

Mutual learning through capacity building on marine biological diversity of areas beyond national jurisdiction

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Abstract

The latest draft negotiating text for a new international legally binding instrument on marine biodiversity of areas beyond national jurisdiction (BBNJ Agreement) includes notable improvements on “inclusive, equitable and effective participation” and “country-driven, transparent, effective, and iterative process” in relation to capacity building and technology transfer (CBTT). This policy brief provides the views of marine and social scientists, and legal experts on the need for creating pre-conditions for mutual learning and ocean knowledge co-development between countries in the Global North and the Global South, in order to ensure the effectiveness of a future BBNJ Agreement. This in turn requires understanding of the current inequities in ocean science, and can build on solutions that have been identified and piloted in recent international scientific collaborations. All comments refer to the latest revised [draft text of the BBNJ Agreement](#) prepared by the President of the Intergovernmental Conference in July 2022.

Benefits of capacity building and technology cooperation

Capacity building is a determinant of the successful implementation of a future international legally binding instrument on the conservation and sustainable use of marine biodiversity of areas beyond national jurisdiction (BBNJ Agreement), as

countries have different levels of knowledge, resources and capacities to understand, value and make decisions on marine biodiversity, particularly in the deep seas. Capacity building is also essential to ensure that the benefits of BBNJ, which have typically been enjoyed by a few countries who have access to marine genetic resources (MGRs) found in areas beyond national jurisdiction, are more equitably shared.

The well-documented imbalance in research capacity, technology, finances, and intellectual property rights in relation to MGRs (Blasiak et al., 2020) influences the level of inclusion of low- and middle-income countries in the negotiations



Photo Credit: courtesy of the NERC funded Deep Links Project- Plymouth University, Oxford University, BGS, JNCC.

KEY POINTS

BBNJ negotiators should:

- include mandatory provisions on capacity building and technology;
- require co-development of capacity-building initiatives based on self-identified priorities by developing countries;
- prioritize technology co-development, as opposed to only calling for technology transfer;
- develop an international institutional structure on capacity building and technology that supports mutual learning and fair partnerships.

and future implementation of the BBNJ Agreement, as well as in their capacity to conserve and sustainably manage marine areas within national jurisdiction (Morgera, 2022) in the light of ecological connectivity with BBNJ (Popova et al, 2019). An interdisciplinary review in South Africa carried out under the One Ocean Hub confirmed that “the deep sea in South Africa remains poorly studied” from a biodiversity and ecological perspective, which is necessary to

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guide environmental management. As a consequence, South Africa's potential to derive benefits from the deep sea is limited, thereby affecting the opportunities for a sustainable blue economy (Sink et al, 2021). This also has global implications, as South Africa's marine biodiversity has international importance owing to it having the third highest level of marine endemism in the world.

Current inequities in capacity and technology for research in the deep seas

There is only a restricted number of countries that can afford the costs and risks of deep-sea research vessels and therefore can control who has access to that source of knowledge. The vast majority of developing countries are not part of bioprospecting efforts and are also greatly underrepresented in marine taxonomic research (WOA II). In effect, 'field capacity at the most basic level of technical and scientific knowledge [of the ocean] is lacking' in most regions of the world (Gorina-Ysern, 2015) and 'despite centuries of hydrographic survey effort, we have more and better data to describe the surface of the Moon or Mars than for most of the Earth's seas.' (Wilson, 2015) This gap is particularly felt in the Caribbean, Africa and Oceania, where nautical charts need to be modernized and made compatible with satellite-based positioning systems, but capacity to plan and implement a prioritized survey programme is lacking (Wilson, 2015).



COASTAL MANAGERS, SMALL-SCALE FISHERS, CONSERVATION AUTHORITIES AND CO-RESEARCHERS ENGAGE WITH THE PHOTOGRAPHS AND STORIES. PHOTO: MIA STRAND

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Meanwhile, nations with modern charts 'actively prevent the release of data,' and restrict marine scientists' mobility and access because of 'the link between obtaining improved knowledge of the ocean and [States'] growing interest in exploring offshore natural resources and technological advances that might be relevant to naval security' (Wilson, 2015).

In addition, also due to the increasing reliance on sequencing technologies and bioinformatics, 'the capacity to undertake genomic research ... is inequitably distributed among countries' (Blasiak et al, 2020). Thus, experts have recommended to urgently 'promote inclusive and responsible research and innovation that addresses equity differentials and fosters capacity and access to technology, while facilitating the realization of commitments to conserve and sustainably use the ocean's genetic diversity' (Blasiak et al, 2020).

Ayanda Yekane, the leader of the Siyaphambile Small Scale Fisher's cooperative, speaking to concerns they have with the Amathole MPA management plan. Photo credit: Luke Kaplan



The One Ocean Hub's interdisciplinary review in South Africa also underscored that research institutions without offshore vessels 'struggle to obtain access to ship and deep-sea sampling technology' and that disparity in access to deep-sea research vessels and technology has implications for access to international research cruises both within and beyond areas of national jurisdiction (Sink et al, 2021). In addition, limited field experience in deep-sea research precludes researchers in the Global South from participating in deep-sea research conferences, thereby making it difficult for these researchers to 'catch up with global standards' (Sink et al, 2021).

Even if the UN Convention on the Law of the Sea (UNCLOS) foresaw the need to address these equity issues through its provisions on scientific cooperation, capacity building and technology transfer to developing countries, almost 30 years after its entry into force, it is evident that there has not been sufficient implementation of these provisions (WOA II). Even when capacity-building efforts have been put in place, they have been ineffective (Harden-Davies et al., 2020). This may be explained by the fact that deep-sea research collaborations, 'even when they are directed at capacity development and the needs of developing countries,' are not fair: researchers in the Global South are less able to negotiate approaches and deliverables that are

beneficial to them due to their limited field experience in and other exposure to deep-sea research (Sink et al, 2021). In addition, even established researchers in the Global South do not have the same experience in managing large international budgets that are made available for deep-sea research and, even when they are allocated large budgets, they face administrative challenges arising from divergent requirements in grant management in the Global North, where deep-sea research funders are based, and the Global South (Sink et al, 2021).



SSF leaders and representatives, mapping their concerns and questions onto a living co-created map of the region and proposed MPA boundaries Photo Credit: Luke Kaplan

Recommendation 1: To address current imbalances in capacity and technology for deep-sea research, mandatory provisions need to be included in the BBNJ Agreement on fair partnerships.

Voluntary provisions would leave the status quo unaffected, instead of guiding developed countries that are deep-sea research funders to contribute more coherently and effectively to address inequities in capacity and technology with a view to supporting the implementation of the BBNJ Agreement in the Global South. Mandatory provisions would provide clearer international cooperation obligations on the co-production of ocean knowledge, in order to support transformative conservation and sustainable use of BBNJ (Morgera, 2022). Mandatory obligations under the BBNJ Agreement would contribute to clarify the more general duty to cooperate under UNCLOS,

which, even if framed in broad terms, requires that State Parties negotiate detailed and tangible implementation arrangements that can be monitored and enforced (Morgera and Ntona, 2018).

Recommendation 2: Co-development of capacity building programmes is a pre-condition to fair partnerships.

Several researchers have increasingly addressed the effectiveness of capacity building, for example, moving away from one-off workshops or time onboard cruises to more long-term and sustained capacity building with opportunities for developing countries to effectively co-produce ocean knowledge. Short-term exchanges can be of value to the early development of research capacity in developing countries, thereby providing the framework for

long-term collaboration that enables researchers to be part of strategic networks that bring together complementary expertise (Lavelle and Wynberg 2022).

Developing countries and their experts should be part of the design process for capacity-building initiatives so that they are more reflective of the needs of the countries themselves and create partnerships towards interdisciplinarity and symmetrical participatory structures to enable innovative, locally relevant research. Developing countries are likely to be interested in capacity building that helps them both within and beyond their national jurisdiction, for example, training in conducting environmental impact assessments (EIAs) and strategic environmental assessments (SEAs), which can then inform and improve biodiversity strategies and action plans (Blasiak et al., 2020) – as discussed in another One Ocean Hub brief on BBNJ.

TEXTUAL SUGGESTION:

Article 44 Modalities for capacity-building and the transfer of marine technology

2. Parties **shall** provide, within their capabilities, resources to support such capacity-building and the transfer of marine technology, **including through fair partnerships in marine scientific research cooperation**, and to facilitate access to other sources of support.

Along similar lines, in June 2022, the Alliance of Small Islands States (AOSIS) launched a Declaration on Marine Science ("[Declaration for the Enhancement of Marine Scientific Knowledge, Research Capacity and Transfer of Marine Technology to Small Island Developing States](#)")

with the objective of making the case that CBTT should move away from a movement of capacity and technology from North to South, but rather established principles of engagement such as: genuine, durable, equitable, sustainable partnership that are responsive to the self-identified needs of developing countries.

The One Ocean Hub's interdisciplinary review in South Africa calls for 'partnerships and research collaboration that promote co-developed, co-led and co-published research' (Sink et al, 2021). To that end, the review underscored the need for:

- co-develop research questions and plans;
- co-led research cruises that collect mutually beneficial data and jointly analysed results, leading to joint research outputs;
- meaningful participation from developing countries' researchers from the outset (conceptualisation phase) so that funding is equitably distributed (which also requires allocating funding of developing

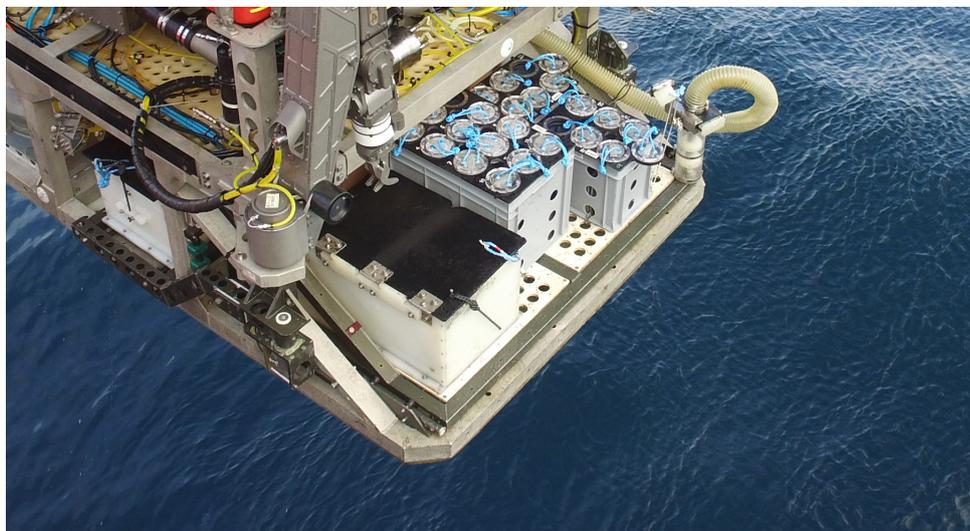


Photo Credit: courtesy of the NERC funded Deep Links Project-Plymouth University, Oxford University, BGS, JNCC.

country participants' time during initial engagements to co-develop international collaboration grants);

- co-developed specific plans for lasting capacity development in developing countries;
- co-developed local, shared infrastructure platforms and integrated research to meet multiple objectives for added value and multiple benefits; and
- clear expectations in international partnerships to ensure institutional alignment and sufficient support not only for research, but also to meet reporting and administration

requirements (Sink et al, 2021).

All of these should be recognised as preconditions for the realization of SDG 14a 'Increase scientific knowledge, develop research capacity and transfer marine technology...in order to improve ocean health and to enhance the contribution of marine biodiversity to the development of developing countries.' Thus, the references in the current draft to "transparent...and iterative processes" for CBTT, as well as to "inclusive and effective participation in the activities undertaken under this Agreement" are to be welcomed, but more explicit references to co-production and equity are still necessary.

TEXTUAL SUGGESTIONS:

Article 42 Objectives

The objectives of this Part are to:

- (b) enable inclusive, **equitable and effective** participation in the activities undertaken under this Agreement
- (d) **co-produce**, disseminate and share knowledge on the conservation and sustainable use of marine biological diversity of areas beyond national jurisdiction;

Article 44 Modalities for capacity-building and the transfer of marine technology

1. Parties, recognizing that capacity-building, access to and the transfer of marine technology, including biotechnology, among Parties are essential elements for the attainment of the objectives of this Agreement, shall **co-develop** capacity-building and **marine technology programmes, with the** developing States Parties that need and request it.

3. Insofar as possible, it will take into account these activities with a view to maximizing efficiency and **equitable** results.

Recommendation 3: Co-development of technology, as part of fair research partnerships and co-developed capacity-building programmes, should be prioritized over the transfer of technology.

The One Ocean Hub's interdisciplinary review in South Africa underscored the importance for international research collaborations to consider, first of all, available technology and resources in the Global South, and to that end, also consider joining local expeditions to participate in sampling under local conditions in the Global South

TEXTUAL SUGGESTIONS:

Article 45 Additional modalities for the transfer of marine technology

1. Parties shall endeavour to ensure that the marine technologies are **co-developed with developing State Parties including as part of marine scientific research cooperation; and, where that is not possible**, that transfer of marine technology takes place on fair and most favourable terms, including on concessional and preferential terms, in accordance with mutually agreed terms and conditions.
2. The transfer of marine technology shall be carried out with due regard for all legitimate interests, including, inter alia, the rights and duties of holders, suppliers and recipients of marine technology, as **well as of those who may be negatively impacted by them**.
3. Marine technology transferred pursuant to this Part shall be appropriate, reliable, **safe**, environmentally sound, and available in an accessible form for developing States Parties **and, to the extent possible**, affordable and up to date, as well as relevant to conservation and sustainable use of marine biological diversity of areas beyond national jurisdiction

(Sink et al, 2021). This can provide opportunities for mutual learning. On that basis, the review recommended developing shared technology, methods and infrastructure to meet multiple objectives for added value, in international scientific cooperation (Sink et al, 2021). The AOSIS Declaration on Marine Science also calls for co-designed, co-developed and co-implemented technology, thereby not only being responsive to the needs self-identified by developing countries but also recognizing these countries as 'partners' and not 'passive beneficiaries'.

Recommendation 4: Capacity building programmes should recognise and integrate Indigenous and local knowledge and approaches

Due to the ongoing inaccessibility of much of the ocean and its biodiversity to coastal communities and Indigenous and local knowledge holders (Armitage et al., 2020), scientists with financial and technological resources are much more able to explore, use, and come to know (scientifically) the ocean and its resources. However,

the AOSIS Declaration on Marine Science underscored that mutual learning also relates to learning from different forms of knowledge including Indigenous and local knowledge subject to free, prior and informed consent. Capacity building initiatives should recognise Indigenous and local knowledge and seek opportunities for meaningful collaboration between scientific and Indigenous and local knowledge systems (Lavelle and Wynberg 2022). Indigenous and local knowledge systems consist of knowledge that can, in some instances, be translated

into the scientific knowledge framework but there are also spiritual dimensions of knowledge that cannot be readily translated into science. The One Ocean Hub's interdisciplinary review in South Africa also indicates that Indigenous local knowledge holders may face cultural barriers in undertaking deep-sea research and that understanding and accommodating traditional, cultural and spiritual values in deep-sea research practices has been a precondition for integrating different knowledge systems in deep-sea research (Sink et al, 2021).

Any potential collaborations between scientific and Indigenous and local knowledge systems would need to ensure that desirable elements of Indigenous and local knowledge associated with marine biodiversity were not taken out of context. Further, the full integrity of these knowledge systems as living bodies of knowledge that transcend social, ecological, political, economic, and spiritual boundaries needs to be respected (Lavelle and Wynberg, 2022). Capacity building is then a two-way process to recognise and integrate Indigenous and local knowledge and approaches.

Recommendation 5: International institutional support should be provided for mutual learning and more uniform approaches



Photo Credit: Sirkka Tshiningayamwe

TEXTUAL SUGGESTION:

Article 44 Modalities for capacity-building and the transfer of marine technology

5. The Conference of the Parties shall provide guidance on **transparent, participatory** and iterative modalities and procedures for capacity-building and the **co-production and transfer** of marine technology within one year of the entry into force of the Agreement or other timeframe as determined by the Conference of the Parties.

Article 47 Monitoring and review

2. The monitoring and review referred to in paragraph 1 shall be aimed at:

(c) measuring performance **and reviewing fairness** of capacity-building and technology **co-development or transfer** activities ...

OPTION II: Working group on capacity-building and transfer of marine technology

(e) the development of indicators for monitoring the progress, **fairness** and effectiveness of capacity-building and marine technology **co-development or transfer**;

(f) the identification, mobilization **and fair distribution** of funds under the financial mechanism;

(j) the accountability of the recipient Parties in the agreed use of funds, **lessons learnt on fair partnerships and identified opportunities for mutual learning**

OPTION III: Capacity-building and transfer of marine technology committee

3. The committee shall:

(a) Assess the effectiveness **and fairness** of the implementation of measures and programmes for capacity-building and marine technology **co-development or transfer**, including by assessing whether capacity gaps are decreasing;

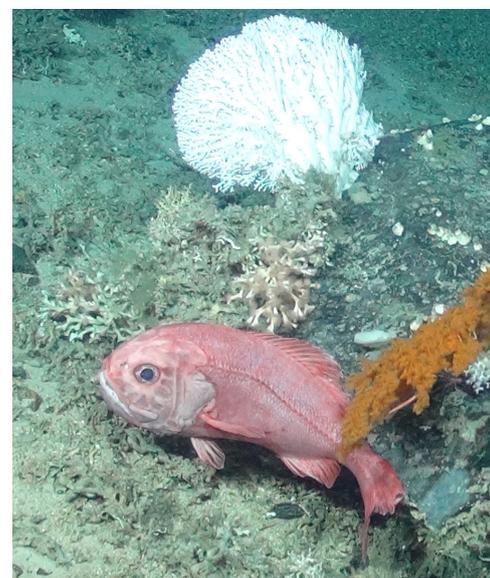
(f) **Synthesize lessons learnt and good practices and on that basis**, elaborate programmes for capacity-building and the **co-development** and transfer of marine technology;

The AOSIS Declaration on Marine Science highlights the need for CBTT initiatives to be monitored, reviewed and adjusted according to the self-identified needs of developing countries, and hence, the need for sufficient flexibility and a focus on mutual learning among all partners and responsibility of all partners. The One Ocean Hub's inter-disciplinary review in South Africa calls for supporting innovative approaches to meaningful capacity development (including funding to pilot these approaches in international scientific

collaborations, particularly on neglected areas at the science-policy interface: Sink et al, 2021). To that end, a more concerted, institutionalized multilateral approach to ensure responsiveness to the needs of developing countries, provide oversight of the distribution of benefits across different regions and scales, and contribute to a more systematic encouragement of virtuous circles through capacity building and technology co-development is needed to capture and share mutual learning in an iterative way (Morgera, 2022).

As underscored in the One Ocean Hub's inter-disciplinary review in South Africa, there is also a need for more uniform approaches across ocean research funding, to address unfair practices. For instance, uniform standards in competitive grants for deep-sea research disregard the current capacity imbalances in the Global South, perpetuating them (Sink et al, 2021). On the other hand, the One Ocean Hub has benefitted from funders' conditions that explicitly required ensuring, monitoring and learning from fair research in partnerships (Snow et al, 2021). And from a marine science perspective, 'changes in funding arrangements and international collaborations to enable more equitable research partnerships could play a particularly transformative role in the development of deep-sea capacity in developing countries' (Sink et al, 2021).

These functions could be performed by the Conference of the Parties under the BBNJ Agreement (under Art. 44) and also by a possible Working Group/Committee on CBTT (Art. 47). In addition, it is welcome that the current draft mentions the opportunity for all relevant stakeholders to contribute to the monitoring and review of CBTT (Art. 47(4)).



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Conclusions

The co-production of ocean science should be considered a precondition for truly joint governance based on shared concepts of scientific collaboration and increased capacities in the Global South to ensure that the BBNJ Agreement serves to realize multiple Sustainable Development Goals (Morgera, 2022). To that end, it is necessary, in a future BBNJ Agreement, to support co-developed capacity-building programmes and technology, as well as develop an appropriate multilateral institutional structure to identify collectively the greatest need for progress in ocean science, taking into account ecological connectivity between areas within and beyond national jurisdiction, as well as our evolving understanding of the ecosystem services provided by BBNJ (Morgera, 2022).

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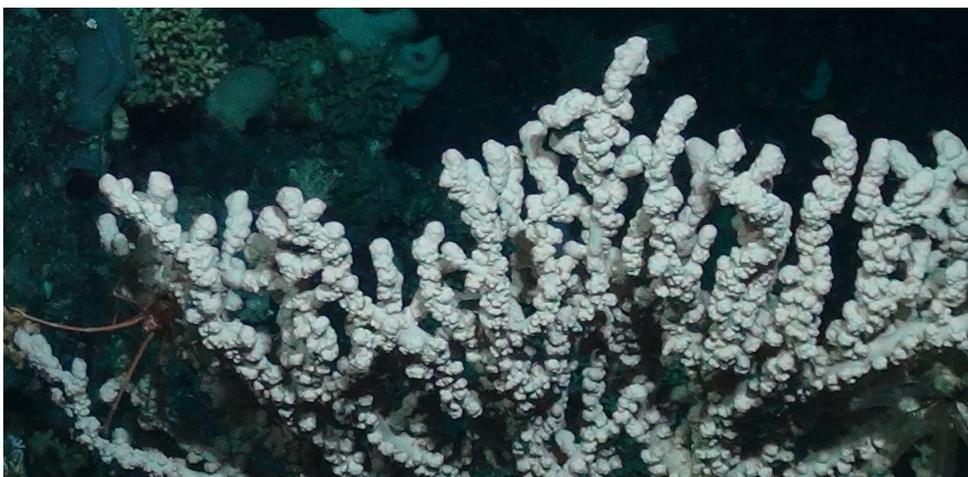
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