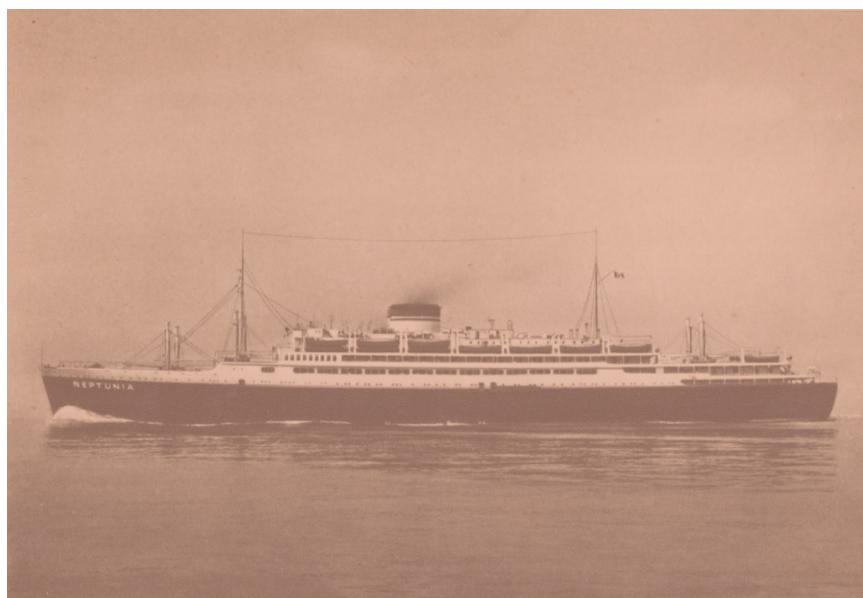


PAIX ET SÉCURITÉ INTERNATIONALES



08

2020



JOURNAL OF INTERNATIONAL LAW
AND INTERNATIONAL RELATIONS



ISSN 2341-0868

DOI: http://dx.doi.org/10.25267/Paix_secur_int.2020.18

Citation: QUINDIMIL LÓPEZ, J. A. “Technology Transfer, International Law and Protection of Marine Biodiversity beyond National Jurisdiction: Key Issues for a new International Agreement”, *Paix et Sécurité Internationales*, num. 8, 2020, pp. 423-449.

Received: 11 June 2020.

Accepted: 30 September 2020.

TECHNOLOGY TRANSFER, INTERNATIONAL LAW AND PROTECTION OF MARINE BIODIVERSITY BEYOND NATIONAL JURISDICTION: KEY ISSUES FOR A NEW INTERNATIONAL AGREEMENT

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I. INTRODUCTION: TECHNOLOGY, INTERNATIONAL LAW AND PROTECTION OF MARINE BIODIVERSITY – II. THE SHORTCOMINGS OF THE UNITED NATIONS CONVENTION ON THE LAW OF THE SEA ON TRANSFER OF MARINE TECHNOLOGY – III. PAVING THE WAY FOR A NEW LEGALLY BINDING INSTRUMENT PROTECTING BIODIVERSITY BEYOND NATIONAL JURISDICTION (BBNJ) – IV. FILLING THE GAP: THE FUTURE BBNJ AGREEMENT AND KEY ISSUES ON TECHNOLOGY TRANSFER – V. FINAL REMARKS

ABSTRACT: This paper deals with the relevant issues on technology transfer arising from the process of negotiation of a new international legally binding instrument on marine biodiversity in areas beyond national jurisdiction. From the difficult implementation of provisions contained in the United Nations Convention on the Law of the Sea and other international instruments, to the current state of negotiations in the Intergovernmental Conference on Marine Biodiversity of Areas Beyond National Jurisdiction, this paper tries to present the challenges, the gaps and the opportunities at stake. This is a historic opportunity to shape integral and specific protection of the biological diversity beyond national jurisdiction, while the oceans are facing more threats and perils than never.

KEYWORDS: Technology transfer – International Law – Law of the sea – Biodiversity – Areas beyond national jurisdiction.

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TRANSFERT DE TECHNOLOGIE, DROIT INTERNATIONAL ET PROTECTION DE LA BIODIVERSITÉ MARINE AU-DELÀ DE LA JURIDICTION NATIONALE: QUESTIONS CLÉS POUR UN NOUVEL ACCORD INTERNATIONAL

RÉSUMÉ: Ce document traite des questions pertinentes sur le transfert de technologie découlant du processus de négociation d'un nouvel instrument international juridiquement contraignant sur la biodiversité marine dans des zones au-delà de la juridiction nationale. De la réglementation inadéquate contenue dans la Convention des Nations Unies sur le droit de la mer et d'autres instruments internationaux, à l'état actuel des négociations à la Conférence intergouvernementale sur la biodiversité marine des zones situées au-delà de la juridiction nationale, ce document tente de présenter les défis, les lacunes et les opportunités en jeu. C'est une occasion historique de façonner une protection intégrale et spécifique de la diversité biologique au-delà de la juridiction nationale, alors que les océans sont confrontés à plus de menaces et de périls que jamais.

MOTS CLÉS: Transfert de technologie - Droit international - Droit de la mer - Biodiversité - Zones au-delà de la juridiction nationale.

TRANSFERENCIA DE TECNOLOGÍA, DERECHO INTERNACIONAL Y PROTECCIÓN DE LA BIODIVERSIDAD MARINA MÁS ALLÁ DE LA JURISDICCIÓN NACIONAL: CUESTIONES CLAVE PARA UN NUEVO ACUERDO INTERNACIONAL

RESUMEN: Este trabajo aborda cuestiones relevantes sobre transferencia de tecnología que surgen del proceso de negociación de un nuevo instrumento internacional legalmente vinculante sobre biodiversidad marina en áreas más allá de la jurisdicción nacional. Desde las regulaciones inadecuadas contenidas en la Convención de las Naciones Unidas sobre el Derecho del Mar y otros instrumentos internacionales, hasta el estado actual de las negociaciones en la Conferencia Intergubernamental sobre Biodiversidad Marina en áreas fuera de la jurisdicción nacional, este trabajo intenta presentar los desafíos, lagunas y oportunidades en juego, es una oportunidad histórica para configurar una protección integral y específica de la diversidad biológica más allá de la jurisdicción nacional, en un momento en el que los océanos enfrentan más amenazas y peligros que nunca.

PALABRAS CLAVE: Transferencia de tecnología - Derecho internacional - Derecho del mar - Biodiversidad - Áreas fuera de la jurisdicción nacional.

I. INTRODUCTION: TECHNOLOGY, INTERNATIONAL LAW AND PROTECTION OF MARINE BIODIVERSITY

The oceans are facing a “global emergency”². The most important threats over the oceans come from pollution, including marine debris or plastics, to increased overfishing, alien invasive species, underwater noise, physical degradation and the impacts of climate change and acidification³.

² UN Secretary-General: *Comments of the UN Secretary-General to the 44th G7 Summit*, 9 June 2018, <https://www.un.org/sg/en/content/sg/speeches/2018-06-09/secretary-general-comments-44th-g7-summit>.

³ UN General Assembly: *Oceans and the law of the sea*, A/73/368, 5 September 2018.

The sea is immense in extension and in resources, both mineral and living, and its economic, cultural and geostrategic importance is evident⁴. As Pinto said, “[f]rom the sea came food and mineral wealth; navigation offered infinite possibilities for the enhancement of wealth through trade, for cultural contacts, and for the spread of spiritual and temporal ‘dominion through military conquest’⁵. It is not possible to cover the immensity of the seas without technology, not for exploring or for sustainable use of marine resources. Or, from another point of view, technology⁶ is completely necessary to explore and exploit in an adequate, respectful and sustainable manner⁷.

Fisheries, commerce and military were the original, primitive uses of the oceans for mankind, but technology made possible new uses from the XX century up to the present, specially mining, genetic resources or energy⁸, especially in the areas beyond national jurisdiction⁹. Today, it is possible to get more from the oceans than in the past, so the more technology we have, the

⁴ Cfr. VILLELA MARRONI, E; ASMUS, M. L., “Geopolitical Strategy for the Territorialism of Oceans and Seas”, *International Journal of Geosciences*, n. 4, 2013.

⁵ PINTO, M. C. W.: “Legal Aspects of North/South Transfer of Marine Technology”, *Sri Lanka Journal of International Law*, n. 139, 1990, p. 141.

⁶ The UNCTAD *International Code of Conduct on the Transfer of Technology* defines technology as “systematic knowledge for the manufacture of a product, for the application of a process or for the rendering of a service”, thus emphasizing the non-material aspect of technology. However, the context of the term is the “transfer of technology transaction”, which includes arrangements for licensing industrial property, as well as the installation, operation, and functioning of plant and equipment (*United Nations Conference on an International Code of Conduct on the Transfer of Technology*, “Draft International code of conduct on the transfer of technology”, 5 June 1985, UN doc. TD/code TOT/47, articles 1.2, 1.3)

⁷ “The major knowledge gaps for BBNJ include: i) Baseline knowledge of which species live or pass through a given environment [...] ii) Understanding connectivity between habitats [...] iii) The role of biodiversity in ecosystem functioning [...] iv) Predicting distributions and patterns from limited sampling [...] v) The response of biodiversity to perturbation, or vulnerability [...]” (HARDEN-DAVIES, H.; SNELGROVE, P., “Science Collaboration for Capacity Building: Advancing Technology Transfer Through a Treaty for Biodiversity Beyond National Jurisdiction”, *Frontiers in Marine Science, Policy and Practices Reviews*, Vol 7, February 2020, p. 8).

⁸ Cfr. ABAD CASTELOS, M.: *Las energías renovables marinas y la riqueza potencial de los océanos. ¿Un mar de dudas o un mar de oportunidades?*, Bosch, Barcelona, 2013, 248 pp.

⁹ Cfr. SOBRIDO PRIETO, M., “North East Atlantic Marine Protected Areas Beyond National Jurisdiction. Geographical and Material Scope”, Chantal, M.; Loureiro, F.; Henriksen, T. (Eds.): *Global Challenges and the Law of the Sea*, Edit. Springer, Cham, 2020, pp. 443 ss.

more international regulation we need¹⁰. Furthermore, the “concerns grow about the increasing anthropogenic pressures posed by existing and emerging activities, such as fishing, mining, marine pollution, and bioprospecting in the deep sea”¹¹. Regarding the areas beyond national jurisdiction, representing 50% of the Earth and 2/3 of the sea, this reality is even more noticeable. Around the 95% could not be yet sampled by scientists, and less than 10% of the seafloor has been mapped¹², and it is estimated a 91% of unknown marine biological diversity¹³. The discovery rate is directly related to technology evolution, since in 1880 there were around 2.000 deep-sea species identified, while in 2020 the number is of 25.830, and increasing exponentially every year, deeper and deeper¹⁴. Due to the complexity of the knowledge on marine biodiversity and the extremely difficult access to ABNJ, especially to the deep sea, technology and technology transfer turn into key elements for the best protection of biodiversity beyond national jurisdiction (BBNJ).

Contemporary development public policies consider technology transfer as a central element, acquiring increasing relevance¹⁵. Undoubtedly, one of the main challenges is the huge difficulty for coordinating the multiple

¹⁰ “The conservation and sustainable use of BBNJ is increasingly attracting international attention, as scientific information, albeit insufficient, reveals the richness and vulnerability of such biodiversity” (International Institute for Sustainable Development (IISD): “Summary of the First Session of the Intergovernmental Conference (IGC) on the Conservation and Sustainable Use of Marine Biodiversity of Areas Beyond National Jurisdiction”, *Earth Negotiations Bulletin (ENB)*, Vol. 25, N. 179, September 2019 (available on <https://enb.iisd.org/vol25/enb25179e.html>)

¹¹ IISD Reporting Services: “Summary of the Third Session of the Intergovernmental Conference (IGC) on the Conservation and Sustainable Use of Marine Biodiversity of Areas Beyond National Jurisdiction: 19-30 August 2019”, *Earth Negotiations Bulletin*, Vol. 25, no. 218, 2 September, 2019. p. 1 (available on <https://enb.iisd.org/vol25/enb25218e.html>).

¹² HARDEN-DAVIES, H.; SNELGROVE, P., “Science Collaboration for Capacity Building: Advancing Technology Transfer Through a Treaty for Biodiversity Beyond National Jurisdiction”, *Frontiers in Marine Science, Policy and Practices Reviews*, Vol 7, February 2020, pp. 7-8.

¹³ MORA, C., TITENSOR, D. P., ADL, S., SIMPSON, A. G., and WORM, B. (2011). “How many species are there on earth and in the ocean?”, *PLoS Biology*, 2011, DOI: 10.1371/journal.pbio.1001127.

¹⁴ GLOVER, A. G.; HIGGS, N.; HORTON, T.: *World Registered of Deep-Sea species (WoRDSS)*, 2020. Accessed at http://www.marinespecies.org/deepsea_on_2020-06-20. DOI:10.14284/352.

¹⁵ SHUGUROVA, I. V.; SHUGUROV, M. V.: “International Technology Transfer. Controversial Global Policy Issues”, *Environmental Policy and Law*, 45/3-4, 2015, p. 133.

and disparate interests at stake, that of developed States (main holders of technology) and that of developing States and the international community as a whole (main holders of biodiversity, either in jurisdictional waters and beyond national jurisdiction)¹⁶. There is no doubt that “[c]apacity building and technology transfer play a key role in enabling developing countries to conserve and sustainably use marine resources, meaningfully participate in international fora dealing with ocean affairs, and meet their international obligations to protect the marine environment”¹⁷.

Besides, technology transfer can be conceived from a double perspective. On the one hand, as an integral part of the regime of access and distribution of benefits derived from genetic resources (biotechnology). On the other hand, as an autonomous instrument to achieve the conservation and sustainable use of biodiversity through environmentally reasonable technologies. The first perspective has been an object of considerable attention by the doctrine, mainly due to the increasing development of genetic resources. However, the second perspective has been less analyzed in the general field of sustainable development and the protection of biodiversity, despite being specifically included in article 16 of the Convention on Biological Diversity (CBD)¹⁸, revealing an essential character: “[...] both access to and transfer of technology among Contracting Parties are *essential* elements for the attainment of the objectives of this Convention [...]”¹⁹. In the specific scope of marine biodiversity in areas beyond national jurisdiction (BBNJ), studies are even scarcer.

Thus, technology transfer is an essential pillar for achieving the objectives of sustainable development, as the most important international texts on

¹⁶ See in general BOCZEK, B. A., *The Transfer of Marine Technology to Developing Nations in International Law*, The Law of the Sea Institute, University of Hawaii, 1982.

¹⁷ WRIGHT, G., CREMERS, K., ROCHETTE, J., CLARK, N., DUNN, D., GJERDE, K. M., et al., “High Hopes for the High Seas: Beyond the Package Deal Towards an Ambitious Treaty”. *IDDRI, Issue Brief*, n. 1, 2019, p. 6, available on https://www.iddri.org/sites/default/files/PDF/Publications/Catalogue%20Iddri/D%C3%A9cryptage/0005-Iddri-IB0919_8aout.pdf.

¹⁸ Cfr. PRIP, C; ROSENDAL, K; TVEDT, M.: “The state of technology transfer obligations in global environmental governance and law: biodiversity conservation and sustainable use”, *FNI Report 4/2015*, Fridtjof Nansen Institute/Centre for Biodiversity Policy and Law, December, 2015, pp. 1-2.

¹⁹ Italics added. Article 16.1 CBD.

the subject have established, from the Rio Declaration²⁰ to the Millennium Declaration²¹ and the recent 2015 Sustainable Development Goals (SDG). In particular, the SDGs have renewed the importance of technology transfer in general²², but especially in relation to the transfer of marine technology. Within the SDG 14 “Conserve and sustainably use the oceans, seas and marine resources for sustainable development”, the goal of achieving this objective is the need to “[increase] scientific knowledge, develop the capacity for research and transfer of marine technology, taking into account the Criteria and Guidelines for the Transfer of Marine Technology of the Intergovernmental Oceanographic Commission²³, in order to improve the health of the oceans and enhance the contribution of marine biodiversity to the development of countries in development, particularly small island developing states and least developed countries”. So, the inclusion of capacity-building and transfer of marine technology both in the international legally binding instrument (ILBI) and in SDGs, it clearly shows its growing importance and its inclusion in the international agenda at the highest political and legal level. Nevertheless, the problem is that it is the absence of economic commitment (mandatory, voluntary). Therefore, technology transfer in general and marine technology in particular, constitutes a central instrument of the United Nations 2030 Agenda for sustainable development, which the main purpose is to protect marine biodiversity.

Likewise, technology transfer is a fundamental pillar of several international regimes, among which the law of the sea and the international environmental law highlight. Specifically, some of the most important provisions on technology transfer can be found in the United Nations Convention on the

²⁰ “States should cooperate to strengthen endogenous capacity-building for sustainable development by improving scientific understanding through exchanges of scientific and technological knowledge, and by enhancing the development, adaptation, diffusion and transfer of technologies, including new and innovative technologies” (Principle 9).

²¹ “We also resolve [...] To ensure that the benefits of new technologies, especially information and communication technologies, in conformity with recommendations contained in the ECOSOC 2000 Ministerial Declaration, are available to all.” (Point 20.5).

²² SDG 17, “Revitalize the global partnership for sustainable development”, paragraphs 17.6, 17.7 y 17.8.

²³ IOC ADVISORY BODY OF EXPERTS ON THE LAW OF THE SEA: *IOC Criteria and Guidelines on the Transfer of Marine Technology (CGTMT)*, UNESCO, Paris, 2005.

Law of the Sea (UNCLOS), the United Nations Framework Convention on Climate Change (UNFCCC) and the CBD and its Nagoya Protocol²⁴. Although we will pay special attention to UNCLOS, due to the purpose of this work, the provisions and experiences of UNFCCC and CBD will be very useful to extract lessons applicable to ILBI, especially because they enjoy a higher level of implementation than UNCLOS²⁵.

This research fits precisely in this context, trying to make contributions to the debate on the historic²⁶ negotiations of an international legal instrument to protect marine biodiversity in ABNJ²⁷. In this way, it tries to explore new lines of progress in the knowledge of an area of extraordinary environmental, social, political, economic²⁸ and legal importance, taking into account the constant and growing threats to biodiversity (climate change, overexploitation

²⁴ Protocol on access to genetic resources and the fair and equitable sharing of benefits arising from the utilization of genetic resources in a fair and equitable way, 29 October 2010. Among the existing international instruments, it could be considered that the closest to our topic would be the 1992 CBD, whose articles 16 and 19 contain specific provisions on technology transfer. However, there is a broad consensus around the problems and difficulties on the implementation of these provisions shown in practice. Among other issues, it has been pointed out its inadequacy to achieve the objectives of the Convention, lack of synergies between financing mechanisms, or the lack of coverage of the needs of many States. (cfr. UNITED NATIONS ENVIRONMENT PROGRAM: *Technology Transfer and Cooperation under the Convention on Biological Diversity: Towards more effective implementation*, Edit. UNEP, Nairobi, 2010). Although the CBD and the Nagoya Protocol deal with the biodiversity under national jurisdiction, a few concrete procedural issues related beyond national jurisdiction are regulated by both instruments (VÁZQUEZ, E., “La protección de la diversidad biológica marina más allá de la jurisdicción nacional. Hacia un nuevo acuerdo de aplicación de la Convención de las Naciones Unidas sobre el Derecho del Mar”, *Revista Electrónica de Estudios Internacionales*, n. 37, 2019, p. 6.

²⁵ Cfr. MINAS, S., “Marine Technology Transfer under a BBNJ Treaty: A Case for Transnational Network Cooperation”, *American Journal of International Law Unbound*, Vol. 112, 2018, p. 145.

²⁶ It is considered “a once-in-a-lifetime opportunity to fashion a new treaty for the high seas” (PAYNE, C., “New Law for the High Seas”, *Berkeley Journal of International Law*, vol. 37, n. 2, 2019, p. 191.

²⁷ To date, the most recent study on the state of the negotiations is PAPANAVRIDIS, E.: “The negotiations for a new implementing agreement under the UN Convention on the Law of the Sea concerning marine biodiversity”, *International and Comparative Law Quarterly*, vol. 69, July 2020, pp. 585 – 610.

²⁸ For an economic perspective, see PONTECORVO, G.; WILKINSON, M., “An Economic Analysis of the International Transfer of Marine Technology”, 2 *Ocean Development and International Law Journal*, Vol 2, n. 3, 1974.

of resources, etc.), of its consequences on the environment and human beings. This research is also focused on the absence of an adequate international legal and institutional framework to effectively manage and protect marine biodiversity.

Indeed, the present work seeks to deepen the need for an international legal and institutional system, within the UNCLOS framework, to regulate the transfer of technology, putting it at the service of sustainable management and effective protection of marine biodiversity. In this sense, although there are international standards and institutions that refer to technology transfer and biodiversity, they do so separately and independently, without focusing on marine biodiversity. Therefore, it is about exploring the possibilities of creating a specific technology transfer framework for the protection of marine biodiversity.

II. THE SHORTCOMINGS OF THE UNITED NATIONS CONVENTION ON THE LAW OF THE SEA ON TRANSFER OF MARINE TECHNOLOGY

The main regulation of the Law of the Sea, UNCLOS, does not contain any specific regulation on the protection of marine biodiversity. Arguably, UNCLOS *regulates* more than it *protects*. Although it contains significant aspects of environmental protection, “the law of the sea has not been able to respond adequately to new and old environmental problems”²⁹. However, it does contain three relevant parts on this subject that are interrelated. Part XII deals with the “Protection and preservation of the marine environment”³⁰, Part XIII regulates “Marine scientific research”³¹ and Part XIV specifically regulates the “Development and transfer of marine technology”³², so that the right to investigate carries the responsibility to share and contribute to capacity-

²⁹ MOSSOP, J.: “Can We Make the Oceans Greener? The Successes and Failures of UNCLOS as an Environmental Treaty”, *Victoria University of Wellington Law Review*, n. 49, p. 574.

³⁰ Articles 192 – 237.

³¹ Articles 238 – 265.

³² Articles 266 – 278. During the process before the III UN Conference on the Law of the Sea started, 32 States included in their proposals the issue of technology transfer, as well as the UNCTAD. For a study of the negotiations around Part XIV, vid. LI, Y., *Transfer of Technology for Deep Sea-Bed Mining: The 1982 Law of the Sea Convention and Beyond*, Martinus Nijhoff Publishers, Dordrecht/Boston/London, 1994; and, in brief, see CGTMT, 5-7.

building and transfer of marine technology³³. Notwithstanding these three parts, its implementation is far from satisfactory to the extent that oceans are gradually and severely been damaged, in particular the marine biological biodiversity³⁴.

The core regulation of capacity-building and transfer of marine technology in the Law of the Sea is Part XIV. The basis of the existence of a specific part dedicated to the transfer of marine technology is found in the principle of “common heritage of humanity”³⁵ applied to the seabed in the Resolution 2749 (XXV), *Declaration of Principles Governing the Seabed and the Ocean Floor, and the Subsoil thereof, beyond the Limits of National Jurisdiction*³⁶: “the seabed and ocean floor, and the subsoil thereof, beyond the Limits of National Jurisdiction [...] as well as the resources of the area are the common heritage of mankind”, establishing the equal access to benefits of the area³⁷. The transfer of marine technology constitutes an indispensable complement to the principle of the common heritage of humanity since Resolution 2749 (XXV), consolidated in Part XIV UNCLOS, developed in CGTMT, and present in the international agenda of sustainable development from Agenda 21³⁸ to the current SDG³⁹. However, its effectiveness is far from adequate due to its implementation problems, as mentioned below.

Since the technology allowing access to ABNJ is only available to a few, both Resolution 2749 (XXV) and UNCLOS establish the need to create mechanisms for the transfer of technology to other countries as the only

³³ For a study on the relationship between Part XIII and Part XIV, see HARDEN-DAVIES, H.; SNELGROVE, P., “Science Collaboration”... *cit.*, 1-14.

³⁴ VÁZQUEZ, E., “La protección”... *cit.*, p. 5.

³⁵ Ambassador Arvid Pardo from Malta formulated this principle in 1967 (LI, Y., *Transfer of Technology*... *cit.*, p. 15), establishing the Seabed Committee and then placing the technology transfer on the agenda of the III UN Conference on the Law of the Sea” in order to avoid the prevalence of developed countries over the exploitation of the seabed (and therefore compensating developing countries)” (CGTMT, p. 5).

³⁶ Cfr. CGTMT, p. 2.

³⁷ Principles 4 and 5.

³⁸ “Chapter 17 of the Agenda 21 states that Transfer of Marine Technology is a way to provide developing countries with a tool to improve their capacity to collect, analyze, assess and use information in support of sustainable development” (CGTMT, p. 3).

³⁹ SDG 14 and 17.

possibility of accessing an area which is the common heritage of humanity⁴⁰. States are bounded to cooperate in accordance with their capacities to actively promote the development and transfer of marine technology, in accordance with fair and reasonable criteria. Otherwise, it establishes that the transfer of marine technology must generally be free or at a reduced cost for the benefit of the receiving State.

Although UNCLOS does not establish what should be understood by “transfer of marine technology”, it is conceived very broadly from article 266 on *Promotion of the development and transfer of marine technology*: “States, directly or through competent international organizations⁴¹, shall cooperate in accordance with their capabilities to promote actively the development and transfer of marine science and marine technology on fair and reasonable terms and conditions”⁴². In addition, UNCLOS “emphasizes: the development of technology including equipment; the sharing of scientific and technological knowledge, data and information; the training of people; and the establishment of national and regional marine scientific and technological centers”⁴³. According to Part XIV UNCLOS, the nuclear elements of the transfer of marine technology⁴⁴ deal with *data* (information and knowledge), *people* (skills, training, exchanges), *equipment* (development, access, transfer) and *cooperation* (including collaboration)⁴⁵.

Following the content of Parts XIII and XIV, it is easy to conclude the importance of capacity building for marine scientific research and the transfer of marine technology, at a bilateral, regional and multilateral level,

⁴⁰ Cfr. UNESCO: “World Heritage in the High Seas: An Idea Whose Time Has Come”, *World Heritage reports*, n. 44, 2016.

⁴¹ In this sense, the following international organizations are considered competent in the sense of article 266.1: FAO, IAEA, IHO, IMO, IOC, ISBA, UNCTAD, UNDP, UNEP, UNESCO, UNIDO, WIPO, WMO, World Bank (Div. Ocean Affairs & Law of the Sea, *Law of the Sea Bulletin*, n. 31, 1996, p. 93). The status of international organization competent, mainly the IOC, “implies the basic duty for the IOC of giving impulse to the implementation and effective use of Part XIV by the States Members of the Commission” (CGTMT: pp. 3-4).

⁴² Article 266.1.

⁴³ Article 268. For a careful commentary of this article, see BARTENSTEIN, K., “Article 268”, Proelss, A. (ed), *United Nations Convention on the Law of the Sea: A Commentary*, Beck/Hart Publishing, 2017, pp. 1778.

⁴⁴ Cfr. HARDEN-DAVIES, H.; SNELGROVE, P., “Science Collaboration”... *cit.*, p. 3.

⁴⁵ Developed by de CGTMT, *see infra*.

being considered even as “key aspects of UNCLOS”⁴⁶. However, the Law of the Sea Convention does not offer an adequate regulatory solution for the protection of biodiversity beyond national jurisdiction, even not including a single direct mention to marine biodiversity. The implementation of UNCLOS provisions on capacity-building and transfer of marine technology has been very insufficient⁴⁷, thus harming developing States in obtaining economic and environmental benefits or benefits from the exploration of resources. One of the main regulatory implementation difficulties is related to the dispersion of technology⁴⁸ between multiple actors, States, universities, research centers and private companies⁴⁹.

However, some evolution can be identified beyond UNCLOS, in particular by the Intergovernmental Oceanographic Commission (IOC) of UNESCO, which adopted the *Intergovernmental Oceanographic Commission Criteria and Guidelines on the Transfer of Marine Technology* (CGTMT) in 2003⁵⁰, according to Article 271 UNCLOS, entitled *Guidelines, criteria and standards*: “States, directly or through competent international organizations, shall promote the establishment of generally accepted guidelines, criteria, and standards for the transfer of marine technology on a bilateral basis or within the framework of international organizations and other for a, taking into account, in particular, the interests and needs of developing States”. CGTMT considers that the transfer of marine technology includes “instruments, equipment, vessels, processes and methodologies required to produce and use knowledge to improve the study and understanding of the nature and resources of the ocean and coastal areas”.

⁴⁶ LONG, R. J.; RODRÍGUEZ CHAVES, M., “Anatomy of a new international instrument for marine biodiversity beyond national jurisdiction. First impressions of the preparatory process”, *Environmental Liability – Law, Policy and Practice*, n. 6, 2015, p.225.

⁴⁷ “That said, if Article 268 [UNCLOS] functioned well, there would be no need for this issue to be included in the 2011 ‘package deal’ (PAPASTAVRIDIS, E.: “The negotiations”... *cit.*, p. 597).

⁴⁸ MINAS, S., “Marine Technology”... *cit.*, p. 144. Furthermore, the level of development and implementation is quite different from one treaty to another.

⁴⁹ BASF, the world’s largest chemical company, owns 47% of the 12.998 genetic sequences associated with 862 marine species registered (<https://www.europapress.es/ciencia/habitat-y-clima/noticia-47-patentes-geneticas-marinas-manos-sola-empresa-20180607184503.html>).

⁵⁰ Adopted by the IOC Assembly, Resolution XXII-12, under the proposal of the Advisory Body of Experts on the Law of the Sea.

One of the most significant elements of CGTMT is the submission proceeding of Transfer of Marine Technology Application (TMTA)⁵¹. However, this mechanism has not been yet implemented, according to the CGTMT, “due primarily to resource constraints and lack of requests from developing nations”⁵². The IOC Assembly dealt with this lack of implementation creating a Group of Experts on Capacity Development⁵³ “to advise the Assembly on, and start the implementation of, the Transfer Marine Technology Clearing House Mechanism”⁵⁴. So, the establishment of an effective clearing house mechanism is one of the major challenges of the ILBI, trying to build it on the bad experiences of CGTMT and on the better experiences of other Conventions, as UNFCCC⁵⁵. Meanwhile, we do not have an appropriate mechanism to identify technological needs or to communicate those needs.

The bad experience in the implementation of UNCLOS should serve as a lesson for ILBI to catalyze a better application of Parts XIII and XIV of the Convention. Some consensus exists around the idea of “strengthening existing capabilities and capacities and an improvement in funding, as well as greater engagement with public and private scientific bodies in the relevant

⁵¹ CGTMT, pp. 13 – 14. Any State may submit the Application to the IOC Secretariat, who will examine -in consultation with officers and specialists- in order to identify potential donors interested in subscribing to a further agreement on transfer of marine technology (GONZÁLEZ, A., “Cutting a Gordian Knot? Towards a practical and Realistic Scheme for the Transfer of Marine Technology”, Nordquist, M.; Long, R.; Heidar, T.; Moore, J. (eds.): *Law, Science & Ocean Management*, Martinus Nijhoff Publishers, Leiden/Boston, 2007, pp. 375-376). For an economic study on technology transfer agreements, AMARO CZELUSNIAK, V.; PEREIRA RIBEIRO, M. C.; AMARAL DERGIN, D. E., “Contratos de transferência de tecnologia e a teoria da nova economia institucional”, *Revista da Faculdade de Direito da Universidade Federal de Minas Gerais*, n. 72, pp. 629 – 661.

⁵² *Ad Hoc Report of the Intergovernmental Oceanographic Commission (IOC: Strategy on Activities in relation to Capacity Development and Transfer of Marine Technology*, IOC/INF-1347, June 17 June 2017). In this sense, “it is noteworthy that the experience under the UN Framework Convention on Climate Change has been that developing country requests were submitted after the establishment of the Climate Technology Centre and Network, with the number of requests increasing with each passing year”.

⁵³ See MINAS, S., “Marine Technology”... *cit.*, p. 146.

⁵⁴ IOC Assembly, Decision IOC-XXIX/10.1 paragraph v, 2017.

⁵⁵ Cfr. MINAS, S., “Marine Technology”... *cit.*, p 145.

specialist fields, such as genomics and ocean engineering technologies⁵⁶. So, ILBI “offers a historic opportunity to strengthen the international framework, including for capacity building and technology transfer, to better support the conservation and sustainable use of biodiversity⁵⁷.”

Although the concern for this matter began in 2004, with the creation by the United Nations General Assembly of an *Open-ended Special Informal Working Group*⁵⁸, only four meetings had been held until 2011. However, in recent years the activity of the Working Group had increased, finally culminating in February 2015 with the presentation of recommendations to the United Nations General Assembly, among which the following stand out: “Decide to develop an international legally binding instrument under the Convention on the conservation and sustainable use of marine biological diversity of areas beyond national jurisdiction and to that end⁵⁹”. Following this recommendation, the United Nations General Assembly adopted resolution 69/292 on 19 June 2015, deciding to develop a legally binding international instrument, within the framework of the United Nations Convention on the Law of the Sea, on conservation and sustainable use of marine biological diversity in areas beyond national jurisdiction. Then, a Preparatory Committee was created to make substantive recommendations to the General Assembly before the subsequent convocation of an international conference that deals with the negotiation of a possible international convention or treaty on the matter.

III. PAVING THE WAY FOR A NEW LEGALLY BINDING INSTRUMENT PROTECTING BIODIVERSITY BEYOND NATIONAL JURISDICTION (BBNJ)

In this context, regarding to find the best way to protect marine biodiversity in the areas beyond national jurisdiction, the UN General Assembly decided to create in 2004 “an *Ad Hoc* Open-ended Informal Working Group to study issues relating to the conservation and sustainable use of marine biological

⁵⁶ LONG, R. J.; RODRÍGUEZ CHAVES, M., “Anatomy” ... *cit.*, p.225.

⁵⁷ HARDEN-DAVIES, H.; SNELGROVE, P., “Science Collaboration”... *cit.* p. 2.

⁵⁸ Resolution 59/24, 17 November 2014.

⁵⁹ *Letter from the Chairs of the Working Group to the General Assembly*, 13 February 2015, A / 69/780, p. 2.

diversity beyond areas of national jurisdiction”⁶⁰. Those issues deal with the survey of the past and present activities of UN and other international organizations regarding BBNJ, as well as their scientific, technical, economic, legal, environmental and socio-economic aspects, identifying possible options to promote international cooperation on the matter. After three meetings from 2006 to 2010, the Working Group members faced issues and exchanged opinions on marine science, marine genetic resources, marine protected areas, environmental impact assessment or illegal, unregulated and unreported fishing⁶¹, among others⁶².

In 2011⁶³, the Working Group decided to recommend the States to initiate a process to develop an international regulation protecting BBNJ, including the famous “package” –or “2011 package”- with the principal issues to be addressed: marine genetic resources (MGRs), marine protected areas (MPAs), environmental impact assessment (EIA), and capacity-building and technological transfer⁶⁴. These four issues –all of them directly related to science and technology- have shaped and conditioned all the process since then, from the deliberations of the Working Group to the resolutions of the United Nations General Assembly and the intergovernmental negotiation⁶⁵. The General Assembly adopted these recommendations and decided to establish the basis for the process according to its Resolution adopted on 24

⁶⁰ A/RES/59/24, par. 73. Just including a single reference to technology transfer, encouraging “the Intergovernmental Oceanographic Commission of the United Nations Educational, Scientific and Cultural Organization to continue to disseminate and implement the Criteria and Guidelines on the Transfer of Marine Technology, approved by the Assembly of the Oceanographic Commission at its twenty-second session, in 2003” (par. 11).

⁶¹ Cfr. YTURRIAGA BARBERÁN, J.A., “Protección de la biodiversidad marina y gestión de las pesquerías en alta mar”, Pueyo Losa, J.; Jorge Urbina, J. (Coords.): *La reforma de la gobernanza pesquera internacional y europea*, Aranzadi Thomson Reuters, Cizur Menor, 2017, pp. 55 – 80.

⁶² International Union for Conservation of Nature: *An International Instrument on Conservation and Sustainable Use of Biodiversity in Marine Areas beyond National Jurisdiction. Matrix of Suggestions*, Edit. IUCN, 16 December 2015, p. 7.

⁶³ New York, 31 May to 3 June 2011.

⁶⁴ *Annex to Resolution of the UN General Assembly*, 24 December 2011, A/RES/66/231, pp. 40 – 41.

⁶⁵ The 2012 Rio Conference on Sustainable Development decided to back the work of the Working Group, underlying its recommendations, including the elaboration of a new instrument.

December 2011: “Decides, accordingly, to initiate within the Ad Hoc Open-ended Informal Working Group [...] that the process will address the issues identified [...]”⁶⁶.

After that the Working Group completed its work in January 2015, the United Nations General Assembly triggered the process to promote the preparation of the ILBI, so opening the intergovernmental phase. Following this Resolution, after several meetings, the Working Group finally concluded the necessity to negotiate a new legally binding instrument under UNCLOS to protect BBNJ⁶⁷ through a global, comprehensive regime. In this sense, on 19 June 2015, the UN General Assembly adopted the Resolution 62/292 on the *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*⁶⁸.

In particular, this Resolution created a *Preparatory Committee* “to make substantive recommendations to the General Assembly on the elements of a draft text of an international legally binding instrument”⁶⁹ under the UNCLOS and on the basis of the Working Group. So, the preparatory committee was called to pave the way for a further intergovernmental conference, so its first meeting, held from 28 March to 8 April 2016, supposed the beginning of the intergovernmental negotiations of the ILBI⁷⁰. Due to the scope of its mandate and the complexity of issues and interests at stake, the work of the committee to reach consensus-based decisions was very hard. Different points of view appeared during the sessions held in 2016 and 2017, before the report to the General Assembly was adopted in the fourth session, 10 to 21 July 2017, dedicating section 6 to “Capacity-building and transfer of marine technology”⁷¹, with elements regarding objectives, types, modalities,

⁶⁶ Paragraph 167, *Oceans and the law of the sea*, A/Res/66/231.

⁶⁷ The Working Group had studied the scope, the parameters and the feasibility of an international instrument under the UNCLOS (Resolution 69/245, 29 December 2014).

⁶⁸ A/RES/69/292.

⁶⁹ A/RES/69/292, par. 1. a).

⁷⁰ 91 States parties to UNCLOS gathered with 10 States non-parties, 7 intergovernmental organizations, 5 specialized agencies and other organizations, 5 UN funds and programs, bodies and offices, 17 non-governmental organizations and 2 international private actors (International Chamber of Shipping and International Chamber of Commerce).

⁷¹ A/AC.287/2017/PC.4/2, 10-21 July 2017, pp. 14-15.

and funding of capacity-building and transfer of marine technology. The Preparatory Committee, organized into plenary sessions and working groups, analyzed topics like scope of the new instrument, the relationship with other instruments⁷², guiding approaches and principles, as well as 2011 package. All of these questions would further represent key issues of the ILBI⁷³.

From the first meeting of the Preparatory Committee⁷⁴, many delegations presented the capacity-building and transfer of marine technology “as a *conditio sine qua non* of the new instrument and as a cross-cutting feature in relation to the other elements of the 2011 package”⁷⁵, based upon the CGTMT and taking into account the importance of UNDP criteria and capacity building. So, the “2017 BBNJ Preparatory Committee report included capacity-building and technology transfer in the points of broad convergence among delegations”⁷⁶. In particular, the Preparatory Committee recommended that technology transfer should be country-driven, sustainable and marine scientific and technological capacity should be developed in accordance with Parts XIII and XIV of the UNCLOS⁷⁷. However, the delegations could not reach consensus on several points dealing with the details, requirements and conditions related to technology transfer, so it was postponed to further meetings⁷⁸.

The Preparatory Committee also discussed on the scope of the ILBI, concluding that the new instrument will be focused on the conservation and sustainable use of marine biodiversity in ABNJ, through the issues contained

⁷² In this sense, see WARNER, R., “Conserving Marine Biodiversity in Areas Beyond National Jurisdiction: Co-Evolution and Interaction with the Law of the Sea”, Rothwell, D.; Oude Elferink, A.; Scott, K.; Stephens, T. (Eds.), *The Oxford Handbook of the Law of the Sea*, Oxford University Press, 2015, <https://www.frontiersin.org/articles/10.3389/fmars.2014.00006/full>.

⁷³ So, the work of the Working Group conditioned the further development of the process, especially since 2011 with the integrated approach and the 2011 package, but other multilateral organisms made contributions in this process, like FAO, IMO, ISA, IOC, and the International Union for Conservation of Nature (cfr. LONG, R. J.; RODRÍGUEZ CHAVES, M., “Anatomy”... *cit.*, p. 218).

⁷⁴ During this first session, few States and few International Organizations gathered, but the G77/China were very active.

⁷⁵ LONG, R. J.; RODRÍGUEZ CHAVES, M., “Anatomy”... *cit.*, p. 225.

⁷⁶ MINAS, S., “Marine Technology”... *cit.*, p. 146.

⁷⁷ A/AC.287/2017/PC.4/2, p.14.

⁷⁸ A/AC.287/2017/PC.4/2, p.17.

in 2011 package, and will be open to parties and non-parties to UNCLOS, including international organizations with competences on its object, as the European Union⁷⁹. Otherwise, one of the most intense debates concerned the principles inspiring the ILBI, including references to the precautionary principle, ecosystem-based approach, adaptive management, cooperation, science-based decision-making, the principle of sustainable development, public and indigenous community participation in decision-making and good governance, common but differentiated responsibilities, freedom of the high seas, the polluter pays principle, equitable use of marine life for the benefit of present and future generations, stewardship of the global marine environment, state liability for environmental damage, inter-generational and intra-generational equity, attention to the special needs and concerns of developing states, including least developed countries, as well as land-locked developing countries and small island developing States⁸⁰.

IV. FILLING THE GAP: THE FUTURE BBNJ AGREEMENT AND KEY ISSUES ON TECHNOLOGY TRANSFER

On April 2018, following the report of the Preparatory Committee, the Intergovernmental Conference held its organizational meeting to prepare the further steps in order to reach a zero draft on the basis of consensus-based decisions, which was finally adopted on 2019 after three sessions⁸¹. Following the third IGC⁸², the States reached a draft containing a proposal regarding

⁷⁹ One of the main hurdles during the first session of the Preparatory Commission was also present during the meetings of the BBNJ Working Group: “the relationship between the new instrument and the governance and management of high seas fisheries”, as well as “the inclusion or exclusion of a reference to fish in the definition of MGRs remains contentious”. In return, the delegates reached a consensus in the sense that “the new instrument should not encroach upon the sovereign rights and the jurisdiction of coastal states in relation to the continental shelf and its resources”.

⁸⁰ Cfr. LONG, R. J.; RODRÍGUEZ CHAVES, M., “Anatomy”... *cit.*, p. 221.

⁸¹ First session, from 4 to 17 September 2018; Second Session, from 25 March to 5 April 2019; and Third Session from 19 to 30 August. For further information on the development of the meetings.

⁸² More than 400 participants, including governments, international organizations, civil society, and academia engaged productively in the session in an amicable spirit to achieve the

the following key issues: general provisions, cross-cutting issues, and the four elements of the 2011 package.

On the matter of technology transfer, the zero draft finally contains important commitments reached by the delegations, including, for instance, many of the objectives discussed by the delegations, the classification of technology transfer and capacity building modalities, or the necessity of a clearing-house instrument, as well as the establishment of general cooperation, from sectoral to a global level. However, the most important and substantive questions remain without consensus, as it is exposed below. Some other general questions, including the definition of “marine technology”⁸³ or “transfer of marine technology”⁸⁴, are considered unnecessary by delegations from the EU and its member States, Japan, the United States, Canada, Australia, the Republic of Korea or Switzerland, suggesting its elimination and the referral to the CGTMT⁸⁵.

The draft includes *Capacity-building and transfer of marine technology* as Part V (articles 42 – 47). The first article regulating capacity-building and transfer of marine technology, article 42, deals with the *objectives*, where the most controversial issue is the verb accompanying the “access to marine technology by and the transfer of marine technology for peaceful purposes to developing States Parties for the attainment of the objectives of this Agreement”. For some of the most “technological” countries, like the US, Japan, Norway, Israel, or the Russian Federation, the objective of the new instrument should be “promote and encourage access”. However, many developing States, including the core Latin American Group, support the reference to “ensure” access to marine technology by and the transfer of marine technology, while the G-77/China and others suggest that it should be “carried out” through enhanced cooperation⁸⁶.

goal of conservation and sustainable use of BBNJ (International Institute for Sustainable Development (IISD): “Summary of the Third Session”... *cit.*).

⁸³ Article 1.11 Draft. *Textual proposals submitted by delegations by 20 February 2020, for consideration at the fourth session of the Intergovernmental Conference on an international legally binding instrument under UNCLOS, Article-by-article compilation*, 15 April 2020, pp. 9-10.

⁸⁴ Article 1.14 Draft. *Textual proposals submitted by delegations by 20 February 2020... cit.*, pp. 9-10.

⁸⁵ International Institute for Sustainable Development (IISD): “Summary of the Third Session”... *cit.*

⁸⁶ *Textual proposals submitted by delegations by 20 February 2020... cit.*, p. 293.

In general, this is the same discussion around many other topics dealing with capacity-building and transfer of marine technology. Indeed, it is possible to find this discussion on verbs “promote” or “ensure” regarding cooperation in capacity-building and transfer of marine technology in article 43. Most of the developed countries suggest that “States parties, directly or through relevant legal instruments and frameworks and relevant global, regional, subregional and sectoral bodies, shall *promote* cooperation”; while developing countries affirm that “States parties [...] shall *ensure* cooperation”⁸⁷.

Nevertheless, the most controversial topics of the draft deal with the mandatory or voluntary nature of the modalities for capacity-building and transfer of marine technology and of the funding provisions. On one hand, developing States mainly support that “[c]apacity-building and the transfer of marine technology *shall* be provided on a *mandatory and voluntary* bilateral, regional, subregional and multilateral basis”⁸⁸. Meanwhile, developed States do not accept anything beyond a *voluntary* basis. On the other hand, and probably the most difficult hurdle to overcome, the gap between developing and developed countries remains insurmountable in Part VII “Financial resources [and mechanism]”. Its first normative provision is still without any consensus: “Funding in support of the implementation of the Agreement, in particular capacity-building and the transfer of marine technology under this Agreement, shall be adequate, accessible, transparent, sustainable, and predictable and both voluntary and mandatory [or only voluntary]”⁸⁹. The United States and Israel lead the position of many developed and technological States which not accept the funding of the new instrument and capacity-building and transfer of technology on mandatory basis⁹⁰.

In general, the delegates reached a “broad consensus that capacity-building and transfer of marine technology should take place at all levels and in several forms, including: the sharing of data, information and knowledge; infrastructure; and human resources, as per Article 46”⁹¹. Many other topics showed substantial progress, including the most part of objectives, a provision

⁸⁷ Article 43.1 Draft.

⁸⁸ Article 44.2 Draft.

⁸⁹ Article 52.1 Draft.

⁹⁰ *Textual proposals submitted by delegations by 20 February 2020... cit.*, pp. 367-369.

⁹¹ HARDEN-DAVIES, H.; SNELGROVE, P., “Science Collaboration”... *cit.*, p. 2.

on cooperation at all levels, a provision on cooperation at all levels, including through global, regional, sub-regional, and sectoral bodies; the suggested types/categories of capacity-building and technology transfer; the desirability of a clearing-house mechanism (CHM); and the COP or other appropriate body having a role in determining capacity-building and technology transfer types⁹². Notwithstanding this, huge divergences remain on the way how to implement capacity-building and transfer of marine technology, in particular those dealing with the mandatory or voluntary nature of the cooperation and of the financial resources. Anyway, there is a huge sentiment of an optimist on the positive evolution of the negotiations leading to achieve a happy end⁹³.

So, the zero draft underlines cooperation as a key issue for achieving capacity-building and transfer of marine technology⁹⁴, but it is however weak in implementation mechanisms. Hence, further work is still needed on whether capacity-building and transfer of marine technology should be to be voluntary, or both mandatory and voluntary, or “in accordance with their capabilities”⁹⁵; who should benefit; the role of the COP in elaborating relevant modalities; the terms and conditions upon which CB and TT are to be provided; concerns regarding the imposition of obligations on the private sector; the provision on monitoring and review, including their mandatory or voluntary nature; questions on the scope⁹⁶.

⁹² International Institute for Sustainable Development (IISD): “Summary of the Third Session”... *cit.*

⁹³ “Notwithstanding the fact that positions of States are not yet aligned on many important issues, there are hope and confidence in that this Conference will ultimately be fruitful, and lead to the development of an instrument that all delegations can agree to, one that makes a strong contribution to the conservation and sustainable use of marine biological diversity of areas beyond national jurisdiction and to the health of the ocean” (DE SERPA SOARES, M.: “The Conservation and Sustainable Use of the Ocean in Areas Beyond National Jurisdiction: Where Do We Stand?”, Chantal, M.; Loureiro, F.; Henriksen, T. (Eds.): *Global Challenges and the Law of the Sea*, Edit. Springer, Cham, 2020, p 326).

⁹⁴ Articles 44 – 46.

⁹⁵ In this sense, article 266.1 UNCLOS.

⁹⁶ International Institute for Sustainable Development (IISD): “Summary of the Third Session”... *cit.*

Further discussions⁹⁷ will be decisive to determine whether the negotiations may lead to an effective new legally binding instrument⁹⁸, as a historic opportunity to improve the implementation of capacity-building and transfer of marine technology in the general frame of UNCLOS, following IOC and UNCTAD guidelines and criteria. To make this historic opportunity real, the new instrument should do two things. Firstly, it should learn from the great mistakes of UNCLOS, weak obligations and weak institutions, and too much fragmentation⁹⁹. Until now, the tough positions of some economic and technological powers made it impossible to overcome divergences in key topics like modalities of capacity-building and technology transfer or financial and monitoring mechanisms. Secondly, it should learn from the best comparative experiences regarding capacity-building and technology transfer in international regimes, like environment and climate change. In particular, the success of the ILBI broadly depends on its inspiration for the establishment of a clearing-house mechanism, in the sense of some of the best tested in practice. In this sense, the Preparatory Committee had suggested that the ILBI should “make provision for a clearing-house mechanism to perform functions with regard to capacity-building and transfer of marine technology, *taking into account the work of other organizations*”¹⁰⁰. In particular, the role and experience of

⁹⁷ The Fourth Session of the Intergovernmental Conference, to be held from 23 March to 3 April 2020, was postponed due to COVID-19 pandemics.

⁹⁸ However, to date, “[t]he current state of negotiations does not offer real degree of certainty as to how effective the new agreement will be” (PAPASTAVRIDIS, E.: “The negotiations”... *cit.*, p. 610).

⁹⁹ “While numerous agreements are currently in place to deal with high seas resources, the BBNJ negotiation reflects the decision that there are too many gaps and too much fragmentation for these to effectively govern the vast and rich high seas” (PAYNE, C. R., “New Law”... *cit.*, p. 353).

¹⁰⁰ Italics added. *Report of the Preparatory Committee established by UN General Assembly Resolution 69/292, A/AC287/2017/PAC.4/2*, p. 14. For a Summary of features of clearing-house mechanisms from various international environmental agreements, see CICIN-SAIN, B. et al.: *Policy Brief on Capacity Development as a Key Aspect for a New International Agreement on Marine Biodiversity Beyond National Jurisdiction (BBNJ)*, Global Ocean Forum, September 2018, pp. 29 – 30.

the IOC could operate as a central key of the new mechanism emerging from the new agreement¹⁰¹.

Experts show a broad consensus that ILBI means a historic opportunity for improving UNCLOS as a general framework for the implementation of capacity-building and the transfer of marine technology. In this sense, the ability to negotiate is crucial and delegations must prioritize the establishment of serious commitments, both in solid obligations, effective institutions and financial resources¹⁰². Notwithstanding this, the negotiations of the new agreement were not focused on this important fact, but in the mandatory or voluntary character of the capacity-building and technology transfer measures¹⁰³. Anyway, beyond the formal, hard, legal, institutional financial topics, the informal, soft side of capacity-building and technology transfer must be considered as a key dimension on this matter¹⁰⁴. Mechanisms as the *Ocean Biogeographic Information System* (OBIS) or the *Global Ocean Observing System* represent both a great example of an effective network and a sample of low-profile States commitments, due to its financial problems and uncertain future¹⁰⁵. There is still a long way to walk regarding the lack of information about capacity-building and transfer of marine technology, in the absence of an efficient centralized mechanism of marine data. For instance, the Global Ocean Science Report gathers information just from 34 IOC Member States¹⁰⁶.

¹⁰¹ *Idem*, p. 33. Several options were proposed for a clearing-house mechanism, including a Secretariat for the new International Agreement, the existing IOC or a combination of both a new Secretariat and the IOC.

¹⁰² The negotiations of ILBI focus on scientific and technological aspects of capacity-building and technology transfer, as well as cooperation mechanisms allowing States to fulfill their rights and responsibilities (WRIGHT, G., CREMERS, K., ROCHETTE, J., CLARK, N., DUNN, D., GJERDE, K. M., et al., “High Hopes”... *cit.*, pp. 2-3.

¹⁰³ PAPANASTAVRIDIS, E.: “The negotiations”... *cit.*, p. 597.

¹⁰⁴ “Past programs set a strong precedent for science collaboration of this kind. The Census of Marine Life (2000-2010) [...] by leveraging philanthropic seed funding to fund and build public and private partnerships and international science networks, some of which live on today (e.g., the International Network for the Investigation of Deep Sea Ecosystems, INDEEP)”.

¹⁰⁵ HARDEN-DAVIES, H.; SNEELGROVE, P., “Science Collaboration”... *cit.*, p. 6-7.

¹⁰⁶ *Ibidem*, p. 2.

V. FINAL REMARKS

Science and technology have always been considered as key aspects in the implementation of UNCLOS, and they are also taken into account in ILBI negotiations. Its significance is extraordinary, despite the enormous importance of the BBNJ, because there is no international legal instrument that protects it nor in an integral way or in a specific way. Without replacing or modifying other international instruments, it would allow providing a global framework for the management and conservation of BBNJ, on a scientific basis, guiding principles, an ecosystem approach, and mechanisms to control human activity in ABNJ.

However, the success of ILBI will depend, in part, on the use of technology to study marine biological diversity, and implement measures of conservation and sustainable use. The capacity for the protection and sustainability of marine biodiversity is linked to the possibilities of reaching an adequate knowledge of its conditions and characteristics. Due to the difficulties of access to marine biological diversity in ABNJ, technology occupies a decisive place to achieve adequate protection and sustainability. Only to the extent that the environment is well known, appropriate measures may be taken to adequately protect it from the threats derived mainly from pollution, illegal fishing, and climate change. And, due to ABNJ's special circumstances, technology is the key factor in achieving that knowledge and therefore optimizing BBNJ's protection possibilities. However, the development and access to the technology necessary for the study and protection of BBNJ are only available to a few developed States and companies, making technology transfer a crucial element in ABNJ. To maximize the deployment of marine technology to protect marine biodiversity in areas beyond national jurisdiction, technology transfer to developing countries is crucial.

The implementation of the regulations on the transfer of marine technology in accordance with the normative and institutional framework existing to date, represented by UNCLOS and IOC, is one of the worse problems. To date, adequate development of UNCLOS Parts XIII and XIV, or key aspects of CGTMT, has not been achieved as an effective mechanism for identifying and communicating capacity-building and transfer of marine technology needs from developing States. For this reason, the relevance of the negotiations is extraordinary, further justified by the commitment assumed by

the States within the framework of the United Nations, to create a specific international treaty or convention for the protection of marine BBNJ. In this sense, ILBI presents the added value of being able to potentially contribute to improving the coordination of existing mechanisms

So, this is one of the most important current issues in international agenda that presents *great difficulties* of access, knowledge, and regulation; *great threats* to the environment that put biodiversity at risk in the largest areas of the planet that are also the most vulnerable; and but also *great benefits*, derived from the increasing exploration and exploitation of resources in the ABNJ. All this has led to a decided interest of the States and the United Nations to carry out the negotiation at the highest level through a complementary agreement to UNCLOS, something that had not happened for the last 25 years. It is, therefore, a multidimensional matter that attains great environmental, technological, political, economic, and legal significance.

One of the main problems that ILBI will have to face is the dispersion of technology among multiple state and non-state actors, public and private. However, this may be, at the same time, one of the great virtues of ILBI if it is able to build the new model of technology transfer by centralizing the entire flow of public and private institutions that develop technology and technology transfer in the world. However, making it real depends on a high level of effective international cooperation and collaboration among actors. This cooperation, as the rest of the means needed for an effective capacity-building and transfer of marine technology for protection biodiversity in the deep sea, should be triggered and developed by ILBI. However, due to the low degree of negotiation on this topic, that is still a *deep* expectation.

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