

PERSPECTIVE OPEN



First to finish, what comes next? Putting Capacity Building and the Transfer of Marine Technology under the BBNJ Agreement into practice

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The completion of negotiations on capacity building and the transfer of marine technology (CBTMT) was a critical milestone that paved the way for the adoption of a historic new UN ocean treaty that was twenty years in the making. The CBTMT part is crucial to enable the effective and equitable implementation of this treaty for the conservation and sustainable use of biodiversity in the two-thirds of the ocean that lies beyond national jurisdiction. We present key advances made by the treaty concerning the “what”, “how” and “why” of CBTMT, from including key definitions, a common vision, and mechanisms for diverse voices to drive action - to institutionalizing processes for funding and measuring of outcomes. We identify five key remaining questions and efforts needed to support the ratification of the treaty in the short term, and to prepare for implementation in the long term: (i) country-driven needs assessments and action plans; (ii) measures to monitor and review the quality of capacity building; (iii) support for key people and processes, including in relation to the Committee; (iv) information sharing and cooperation; (v) funding. We argue that preparations for the implementation of the CBTMT provisions of the Agreement are needed now. We propose that governments, research organizations, non- and inter- governmental organizations and funding bodies engage in a coordinated effort to address the remaining questions, strengthen confidence towards the ratification of the treaty, and ensure that the advances made by the treaty on paper are put into practice.

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INTRODUCTION

Capacity building and the transfer of marine technology (CBTMT) were critical issues in the negotiations for a new international legally binding instrument for the conservation and sustainable use of marine biodiversity of areas beyond national jurisdiction (BBNJ Agreement)¹. At midday on Friday 3rd March 2023, the negotiations for the CBTMT Part of the new Agreement were brought to a close, making it the first part of the treaty to be finalized. The somewhat faster agreement on this portion of treaty text can be seen as a demonstration of a general convergence of opinion around the essential nature of CBTMT for implementing the new treaty, and that the treaty will only be effective if the capacity and technologies of countries are sufficient to enable their effective participation. Closing this part of the text required overcoming controversial issues relating to intellectual property rights, obligations for technology transfer, and funding². Reflecting on the key advances made by the BBNJ Agreement for CBTMT and identifying next steps towards the ratification and implementation of this treaty is crucial for three reasons.

First, as stated by multiple delegations at the adoption of the treaty, the negotiations for the BBNJ Agreement were as much about equity as they were about conservation and sustainable use^{3,4}. The desire for the BBNJ Agreement to address power asymmetries and inequities was evident from several interventions concerning the need to ensure States have the required capacity, technology, and infrastructure to access, research, conserve and sustainably use marine areas beyond national

jurisdiction (ABNJ)^{2,5}. Gaps in capacity and opportunity are reflected in scientific publication trends dominated by a few countries^{6,7}, and reports that some voices and knowledge forms have been under-represented, undervalued or undermined in ocean governance^{8–11}. The BBNJ Agreement framework for CBTMT is critical for improving equitable participation in the ocean commons.

Second, CBTMT is crucial for the effective implementation of the Agreement. All States have interests in marine biodiversity in the two thirds of the ocean that lie in ABNJ, since it provides diverse ecological, economic, scientific, and cultural services and benefits¹². The vast size and complex interconnectivity of marine ABNJ requires effective participation and cooperation^{13,14}. Yet participation will require addressing long-standing challenges to the implementation of CBTMT under the UN Convention on the Law of the Sea (UNCLOS) provisions, and persistent gaps in capacity relating to ocean knowledge, technology, policy and law at individual, institutional and international scales^{15–20}.

Third, upfront capacity development, prior to entry into force will be crucial to provide States with the capacity and confidence to ratify the Agreement. Early assessment of the diverse CBTMT needs facing States, and development of plans to address such needs, could be done during a Preparatory Commission phase in conjunction with assistance for ratification processes to support rapid entry into force¹³.

We argue that preparations for the equitable and effective implementation of the CBTMT provisions of the Agreement are needed now. First, we identify the achievements of the

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Agreement in relation to CBTMT. Second, we identify first steps needed. As such, we seek to outline short- and long-term priorities for operationalizing CBTMT through this historic new treaty and pose questions for discussion by relevant actors with roles to play in CBTMT, including but not limited to governments, intergovernmental and nongovernmental organizations.

ADVANCES FOR CBTMT

The BBNJ Agreement strengthens the under-implemented^{16,21,22} 1982 United Nations Convention on the Law of the Sea (UNCLOS) framework in both specificity and scope. It does this by including descriptions, definitions and objectives, establishing a new body (the CBTMT Committee), providing for monitoring and review, explicitly linking CBTMT to finance, and providing for participation of not only States but also Indigenous Peoples and local communities. These advances build on experiences from other treaties.

For example, while obligations relating to CBTT already exist in international treaties, such as the 1992 Convention on Biological Diversity (CBD) and the UN Framework Convention on Climate Change (UNFCCC), the language in these earlier conventions is general, and did not specify upfront the establishment of a body or process for delivery or accountability, leaving implementation to be undertaken later through decisions of the Conference of the Parties (including for example the subsequent establishment of the Paris Committee on Capacity-building). The voluntary nature of CBTT funding has created uncertainty in implementation even for relatively well-supported initiatives such as those under UNFCCC. The Montreal Protocol created the Multilateral Fund to support developing countries, including in ratification and early implementation, and is one of the few examples of mandated financial support to CBTT from assessed contributions.

Such learnings are reflected in the provisions for CBTMT in the treaty text, while the importance of CBTT to support developing States' participation and exercise of rights and responsibilities is recognized in the Preamble²³. The BBNJ Agreement advances beyond the existing legal and institutional framework by elaborating the 'what', 'how' and 'why' of CBTMT.

The 'what': descriptions and definitions for CBTMT

The Agreement provides descriptions and definitions that add to the existing international framework. Capacity building is referred to as the "creation and enhancement of human, financial management, scientific, technological, organizational, institutional and other resource capabilities" (Article 46; Annex II). This incorporates the full range and scale of tools, skills and resources—from individual to institutional scales—needed for implementation, beyond stand-alone initiatives. Marine technology is defined in Article 1 as referring to "data, software, hardware and know-how for the study of the ocean and the conservation and sustainable use of marine biodiversity, including biotechnology." The definition adds to the existing framework, filling a gap in UNCLOS^{24–26}. Importantly, the types of capacities and technologies are not set in stone – the agreement provides a mandate for the Conference of the Parties (CoP), informed by the CBTMT Committee, to respond to technological developments, for example updating the Annex detailing types of CBTMT. The descriptions and definitions advance the existing framework by supporting a common understanding of CBTMT that can evolve over time.

The 'why'

Objectives. Objectives relating to CBTMT are found throughout the Agreement. Part V is dedicated to CBTMT and presents objectives including to "enable inclusive, equitable and effective cooperation and participation in the activities undertaken under

this Agreement" (Article 42). Capacity building is also referenced in the objectives of Parts II–IV of the treaty regarding: activities with respect to (i) marine genetic resources and digital sequence information; (ii) preparation, conduct and evaluation of environmental impact assessments and strategic environmental assessments; and (iii) developing, implementing, monitoring, managing and enforcing area-based management tools, including marine protected areas. These repeated references to CBTMT avoids CBTMT being a blind-spot for implementation siloed to one Part, and ensures it is a key, cross-cutting priority for the entire BBNJ Agreement, including as part of financing research partnerships, sharing benefits from marine genetic resources, and supporting environmental impact assessments.

Vision for transfer of marine technology. A vision for the transfer of marine technology is provided: "Parties share a long-term vision of the importance of fully realizing technology development and transfer for inclusive, equitable and effective cooperation and participation in the activities undertaken under this Agreement and in order to fully achieve its objectives" (Article 45). This reflects a feeling expressed through interventions throughout the negotiations that UNCLOS provisions for CBTMT had not been fully implemented². This long-term vision, alongside the inclusion of equity as a guiding principle and approach in Article 5, represents a useful addition to the existing framework as the conversation around capacity building evolves to reflect the two-way nature of partnerships²⁷.

The 'how'

Obligations and guidance. The CBTMT obligations move from the largely voluntary language used in UNCLOS towards a more mandatory and collaborative approach. For example, the Agreement refers to "the need to ensure" CB and to "cooperate to achieve" TMT. Moreover, the Agreement specifies that CBTMT shall be country-driven, transparent, effective and iterative, participatory, cross-cutting, gender-responsive, based on lessons learned and responsive to the needs of developing countries (Article 44). Similarly, technology transferred must be "reliable, affordable, up-to-date, environmentally sound and available in an accessible form for developing States parties" (Article 45). This represents a step forward from the UNCLOS obligations for CBTMT^{17,28,29}.

Mechanisms for voices. The creation of a CBTMT Committee is an important innovation provided by the Agreement, providing the first designated body on this topic under UNCLOS. The terms of reference for the CBTMT Committee, and the modalities under which it will operate, will be decided by the first meeting of the CoP. The CBTMT Committee could provide guidance on needs assessment processes, evaluate needs, priorities and gaps, mobilize funding, and review whether efforts have been sufficient to achieve lasting capacity (Article 42, paras 4b & 6). Furthermore, through the inclusion of a broader groups of stakeholders, including Indigenous Peoples and local communities, the BBNJ Treaty could be more representative and effective in its implementation, including through considering diverse knowledge systems and worldviews^{30,31}.

Funding. The BBNJ Agreement establishes a financing mechanism for CBTMT which aims to provide funding that is "adequate, accessible, new and additional, and predictable" to assist developing countries in implementation - from mandatory and voluntary sources including a special fund and the GEF Trust Fund (Article 52). This is a step forward beyond the arrangements of most other environment conventions which rely solely on voluntary contributions for CBTMT and have not been adequate to build long-term capacity, nor predictable in maintaining the achievements of short-term projects and generating long-term

outcomes³². The special fund will incorporate diverse funding sources, including assessed contributions from developed countries, and funding from monetary benefit-sharing from the utilization of marine genetic resources and digital sequence information.

Monitoring and review. The inclusion of a process for monitoring and review is an important step forward provided by the BBNJ Agreement (Article 47). The CBTMT Committee will play a key role in measuring performance of CBTMT, including through indicators, results-based analyses and assessment of outputs, outcomes, progress and effectiveness (Article 47). The explicit mention of “outcomes” and “effectiveness” is a step towards the development and use of measurements of the quality of capacity building initiatives, as well as quantity²⁶.

WHERE TO NOW?

As the focus shifts toward ratification and implementation of the Agreement, there is a need to ensure that States have confidence that the CBTMT required for the effective and equitable implementation of the Agreement will be available. Capacity building initiatives can start immediately under current frameworks such as preparatory materials on key BBNJ CBTMT issues and having them circulate through the different informal BBNJ gathering and working groups¹³. This necessitates cooperation to address remaining questions and advances needed for: (i) needs assessments; (ii) measurements of CBTMT; (iii) people participating in CBTMT; (iv) information sharing; and (v) funding for CBTMT.

Needs Assessments

Needs assessments could play an important role in kickstarting early implementation of the treaty in a way that addresses the CBTMT needs and priorities of Parties, guides efforts by funders and other partners, and provides a baseline against which to monitor progress in CBTMT. The treaty text acknowledges that there are different ways to undertake needs assessments, including “on an individual case-by-case, subregional or regional basis” and that these tailored assessments shall account for the special circumstances of SIDS and least developed countries (Article 44), leaving room for self-assessment and/or facilitation by the CBTMT Committee.

Yet questions remain in terms of how needs assessment can be facilitated, what support might be provided, and who might play a role. It will be important that needs assessments are bottom-up, empowering countries and communities to reflect on the current status, priorities and needs for implementing the BBNJ Agreement, as well as the technological, institutional and human capacities needed to meet needs in the long term. It is important that needs assessment are undertaken at national (and/or sub-regional or regional as appropriate) levels and key targets are analyzed carefully, such as, funding, infrastructure and technologies needed¹³. Identifying existing methodologies for needs assessments, including under other conventions and processes, will help identify lessons learned including how capacity and technology needs have (or have not) been fulfilled based on them. Needs assessments require resource mobilization and would usefully be considered by the Finance Committee under the BBNJ Agreement (Article 52).

Monitoring

A monitoring and review process (Article 47) could facilitate the development of metrics that measure the quality of activities, not only quantity. Such quality metrics will need to be context appropriate and require trials based on robust methodology – work on this should start immediately. Having appropriate metrics in place is important not only for accountability, but also for

measuring longer-term outcomes that can lead to transformational change (e.g., the capacity of countries to become active participants in implementing BBNJ measures in the long term), instead of only short-term output metrics (e.g., number of workshop participants) that may not have a lasting impact.

People, power and politics

Members of CBTMT Committee. The establishment of bodies under the BBNJ Agreement, such as the CBTMT Committee, provides an important avenue to give voice to the needs and expertise of communities that are often under-represented in international ocean governance – such as traditional knowledge holders, scientists from Small Island Developing States (SIDS), and Indigenous Peoples and local ocean communities. These bodies must be allocated sufficient time and resources for in-depth and strategic examination of CBTMT issues and be informed by diverse voices. This would include support for individuals beyond state representatives, such as natural and social scientists, researchers, policy advisors, community leaders and representatives. Enabling measures would include (i) educational scholarships; (ii) dialogs across disciplines; (iii) facilitation of equitable participation through travel and subsistence support for all BBNJ related meetings; and (iv) networking opportunities between global north and south experts to establish common ground. The CBTMT Committee will need to cooperate with the other bodies under the Agreement, such as the Access and Benefit-Sharing Committee, and build synergies with activities undertaken by other treaties¹⁷.

Actors. A second issue requiring discussion is which entities will take forward CBTMT, and their respective motivations for doing so. Entities with roles to play in CBTMT may include governments, IGOs, NGOs, private sector, academia, philanthropic organizations and Indigenous Peoples and local communities. Each of these actors will have their own motivations for participation²⁶ (e.g., science, conservation, equitable participation and use of ocean resources, preservation of cultural values, or technological advancement) and the text on CBTMT in the BBNJ Agreement can provide for multiple interpretations. However, not all partners will have equal voice and influence (e.g., partners donating money may be considered more influential), and it is therefore important to proactively address power imbalances to achieve equitable participation with the aim of meeting the priority needs of all participants. It is important to take the motivations of stakeholders into account in the formation of partnerships, so that each partner both provides and gains something of value.

The formation of multi-stakeholder partnerships will be an important component of implementation and funding of activities under the BBNJ Agreement. A better understanding of the motivations of diverse actors can help bring them together towards the common goal of improving BBNJ management in a specific ocean area, concurrently delivering CBTMT to build the capacity and available technology of all partners to participate effectively, and to enhance mutual learning. The COP, the CBTMT Committee, and the Clearinghouse mechanism can actively facilitate partnership building – the interactions between the relevant bodies under the BBNJ Agreement will be an important topic for the preparatory phase.

Information sharing

The clearinghouse mechanism (CHM), envisioned as an open access centralized platform for information sharing, is positioned to play a key role in the implementation of the CBTMT aspects of the treaty including, for example, matching requests with potential partners. Further thought is required to crystallize how the CHM will work, particularly because this functionality goes further than standard clearinghouse mechanisms which typically

serve as information repositories. A useful start would be a mapping exercise of existing clearinghouse mechanisms to identify entities with synergies to the aims of the agreement, based on assessments already undertaken³³. Examples include dedicated capacity building clearinghouses, such as the Inter-governmental Oceanographic Commission Capacity Development Hub, and mechanisms with broader mandates such as the Joint Clearinghouse Mechanism under the Basel Conventions and the Convention on Biological Diversity Clearing-House Mechanism. During the negotiations, many delegations also stressed that the clearinghouse mechanism will require a strong human element, including dedicated staff and financing. Without the coordination and individual attention provided by dedicated staff, the CHM may not be able to fulfill its envisioned functions³⁴.

Funding

While the mandatory nature of some of the funding should guarantee a base level of financing for CBTMT, it will likely not be enough given the large gaps that exist in current ocean finance and anticipated needs for implementation^{35,36}. While the exact amount of funding required for BBNJ-related CBTMT is not yet known, countries will need to build up the institutions, equipment, and human capacity required for implementation, in some cases potentially considering a regional approach that could help pool resources. Completed country-led needs assessment will be necessary to determine the full financing requirements, which are likely to be considerable. In addition, developing countries that have signed the treaty will require immediate, “kick-start” assistance to support ratification and early implementation³⁷, as has been done previously, for example, under the Nagoya Protocol Implementation Fund and the Montreal Protocol’s Multilateral Fund. Such early assistance will also help build the confidence of countries in their ability to implement the treaty obligations, helping make the case for ratification.

As the shortfall in funding is envisaged to be met by voluntary contributions, it is important to develop a better understanding of potential funding options and their applicability. This might include mapping existing BBNJ-relevant CBTMT activities and their funding sources and quantities, as well as learn lessons from other frameworks on innovative funding, such as the UNCCD Land Degradation Neutrality Fund. The treaty text currently envisions funding from both public and private sources, but the potential role of the private sector as a source of financing for treaty implementation, including CBTMT, requires further consideration³⁸. Finding ways to leverage synergies along the ocean-biodiversity-climate nexus and between the BBNJ Agreement and other frameworks such as Sustainable Development Goal (SDG14) and the Kunming-Montreal Global Biodiversity Framework may be useful to increase the effectiveness of both CBTMT and its finance. The CBTMT Committee could have an important function in evaluating such approaches, a stocktaking exercise should be undertaken to inform this work.

CONCLUSION

The BBNJ Agreement represents a significant step forward for CBTMT. It has elevated the importance of CBTMT, transforming it from an afterthought to a central component of a new treaty system, critical to its success. The BBNJ Agreement clarifies the “what”, “how” and “why” of CBTMT, including key definitions and a common vision, establishing innovative mechanisms for diverse voices to be heard through the CBTMT Committee, and creating clear processes for funding and measuring the outcomes. There is a need to collaboratively develop options and pathways relating to CBTMT and associated funding in order to: (i) build confidence that the BBNJ agreement will be implementable; (ii) ensure that

the BBNJ agreement enters into force soon; and (iii) enable the innovations that the BBNJ agreement established for CBTMT to be implemented in practice.

First, understanding the needs and priorities of States for ratification and implementation of the BBNJ Agreement is crucial to shape the partnerships that will underpin successful implementation. Understanding the options and requirements for effective country-driven needs assessments would be a good start, and will help speed up the conduct of these assessments.

Second, the pathways to operationalising the CBTMT provisions should be scouted. This will require work to better understand the current CBTMT landscape to identify gaps, synergies and opportunities to build on existing initiatives and fund new initiatives. Similarly, early strategic and collaborative research into key processes may help speed implementation. This might include fleshing out options for the work of the CBTMT Committee, and the process and requirements for monitoring and review. A study of existing indicators and monitoring processes, for example, could provide helpful insights for the work of the CBTMT Committee.

Third, the partnerships that will underpin implementation can start to form. These could be informed by developing CBTMT research and action agendas led by self-determined needs of States and co-developed with stakeholders likely to have a role in CBTMT – IGOs, NGOs, governments, philanthropies, local communities, and research organizations spanning humanities, social and natural science.

Just as CBTMT was the first part of the treaty negotiations to cross the finish line, efforts that prepare to put CBTMT provisions into practice could strengthen confidence in Parties to ratify the agreement and pave the way for implementation. CBTMT is at the heart of a successful treaty as it holds the building blocks to ensure that countries can engage in all subsequent implementation activities. The equitable participation of all countries, both developing and developed, is required to make the BBNJ Agreement effective. And an effective BBNJ Agreement can, in turn, be an active contributor towards building a more equitable and fair future, for the good of all humankind.

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REFERENCES

1. Nations, U. 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.232/2023/4) adopted on 19 June 2023. 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. *Further resumed fifth session New York, 19 and 20 June 2023*.
2. IISD. Summary of the Resumed Fifth Session of the Intergovernmental Conference on an International Legally Binding Instrument under the UN Convention on the Law of the Sea on the Conservation and Sustainable Use of Marine Biodiversity of Areas Beyond National Jurisdiction: 20 February – 4 March 2023. *Earth Negotiations Bulletin Vol. 25, No. 250* Preprint at (2023).
3. CARICOM. Treaty launches new chapter for equity in World’s Ocean. <https://caricom.org/treaty-launches-new-chapter-for-equity-in-worlds-ocean/>. Preprint at (2023).
4. United Nations Meeting Coverage, I. C. on M. B. Demonstrating ‘the Power of Multilateralism’, Intergovernmental Conference Adopts Historic New Maritime Biodiversity Treaty. *SEA/2182* Preprint at (2023).
5. Amon Catzim N. et al. *Conservation and sustainable use of marine biodiversity beyond national jurisdiction: Capacity building and technology transfer considerations for the Caribbean*. (2022).
6. Pouponneau, A. Blue Economy: The perspectives of Small Island Developing States. *Small States & Territories* **6**, 69–82 (2023).
7. Tolochko, P. & Vadrot, A. B. M. The usual suspects? Distribution of collaboration capital in marine biodiversity research. *Mar. Policy* **124**, 104318 (2021).

8. Blasiak, R., Pittman, J., Yagi, N. & Sugino, H. Negotiating the use of biodiversity in marine areas beyond national jurisdiction. *Front Mar. Sci.* **3**, <https://doi.org/10.3389/fmars.2016.00224> (2016).
9. Vierros, M. K. et al. Considering Indigenous Peoples and local communities in governance of the global ocean commons. *Mar. Policy* **119**, 104039 (2020).
10. Amon, D. J., Filander, Z., Harris, L. & Harden-Davies, H. Safe working environments are key to improving inclusion in open-ocean, deep-ocean, and high-seas science. *Mar Policy* **137**, 104947 (2022).
11. Haas, B. et al. The use of influential power in ocean governance. *Front Mar Sci* **10**, 977 (2023).
12. Wright, G., Rochette, J., Gjerde, K. & Seeger, I. *The long and winding road: negotiating a treaty for the conservation and sustainable use of marine biodiversity in areas beyond national jurisdiction.* (2018).
13. Gjerde, K. M. et al. Getting beyond yes: fast-tracking implementation of the United Nations agreement for marine biodiversity beyond national jurisdiction. *npj Ocean Sustain.* **1**, <https://doi.org/10.1038/s44183-022-00006-2> (2022).
14. Popova, E. et al. Ecological connectivity between the areas beyond national jurisdiction and coastal waters: Safeguarding interests of coastal communities in developing countries. *Mar. Policy* **104**, 90–102 (2019).
15. Long, R. Marine Science capacity building and technology transfer: Rights and duties go hand in hand under the 1982 UNCLOS. in *Center for Oceans Law and Policy* vol. 11, 297–311 (2007).
16. Long, R. Striking an Equitable Balance under the Biodiversity Agreement: The Elusive Case of New Technologies, Marine Genetic Resources and the Global South. in *Emerging Technology and the Law of the Sea* (eds. Kraska, J. & Park, Y. K.) 63–107 (Cambridge University Press).
17. Vierros, M. K. & Harden-Davies, H. Capacity building and technology transfer for improving governance of marine areas both beyond and within national jurisdiction. *Mar. Policy* **122**, 104158 (2020).
18. Zitoun, R., Sander, S. G., Masque, P., Perez Pijuan, S. & Swarzenski, P. W. Review of the Scientific and Institutional Capacity of Small Island Developing States in Support of a Bottom-up Approach to Achieve Sustainable Development Goal 14 Targets. *Oceans* vol. 1 Preprint at <https://doi.org/10.3390/oceans1030009> (2020).
19. Polejack, A. & Coelho, L. F. Ocean Science Diplomacy can Be a Game Changer to Promote the Access to Marine Technology in Latin America and the Caribbean. *Front Res Metr Anal* **6**, 637127 (2021).
20. Bell, K. L. C., Quinzin, M. C., Poulton, S., Hope, A. & Amon, D. 2022 *Global Deep-Sea Capacity Assessment.* (2022).
21. Freestone, D. Capacity Building and the Implementation of the Law of the Sea Convention: a View from the World Bank. In *Law, Science & Ocean Management* <https://doi.org/10.1163/ej.9789004162556.i-850.88> (2010).
22. Barterstein. Part XIV – Development and transfer of marine technology. in *United Nations Convention on the Law of the Sea: A commentary.* (ed. Proelss, A.) 1764–1812 (Nomos Verlagsgesellschaft, 2017).
23. Lothian, S. The BBNJ preamble: More than just window dressing. *Mar Policy* **153**, 105642 (2023).
24. UNESCO, I. O. C. of. *IOC criteria and guidelines on the transfer of marine technology (CGTMT).* (2005).
25. Harden-Davies, H. & Snelgrove, P. Science Collaboration for Capacity Building: Advancing Technology Transfer Through a Treaty for Biodiversity Beyond National Jurisdiction. *Front Mar Sci* **7**, 40 (2020).
26. Harden-Davies, H. et al. Capacity development in the Ocean Decade and beyond: Key questions about meanings, motivations, pathways, and measurements. *Earth System Governance* vol. 12 Preprint at <https://doi.org/10.1016/j.esg.2022.100138> (2022).
27. Harden-Davies, H. et al. How can a new UN ocean treaty change the course of capacity building? *Aquatic Conservation: Marine and Freshwater Ecosystems* vol. 32 Preprint at <https://doi.org/10.1002/aqc.3796> (2022).
28. Yarn, D. The Transfer of Technology and UNCLOS. *Georgia Journal of International and Comparative Law* 121–153 (1984).
29. Galindo, G. R. B. Quem diz humanidade, pretende enganar?: Internacionalistas e os usos da noção de Patrimônio Comum da Humanidade aplicada aos fundos marinhos (1967-1994). Preprint at (2006).
30. Bhatia, A. The South of the North: Building on Critical Approaches to International Law with Lessons from the Fourth World. *Oregon Review of International Law* **14**, 131–177 (2012).
31. Mulalap, C. Y. et al. Traditional knowledge and the BBNJ instrument. *Mar Policy* **122**, 104103 (2020).
32. Miloslavich, P. et al. Challenges for global ocean observation: the need for increased human capacity. *J. Oper. Oceanogr.* **12**, S137–S156 (2019).
33. Cicin-Sain, B. *Policy Brief on Capacity Development as a Key Aspect of a New International Agreement on Marine Biodiversity Beyond National Jurisdiction (BBNJ).* (2018).
34. Kingdom of Belgium, G. of M. and C. R.) Informal Intersessional BBNJ High Seas Treaty Dialogues. IGC 4 Non-Paper. Preprint at (2022).
35. Sumaila, U. R. et al. Financing a sustainable ocean economy. *Nature Communications* vol. 12 Preprint at <https://doi.org/10.1038/s41467-021-23168-y> (2021).
36. Alliance, B. N. *Accelerating Impact in the High Seas: Preliminary Draft Discussion Document.* (2022).
37. Thiele, T. *Innovative High Seas Finance Mechanisms for the future instrument under the United Nations Convention on the Law of the Sea on the conservation and sustainable use of marine biological diversity of areas beyond national jurisdiction (BBNJ).* (2022).
38. Thiele, T. & Gerber, L. R. Innovative financing for the High Seas. *Aquat Conserv* **27**, 89–99 (2017).

AUTHOR CONTRIBUTIONS

Conceptualization: H.H.D., V.F.L., J.S.V., M.V. Writing, editing: H.H.D., M.V., J.S.V., V.F.L., L.F.C., G.N. Editing and review: S.T., G.N., V.F.L., M.V., H.H.D.

COMPETING INTERESTS

H.H.D. participated as an observer to the fifth session of the intergovernmental conference on a new international legally binding instrument for the conservation and sustainable use of marine biological diversity of areas beyond national jurisdiction under the UN Convention on the Law of the Sea on the delegation of IUCN. G.N. participated as a delegate to the fifth session of the intergovernmental conference on a new international legally binding instrument for the conservation and sustainable use of marine biological diversity of areas beyond national jurisdiction under the UN Convention on the Law of the Sea on the delegations of Samoa and Palau. M.V. participated as an observer to the resumed fifth session of the intergovernmental conference (March 2023) on a new international legally binding instrument for the conservation and sustainable use of marine biological diversity of areas beyond national jurisdiction under the UN Convention on the Law of the Sea on the delegation of the Global Ocean Forum. V.F.L. participated as an observer to the resumed fifth session of the intergovernmental conference (March 2023) on a new international legally binding instrument for the conservation and sustainable use of marine biological diversity of areas beyond national jurisdiction under the UN Convention on the Law of the Sea on the delegation of DOSI. L.F.C. and J.S.V. participated as a delegate to the resumed fifth session of the intergovernmental conference (March 2023) on a new international legally binding instrument for the conservation and sustainable use of marine biological diversity of areas beyond national jurisdiction under the UN Convention on the Law of the Sea on the delegation of Brazil. S.T. participated as a delegate to the resumed fifth session of the intergovernmental conference (March 2023) on a new international legally binding instrument for the conservation and sustainable use of marine biological diversity of areas beyond national jurisdiction under the UN Convention on the Law of the Sea on the delegation of Seychelles.

ADDITIONAL INFORMATION

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