have maintained a claim to such a feature.[45]

Of particular note for the present discussion, on the basis of the *travaux préparatoires*, the Tribunal determined that Article 121(3) is a "provision of limitation" with:

---

40 *In the Matter of the South China Sea Arbitration before an Arbitral Tribunal Constituted under Annex VII to the 1982 United Nations Convention on the Law of the Sea between the Republic of the Philippines and the People's Republic of China*, Award, 12 July 2016, Permanent Court of Arbitration (PCA), PCA Case No. 2013–19, available at, <https://pca-cpa.org, at https://pcacases.com/web/view/7> (hereinafter, the South China Sea Award). It should be noted that the second author of this Chapter served as an independent expert witness in this case.

41 *Ibid.*, para. 541.

42 *Ibid.*, para. 489.

43 *Ibid.*, para. 542.

44 *Ibid.*, para. 543.

45 *Ibid.*, para. 516.

> the object and purpose of preventing encroachment on the international seabed reserved for the common heritage of mankind and of avoiding the inequitable distribution of maritime spaces under national jurisdiction.[46]

This ruling is clearly at odds with the aforementioned maximalist tendency in State practice towards claiming continental shelf and EEZ rights from small, remote and sparsely or uninhabited features which tends to substantially reduce the spatial extent of ABNJ. Following the ruling, questions have been raised about the implications for other small features from which large maritime claims have been made.[47] These uncertainties are likely to give rise to questions about which areas of ocean are subject to coastal State jurisdiction, or to the ILBI.

3 Functional Connectivities and Complexities

A growing body of scientific research is demonstrating the ecological connectivity of the oceans. It is now clear that areas within AWNJ and ABNJ are ecologically linked in multiple ways which can be both active and passive in character.[48] Active connectivity involves self-propulsion by the species involved, for instance the long-distance migrations of sea birds, sea turtles, sharks and marine fish such as tuna. In contrast, passive connectivity is predominantly driven by ocean currents. Both active and passive modes of connectivity transcend AWNJ and ABNJ.

Ecological connectivity is not in itself a problem, but the ocean is divided for legal purposes into jurisdictional zones in which there are different legal principles, and states have different rights and responsibilities. Challenges arise where activities in one area have an impact on marine ecosystems that straddle multiple legal zones, limits and boundaries. This limits the ability to

46 *Ibid.*, para. 535.

47 For example see, 'Regime of Islands in the Aftermath of the South China Sea Arbitration' 112 *Proceedings of the 112th Annual Meeting, American Society of International Law,* 2018, 3.

48 E. Popova, *et al.*, 'Ecological Connectivity between the Areas beyond National Jurisdiction and Coastal Waters: Safeguarding Interests of Coastal Communities in Developing Countries' 104 *Marine Policy,* 2019, 90; D.C. Dunn, *et al.*, 'Adjacency: How legal precedent, ecological connectivity, and Traditional Knowledge inform our understanding of proximity', Policy brief, Nereus Program (2017). https://nereusprogram.org/reports/policy-brief-adjacency-how-legal-precedent-ecological-connectivity-and-traditional-knowledge-inform-our-understanding-of-proximity/ (accessed 12 July 2019).

manage activities coherently, something that the First Global Integrated Marine Assessment indicated was necessary to improve the ocean environment.[49]

3.1 *Horizontal Connectivity*

Horizontal interaction or connectivity issues can occur when species migrate through more than one maritime zone. Coastal States will have jurisdiction over such species when they are in their EEZ or territorial sea, but beyond the EEZ the freedom of high seas applies, and the species may or may not be subject to fishing regulated by a Regional Fisheries Management Organisation (RFMO). The LOSC contains obligations on States to cooperate in the case of straddling or highly migratory fish species, although this was considered to be insufficient to respond to the practical problems in achieving cooperation.[50] The UN Fish Stocks Agreement (UNFSA)[51] was negotiated to resolve some of the coordination difficulties arising from managing fish stocks in such a situation. However, the challenges in conserving and sustainably using marine biodiversity go well beyond a single sector. Migratory species can be impacted by a wide range of other activities including shipping, deep seabed mining, and pollution, among others. Other horizontal connectivity problems arise from the fact that a vulnerable or important marine ecosystem may be dependent on juvenile replenishment from another ocean feature that could be in a different maritime zone. Efforts to protect the ecosystem, for example by establishing MPAs, may be undermined if the connected areas are not also protected.[52] Hence there is an effort to create a framework in the ILBI for networks of marine protected areas in ABNJ.

Some coastal States have emphasised the problems they see arising for areas within their jurisdiction if activities on the high seas are not regulated effectively. For example, Pacific Small Island Developing States (PSIDS) have intervened repeatedly during the PrepCom and IGCs, pointing out the dependence

49 *Summary of the first global integrated marine assessment* (22 July 2015) UN Doc A/70/112, para. 40; R.D. Long, A. Charles and R.L. Stephenson, 'Key Principles of Marine Ecosystem-based Management', 57 *Marine Policy*, 2015, 53.

50 LOSC, arts. 63, 64, and 116. See, e.g., E. Meltzer, 'Global Overview of Straddling and Highly Migratory Fish Stocks: The Nonsustainable Nature of High Seas Fisheries', 25 *Ocean Development and International Law*, 1994, 255.

51 United Nations Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea of 10 December 1982 relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks, 34 ILM 1542 (1995); 2167 UNTS 88.

52 See, for example, K.I. Pendoley *et al.*, 'Protected Species Use of a Coastal Marine Migratory Corridor Connecting Marine Protected Areas' 161 *Marine Biology*, 2014, 1455.

that they have on migratory species that travel through the high seas and their coastal waters. Small island, but often "large ocean", developing States are particularly dependent on the health of the oceans not only in terms of access to marine resources for food security, but also in economic terms as a critical source of revenue and to support livelihoods as well as in cultural terms.[53] For example, the value accruing to Pacific Islands Forum Fisheries Agency (FFA) members[54] from the tuna species, which migrate far beyond national jurisdictional limits, in 2018 has been estimated at US$3.05 billion,[55] making it the dominant development opportunity and source of government revenue for many of these States.[56]

In contrast, other coastal States have expressed concern that measures taken on the high seas not impede their rights to explore and exploit the resources of AWNJ. During the negotiations there has, for example, been resistance to the idea that the provisions on environmental impact assessment (EIA) for activities in ABNJ might affect the process for EIA for activities in AWNJ – despite the fact that an obligation to undertake EIAs in AWNJ exists in both customary international law and article 206 of the LOSC. Similarly, coastal States are keen to ensure that the presence of an MPA in adjacent areas of the high seas would not undermine their rights in their EEZ.

3.2 *Vertical Connectivity*

Vertical connectivity is a particularly complex problem in the BBNJ context. Within national jurisdiction, coastal States have jurisdiction over many activities that impact marine biodiversity, especially fisheries and the exploitation of non-living resources. Up to 200 M EEZ limits coastal States can generally exercise control over the impacts on marine biodiversity from activities within their EEZ and continental shelf. Beyond 200 M, if a coastal State has an outer or extended continental shelf, the regime of the high seas applies to the superjacent water column. Article 77(1) of the LOSC provides that coastal States have

53 J.E. Hay, 'Small Island Developing States: Coastal Systems, Global Change and Sustainability', 8 *Sustainability Science*, 2013, 309, at 318.

54 Pacific forum Fisheries Agency Members comprise: Australia, the Cook Islands, the Federated States of Micronesia, Fiji, Kiribati, the Marshall Islands, Nauru, New Zealand, Niue, Palau, Papua New Guinea, Samoa, the Solomon Islands, Tokelau, Tonga, Tuvalu and Vanuatu.

55 Forum Fisheries Agency and the Pacific Community (2019) Value of WCPFC-CA Tuna Fisheries 2019.

56 For example, it has been estimated that revenues derived from tuna species accounted for over 60 per cent of the public budget for Kiribati in 2012. See, World Bank, *Pacific Possible: Tuna Fisheries Report*, (Washington DC, World Bank, 2017).

sovereign rights over the continental shelf for the purpose of exploring and exploiting its resources. These include the:

> living organisms belonging to sedentary species, that is to say, organisms which, at the harvestable stage, either are immobile on or under the seabed or are unable to move except in constant physical contact with the seabed or subsoil.[57]

Complex questions arise in the context of BBNJ as to how the definition of sedentary species will apply to the collection of marine genetic resources (MGRs) at or near the seabed above a State's continental shelf that lies under high seas.[58] Vertical connectivity problems arise because ecosystems found in places such as hydrothermal vents and seamounts do not fall neatly into categories of sedentary or non-sedentary species. For example, the microbes at hydrothermal vents can be found in the seabed, circulating in the water column or in symbiosis with other creatures including tube worms.[59] The problem in applying the sedentary species definition to MGRs has received limited attention in the BBNJ discussions, despite the fact that most delegations now accept that a single legal framework should apply to MGRs in the high seas and Area.[60]

In addition to having sole rights to exploit the resources of the seabed, coastal States also have a range of obligations in relation to the preservation of the marine environment. Environmental impacts on benthic ecosystems can arise from activities conducted under the jurisdiction of the coastal State (such as mining or fishing for sedentary species) as well as from activities under the high seas regime (such as bottom fishing and dumping from vessels). One issue that has not received much attention is the fact that, because activities on the continental shelf beyond 200 M are essentially conducted in and adjacent to the high seas, all such activities are inherently undertaken in a transboundary context. Customary international environmental law principles including the

57 LOSC, art. 77(4).

58 See e.g., C.H. Allen, 'Protecting the Oceanic Gardens of Eden: International Law Issues in Deep-Sea Vent Resource Conservation and Management', 13 *Georgetown International Environmental Law Review*, 2000, 563; J. Mossop, 'The Relationship between the Continental Shelf Regime and a New International Instrument for Protecting Marine Biodiversity in Areas beyond National Jurisdiction', 75 *ICES Journal of Marine Science*, 2018, 444.

59 Allen, *supra* n 58, at 627.

60 J. Mossop, 'Towards a Practical Approach to Regulating Marine Genetic Resources' 8 ESIL Reflections, 2019, https://esil-sedi.eu/esil-reflection-towards-a-practical-approach-to-regulating-marine-genetic-resources/ (accessed 22 November 2019).

obligation to prevent significant harm to commons areas and the obligation to conduct environmental impact assessments[61] are particularly relevant for activities in proximity to a continental shelf.[62]

3.3 *Coastal State Interests, Adjacency, and the ILBI Negotiations*

As discussed, coastal States have two interests in relation to the extended continental shelf: a need to ensure that they can exercise their sovereign rights to explore and exploit the living and non-living resources of the shelf; and a responsibility to protect and preserve the marine environment in the vicinity of the continental shelf and beyond.

These connectivity problems have led to an argument by some that coastal States should have a greater level of influence in relation to measures to protect the marine environment in areas of the high seas adjacent to their maritime zones. A group of authors have argued in a policy brief that coastal States seeking to ensure protection of marine biodiversity in adjacent ABNJ areas should be given special responsibilities due to ecological connectivity.[63] The Policy Brief states:

> … so long as adjacent States can prove that their management measures conserve marine biodiversity within or beyond their national jurisdiction, the over-arching conservation mandate of UNCLOS would support granting to those States greater influence over management of those ABNJ resources to which they lie adjacent. Under this approach, those qualified adjacent States would be allocated the primary responsibility to coordinate with existing sectoral and regional organizations to become the leading architects of new regional conservation agreements.[64]

This Policy Brief, as well as interventions along similar lines by small island developing States in the Preparatory Committee, has created a debate about the appropriate legal principles that apply to the intersection between coastal States rights and duties, and those applicable in ABNJ. In the President's "Aid to Negotiations" issued prior to the second meeting of the intergovernmental

61 *Legality of the Threat or Use of Nuclear Weapons, Advisory Opinion,* [1996] ICJ Reports 266, para. 148; *Responsibilities and Obligations of States Sponsoring Persons and Entities with Respect to Activities in the Area, Advisory Opinion* [2011] ITLOS Rep 10, paras. 116 and 148.

62 J. Mossop, *The Continental Shelf beyond 200 Nautical Miles: Rights and Responsibilities* (Oxford University Press, 2016) p. 106.

63 Dunn *et al.*, *supra* n 48.

64 *Ibid.* at 5.

conference (IGC2), a long list of possible general principles and approaches were included, based on contributions made during IGC1.[65] At the very end of the list was option (v), "take into account adjacency".[66] Adjacency was also included as an option for principles in the substantive parts including MGRs, area-based management tools (ABMTs) and EIAs. One difficulty was that there was no clear explanation of what "adjacency" meant, meaning that many delegates assumed that the goal was to give additional rights or responsibilities to coastal States in adjacent areas of the high seas. This did not receive enthusiastic endorsement by many delegations in the IGC.

The use of adjacency changed in the draft text issued by the President prior to IGC3.[67] Adjacency no longer appeared in a section on general principles and approaches, nor as a principle or approach under the separate parts. Instead, references to "adjacent coastal States" featured in specific aspects of the draft text.

Key mentions of coastal State interests in the draft text included the following:

- The introductory segment included a statement that the rights of coastal States "shall be respected in accordance with the Convention".[68]
- Where MGRs from ABNJ are also found in AWNJ, activities with respect to those resources shall be conducted with "due regard" for the rights and legitimate interests of any coastal State under the jurisdiction of which such resources are found.[69]
- If MGRs are accessed in ABNJ that may result in utilisation of MGRs in AWNJ, either prior consent or prior notification and consultation with the coastal State is required.[70]
- For ABMTs, measures adopted under the ILBI should not "undermine the effectiveness of measures adopted by coastal States in adjacent areas within national jurisdiction and shall have due regard for the rights, duties and

65 For discussion of the different principles raised in the Preparatory Committee, see A. Oude Elferink, 'Coastal States and MPAs in ABNJ: Ensuring Consistency with the LOSC', 33 *International Journal of Marine and Coastal Law*, 2018, 437, at 439.

66 United Nations, *President's Aid to Negotiations* (3 December 2018) UN Doc A/CONF.232/2019/1* at 8.

67 United Nations, *Draft text of an agreement 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* (17 May 2019) UN Doc A/CONF.232/2019/6 (hereinafter 'draft text').

68 Draft text, art. 4(2).

69 Draft text, art. 9(2).

70 Draft text, art. 10(5).

legitimate interests of all States". Consultations would be required with coastal States.[71]
- Where an ABMT is established in ABNJ but that area subsequently falls under the jurisdiction of the coastal State, the ABMT must be amended.[72]
- Proposals for ABMTs must outline the impact on coastal States and any consultations with them.[73] In addition, coastal States will be among the parties included in consultations under the ILBI processes.[74]
- EIAs should take into account possible impacts on transboundary areas including adjacent coastal States.[75]
- Adjacent coastal States should be included in consultation on EIAs.[76]

Not all of these proposals received support in the discussions at IGC3, but it is possible to make a few observations. First, the idea of adjacency proposed by the Policy Brief does not appear to have prevailed in the draft text. One attempt to partially revive this concept can be seen by a PSIDS proposal that the views and comments of coastal States should be given particular regard if an ABMT affects high seas pockets surrounded by AWNJ.[77] Second, States are clearly beginning to work through the consequences for coastal States in some circumstances. However, many of the issues identified above are either not addressed, or addressed inadequately. Third, there is still a lack of clarity about the general legal principle that should govern the interaction between coastal States' rights and the rights of other States.

4 Potential Options

4.1 *Use of Principles*

Although the draft text appears to be moving towards setting out specific references to coastal States in respect of elements of the treaty, it is still likely to be important for the ILBI to set out general principles on how the relationship between areas under coastal State jurisdiction and ABNJ will be managed. Not every scenario can be covered with specific provisions.

71 Draft text, art. 15(5).
72 Draft text, art. 15(6).
73 Draft text, art. 17(4).
74 Draft text, art. 18(2).
75 Draft text, art. 26.
76 Draft text, art. 34.
77 PSIDS Proposal for a new 18(6)(bis), ABMT/CRP.2.

"Due regard" is often considered an organising principle of the LOSC. However, the LOSC does not generally require "due regard" for coastal States when considering the intersection between rights on the high seas and for coastal States. Article 87 provides that the freedoms of the high seas must be exercised by all States with due regard for the interests of other States in their exercise of high seas freedoms and for the rights with respect to activities in the Area, but does not mention coastal States. The freedom of fishing is "subject to the rights and duties as well as the interests of coastal States regarding straddling and highly migratory stocks".[78] Article 78(2) requires coastal States not to infringe or unjustifiably interfere with the rights and freedoms of other States when exercising their rights over the continental shelf.[79] The clearest example of the LOSC requiring due regard when exercising rights in ABNJ towards a coastal State is in article 142(1), which requires activities in the Area with respect to transboundary deposits to be undertaken with due regard to the rights and legitimate interests of any coastal State across whose jurisdiction such deposits lie.

Arguably, "due regard" is the appropriate general principle that should be applied in the BBNJ context.[80] Some authors have suggested that it has general applicability to the intersection of rights in the LOSC. For example, Oxman argued that due regard is an organising principle in the law of the sea generally.[81] Treves has suggested that due regard reflects:

> a broader customary law rule necessarily implied in the need to ensure coexistence between the customary freedoms of the high seas, the rights in the Area and the rights of coastal States in the EEZ and on the continental shelf.[82]

78 LOSC, art. 116.

79 This has been equated with "due regard". See *Chagos Marine Protected Area* (*Mauritius v. United Kingdom*), *Award,* (2015) XXXI RIAA 359, para. 540. For a contrasting view see Mossop (2016), *supra* n 62, at 186.

80 Oude Elferink, *supra* n 65, at 447. The argument is further explored in Joanna Mossop and Clive Schofield, 'Adjacency and due regard: The role of coastal States in the BBNJ Treaty', *Marine Policy*, 2020, https://doi.org/10.1016/j.marpol.2020.103877.

81 B.H. Oxman, 'The Principle of Due Regard' in ITLOS, *The Contribution of the International Tribunal for the Law of the Sea to the Rule of Law 1996–2016*, (Leiden, Brill/Nijhoff, 2018) p. 108, at 112.

82 T. Treves, ' "Due regard" Obligations under the 1982 UN Convention on the Law of the Sea: The Laying of Cables and Activities in the Area', 34 *International Journal of Marine and Coastal Law*, 2019, 167, at 182.

Although "due regard" appears open-ended and somewhat vague, judicial interpretation has given some content to the concept, albeit in bilateral examples of due regard. The International Tribunal on the Law of the Sea (ITLOS) in the *Bay of Bengal* case was of the view that where two States owe due regard to one another, discharge of the obligation may involve the conclusion of specific agreements or the establishment of cooperative arrangements.[83] In the *Chagos MPA* arbitration, the Tribunal found that the conduct necessary to fulfil due regard obligations in article 56(2) will depend on the rights held, their importance, the extent of the anticipated impairment, the nature and importance of the proposed activities and the availability of alternative approaches. Consultation will normally be required with the rights-holding State.[84] However, despite these judicial statements, there are aspects of the relationship between States that the ILBI will need to more explicitly elucidated rather than rely on a general principle.[85]

The formulation in draft article 4(2) does not apply due regard. Instead, the "rights and jurisdiction of coastal States … shall be respected." One reading of this drafting is to give preference to coastal State rights over interests in ABNJ. In cases where the coastal States' rights might be intruded upon, respecting those rights might imply a limitation on the actions that can be taken in ABNJ. This would be an unnecessary and undesirable move away from the balancing approach represented by a due regard obligation.

4.2 *Managing Spatial and Functional Complexities in Practice*

We argue that specific provision can be made in the ILBI to deal with some of the issues identified earlier in this chapter.

4.2.1 Uncertain Boundaries

First, there is the question how to provide for uncertainties over maritime limits and boundaries, notably the outer limits of the continental shelf. In many cases, the law of the sea has provided for such uncertainties – for example, by indicating that States should make "every effort to enter provisional arrangements of a practical nature" pending an agreement on EEZ or continental shelf boundaries.[86] In the context of the ILBI, a number of draft provisions call for consultations or notifications for adjacent coastal States. As explained,

83 *Delimitation of the Maritime Boundary between Bangladesh and Myanmar in the Bay of Bengal* (*Bangladesh/Myanmar*), *Judgment,* [2012] ITLOS Reports 4, para. 476.

84 *Chagos MPA*, *supra* n 79, para. 519.

85 Oude Elferink, *supra* n 65, at 465.

86 LOSC, arts. 74(3) and 83(3).

there are different reasons why it may be difficult to identify the coastal State. It could be decided, for example, that where a State has submitted information about the delineation of the outer limits of the continental shelf, but no recommendation has been received by the CLCS, that the outer limits provisionally identified by the coastal State be treated as the interim boundary between its jurisdiction and ABNJ. Where there is an overlapping claim where more than one State claims entitlement to a part of a continental shelf, the combined submissions could be used to determine the interim outer limits.

In relation to identifying which State is the coastal State that should be consulted, an assumption could be built into the ILBI that both (or all) claimant States are deemed the coastal State for the purposes of consultation. This may prove politically sensitive, but it must be remembered that under a principle of due regard, one coastal State's opposition to a proposal in ABNJ would not override other interests.

The issue with identifying the coastal State for the purpose of the exploitation of MGRs close to the continental shelf beyond 200 M is much more complicated. The need for provisions dealing with uncertainty over the identity of the coastal State will depend in part on the content of the rights allocated to coastal States under the ILBI. For example, in draft article 10(5), a coastal State may have the right to consent to exploitation of MGRs that are found both in AWNJ and ABNJ. While the prospect of this option making it into the final ILBI is remote, this sort of provision makes the identity of the coastal State quite important. If there are any monetary benefits to be derived for coastal States, a more creative form of dealing with the dispute would have to be devised such as a trust arrangement until claims are settled.

4.2.2 The Continental Shelf and ABNJ

In light of the problems raised about applying the definition of sedentary species to MGRs, in an ideal world the ILBI would define what this means and how it will apply. One option might be to seek to redefine the concept of "sedentary species" for an MGR regime. This might involve stating that coastal State rights to living resources do not apply to MGRs, which would create a more coherent legal framework. Another option could involve giving expanded rights to the coastal State to MGRs found in seabed ecosystems in return for additional responsibilities for environmental protection.[87] However, it must be acknowledged that both of these options will be politically hard to achieve. Unfortunately, it is highly likely that this issue will not be resolved in the ILBI.

87 Some possibilities are explored in Mossop (2018), *supra* n 58.

However, there may be scope for the issue to be taken up in the future by the Conference of the Parties.

Another issue is whether there should be a requirement for compatibility between measures adopted in the high seas and under national jurisdiction. Oude Elferink has argued persuasively that such a concept is unlikely to be accepted on the basis that there is no reason to expect this would lead to better environmental outcomes.[88]

5 Conclusion

As in any negotiation towards an international treaty, not all potential issues can be resolved in the final treaty text. This may be because there is an irreconcilable difference of opinion, leading to deliberate ambiguity or omission from the text altogether. In the case of the ILBI, there is significant time pressure on the negotiations, with the General Assembly only authorising four meetings in Resolution 72/249. This does not mean that there may not be more sessions of the IGC, only that the process of extending the conference is not clear at the time of writing. Therefore, States have been keen to try to conclude the treaty by the fourth session. If this is the case, then the finer details of how the rights of coastal States will intersect with the ILBI may be considered expendable. This is especially true since there is considerable debate about the core elements of the treaty.

Nevertheless, at a bare minimum, the ILBI would be well-served if States agreed on the use of the principle of due regard to govern the relationship with coastal States, rather than an approach of "respecting" coastal State rights. The latter formulation leans too far in the direction of coastal State interests overriding interests in the high seas to be consistent with the LOSC.

This paper has highlighted a number of spatial and functional complexities and uncertainties. Unfortunately, the zonal approach to managing ocean activities arguably has many disadvantages and tends to inhibit the adoption of sound ecosystem-based management across large ocean spaces, notwithstanding some laudable efforts towards transboundary cooperation in ocean governance. It would be helpful if the ILBI could assist in avoiding ambiguities at the intersection of ABNJ and AWNJ. However, if this is not possible, it is potentially a matter that could be addressed through dispute settlement under the ILBI.

88 Oude Elferink, *supra* n 65, at 465.

PART 6

Arctic Issues: Environment, Security, Shipping

∴

CHAPTER 16

Non-Arctic States' Role in the High North: Participating in Arctic Governance through Cooperation

Nong Hong

Abstract

The new geo-political landscape of the Arctic today is a significant departure from the great power politics that existed in the region during the Cold War era. Apart from traditional Arctic States, more and more international organizations and non-Arctic states are showing an increased interest in this region. This paper explores the growing interests of the three East Asia States, China, Japan, and South Korea, among a selected group of non-Arctic states in the Arctic and examines the nature of their interests and motivations in maintaining their involvement and presence in the region. Promoting cooperation is a common policy of these three Asian stakeholders to participate in Arctic governance. China's approach to Arctic cooperation is elaborated in details which will be crucial to the country's relationship with other stakeholders in the years to come.

Keywords

Arctic – geo-political – China – Japan – South Korea – Arctic States – non-Arctic States – policy – governance – Arctic Council – resource development – polar research – cooperation – scientific research – shipping

1 Introduction

During the Cold War, the Arctic was a security flashpoint between the United States and the U.S.S.R. with nuclear submarines from the United States and the Soviet Union patrolling deep below the polar ice of the Arctic Ocean and bombers airborne over the region. Today, the Arctic may be disassociated from great power politics, but new geo-political realities are taking shape out of the melting Arctic. Even though the Arctic is often described as a region of

 | DOI:10.1163/9789004422438_017

cooperation, opportunities for greater tensions may also increase as interests among the great powers in this arena continue to rise. Russia has reopened some of its abandoned military installations during the Soviet era and placed new facilities and airfields in its northern territory. It has also established a string of seaports along its northern coastline. The United States tends to frame the growing Sino-Russian partnership in hard-power terms and is making a dramatic policy shift from the previous administration which saw climate change as the clear and present danger to Arctic security.

Against the background of such developments, major powers from outside the region, such as the United Kingdom, France, Germany, China, Japan, and South Korea and India are taking special interest in many aspects of the Arctic that focus on scientific research, shipping, and resource development. This chapter explores the growing interests of China, Japan, South Korea in the Arctic and examines the nature of their interests and motivations in wanting to maintain involvement and a presence in the region. Promoting cooperation is a common policy of these three Asian stakeholders to participate in Arctic governance. China's approach to Arctic cooperation is elaborated in details which will be crucial to the country's relationship with other stakeholders in the years to come.

2 Presence of China, Japan, and South Korea in the Arctic

The interests of these states range from participating in Arctic governance and accessing potential resources to exploiting shipping opportunities and undertaking polar research.

2.1 *Governance*

Seeking observer status in the Arctic Council is regarded by these three East Asian countries as an important step to ensuring their involvement in determining the course of the future of the Arctic region that they perceive will have an impact on their economic interests and global environmental concerns. As a maritime State, Japan has for a long time shown interest in the developments in the Arctic region, including its participation as an observer at the Ottawa Conference in 1996 that launched the establishment of the Arctic Council from the Arctic Environmental Protection Strategy (AEPS) framework. The government of Japan has since expressed interest in gaining greater access to discussions and negotiations on the Arctic. Japan could benefit heavily from the opening of the Northwest Passage, which would establish a route circumventing the Suez Canal and shorten transit times between Asia and Europe by

40 percent.[1] The government of Japan submitted its application in 2009 for observer status in the Arctic Council.[2]

With a growing reputation of having an edge in shipbuilding and engineering, South Korea sees the thawing Arctic as an opportunity to have a stake on "future sea routes to ensure stable energy supplies and liven up its shipbuilding, logistics and trading industries."[3] A South Korean delegation visited Norway in August 2009 with an aim to garner support from Norway for South Korea's entry as an observer to the Arctic Council. "Being an observer of the Arctic Council will help us enter the discussion among the Arctic nations over preservation and development of the area. That will also help our government brainstorm policies on development of marine transportation," a ministry official told *The Korea Times*.[4] In August and September 2012, South Korea's then-president Lee Myung-bak's visit to Greenland and Norway reflected the country's anticipation of economic opportunities in the Arctic, placing emphasis on the importance "to forge a future-oriented partnership aimed at tackling climate change and environment-friendly development and preservation of the Arctic."[5] An economic cooperation agreement signed with Norway is viewed by South Korea as gaining support from this Arctic State to back Seoul's bid for permanent observer status.

China views the Arctic Council as an important body for governance and cooperation. Compared with an *ad hoc* status, a "permanent" observer status is perceived to be more than symbolic and "better positions non-Arctic states to participate in the governance of the Arctic region."[6] According to Linda Jakobson and Peng Jingchao, China has an unspoken concern that it will not be a desired attendee at some point in the future and its aspiration for observers to attain more influence in the Arctic Council will be not achieved.[7] Since 2007,

---

1 Bennett, Mia, "Japan applies for Arctic Council observer status," at http://arctic.foreignpolicyblogs.com/2009/04/20/japan-applies-for-arctic-council-observer-status/.

2 Ibid.

3 Shin Hyon-hee, 2012. "S. Korea seeks bigger role in Arctic." *The Korea Herald*, http://www.asianewsnet.net/home/news.php?id=30743.

4 Kim Se-jeong, "Korea Wants to Join in Arctic Projects, August 24, 2009," at *The Korea Times*, http://www.koreatimes.co.kr/www/news/special/2009/04/176_29902.html.

5 An Myungok, 2012. Korea Net. http://www.korea.net/NewsFocus/Policies/view?articleId=102568.

6 Aldo Chircop, "The Emergence of China as a Polar-Capable State," *Canadian Naval Review* 7, no. 1 (Spring 2011): 13.

7 Lijun Lan, "Statement by H.E. Ambassador Lan Lijun at the Meeting between the Swedish Chairmanship of the Arctic Council and Observers" (statement, Stockholm, November 6, 2012), Arctic Council, https://arctic-council.org/images/PDF_attachments/Observer_DMM_2012/ACOBSDMMSE01_Stockholm_2012_Observer_Meeting_Statement_Ambassador_Lan_Lijun_China.pdf. Statement made to the Arctic Council Observer and *Ad-hoc* Observer delegates at the Swedish Ministry of Foreign Affairs.

China has participated as an *ad hoc* observer at the Arctic Council meetings, which has allowed it to gain a better understanding of the Council's work. It has also officially expressed its intentions to become a permanent observer to the Arctic Council since 2008. Compared with Japan and South Korea, China's expression of interest in the region continues to receive most attention in political, media and academic circles. Much of this arises from the perceived concern over the impact a vast-resource hungry economy such as China will have on the Arctic where new maritime routes for trade could potentially be charted and when accessibility of potential resources such as hydrocarbons and minerals become economically viable for exploitation. Together with Japan and South Korea, China was granted observer status in the Arctic Council in May 2013.

2.2 *Shipping*

China, Japan, and South Korea see the melting Arctic Ocean as a unique opportunity for international trade and potential access to resources. China possesses the *Xuelong* (Snow Dragon) icebreaker which was originally built in Ukraine in 1993 and converted from an Arctic cargo ship to a polar research and re-supply vessel by Hudong-Zhonghua Shipbuilding of Shanghai by the mid-90s. It was then extensively upgraded in 2007 and 2013. Jointly designed by the Finland-based Aker Arctic Technology Inc., the Chinese Arctic and Antarctic Administration (CAA), and the Polar Research Institute of China (PRIC), a second Chinese polar icebreaker named MV X*uelong 2*, slightly smaller but more capable than *Xuelong*, entered service in July 2019.[8] Some Chinese shipyards such as the Shanghai Shipyard and Hudong-Zhonghua Shipbuilding Co. Ltd. are already building ice-class ships of their own.[9]

South Korea is interested in the economic benefit of Arctic shipping, as it hosts the largest ship building yards in the world. Samsung Heavy Industries has developed a double-acting vessel that has the same open sea characteristics as other ships in its class combined with the breaking capacity of an icebreaker, cutting through up to 1.5 metres of ice. South Korean industry (and, incidentally, its subsidiaries in Finland) thus has a vested economic interest in the development of a trans-Arctic shipping route and industry.[10] South Korea's

8 "Icebreaker Xuelong 2 joins service on China national maritime day." *Global Times*. 11 July 2019. Retrieved 11 July 2019.

9 Sakhuja, "The Polar Code and Arctic Navigation," 809.

10 Heather Exner-Pirot, "What Route for Arctic Shipping?" 25 March 2011, at http://eyeonthearctic.rcinet.ca/en/blog/136-heather-exner-pirot/793-what-route-for-arctic-shipping.

Samsung Industries is looking into filling the technological gap to make it possible to deliver Arctic natural gas across the Pacific. It is working on making these two-headed tankers capable of carrying natural gas that has been cooled into liquid to Asian markets.[11]

With the same interests of shipping as its neighbour China, Japan also calls for joining hands with the United States and other Arctic States in ongoing multilateral efforts to create a new shipping regime in the Arctic Ocean. Japan believes that as a result of receding sea ice, caused by global warming, the Arctic is expected to open up for global shipping in the future. This will present strategic options for Japan's industry in light of shorter shipping routes from Japan to Europe via the Arctic Ocean. Yoichi Fujiwara, a spokesman for the Japanese Embassy in Ottawa said: "we are interested in environmental programs, and transportation or passage through the Arctic area, and development of resources in the Arctic Circle."[12]

2.3 *Resource Development*

The forecast by the International Energy Outlook 2011 published by the U.S. Energy Information Administration suggests that the world energy consumption will grow by 53 percent from 2008 to 2035. It points to Asia's rapidly growing economies that will be the primary drivers of increasing global energy demand. Chinese companies, some with close government ties, are investing heavily across the Arctic. China is deepening its Arctic presence through resource-oriented investments and the development of ports. It is in the process of diversifying its energy resources by investing in both Russia's Yamal liquid natural gas (LNG) complex and Norway's oil and gas fields. These sources not only provide China with an alternative supply of oil and gas but also help China gain experience in developing Arctic infrastructure and technology, which will eventually allow it to control the routes through which its imports travel. For similar reasons, China is now seeking to make oil and gas investments in Alaska, Canada, and Norway, as well as investments in the mineral industries and ports of many Northern European Arctic States.[13]

---

11 Lauren Krugel, the Canadian Press, "Chinese interest in Arctic riches heating up: Calgary political scientist (Arctic-Natural-Gas)," February 25, 2008, at http://www.david-kilgour.com/2008/Feb_27_2008_09.htm.

12 Bryn Weese, "Japan latest non-Arctic country to claim stake in North Pole," *Toronto Sun*, September 3, 2010, at http://www.torontosun.com/news/canada/2010/09/03/15241971.html.

13 Sherri Goodman and Elisabeth Freese, "China's Ready to Cash In on a Melting Arctic," *Foreign Policy,* May 1, 2018, at https://foreignpolicy.com/2018/05/01/chinas-ready-to-cash-in-on-a-melting-arctic/.

Japan is already involved in Russian oil and gas projects in the country's east and the Arctic. In September 2019, Japan's Mitsui & Co. and the state-backed Japan Oil, Gas, and Metals National Corporation (JOGMEC) signed a protocol with Russia's Novatek gas producer on investing in the Arctic LNG 2 project.[14] Japan's government and its state-owned oil group have emerged as leading contenders for a stake in Rosneft's $157bn Arctic project. As of December 2019, Japan's Ministry of Economy, Trade and Industry and JOGMEC were said to be the primary parties considered for investment into the Vostok oil development. Participating in the project will help Japan diversify its energy supply away from the Middle East, from where it currently imports almost 90 per cent of its oil.[15]

2.4 *Polar Research*

China maintains an active polar research program, in which it is intensifying research in both the Arctic and Antarctic regions. In 2004, China opened its first Arctic scientific research station, Huang He Zhan (Yellow River Station) at Ny-Ålesund in Svalbard, Norway. Furthermore, with *Xuelong*, the world's largest non-nuclear icebreaker, China has embarked on several Arctic research expeditions. These activities are part of China's larger polar scientific research efforts, which have resulted in more than twenty expeditions being sent to the Arctic and Antarctic since 1984. Viewing itself as a "near Arctic state," China perceives the environmental changes and economic development happening in the Arctic to have "a significant impact on [its] climate, ecological environment, agricultural production as well as social and economic development."[16] The Chinese Arctic and Antarctic Administration (CAA) is the national authority that organizes, coordinates, and supervises Chinese Arctic and Antarctic expeditions. The Polar Research Institute of China (PRIC) was founded in 1989 and coordinates national polar research. PRIC provides logistics for Chinese National Arctic/Antarctic Research Expeditions (CHINARE). PRIC is also in charge of running and managing the M/V *Xuelong,* the Great Wall and Zhongshan Antarctic stations.

---

14 James Brown, "Japanese Investment in Russia Floundering Despite Arctic Energy Deal," *The Moscow Times,* October 16, 2019, at https://www.themoscowtimes.com/2019/10/16/japanese-investment-floundering-despite-arctic-energy-deal-a67754.

15 Nastassia Astrasheuskaya, "Japan lines up Russian Arctic oil investment," *Financial Times*, December 11, 2019, at https://www.ft.com/content/df288d08-1c14-11ea-9186-7348c2f183af.

16 Arctic Council, http://www.arctic-council.org/index.php/en/about/documents/category/392-observer-meeting-stockholm-6-nov-2012.

In Japan, scientists have been involved in Arctic research since the 1950s, but it was not until 1990 that Arctic research became institutionalized under the aegis of the Arctic Environment Research Center (AERC). AERC was established within the National Institute of Polar Research (NIPR) in June 1990 and reorganized in April 2004. The center aims to cooperate with researchers at universities and other research institutes as a central aspect of the organization of Japanese Arctic and Antarctic research. The center is responsible for the management and the administration of the Japanese research station at Ny-Ålesund, and in charge of the collection of Arctic information and data and publishes the Arctic Research Directory.[17] Other institutions engaged in Arctic research in Japan include the Japan Agency for Marine-Earth Science and Technology (JAMSTEC), the Japan Aerospace Exploration Agency (JAXA), and universities such as Hokkaido University, Tokyo University of Marine Science, and Kitami Institute of Technology. Japan's Arctic research focuses on understanding the mechanism of warming amplification in the Arctic, understanding the Arctic system for global climate and future change, evaluation of the effects of Arctic change on weather in Japan, marine ecosystems and fisheries, prediction of sea ice distribution and effects upon Arctic sea routes.[18]

South Korea's polar research history began in 1987 with the Polar Research Center of the Ocean Research Institute which was set up as part of an Antarctic station construction program. Since then, it has expanded from a mere Polar Research Laboratory to a Polar Research Institute, a subsidiary research unit of the Korea Ocean Research Institute. The Korea Polar Research Institute is now an international polar research institute operating the King Sejong Station in Antarctica and the Dasan Station in the Arctic. South Korea actively participates in several relevant international organizations such as the Antarctic Treaty Consultative Parties (ATCP), the Scientific Committee on Antarctic Research (SCAR) and the International Arctic Science Committee (IASC), and became recognized internationally by publishing research achievements in prominent international journals. Since 2002, South Korea has run the Arctic research station Dasan at Ny-Ålesund, conducting research on climate and marine species ecology.

17 http://www-arctic.nipr.ac.jp/.

18 Kazuyuki Shiraishi, 2012. Japanese National Activity in the Arctic Science http://faro-arctic.org/fileadmin/Resources/DMU/GEM/faro/2012_Kazuyuki_Shiraishi_s_presentation.pdf.

3 Relationship among the Three East Asia States in the Arctic

China, Japan, and South Korea were granted observer status in the Arctic Council at the same time in May 2013. Most literatures relevant to these three countries focus substantially on why they are interested in the Arctic, with less attention on the important role that Asian states play in Arctic affairs. Major drivers of Arctic environmental problems originate from outside of the region, which means that the most important Arctic environmental institutions are not regional but global. "Asian states are among the definite stakeholders in these institutions, combining high scores on power, legitimacy and urgency."[19]

Asian stakeholders, through raising their participation and ownership in knowledge-building and recommendation work, may contribute much to the Arctic Council for better governance of the activities affecting the Arctic.

> Such involvement in knowledge-building might promote the regulatory dynamics within broader international institutions crucial to Arctic governance, as well as encouraging collaboration in mutually beneficial capacity enhancement.[20]

China, Japan, and South Korea, as non-Arctic countries, advocate their interests by actively participating in international and regional cooperation mechanisms and taking advantage of the speaking rights within the various organizations.[21] Internationally, the three countries participate at the globalized international systems level applicable to the Arctic region, such as the United Nations Convention on the Law of the Sea (UNCLOS), the United Nations Framework Convention on Climate Change (UNFCCC), and international legal documents developed by the IMO, such as the Guidelines for Ships Operating in Arctic Ice-covered Waters.[22] On the regional level, they participate in multilateral and bilateral agreements and institutional arrangements between countries, such as the Arctic Council. They are able to understand the latest developments in Arctic affairs and gain insights regarding topics of their concern

19 Olav Schram Stokke, "Asian Stakes and Arctic Governance," *Strategic Analysis* 38, no. 6 (November 18, 2014), 770–783, https://doi.org/10.1080/09700161.2014.952946, 778.

20 Ibid., 780.

21 W. Li, "Research on the Cooperative Approaches of China, Japan and South Korea in the Arctic," *Polar Strategies*, 6 (June 2012), in Chinese, 28.

22 Jian Yang, Leiv Lunde, "Introduction: Nordic Perspectives on Asia's Arctic Interests," in Leiv Lunde, Yang Jian, Iselin Stensdal (eds.), *Asian Countries and the Arctic Future* (World Scientific Publishing, 2016), 1–11.

through the Arctic Council. In addition, they could share the latest technologies and learn how to deal with related issues through participation in the various working groups and project meetings within the Arctic Council.[23] On the discussion about reforming Arctic governance, "China, Japan, and South Korea can strengthen exchanges and cooperation with member states, observers and relevant international organizations within the organizational framework of the Arctic Council."[24]

China, South Korea, and Japan believe that the development of the Arctic should be orchestrated between the efforts of all interested countries that have an urgent need for relevant financial, economic and technological opportunities.[25] From a sectoral perspective, China, South Korea, and Japan are actively pursuing scientific, economic, and political activities for the development of the Arctic, seeking to increase their roles in the Arctic Council. They are aiming to ensure an increasing presence in the Arctic in the form of scientific expeditions, cargo transportation, fisheries, mining, and education, among others. They are similarly interested in information about the deposits of strategic natural resources in the Arctic and their development, as well as prospects of operation of the sea routes, ice-breaker construction, and the situation in the areas inhabited by indigenous peoples of the North.[26]

South Korea is generally welcomed by Arctic States, as the country can offer necessary equipment for developing northern economies, investments for resource extraction, and a growing market for exports. It is the trust that the member States of the Arctic Council place in South Korea on a bilateral level that is driving the rising profile of the country in Arctic affairs, with the hope of receiving help in research and development in their northern regions. South Korea has also demonstrated its sincerity as an Arctic stakeholder by becoming the first Asian country to develop an integrated "master plan" for its regional activities that lays out political, commercial and scientific goals.[27] The plan spans from 2013 to 2017 and aims to increase international cooperation to explore and promote Arctic business (shipping, fishing, and

23 Ibid.

24 W. Li and Wu, D., 2010, "Analysis of the Relationship Between Major East Asian Countries and the Developing Arctic Council," *International Outlook* 6, in Chinese, 91.

25 Valeriy P. Zhuravel, "China, Republic of Korea and Japan in the Arctic: politics, economy, security," *Arctic and North* 24, (2016), http://www.arcticandnorth.ru/upload/iblock/278/09_zhuravel.pdf, 125.

26 Ibid.

27 Mia M. Bennett, "The Maritime Tiger: Exploring South Korea's Interests and Role" *Strategic Analysis* 38, no. 6 (November 18, 2014): 886–903, https://doi.org/10.1080/09700161.2014.952946, 898.

shipbuilding), and expand Arctic research.[28] South Korea sees involvement in the Arctic as an opportunity to strengthen its shipbuilding industry, promote new trade routes, and find new sources of energy imports. South Korea has had a central research agency called the Korean Polar Research Institute since 1987, which focuses on Arctic governance, policy, research, and industry. South Korea also has a lot to gain from shorter shipping routes. Furthermore, it has also been ramping up its Arctic research and diplomatic activities in recent years.

Japan has a long history of Antarctic research: its National Institute of Polar Research launched its first Antarctic mission in 1956, and Japan launched a new icebreaker in 2008. It was not until recently that Japan shifted focus towards the Arctic, when its resource dependency reignited industry interest in Arctic shipping lanes. Though a bit slower than its Asian counterparts in showing interest in the Arctic, Tokyo has been steadily increasing its Arctic programs in an effort to catch up. Japan published its interim Arctic policy in 2008, and adopted the final version in 2015, seeking to increase research and to explore strategic opportunities, specifically the Northern Sea Route. Given Japan's proximity to the Bering Strait, it aims to gain from increased traffic at its ports and from the potential to become a central hub in Asia.[29]

China's Arctic policy is more upbeat on Arctic shipping options, subsuming them under the larger Belt and Road Initiative as a "Polar Silk Road." However, the Chinese shipping industry's actual advancements into the region have been increasingly cautious over time.[30] Heavily reliant on trade, China is home to 7 out of the 10 busiest ports in the world. When the Arctic routes are passable, they are on average 40 percent quicker than traditional routes such as the Panama or Suez Canals, representing a reduction of a week in sailing time, or an estimated savings of US$ 600,000 per vessel per trip.[31] China has reportedly planned to have 5 to 15 percent of its container traffic on Arctic routes by

28 Diana Edwards, "A View from the West: China, Japan, South Korea Look North," *Canadian Naval Review* 12, no. 2 (2016), http://www.navalreview.ca/wp-content/uploads/public/Vol12num2/Vol12num2art8.pdf, 38.

29 Ibid.

30 Arild Moe and Olav Schram Stokke, "Asian Countries and Arctic Shipping: Policies, Interests and Footprints on Governance," *Arctic Review on Law and Politics*, Vol. 10, 2019, 24–52, 43.

31 Linda Jakobson and Seong-Hyon Lee, "The North East Asian States' Interests and Possible Cooperation with the Kingdom of Denmark," *Stockholm International Peace Research Institute*, April 2013, 9.

2020.[32] Given that Arctic States have direct control of the Arctic trade routes, China wants to be able to observe talks that affect these routes.[33]

Some argue that shipping and shipbuilding are not the most powerful drivers of the Arctic aspirations pursued by these East Asian countries as many hold.[34] "Arctic maritime transport is viewed with rising caution at governmental as well as industry levels in these countries."[35]

Reflected particularly in Japanese and Korean policy documents and industry statements, the evaluation on maritime business opportunities is prudent. The significance of shipping and shipbuilding for Asian engagement in the Arctic has also been conditioned by bureaucratic structures in each country and their proximity to industry associations and fluctuations in the relevant markets. Each nation's ministry of foreign affairs, the Cabinet Office in Japan's case, have played important roles in the aggregation of comprehensive Arctic policies. The Ministry for Oceans and Fisheries has been the main driver in South Korea which also has responsibility for shipping and polar research. Deep involvement of the government offices closest to shipping and shipbuilding (characteristic of policy development in Korea and Japan) implies that elaboration of goals, priorities, and specific projects build on sector expertise is sensitive to not only opportunities, but also political or economic constraints.[36] In China and South Korea, where Arctic policies convey the clearest emphasis on economic use, the shipping industries have been financially overstretched in recent years, and thus are less prepared to commit themselves to heavy investments where the expected returns are potentially high, but uncertain and still far in the future. For all three countries, rising attention to Arctic developments as well as broader aspirations of playing visible roles in global governance mean that maritime transport projects involving this region are assessed with considerable interest, but we find nothing to indicate that they will be pursued unless the expected returns equal or exceed those of other options.[37]

---

32 Hugh Stephens, "The Opening of the Northern Sea Routes: The Implications for Global Shipping and for Canada's Relations with Asia," *SPP Research Papers*, The School of Public Policy, University of Calgary, Canadian Global Affairs Institute, Vol. 9, No. 19 (May 2016), 4.

33 Diana Edwards, "A View from the West: China, Japan, South Korea Look North," *Canadian Naval Review* 12, no. 2 (2016), http://www.navalreview.ca/wp-content/uploads/public/Vol12num2/Vol12num2art8.pdf, 38.

34 Arild Moe and Olav Schram Stokke, "Asian Countries and Arctic Shipping: Policies, Interests and Footprints on Governance," *Arctic Review on Law and Politics,* Vol. 10, 2019, 43.

35 Ibid.

36 Ibid., pp. 24–52.

37 Ibid.

China, Japan, and Korea also emphasize both their contributions to scientific investigations in the Arctic and the relevance of their capital and technology for regional economic development.[38] China's Arctic Policy White Paper, for instance, reinforces the scientific factor by referencing its own prominence in global governance and international affairs. The three states underscore that they fully respect the sovereignty and sovereign rights of coastal States. None of them has explicitly challenged the controversial unilateral shipping regulations that Canada and Russia have established for ice-covered waters adjacent to their coasts. At regional and global levels too, the Asian states have maintained relatively low profiles, specifically in shipping-oriented activities under the Arctic Council and in the negotiations of a legally binding Polar Code under the International Maritime Organization.[39]

Recently, there has been increasing collaboration among these three East Asian states on their polar goals. The first South Korean scientist to go to the Arctic was on board a Chinese research vessel, and a Japanese scientist traveled with the South Korean icebreaker *Araon*.[40] South Korea and China signed a Memorandum of Agreement in 2008 to collaborate on polar research. Japan did not enter into formal agreements with China at that time, but in April 2016, Japan, China, and South Korea held their first high-level collaboration talks on the Arctic in Seoul.[41] The three states agreed to work together to increase scientific research on the Arctic and help each other further their Arctic interests, which marks the first time these three countries have officially collaborated on the Arctic.[42]

China, Japan, and South Korea jointly initiated and play an important role in the Asian Forum for Polar Sciences, which has become the only regional scientific cooperative organization in Asia. The three countries play an important role in this organization. China actively advocated for the Pacific Arctic Group to be set up at the Arctic Science Summit Week. The working group has become a significant channel for the three countries to make an impact in the field of Arctic research. Starting in 2011, the Korea Maritime Institute[43]

38 Ibid.

39 Ibid.

40 Diana Edwards, "A View from the West: China, Japan, South Korea Look North," *Canadian Naval Review* 12, no. 2 (2016), http://www.navalreview.ca/wp-content/uploads/public/Vol12num2/Vol12num2art8.pdf, 38.

41 "China, Japan, ROK agree to strengthen research cooperation on Arctic," *Xinhuanet*, June 9, 2018, http://www.xinhuanet.com/english/2018-06/09/c_137240638.htm.

42 Diana Edwards, "A View from the West: China, Japan, South Korea Look North," above note 40, 38.

43 More information about Korea Maritime Institute can be found at www.kmi.re.kr (accessed on September 19, 2014).

has been the main financier and host of the 'North Pacific Arctic Conference' in Hawaii, discussing Arctic governance matters in an attempt to become an advocate for Arctic affairs among countries outside the region.[44]

During high-level talks at the Foreign Ministry in Tokyo in 2017, Japan, China, and South Korea agreed to conduct a joint study to assess pollution and climate impacts in the Arctic, wrapping up their latest talks on how to develop the region. The agreement on joint scientific research and exploration comes amid increased global attention on navigation and resource development in the Arctic Ocean.[45] Under the agreement, the three countries will collect basic data, including on the levels of marine pollution in the Arctic Ocean, to ensure the environment is protected during development work and can predict the best timing for navigation in the Arctic Ocean. "It is indispensable for the international community to ensure the protection and preservation of the fragile marine environment of the Arctic Ocean, and to maintain peace, stability and constructive cooperation based on a rule-based maritime order," according to the joint statement issued after the talks.[46]

4 Arctic States' Approach to Cooperation in the Arctic

The gradual disappearance of Arctic sea ice raises challenges to sovereignty and security issues, some of which are increasingly evident in the evolving relationships between the eight Arctic States and non-Arctic states, such as China, Japan, South Korea, and India. In the same vein, there is a strong and practical need to strengthen international cooperation on Arctic matters, especially in the face of growing global attention on melting Arctic sea ice. Cooperation between Arctic and non-Arctic states have continued to develop on a number of levels, either bilaterally or within the existing frameworks of regional forums and international organizations, and on issues of scientific research, environmental protection, and sustainable development.

At the third Arctic Circle Assembly in Reykjavik, Iceland in 2015, Zhang Ming, China's vice minister of foreign affairs, delivered a keynote speech titled

44 Leiv Lunde, Yang Jian, Iselin Stensdal (eds.), *Asian Countries and the Arctic Future* (World Scientific Publishing, 2016), 243.

45 "Japan, China and South Korea OK joint study on Artic Development," *Japan Times* online, June 9, 2017, https://www.japantimes.co.jp/news/2017/06/09/national/science-health/japan-china-south-korea-plan-joint-study-arctic-development/#.XVbCPOhKiUk.

46 Ibid.

"China in the Arctic: Practices and Policies."[47] The following year, Gao Feng, China's chief negotiator for climate change, gave another speech about China's view on Arctic cooperation at the fourth Arctic Circle Assembly.[48] Furthermore, Xu Hong, head of the Department of Legal Affairs in China's Ministry of Foreign Affairs, talked about China's view on Arctic economic development at the sixth International Meeting of Representatives of Arctic Council Member States, Observer States, and Foreign Scientific Community, which was hosted by the Russian Federation between August 29 and September 2 of 2016.[49] These speeches, which often focus on "cooperation," display an emerging Chinese Arctic policy that is well reflected in the China Arctic Policy White Paper.

Recognizing and respecting each other's rights constitutes the legal basis for cooperation between Arctic and non-Arctic states. In accordance with the UNCLOS and other relevant international legal frameworks, Arctic States have sovereign rights and jurisdiction in their respective areas in the Arctic region, while non-Arctic states also enjoy rights of scientific research and navigation. To develop a partnership of cooperation, Arctic and non-Arctic states should, first and foremost, proceed from the basis of recognizing and respecting each other's rights under international law.

Second, mutual understanding and trust provide a political guarantee for cooperation between Arctic and non-Arctic states. Arctic States, with a larger stake in Arctic-related issues, argue that they should play a more important role in Arctic affairs than non-Arctic countries. In the meantime, given the trans-regional implications of certain Arctic issues, non-Arctic states that fall under such influence also argue that they have legitimate interests in Arctic-related issues. With their interests intertwined, there is no doubt that both Arctic and non-Arctic states will play increasingly significant roles in Arctic affairs. To enhance cooperation, Arctic and non-Arctic states should, on the basis of respecting each other's rights, strengthen their communication, improve mutual understanding, foster trust, and seek areas of converging interests.

Third, addressing trans-regional issues through joint research endeavors represents a major field of cooperation between Arctic and non-Arctic states.

47 Ministry of Foreign Affairs of the People's Republic of China, "Vice Foreign Minister Zhang Ming Attends the Third Arctic Circle Assembly and Delivers a Keynote Speech," October 17, 2015, https://www.fmprc.gov.cn/mfa_eng/wjbxw/t1307440.shtml.

48 Arctic Circle, Videos from the 2016 Assembly, at http://www.arcticcircle.org/assemblies/2016/videos.

49 Liu Nengye, "China's Emerging Arctic Policy," *The Diplomat*, December 14, 2016, http://thediplomat.com/2016/12/chinas-emerging-arctic-policy/.

Enhanced cooperation in scientific research will enable Arctic and non-Arctic states to view trans-regional issues from a wider perspective, send a more comprehensive message to the international scientific community, and facilitate the settlement of relevant issues. This model of cooperation has already yielded sound results in addressing issues such as climate change and Arctic shipping. The issue for Arctic Council members now is how to involve non-Arctic states at the early stages of relevant research endeavors and in-depth discussions.

Arctic and non-Arctic states have different rights, interests and specific concerns with regards to Arctic-related issues. However, peace, stability and sustainable development in the Arctic serves the common interests of both Arctic and non-Arctic states. It is crucial for the Arctic and non-Arctic States to intersect and share these different rights, interests and concerns. Mutually beneficial cooperative partnerships which promote and enhance these interests will surely be the most appropriate way forward in a region of growing global importance. For instance, Arctic resources require enormous foreign investment to develop; China, which is flush with capital, is well positioned to facilitate this investment. In turn, Chinese leaders hope that Arctic States will be inclined to back Chinese interests in the region. China's strategy of scientific diplomacy, participation in Arctic institutions, and resource diplomacy has proved fairly successful, enabling China to acquire peacefully a (limited) say in Arctic affairs.[50] China is acquiring various technologies that are essential for building upon new economic opportunities in the Arctic. China is building ice-strengthened bulk carriers and tankers capable of commercial Arctic navigation as well as planes that can fly in harsh polar weather conditions. Arctic shipping will not only benefit such countries whose economies heavily depend on international trade and shipping (e.g., China, Japan, South Korea), but also serves the interests of Arctic States as well. Martin Breum points out that, spurred by climate change and hopes of funding from China's Belt and Road Initiative, "the governments of Norway and Finland are breathing new life into a vision of an Arctic Corridor from Asia to the European mainland."[51]

50 Shiloh Rainwater, "Race to the North: China's Arctic Strategy and Its Implications," *Naval War College Review*, Vol. 66 [2013], No. 2, Article 7, 62–82, 73.

51 Martin Breum, "How Angry Birds and prospects of Chinese funding power visions of the shortest-ever route from China to Europe," *Arctic Today*, March 13, 2018, https://www.arctictoday.com/angry-birds-prospects-chinese-funding-power-visions-shortest-ever-route-china-europe/.

5 China's Approach to Cooperation in the Arctic

"Cooperation" is an effective means for China's participation in Arctic affairs, and "respect" is the key basis for China's participation. A "win-win result" is the value pursuit of China's participation in Arctic affairs, which carries on the message that all stakeholders should pursue mutual benefits and common progress in all fields of activities. "Such cooperation should ensure that the benefits are shared by both Arctic and non-Arctic states as well as by non-state entities and should accommodate the interests of local residents including the indigenous people."[52]

5.1 *"Cooperation" with Arctic States*

In 2012, China and Iceland signed the Framework Agreement on Arctic Cooperation, which was the first intergovernmental agreement on Arctic issues between China and an Arctic State. The China-Iceland Joint Aurora Observatory formally opened on October 18, 2018, in the northern part of Iceland.[53] The observatory and the land of Karholl are owned by the Icelandic non-profit organization "Arctic Observatory." The Polar Research Institute of China (PRIC) leases the land for the operations of the observatory. On April 8, 2018, China and Finland signed an agreement to establish a joint research center for Arctic space observation and data sharing service in Sodankyla, which is located in north Finland's Lapland.[54] The center will enhance cooperation on cryosphere research with the use of satellites, which will provide information from the Arctic region for use in climate research, environmental monitoring, and operational activities (such as navigation in the Arctic Ocean). The cooperation between Norway and China on climate monitoring and predictions in the Arctic will be increased and carried out on the platform of the Nansen-Zhu International Research Center (NSC), jointly established by China and Norway in 2003.[55] A climate research seminar was attended by Chinese and Norwegian scientists in Beijing April 16–17, 2018. At that seminar, they decided that they will conduct more research on how Arctic climate change influences the

52 The People's Republic of China, The State Council, "Full text: China's Arctic Policy," January 26, 2018, http://english.www.gov.cn/archive/white_paper/2018/01/26/content_281476026660336.htm.

53 See https://karholl.is/en/.

54 "China, Finland to Enhance Arctic Research Cooperation," *China Academy of Sciences,* October 31, 2018, http://english.cas.cn/Special_Reports/Belt_of_Science_Road_for_Cooperation/Technology_Cooperation/201810/t20181029_200564.shtml.

55 "China, Norway to boost cooperation in Arctic climate research," *Xinhuanet,* April 19, 2018, http://www.xinhuanet.com/english/2018-04/19/c_137123061.htm.

climates of Europe and Asia. They will also develop a prediction system for extreme weather and secondary disasters. China's Ministry of Natural Resources held the Arctic Circle China Forum in Shanghai from May 10 to 11, 2019.[56] The forum discussed the importance of developing broader international cooperation in areas such as climate change.

On June 5, 2019, China and Russia signed a joint statement vowing to strengthen contemporary global strategic stability and promote the cooperation between the two countries in the Arctic area, mainly by expanding shipping routes and cooperating in the development of infrastructure construction, resource exploitation, tourism, environmental protection, and scientific expeditions.[57] In 2019, China and Russia launched a scientific cooperation program in the Arctic through an agreement that documents the development of bilateral cooperation between the Pilot National Laboratory for Marine Science and Technology (QNMLM) and the P.P. Shirshov Institute of Oceanology of the Russian Academy of Sciences (IO RAS); the agreement is targeted at Arctic research and the preservation of its indigenous natural resources.[58]

5.2 *Cooperation with International Institutions*

On October 3, 2018, ten parties (including Canada, China, Denmark, Iceland, Japan, Norway, Russia, Korea, the United States, and EU) signed an agreement to prevent unregulated fishing in the central Arctic Ocean.[59] This agreement is the first to use a legally binding, precautionary approach to protect an area from commercial fishing before fishing has begun in the area. Under the agreement, the Parties commit to not initiate commercial fishing in the central Arctic Ocean until there is more knowledge about the fish stocks in the area. As part of the agreement, the Parties will establish a joint scientific research and

56 Nannan Lundin, "Arctic, climate change and science diplomacy," *Offices of Science and Innovation,* May 22, 2019. https://sweden-science-innovation.blog/china/arctic-climate-change-and-science-diplomacy/.

57 "zhong hua ren min gong he guo hee luo si lian bang guan yu fa zhan xin shi dai quan mian zhan lüe xie zuo huo ban guan xi de lian he sheng ming (quan wen) [Joint Statement of the People's Republic of China and the Russian Federation on the Development of a Comprehensive Strategic Partnership for the New Era (full text)]," *Xinhua News Agency,* June 6, 2019, https://www.chinanews.com/gn/2019/06-06/8857473.shtml.

58 "China and Russia Launch Scientific Cooperation in Arctic," *Cision PR Newswire,* April 16, 2019, https://www.prnewswire.com/news-releases/china-and-russia-launch-scientific-cooperation-in-arctic-300832682.html.

59 Catherine Benson Wahlen, "Nine Countries, EU Sign Agreement to Prevent Unregulated Fishing in Central Arctic Ocean," *International Institute for Sustainable Development,* October 9, 2018, http://sdg.iisd.org/news/nine-countries-eu-sign-agreement-to-prevent-unregulated-fishing-in-central-arctic-ocean/.

monitoring program to improve understanding of the area's ecosystems and determine if fish stocks can be sustainably harvested.

The China-Nordic Research Center (CNARC) was established in Shanghai on December 10, 2013 by ten member institutes (four Chinese and six Nordic).[60] CNARC's research themes include Arctic climate change and its impacts, resources, shipping and economic cooperation, and Arctic policymaking and legislation. Since 2013, CNARC has held an annual Symposium which covers topics on: Human Activity and Environmental Change, North meets East, Arctic Synergies: Policies and Best Practices, the Sustainable Arctic, Trans-regional cooperation in the Arctic Development and Protection, Integrated Ocean Management in the Arctic, Arctic Fisheries, the Polar Silk Road, and Sustainable Development Practices.

5.3 *Cooperation with Non-Arctic States*

China is having trilateral High-Level Dialogue on the Cold Affairs with Japan and South Korea.[61] The dialogue initiated in 2011 during the Japan-China-South Korea Summit by South Korea's motion. The dialogue seeks to build mutual understanding through consistent communication among the three countries regarding the Arctic region. As the observers of the Arctic Council, the three countries also communicate the outcomes of their dialogue to the Arctic Council. The first dialogue took place in Seoul in 2016; the second took place in Tokyo in 2017; and the third took place in Shanghai in 2018. During the latest trilateral dialogue, which took place on June 26, 2019 in Pusan, the three countries agreed to further negotiate for and promote a "free and open rule of the sea" in the Arctic in regard to the rule of law, freedom of navigation, openness, and transparency.[62][63] The three countries also agreed to further discuss data sharing and collaboration in scientific research on the Arctic region. Finally, the three countries also seek to further discuss creating a rule-based

60 "Background," *China-Nordic Arctic Research Center,* https://www.cnarc.info/organization.

61 The People's Republic of China, Ministry of Foreign Affairs, "di san lun zhong ri han bei ji shi wu gao ji bie dui hua lian he sheng ming [Joint Statement of the Third Round of China-Japan-Korea High-level Dialogue on Arctic Affairs]," June 8, 2018, https://www.fmprc.gov.cn/web/wjb_673085/zzjg_673183/tyfls_674667/xwlb_674669/t1567101.shtml.

62 "di si lun han zhong ri bei ji shi wu gao ji bie dui hua jiang zai fu shan ju xing [The Fourth Round of High-level Dialogue on Korean, Chinese and Japanese Arctic Affairs will be held in Busan]," *Yonhap News Agency,* June 24, 2019, https://cn.yna.co.kr/view/ACK20190624006300881.

63 Japan, Ministry of Foreign Affairs, "Dai 4-kai Hokkyoku ni kansuru nitchūkan haireberu taiwa [Japan-China-ROK High Level Dialogue on the 4th Arctic]," June 2, 2019, https://www.mofa.go.jp/mofaj/fp/msp/page22_003228.html.

economic environment in the Arctic region. China has also engaged separately with the United Kingdom and France regarding bilateral dialogues on the law of the sea and polar issues.

6 Other Actors' Perception about China

The United States is worried about China's increasing cooperation with the Arctic countries in regard to economic development and scientific research. Triggered by China's involvement in Greenland, U.S. President Donald Trump has, with varying degrees of seriousness, repeatedly expressed interest in buying the autonomous Danish territory.[64] China Communications Construction Company's (CCCC) bid for Greenland's airport construction projects in 2018 triggered a huge reaction from the United States, since Greenland is strategically important for the U.S. military and its ballistic missile early warning system. Under U.S. pressure, Greenland decided to pick Denmark over Beijing for financing the planned projects.[65] U.S. Secretary of State Mike Pompeo expressed concerns over China's participation in Arctic affairs and suggested that China's participation could transform the Arctic Ocean into a new South China Sea, fraught with militarization and competing territorial claims.[66]

While Russia turned to China for potential investments and technology partnerships, the pivot to Asia was seen as a potential boost for development of the Russian Far East and Urals region.[67] Against a background of strained relations with the West, China is viewed as Russia's primary source for capital to develop the Arctic. Although both China and Russia have strong interests in strengthening cooperation over energy resources and minerals—and more broadly over trade and investment flows—in general, there has been much skepticism as to the extent to which Russia welcomes the non-Arctic states,

64 Vivian Salama, *et al.*, "President Trump Eyes a New Real-Estate Purchase: Greenland," *Wall Street Journal,* August 16, 2019, https://www.wsj.com/articles/trump-eyes-a-new-real-estate-purchase-greenland-11565904223.

65 Jacob Gronholt-Pedersen and Stella Qiu, "China withdraws bid for Greenland airport projects: Sermitsiaq newspaper," *Reuters,* June 4, 2019, https://www.reuters.com/article/us-china-silkroad-greenland/china-withdraws-bid-for-greenland-airport-projects-sermitsiaq-newspaper-idUSKCN1T5191.

66 Blake Hounshell, "Pompeo aims to counter China's ambitions in the Arctic," *Politico,* May 6, 2019, https://www.politico.com/story/2019/05/06/pompeo-arctic-china-russia-1302649.

67 Camilla T. N. Sorensen and Ekaterina Klimenko, "Emerging Chinese-Russian cooperation in the Arctic," *Stockholm International Peace Research Institute,* June 2017, https://www.sipri.org/sites/default/files/2017-06/emerging-chinese-russian-cooperation-arctic.pdf.

and China in particular, in the Arctic region. Pervasive mistrust is rooted in historical grievances and strategic cultural differences. There are growing concerns, particularly on the Russian side, about the long-term implications of the ongoing shift in relative power.[68]

In the midst of a bruising dispute with China, Canada has sided with Beijing over Washington on the Arctic, dispatching a senior parliamentarian to Shanghai to express support for co-operation in the high latitudes. Liberal MP Andrew Leslie told a forum on May 10, 2019, that "Canada welcomes opportunity for further productive cooperation with China" and suggested that "the whole idea is to engage in dialogue … we can work cooperatively."[69]

The former president of Iceland, Olafur Ragnar Grimsson, who is also the current chairman of the Arctic Circle, suggested that it is worth remembering that China, along with South Korea and Japan, are surpassing even the Arctic States in Arctic science and research, and that Asia is now playing a greater economic and diplomatic role in Arctic affairs "than any of us could have predicted five years ago. That is the new model of the Arctic reality—that not only China, but Asia has arrived in the Arctic, big time."[70] The Swedish government seeks to develop an innovative, multidisciplinary, and globally coordinated polar research process.[71] One of its ambitions is to introduce this research process into its international cooperation with new partners, including China. Sweden is also very positive about Iceland's cooperation with China. The Swedish government described the introduction of geothermal energy into China's clean energy transformation as a "standard setter" for geothermal energy development in China's future energy system.

Given its geographic proximity to the two countries, Japan is concerned, from a security perspective, with China's energy cooperation with Russia. Japan has been seeking to cooperate with Russia in order to balance the potential threat posed by the Sino-Russian cooperation in the Arctic region.[72] Moreover, Japan is also concerned with China's approach to the other Arctic nations. Analysis from the Japn Marime Self-Defence Force (JMSDF) expressed concern over the

68 Ibid.

69 Nathan Vanderklippe, "Agreeing on the Arctic: Amid dispute, Canada sides with China over the U.S. and how to manage the North," *The Globe and Mail,* May 10, 2019, https://www.theglobeandmail.com/world/article-agreeing-on-the-arctic-why-canada-sides-with-china-over-the-us-on/.

70 Ibid.

71 Lundin, "Arctic, climate change."

72 "Roshia no seiiki `Hokkyoku-kai' ni Chūgoku ga shokushu nichiro bōei kyōryoku ni katsuro [China's reach in Russian sanctuary Arctic Ocean]," *The Sankei News,* November 15, 2018. https://www.sankei.com/politics/news/181115/plt1811150001-n1.html.

China-Iceland Joint Aurora Observatory and its potential implications for China's scientific cooperation with the Arctic countries in 2018.[73] On economic cooperation, however, Japan is joining with China's initiatives to participate in the development of the Arctic. Together with Finland, Russia, and Norway, Japan joined China's polar fiber link project, which will see a 10,000-kilometer fiber-optic cable network that connects Europe and Asia.[74] The Japanese government keeps a close watch on China's cooperation with the Nordic countries (e.g., Iceland) and believes that China's main interests in the Arctic include the exploration and exploitation of Arctic resources, development of a commercial shipping route in the Arctic region, and enhanced global security.[75] Yet, the Japanese government still holds positive views on China's participation in international cooperation in the Arctic and, in its Arctic report, puts more emphasis on China's principles of mutual respect, cooperation, win-win, and sustainability.

7 Future of Arctic Cooperation

A basic question has been raised: with the shift in the international security architecture, will the Arctic in the future continue to be a region generally characterized by cooperation and low tensions, as it was during the post-Cold War era, or instead become a region characterized by competition and increased tensions, as it was during the Cold War?[76] Some hold the view that this shift poses a potential challenge to the tradition of cooperation, low tensions, peaceful resolution of disputes, and respect for international law that has characterized the approach used by the Arctic States, particularly since the founding of

73 "Chūgoku no Hokkyoku-kai shinshutsu to kenen jikō—Chūgoku kokusan saihyō-sen, setsuryū 2-gō shinsui o ki ni kangaeru [China's Arctic Ocean Expansion and Concerns-Considering the Launch of Snow Dragon No. 2]," September 28, 2018, https://www.mod.go.jp/msdf/navcol/SSG/topics-column/col-122.html.

74 Ting Shi, "10,000 Kilometers of Fiber-Optic Cable Show China's Interest in Warming Arctic," *Bloomberg,* December 13, 2017, https://www.bloomberg.com/news/articles/2017-12-13/undersea-cable-project-shows-china-s-interest-in-warming-arctic; Thomas Nilsen, "Major step towards a Europe-Asia Arctic cable link," *The Barents Observer,* June 6, 2019, https://thebarentsobserver.com/en/industry-and-energy/2019/06/mou-signed-set-arctic-telecom-cable-company.

75 http://www.mext.go.jp/b_menu/shingi/gijyutu/gijyutu5/siryo/__icsFiles/afieldfile/2018/09/14/1409210_003.pdf.

76 United States of America, Congressional Research Service, "Changes in the Arctic: Background and Issues for Congress," November 27, 2019, 53, https://fas.org/sgp/crs/misc/R41153.pdf.

the Arctic Council in 1996, for managing Arctic issues.[77] In this regard, some observers argue that "the Arctic states and other Arctic stakeholders should attempt to maintain the region's tradition of cooperation and low tensions, and work to prevent the competition and tensions that have emerged in Europe, Asia, and elsewhere in recent years from crossing over into the Arctic."[78] They point to the experience of Arctic States and other Arctic stakeholders that have achieved success in promoting cooperation on a range of issues, which have served as a useful model for other parts of the world to follow.[79] Nevertheless, the Arctic has no way to staying fully isolated from the competition and tensions that have arisen in other parts of the world.

77 See, for example, Melody Schreiber, "As the Arctic Changes, International Cooperation May Be Put to the Test," *Arctic Today*, July 25, 2018; Stephanie Pezard, Abbie Tingstad, and Alexandria Hall, "The Future of Arctic Cooperation in a Changing Strategic Environment," *RAND Europe* (2018), 18; Geoff Ziezulewicz, "As Arctic Waters Open, Nations Plant Their Flags," *Navy Times*, April 8, 2018; James Stavridis, "Avoiding a Cold War in the High North," *Bloomberg*, May 4, 2018; Kristina Spohr, "The Race to Conquer the Arctic—the World's Final Frontier," *New Statesman*, March 12, 2018.

78 Ibid., "Changes in the Arctic," 53.

79 See, for example, Kevin McGwin, "More Military Activity May Spoil the Arctic's Atmosphere of Collaboration, Warns a Danish Report," *Arctic Today*, December 6, 2018; Hsin Hsuan Sun, "Arctic Council Sells Itself As a Model for International Cooperation at the UN," *Arctic Today*, July 23, 2018; John Grady, "Panel: Cooperation, Not Conflict Key to Future of the Arctic," *USNI News*, April 9, 2018; Levon Sevunts, "Arctic Nations Develop Coast Guard Co-operation," *Barents Observer*, March 13, 2018; Doug Tsuruoka, "Despite US-Russia Tensions, Arctic Powers Eye Cooperation," *Asia Times*, March 29, 2017.

CHAPTER 17

Round Two for Arctic Fishing?

David Dubay

Abstract

In 2017, the Arctic Five—the United States, Canada, Russia, Norway, and Denmark—along with China, Japan, Iceland, and the European Union agreed to a moratorium on commercial fishing in the central Artic Ocean (CAO). The resulting Central Arctic Ocean Fishing Agreement (CAOFA) is intended to restrict unregulated fishing on the high seas of the Arctic Ocean and provide scientists time to study whether any fish populations present would support a commercial fishery. Over thirty years ago, overfishing in another area of the Arctic, a spot in the Bering Sea known as the "Donut Hole," led to the collapse of its valuable pollack fishery. By 1994, six nations (the United States, Russia, Japan, China, South Korea, and Poland) had signed the Central Bering Sea Pollack Agreement, which banned further fishing until the science of the region's fisheries was better understood. Unfortunately, that agreement came too late and the Donut Hole's pollack fishery never recovered. Taking action to protect any fisheries resources present in the CAO before fishing begins is an admirable first step. This paper examines some of the issues that will help determine whether the CAOFA is ultimately successful in its goal of protecting fisheries resources.

Keywords

Arctic – fisheries – Arctic Ocean – Central Arctic Ocean Fishing Agreement – United Nations Fish Stocks Agreement – regional fisheries management organizations – illegal fishing – overfishing

1 Introduction

The sea ice is melting in the central Arctic Ocean (CAO), which brings not only the possibility of fishing to this area, but also the complex issues regarding the conservation and management of fisheries resources. Fish populations in the rest of the world's oceans have been declining for decades due to overfishing and illegal, unregulated and unreported (IUU) fishing, problems the Arctic

 | DOI:10.1163/9789004422438_018

Ocean avoided when it was frozen. Today, with significant sections of the Arctic Ocean navigable during the summer months, along with ice-free summers predicted for the near future, government leaders, scientists and scholars have become increasingly concerned about the impacts that more people and vessel traffic in the Arctic will have on the environment. One major concern is that the improved access and navigability resulting from the declining sea ice will lead to a race by distant-water fishing fleets to plunder Arctic fisheries resources. In response, the United States led an international effort to protect fish populations from unregulated fishing on the high seas portion of the Arctic Ocean, efforts that culminated in the Central Arctic Ocean Fishing Agreement (CAOFA) in 2018. On 1 October 2018, the Arctic Five, the group of five Arctic littoral States (the United States, Canada, Denmark, Norway, and Russia), along with five other states: China, Japan, South Korea, Iceland, and the EU, which control large, distant-water fishing fleets, agreed to a 16-year moratorium on commercial fishing on the high seas portion of the CAO. The CAOFA's ban on commercial fishing is intended to provide scientists time to study the CAO's ecosystems and evaluate whether this area supports any exploitable fisheries before any commercial fishing begins.

Whether the CAOFA will ultimately be deemed a success remains to be seen, as any results will most likely not be known for years, if not decades. First, the agreement requires the ratification of all of the ten parties before it enters into force, and although not complete, the ratification process is well underway and provides hope that the agreement will soon go into effect.[1] Even after the CAOFA enters into force, scientists may ultimately determine that no commercially viable fish populations exist in the CAO. However, there are reasons to be optimistic, as early signs point in the direction of fish moving farther north into the Arctic Ocean as its waters grow warmer. Finally, the CAOFA requires development of conservation and management measures and the creation of a regional fisheries management organization (RFMO) before commercial fishing begins.

2 Background

The CAOFA was, in part, motivated by the collapse of the pollack fishery in the high seas portion of the Bering Sea, a spot referred to as the "Donut

1 As of October 30, 2019, South Korea was the sixth country to have completed ratification after Canada, the EU, the U.S., Japan, and Russia.

Hole." Overfishing during the 1980s and 1990s led to a cataclysmic collapse of this once vibrant pollack fishery and other valuable fisheries in that area. By 1994, the United States, Russia, Japan, China, South Korea, and Poland agreed to ban fishing in the area. The Central Bering Sea Pollack Agreement was intended to prevent fishing until the science of the fisheries in this region was better understood. Tragically, the pollack fishery in the central Bering Sea never recovered.[2] It is important to note however that although the collapse of the central Bering Sea incident may have been in the minds of the proponents of the CAOFA, the two situations are very dissimilar. The Central Bering Sea Pollack Agreement was motivated by an imminent fishery collapse, whereas the CAOFA sets out to protect fisheries that have not yet even been identified.

The Arctic Ocean, a semi-enclosed sea and the world's smallest ocean, covers approximately five million square miles on top of the world. It is bounded by the five Arctic littoral States of the United States Russia, Canada, the Republic of Denmark (through Greenland), and Norway. The central Arctic Ocean extends beyond the EEZs of the Arctic Five and covers 2.8 million square miles. The Arctic region is warming at twice the rate as the rest of our planet. As a result, portions of the Arctic Ocean that once were ice-covered are now ice-free during the summer months. Approximately 40% of the CAO is now navigable for at least part of the year.

The United States' efforts to protect the CAO began over a decade ago, when Congress in 2008 directed that the United States "initiate international discussions and take necessary steps with other Nations to negotiate an agreement for managing migratory and transboundary fish stocks in the Arctic Ocean."[3] The declaration provided that "the United States should support international efforts to halt expansion of commercial fishing activities in the high seas of the Arctic Ocean."[4] Starting in 2009, the United States closed its EEZ north of the Bering Strait to commercial fishing until sufficient information is available to enable a sustainable commercial fishery to proceed.[5]

2 For an eye opening description of the facts of the case, see Bailey, K. M. 2011. An empty donut hole: the great collapse of a North American fishery. *Ecology and Society* 16(2): 28. URL: http://www.ecologyandsociety.org/vol16/iss2/art28/.

3 Public Law 110–243, 122 STAT. 1569–1571 (June 3, 2008).

4 Id., sec 4.

5 74 FR 56734.

In 2015, the Arctic Five issued a joint declaration stating the group's intention to prevent unregulated fishing in the CAO.[6] In the declaration, the five Arctic littoral States resolved only to authorize commercial fishing by their vessels in the CAO after an international regulatory regime was in place. The declaration included an intention to form a joint scientific undertaking to study the region's ecosystems and a call for other interested states to participate in broadening the efforts to protect the CAO beyond the efforts of the Arctic Five. Discussion between the signatories to the CAOFA took place in 2017 and 2018. The CAOFA was finalized towards the end of 2018 and the agreement was signed on October 1, 2018.

The intent of the CAOFA is to prevent unregulated fishing on the high seas portion of the CAO. Unregulated fishing generally refers to fishing in waters not covered by a conservation and management regime or vessels fishing in waters covered by an RFMO but not complying with RFMO requirements because they are not members. Unregulated fishing on the high seas results in the exploitation of many fish species when states harvest fish without any limitation and is part of the larger problem of IUU fishing. Illegal fishing, i.e., fishing in another state's EEZ or fishing in an RFMO management area in violation of the RFMO's regulations defeats a coastal State's or RFMO's legitimate management and conservation interests, depleting valuable fish stocks. Unreported fishing occurs when catches are not reported accurately to authorities in contravention of either state or national requirements. Unreported fishing interferes with the proper functioning of fishery management. Along with overfishing that occurs under existing regulatory regimes, IUU fishing significantly depletes fish populations, some of which are already below sustainable levels and may even be in danger of collapse. IUU fishing, much like international piracy, has gone from a regional concern to a global security threat. IUU fishing is supported by transnational criminal organizations and has been linked to a whole host of other maritime crimes, including drug trafficking, human slavery, piracy,[7] and terrorism.

The three main "hard law" legal instruments that govern international fishing are the 1982 United Nations Convention on the Law of the Sea (UNCLOS,

6 U.S. Department of State, "Arctic Nations Sign Declaration to Prevent Unregulated Fishing in the Central Arctic Ocean," Media Note, July 15, 2015 <https://2009–2017.state.gov/r/pa/prs/ps/2015/07/244969.htm> (Last accessed November 22, 2019.)

7 A study of piracy incidents found states that experienced declining fish production were more likely to have an increase in incidents of piracy. *Id.* at 11.

Law of the Sea, or LOS),[8] the 1993 FAO Compliance Agreement,[9] and the 1995 UN Fish Stocks Agreement.[10]

UNCLOS was crafted as the codification of the international law for regulating the use of the world's oceans. One of its key provisions was to allow states to declare an Exclusive Economic Zone or EEZ up to 200 nautical miles from its baseline. An EEZ is a zone where a state has the jurisdiction and authority to explore and exploit the natural resources present from the top of the water column all the way to the seabed. One of these natural resources is fish. Beyond a nation's EEZ, all states have the freedom to fish subject to the other international obligations and agreements.[11]

UNCLOS has specific provisions to protect shared stocks, both straddling stocks (fish that occur along the dividing line between two states' EEZs and fish that occur along the border of a state's EEZ and the high seas) and highly migratory stocks (fish that migrate long distances crossing international boundaries). For highly migratory species, "[t]he coastal State and other States whose nationals fish in the region for the highly migratory species listed in Annex I shall cooperate directly or through appropriate international organizations with a view to ensuring conservation and promoting the objective of optimum utilization of such species throughout the region, both within and beyond the exclusive economic zone."[12] For straddling stocks, coastal States and states that fish for such stocks in an adjacent zone are required to, either directly or through appropriate sub-regional or regional organizations, agree on conservation measures for the stocks in adjacent areas. Without this provision, states would be free to undermine a coastal State's conservation measures by fishing just on the other side of the boundary line.[13]

---

8 United Nations Convention on the Law of the Sea, Dec. 10, 1982, 1833 U.N.T.S. 397 [hereinafter UNCLOS] Despite the fact that the United States was a key proponent and leader of the Law of the Sea Conference, the U.S. has not yet ratified the treaty despite calls from nearly every corner of the world and within the United States to do so. Nonetheless, the United States treats almost all the treaty's provisions, including the articles governing fisheries, as reflecting customary international law.

9 FAO Agreement to Promote Compliance with International Conservation and Management Measures by Fishing Vessels on the High Seas.

10 1995 United Nations Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea of 10 December 1982 relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks [hereinafter FSA].

11 There are a handful of other important international agreements, including the 1989 UN Driftnet Moratorium, the 1993 UN FAO Compliance Agreement, and the 2009 Port State Measures Agreement that are beyond the scope of this paper.

12 UNCLOS, *ibid.*, Art. 64(1).

13 *Id.* at Art. 63.

The UN Fish Stocks Agreement (FSA) expands on UNCLOS's protections for straddling and highly migratory stocks. The FSA requires states to cooperate either through regional or subregional fisheries organizations or directly, to conserve straddling and highly migratory fish stocks.[14] Where there is no RFMO, states are directed to cooperate to establish an organization or reach other agreement for the management of a straddling and highly migratory fish stock.[15] Further, the FSA mandates that States meet their duty to cooperate by becoming members of such an organization or participate in such an arrangement, or by agreeing to apply the conservation and management measures established by such organization or arrangement.[16] Only states that are members of the relevant regional or sub-regional fisheries organization or agree to apply the measures established by the organization shall be entitled to fish for those resources.[17]

Beyond straddling stocks and highly migratory species, UNCLOS provides that states have an overarching obligation to cooperate in the management and conservation of marine living resources.[18] Actions taken are required to be based on the best scientific evidence available with the aim of maintaining fish populations and dependent species or restoring stocks above the level where reproduction becomes seriously threatened.[19]

The third major international fisheries agreement, the UN FAO Compliance Agreement, was designed to ensure that vessels are authorized by flag States before they can fish on the high seas and to prevent the reflagging of violators, a common problem in international fisheries.

3 Issues

The CAOFA raises a number of issues that may present challenges for the parties to the agreement if commercially viable fish populations are found in the Arctic or if a non-party starts fishing in the CAO during the term of the agreement. The most important issue is that the agreement could create instability in the region if a non-party starts fishing in the CAO. A second issue is the interaction of the agreement with the UN Fish Stocks Agreement, a treaty

14 FSA, *ibid*. Art. 8(1).
15 *Id.* at Art. 8(5).
16 *Id.* at, Art. 8(3).
17 *Id.* at Art. 8(4).
18 UNCLOS, *id.*, Art. 117.
19 UNCLOS, *id.*, Art. 119.

which also deals with new and evolving fishers as well as RFMO requirements. Further, if an RFMO is eventually negotiated for the CAO, how will the parties to the agreement solve some of the recurrent organization and management issues that have negatively affected the performance of other RFMOs? Lastly, the future of fishing in the CAO will be greatly affected by ecosystem changes and human fishing activity in the world's other oceans.

Might we see a showdown over Arctic fishing over a state that is not a party to the CAOFA conducting unregulated fishing in the CAO during the moratorium? Whether non-parties to the Central Arctic Ocean Fishing Agreement would be compelled to act in accordance with the moratorium[20] is unclear. At the outset, an international agreement cannot bind a party state that has not consented. Further, the right to fish is one of the high seas' freedoms and UNCLOS does not expressly obligate a flag State to comply with conservation and management measures established by an RFMO. Practically speaking, demanding that a non-party comply with a total ban on fishing where there are harvestable quantities of fish appears unreasonable. A non-party to the CAOFA that is a signatory to the FSA would be obligated to take actions consistent with the agreement with regards to straddling and highly migratory fish stocks, if the CAOFA is interpreted as an RFMO. A non-signatory to the FSA would at least have a duty to cooperate in the conservation and management of living marine sources, a duty under UNCLOS that is also considered customary international law. In the Bering Sea Donut Hole case, a failure of the parties to agree led to the spectacular collapse of the area's pollack fishery. The same situation could still occur in the central Arctic Ocean. A state could continue to fish while arguing that its actions are in line with applicable conservation and management measures. A coastal State might argue that such fishing is illegal while the fishing state could argue that its activities are simply unregulated, but not illegal. However, both illegal fishing and unregulated fishing deplete fisheries resources and a party to the CAOFA may strongly object to a non-party fishing in the COA. A conflict over fishing would go against the CAOFA's proponents' aims to resolve resource issues peaceably.

At the outset, the question should be asked whether any provisions of the UNFSA conflict with those of the CAOFA.[21] The CAOFA does not supersede the

20 The agreement does not prohibit exploratory fishing on the basis of sound scientific research.

21 The CAOFA is not strictly illusory due to its broader subject matter, i.e., the UNFSA deals with the subject of shared stocks, specifically, straddling and migratory fish stocks, while the CAOFA applies more broadly to fish, defined as "species of fish, mollusks and crustaceans except those belonging to sedentary species as defined in Article 77 of the Convention [UNCLOS]."

UNFSA as it expressly states that "[t]he parties recognize that they are and will continue to be bound by their obligations under the relevant provisions of international law, including those reflected in the Convention and the 1995 Agreement [i.e., UNFSA]."[22] In fact, many of the UNFSA's provisions appear to directly override those of the CAOFA. In order to step around these conflicts, the CAOFA could be viewed as a provisional agreement under the UNFSA or a new or exploratory fishery in order to fulfill the objectives and the spirit of both agreements despite the CAOFA's broader subject matter of all fish, as opposed to the UNFSA's limit to straddling stocks and migratory species, as discussed more fully below.

It is interesting to note that nine of the ten parties to the CAOFA have ratified UNCLOS, with the United States having signed the Convention but not yet ratified it. In addition, nine of the ten parties have ratified the UN Fish Stocks Agreement. China, the lone holdout, has signed the UN Fish Stocks Agreement but not ratified it. Further, six of the ten parties (The United States, Canada, Norway, Japan, South Korea and the European Union) have ratified the FAO Agreement to Promote Compliance with International Conservation and Management Measures by Fishing Vessels on the High Seas.

Under the UNFSA, the mandate for coastal States and flag States of fishing vessels is clear: to be entitled to access high seas straddling or migratory fishery resources, states must either join the competent RFMO or agree to apply the conservation and management measures established by the RFMO.[23] The UNFSA applies broadly to the conduct of fishing and does not distinguish between exploratory fishing and fishing conducted for scientific research.[24] If an RFMO with competence over the relevant straddling or migratory fish stocks does not exist, states under the UNFSA have an obligation to cooperate in the establishment of an RFMO.[25] The flag State for fishing vessels has an obligation to apply the conservation measures of the RFMO and ensure that such vessels do not engage in any activity that undermines the effectiveness of such measures.[26] The nine CAOFA parties that are parties to the UNFSA are bound under international law to follow these provisions. China, although it has not ratified the UNFSA, has signed the agreement and thus is obligated not to engage in

22 Agreement to Prevent Unregulated High Seas Fisheries in the Central Arctic Ocean, October 1, 2018 [CAOFA].

23 FSA, ibid., Art. 8(3).

24 The UNFSA includes provisions for new and exploratory fisheries but does not distinguish between different purposes for fishing, e.g., exploratory fishing or scientific research.

25 FSA, *id.*, Art. 8(5).

26 *Id.* at Art.17(4).

any activity that would undermine the UNFSA's objectives. In the absence of the CAOFA, the relevant coastal States and flag States for fishing vessels would be required to establish an RFMO before fishing in the COA.[27]

The CAOFA places a moratorium on commercial fishing but includes specific provisions for exploratory fishing and scientific research, which will be necessary to determine the existence of any commercially viable fish stocks in the CAO. For new or exploratory fisheries, the UNFSA provides that

> [s]tates shall adopt as soon as possible cautious conservation and management measures, including, *inter alia*, catch limits and effort limits. Such measures shall remain in force until there are sufficient data to allow assessment of the impact of the fisheries on the long-term sustainability of the stocks, whereupon conservation and management measures based on that assessment shall be implemented. The latter measures shall, if appropriate, allow for the gradual development of the fisheries.[28]

The CAOFA requires the establishment of conservation and management measures for exploratory fishing within three years.[29] Parties are authorized to carry out scientific research involving the catching of fish provided the activities do not undermine preventions of unregulated commercial and exploratory fishing and the protection of healthy marine ecosystems.[30]

At least one commentator has opined that the CAOFA could be viewed as an RFMO under Article 1 (1)(d) of the UNFSA.[31] Under Article 1 (1)(d), "arrangement" means a cooperative mechanism established in accordance with the Convention [UNCLOS] and this Agreement [UNFSA] by two or more States for the purpose, *inter alia*, of establishing conservation and management measures in a subregion or region for one or more straddling fish stocks or highly migratory fish stocks."[32] However, the CAOFA expressly states that "it is premature at this point to establish any additional regional or subregional fisheries management organizations or arrangements for the high seas portion of

27 *Id.* at Art 8(5).

28 *Id.* at Art. 6(6).

29 CAOFA at Art. 5(1.d.).

30 *Id.* at Art. 4.

31 V. Schatz *et al.*, "The 2018 Agreement to Prevent Unregulated High Seas Fisheries in the Central Arctic Ocean: A Primer," EJIL: Talk!, October 26, 2018, https://www.ejiltalk.org/the-2018-agreement-to-prevent-unregulated-high-seas-fisheries-in-the-central-arctic-ocean-a-primer/.

32 An "arrangement" is more commonly referred to as a regional fish management organization or RFMO.

the Arctic Ocean," which makes the argument that the CAOFA constitutes an RFMO tenuous. Although the CAOFA was not executed under the authority of the UNFSA, i.e., the CAOFA only recites that the parties recall the provision of the UNFSA. Thus, the CAOFA could be viewed as a "provisional arrangement" under Article 7(5) in accordance with the requirements for new and exploratory fishing, IAW Art. 6(6), discussed above. Per Article 7(5), pending agreement on compatible conservation and management measures, the States concerned, in a spirit of understanding and cooperation, shall make every effort to enter into provisional arrangements of a practical nature. If the CAOFA is not a provisional arrangement under the UN Fish Stocks Agreement, then the discovery of fish in the COA by a non-party might trigger negotiations for an agreement to create an RFMO outside the CAOFA, perhaps undercutting the CAOFA's relevance and/or effectiveness.

The downside, if and when commercial fishing starts, is that the effectiveness of any resulting regional fisheries management organization (RFMO) will face the same challenges as other RMFO's face regarding compliance and enforcement that make overfishing and IUU fishing difficult to stop in the rest of the world's oceans. Although the signatories to the CAOFA include many of the countries with large, distant water fishing fleets, many other such countries are not signatories. Under international law, the agreement is not binding on non-parties. Even so, international law obligates states to cooperate in the conservation and management of living marine resources and many states are parties to international instruments that protect fish. In spite of this, many states fail to carry out their obligations. How to get coastal States, flag States, and port States to comply with their international legal obligations for the protection and conservation of living marine resources, including fisheries, is one of the enduring problems of international fisheries law.

The interconnectedness of the world's oceans and their ecosystems means that activities and events in other parts of the world's oceans will have an effect on the Arctic. The Arctic Ocean as a result of the melting sea ice now provides a shortcut from Asia to North America and Europe for a portion of the summer months. But change has come slow to the Arctic so far. Shipping companies will begin to pursue greater use of the Arctic Ocean when they determine it's advantageous from a bottom-line business perspective or navigating via the Arctic presents some other improvement such as increased safety or improved logistics. They may make the move to the Arctic if there are availability issues or other impediments to using existing shipping routes. Increased ship traffic is already beginning to impact the Arctic environment and the effects of more traffic are only going to increase in the future. Declining fish production in other parts of the world has resulted in fishing fleets moving to more productive

fishing grounds—sometimes thousands of miles away—and a doubling of fishing effort. If there are fish in the Arctic, fishing vessel will eventually seek them out. The existing international fisheries regime has done a poor job of protecting the world's fish stocks. As events affect states' use of the world's shipping lanes and fishing grounds, it is just human nature that people will look for alternatives, and the warming Arctic will gradually be a more attractive option over time. Protecting the Arctic and its fish means ensuring that free access and safety for the other shipping lanes and straits of the world remain protected. Fisheries resources around the globe also need better protection or distant water fleets will have greater incentives to follow the fish to the Arctic. If they do, the Arctic's pristine environment could be in jeopardy from increased use and resource exploitation.[33]

4 Conclusion

The Arctic Ocean's sea ice is melting and opening access to this previously frozen body of water. Arctic States are concerned about exerting their sovereignty as well as taking advantage of the potential shipping, energy and fishing opportunities that this developing situation in the north presents. For protecting any fisheries in the CAO, the CAOFA is an admirable step, but there are other perhaps even more pressing issues. More ships will bring more environmental impacts and raise the risk of an oil spill. Energy development projects will bring their own risks to fisheries as the Deepwater Horizon and *Exxon Valdez* incidents have tragically shown us. Efforts to develop the Arctic in a sustainable, safe and environmentally sound manner, one that protects fish, are only half the puzzle. Decisions outside the Arctic (not cooperation and governance within) will shape the types and amounts of activity in the Arctic, including those regarding fishing and the protection of living marine resources.

33 *See*, United States Coast Guard, *Arctic Strategic Outlook* (April 2009). Fish are already migrating farther north into the Arctic as water temperatures change.

Index