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“Our fish are not your marine biodiversity”: tensions in integrating fisheries into the BBNJ Agreement

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The 2023 Biodiversity Beyond National Jurisdiction (BBNJ) Agreement aims to conserve and sustainably use marine biodiversity in areas beyond national jurisdiction. However, separating fisheries from broader conservation frameworks has led to fragmented governance. This paper examines how spatial, technological, institutional, and philosophical tensions complicated efforts to integrate fisheries within the BBNJ framework. A qualitative methodology was used to analyse general perceptions of fisheries within marine biodiversity in the context of BBNJ Agreement and negotiations. Statements and interviews with stakeholders, including delegates, fisheries managers, and conservationists, were conducted during and after the BBNJ negotiations. Survey results revealed divergent perspectives on the relationship between fisheries management and marine biodiversity conservation, highlighting the persistent tensions between conservation and sustainable use objectives. These divides must be bridged to support more coherent, inclusive, and effective ocean governance.

Activities that rely on using marine resources, particularly commercially valuable fisheries that significantly contribute to national and local economies¹, have consistently received significant focus in ocean governance frameworks². For example, the 1982 United Nations Convention on the Law of the Sea (UNCLOS), despite its general scope on environmental issues³, includes provisions for protecting living marine resources, highlighting fisheries (Articles 61–65 and 192–194). This focus also informed the 1995 United Nations Fish Stocks Agreement (UNFSA), particularly for the management of straddling and highly migratory fish stocks⁴, adding to the broader corpus of international and regional frameworks on fisheries management⁵.

While fisheries remain a central issue in many governance frameworks due to their economic and food security significance¹, the broader field of ocean governance has expanded to address a wider range of environmental issues⁶, including climate change, biodiversity loss, and marine pollution, often referred to as the triple planetary crisis⁷. Nevertheless, this broader environmental ocean governance agenda has often developed alongside, rather than integrated with, existing fisheries frameworks, highlighting an enduring institutional and conceptual divide^{8,9}.

This divide is especially evident in the governance of the High Seas. Traditionally, 95% of fishing occurs within Exclusive Economic Zones (EEZs) extending up to 200 nautical miles from coastlines and falling under

national jurisdiction¹⁰. However, declining fish stocks due to rising demand, climate change, and other socio-economic forces have pushed industrial fishing into the High Seas, where governance is weaker^{11–13}. Instruments like the UNCLOS and UNFSA emphasise the need for collaborative management of the High Seas and their resources, especially for economically critical, highly migratory, and transboundary species like tuna that migrate across EEZs and the High Seas¹⁴. While the first Regional Fisheries Management Organisation (RFMO) was established in 1949, UNFSA strengthened RFMOs (UNFSA, 1995).

Despite these efforts, high-seas fishing has steadily increased in recent decades¹¹, raising equity and ecological concerns^{15,16}. These concerns are compounded by broader environmental pressures such as climate change and habitat destruction, exposing the limitations of existing frameworks. Many scholars and policymakers have argued that UNCLOS, regarded as “the constitution of the sea,”¹⁷ as well as other existing frameworks, are inadequate for protecting marine biodiversity in Areas Beyond National Jurisdiction (ABNJ)^{2,18,19}. These concerns led to the negotiation and eventual adoption of the Biodiversity Beyond National Jurisdiction (BBNJ) Agreement in June 2023²⁰.

The BBNJ Agreement is the first legally binding instrument designed to conserve and sustainably use marine biodiversity in ABNJ. These areas, which include the High Seas (water column beyond the EEZ) and the Area

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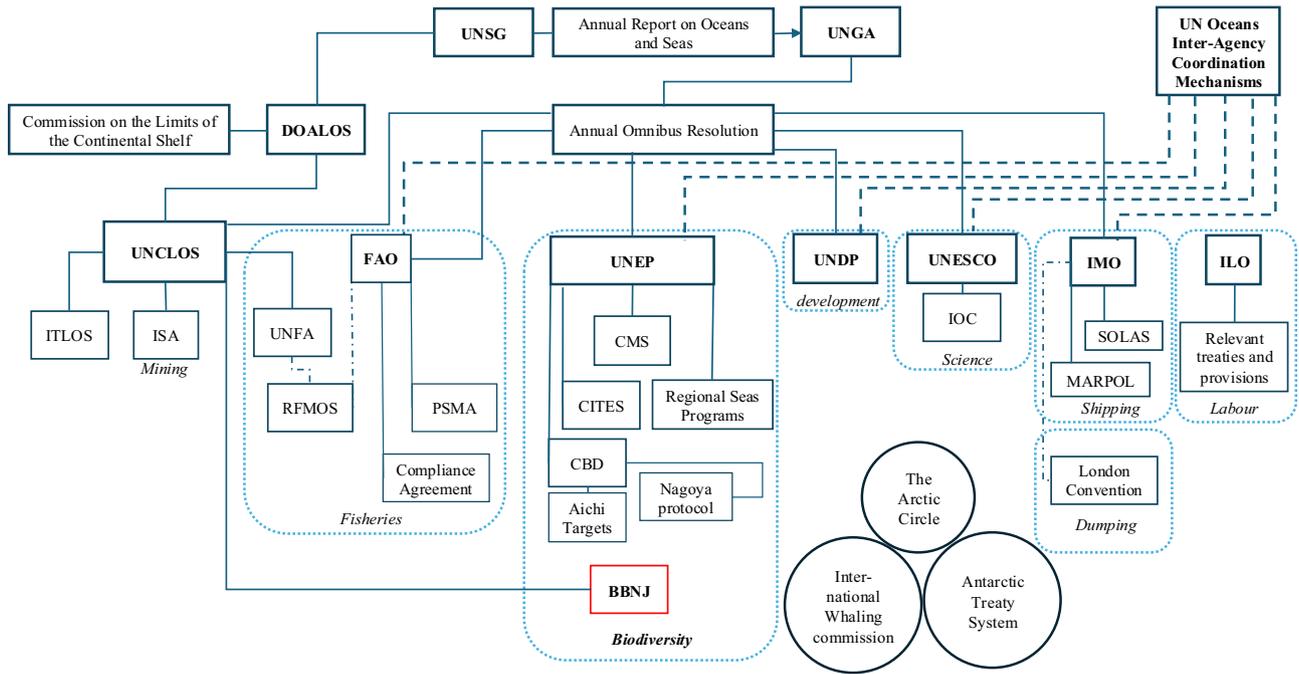


Fig. 1 | Summary of existing international instruments for the governance of Areas Beyond National Jurisdiction (ABNJ). Adapted from the World Ocean Review (<https://worldoceanreview.com/en/wor-4/politics-and-the-oceans/on-the-difficulty-of-governing-the-sea/>). See the acronyms legend in the Supplementary PDF file.

(the seabed and subsoil thereof beyond national jurisdiction) as defined by UNCLOS (Articles 86 and 1(1)(1)/Part XI, respectively), cover over two-thirds of the ocean, and host diverse ecosystems vital for maintaining Earth’s life processes, including climate regulation²¹. However, over the past decade, growing human pressures, such as plastic pollution and overfishing, have intensified scientific and governmental concerns over marine biodiversity protection²². The BBNJ Agreement is expected to address these concerns and contribute to a more coherent and integrated framework for the conservation and sustainable use of marine biodiversity in ABNJ^{2,23}.

However, despite its ambitious scope²⁴, the BBNJ Agreement faces an enduring challenge where the management of commercially valuable marine resources is often separate from broader marine biodiversity conservation objectives^{8,9,25}. Fisheries management and seabed mining received preferential treatment over broader biodiversity objectives. When asked about the relationship between fisheries and marine biodiversity during BBNJ negotiations, a Pacific Small Island Developing State (PSIDS) delegate remarked:

“Our fish are not your marine biodiversity!” (Interview with delegate from a PSIDS, August 2022).

While PSIDS did not necessarily support excluding fisheries from marine biodiversity, this sentiment reflects the deeper tension between how individual fisheries stakeholders perceive fishery management and marine biodiversity conservation objectives. The tension partly centres on whether fish should be treated as part of marine biodiversity to which conservation objectives can be applied, or primarily as a resource already used and managed separately under existing regimes. This divide was also institutionalised in the final text of the BBNJ Agreement; fisheries and fishing-related activities were exempted from the Marine Genetic Resources (MGR) regime unless the fish were used explicitly for purposes covered under Part II of the BBNJ Agreement, such as bioprospecting (Article 10(2)). This legal carve-out effectively upheld a sectoral divide. Although fisheries are part of marine biodiversity and both influence and are affected by its broader state, their management could not be easily integrated into the BBNJ Agreement’s wider goals of conserving and sustainably using marine biodiversity in ABNJ.

The BBNJ Agreement enters a landscape where fisheries are already managed separately in practice, despite their ecological interconnectedness

with wider marine biodiversity aspects. Fisheries frameworks like UNFSA and RFMOs have already set legally binding conservation and management measures, focusing on economically important fisheries⁵. While they increasingly address bycatch species such as sharks, whales, and seabirds, contributing to broader conservation efforts²⁶, this is not their central focus.

RFMOs are typically divided into general, deep-sea, and tuna RFMOs. For example, the Western and Central Pacific Fisheries Commission (WCPFC) and the Inter-American Tropical Tuna Commission (IATTC) oversee high-value tuna stocks such as bluefin, yellowfin, bigeye, skipjack, and albacore. Similarly, the Northwest Atlantic Fisheries Organization (NAFO), a general RFMO, focuses, for example, on Atlantic cod, a key species in the North Atlantic fishing industry⁵.

Only a few frameworks, such as the Commission for the Conservation of Antarctic Marine Living Resources (CCAMLR), combine broader conservation objectives with fisheries management, allowing them, for example, to establish Marine Protected Areas (MPAs)^{5,27}. Notably, CCAMLR is sometimes considered an RFMO, but technically, it is a conservation organisation with fisheries management responsibilities²⁸. This diversity of institutional mandates and objectives has led to a fragmented ocean governance system (Fig. 1), in which biodiversity concerns are often treated separately from economic or sectoral priorities²⁹. International bodies such as the Food and Agriculture Organization (FAO), which sets global fisheries standards, could bridge the broader biodiversity and fisheries governance. However, limitations in their mandate, coordination, and enforcement impede this role³⁰.

Moreover, these tensions are also political and socio-economic. Industrialised fishing nations, including several Organisation for Economic Co-operation and Development (OECD) members, dominate high-seas fishing with distant-water fleets (Sumaila et al. 2016), yet have the capacity for alternative marine uses. In contrast, developing coastal states, especially small island developing states (SIDS), rely heavily on migratory fish stocks spanning their EEZs and the High Seas³¹. SIDS emphasise the ecological, economic, and cultural links between their waters and the adjacent High Seas, advocating governance that reflects these connections³². Though often overlooked in ocean governance, landlocked developing states have also used the BBNJ negotiations platform to assert their interests in managing, accessing, and using resources in these global commons³³. Therefore,

Fig. 2 | Bar graphs showing relative the responses to two questions about the relationship between fisheries and marine biodiversity in the context of the Biodiversity Beyond National Jurisdiction (BBNJ) negotiations. The graphs show a participants' initial reactions to whether they think fisheries are the same as or a critical aspect of marine biodiversity, and **b** shifts in participants' responses to the second question—whether fish are the same as marine biodiversity in the BBNJ context.



fisheries management in ABNJ is about ecological sustainability, access, benefit distribution, and intergenerational equity for fishing and non-fishing nations.

The BBNJ Agreement seeks to balance the conservation and sustainable use of marine biodiversity, within an already fragmented institutional landscape and a highly contentious political environment. With the treaty text finalised, this paper examines how these tensions emerged during negotiations and how they were addressed or left unresolved. The tensions between fisheries management and broader marine biodiversity objectives, as expressed by the PSIDS delegate, underscore the need to assess how different stakeholders perceive this relationship. Various factors, including economic interests, institutional mandates, geopolitical priorities, and cultural values, shape these perceptions. Understanding how these factors influence stakeholders' views is crucial for evaluating the Agreement's effectiveness and the prospects for cooperation or conflict in its implementation. To explore this issue, this article draws on stakeholder views, including delegates, fisheries managers, and conservationists, from statements and interviews conducted during and after the BBNJ negotiations.

Results

General perceptions of fisheries within marine biodiversity in BBNJ context

Survey responses revealed divergent perspectives on the relationship between fisheries and marine biodiversity. While some stakeholders viewed fish as synonymous with marine biodiversity in the BBNJ context, others saw them as distinct but interconnected. Responses to the yes/no confirmation question revealed shifts in perspective. Some participants initially equated fish with marine biodiversity, but later clarified that while fish are not the same as marine biodiversity, they are a critical component within the BBNJ framework. Others firmly insisted that fish and marine biodiversity are fundamentally the same in the BBNJ context (Fig. 2).

In delegate statements, a clear distinction was made between fisheries management and broader marine biodiversity conservation objectives. These statements came particularly from distant-water fishing nations, mainly OECD countries and China, as well as from SIDS (Fig. 3), and international organisations such as the FAO and RFMOs. As a distinct biodiversity theme, fisheries featured prominently in contentious discussions across all BBNJ Agreement package elements, including MGRs, area-based management tools (ABMTs), MPAs, Environmental Impact Assessments (EIAs), and Capacity-Building and the Transfer of Marine Technology (CB&TMT) (Figs. 4, 5). The FAO frequently referenced fisheries, often using them as an entry point to engage with each package element (Fig. 4) and highlight connections with existing institutional

frameworks such as RFMOs. Notably, FAO statements referenced fisheries more often in relation to package elements than the elements were mentioned independently, underscoring the central role of fisheries in BBNJ negotiations. While delegate statements were carefully crafted to emphasise the mutual relevance of fisheries and BBNJ Agreement objectives, a conceptual separation between fisheries management and broader conservation measures remained evident.

For instance, during the fifth session's general exchange of views, the FAO emphasised that the sustainable use of fisheries resources in ABNJ cannot be achieved without conserving marine biological diversity³⁴. This reflects a key tension in the BBNJ discussions, where fish were often framed as a resource for use, whereas broader marine biodiversity was something requiring conservation. The FAO also noted that existing frameworks, such as the UNFSA, should remain unaffected by the BBNJ Agreement unless new forms of resource use, like bioprospecting, are introduced³⁴. This perspective reflects the influence of existing institutional structures in maintaining the status quo, where it is challenging to include aspects like fisheries already governed under existing frameworks, in new frameworks that seek to address broader conservation issues^{35,36}.

The diversity of perspectives of various stakeholders from the analysis of delegate submissions and statements, accompanied by the survey questions and other engagements, revealed significant tensions central to understanding the fisheries–biodiversity interface in the BBNJ Agreement process. These tensions were grouped into themes to form the structure of the following analysis.

The BBNJ and its coastal entanglements

Fisheries-related issues emerged as a critical focal point in textual and plenary submissions and discussions from coastal states, especially SIDS, the OECD fishing nations, and international organisations, such as the FAO (Fig. 3). These delegates strongly contested the notion that the High Seas are too distant to be of consequence for coastal populations, emphasising their critical role in maintaining the ecological and economic stability of coastal fisheries^{34,37}.

As a delegate commented during the first Intergovernmental Conference (IGC):

“We believe, for this very important process to be effective and fair, it is crucial the people living in coastal communities in the least developed countries (LDCs) and small island developing states (SIDS) and other developing countries are listened to and have an active role in protecting and sustainably managing the ocean. They are among those most affected by the impacts of how the ocean is used and protected” (Statement, delegate from Liberia during the first IGC, 2018).

Fig. 3 | Sankey diagrams showing patterns of fisheries-related references in BBNJ negotiations. **a** Reference by negotiating group and **b** co-mentions of fisheries with BBNJ Agreement package elements. The width of each flow is proportional to the relative number of references, indicating how frequently fisheries were associated with particular groups or topics.

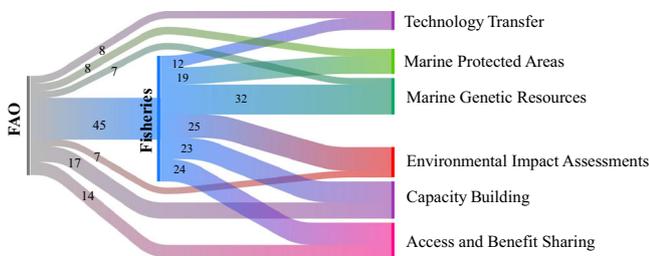
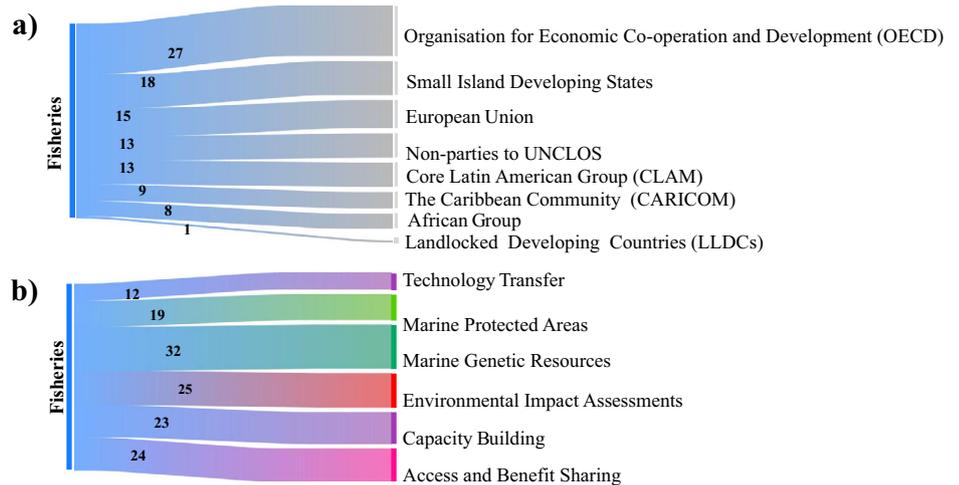


Fig. 4 | Sankey diagram illustrating directional relationships between fisheries and BBNJ Agreement package elements in FAO statements. The Sankey diagram illustrates that fisheries were more frequently mentioned in relation to package elements (e.g., MGRs, MPAs, EIAs, CB&TT) than the package elements were discussed independently.

Scientific evidence supports this position, demonstrating that the ocean functions as a highly interconnected system³⁸. Many commercially and culturally significant fish species, such as tuna and other migratory pelagic fish, depend on the High Seas for key life stages, including feeding, breeding, and migration^{39,40}. Consequently, ensuring the health of these ecosystems is essential for sustaining fisheries that coastal communities depend on for food security, employment, and cultural identity¹. As delegate statements from countries such as Barbados, Palau, and Tuvalu stressed, the High Seas are not merely an ecological space but also a socio-economic and cultural one, deeply interwoven with the traditions and livelihoods of millions, particularly in SIDS. As a delegate from Palau remarked:

“The High Seas are a shared heritage, and for SIDS like ours, they are more than an economic resource; they are our identity” (Interview with delegate from Palau, 2023).

However, this spatial framing of the High Seas as an extension of coastal state interests rather than a global commons to be managed collectively created a dilemma within the BBNJ Agreement negotiations³³. For example, landlocked nations pushed back against narratives that framed ABNJ primarily in relation to coastal fisheries. These states argued that while the ecological connectivity between EEZs and the High Seas is scientifically valid, it should not be used to grant coastal states preferential rights over High Seas resources³³.

Spatial conservation tools: MPAs and EIAs

The proposed governance mechanisms, ABMTs including MPAs, and EIAs further exemplified the spatial tension between fisheries management and broader marine biodiversity conservation. The EIA framework, for instance,

is designed to evaluate the ecological and socio-economic effects of activities in ABNJ, including areas that might intersect with fisheries’ concerns. Several countries, including New Zealand, PSIDS, Australia, and the Alliance of Small Island States (AOSIS), argued that adjacent coastal states, fisheries stakeholders, and traditional knowledge holders must be actively involved in the ABNJ EIA process^{37,41}. Their position was that High Seas activities, particularly those affecting migratory fish stocks, could have direct socio-economic repercussions on coastal communities³⁷.

As the delegate from Liberia stated:

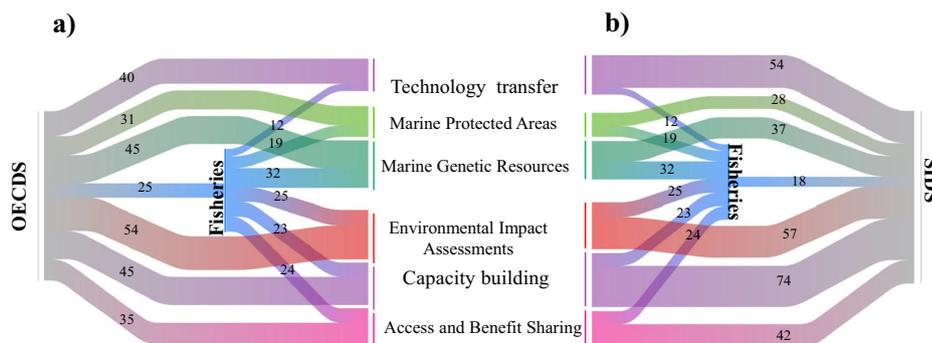
“The proposed agreement may have unresolved concerns for areas within Liberia’s biodiversity and fisheries resources, the protection of its Exclusive Economic Zone, the protection of its maritime program and hydrocarbon resources, which we believe further consultations [on EIAs] are extremely important...” (Statement, delegate from Liberia during the fifth IGC, 2022).

Similar concerns emerged regarding the establishment of ABMTs/MPAs. While ABMTs/MPAs are widely acknowledged as practical conservation tools⁴², not all serve the same purpose. In fisheries management, spatial tools such as closures for fisheries or gear restrictions are designed not to preserve ecosystems in perpetuity, but to allow sustainable recovery of the fisheries stocks. These tools are typically flexible, sectoral, and embedded in regional management bodies. By contrast, MPAs—especially no-take zones—are often perceived as conservation-first instruments with longer-term or permanent restrictions^{43,44}.

Delegations struggled to distinguish between ABMTs broadly and MPAs specifically, over which aspects of conservation and sustainable use apply universally, and which apply selectively when these tools are implemented³⁷. Strict ABMTs like no-take MPAs can sometimes produce adverse socioeconomic effects and reinforce equity, power, and justice issues, leading to resistance and non-compliance with biodiversity strategies^{43,44}. The European Union (EU), which was a big proponent of MPAs, emphasised that MPAs should not be seen as rigid “no-take” zones but should be able to support limited use if aligned with conservation goals (EU and its member States Interventions, 2019). In contrast, more flexible, use-based approaches may fail to offer sufficient protection, especially in the face of urgent threats or severe environmental degradation^{2,45}.

Uncertainty about the limits of new MPAs caused friction, especially among states whose fisheries are already managed under regional frameworks that employ their own ABMTs. Fisheries-dependent states voiced concerns that these protected areas could overlap with or impose restrictions on existing fishing activities. As one delegate from Iceland put it post-BBNJ negotiations:

Fig. 5 | Sankey diagram illustrating directional links between fisheries and BBNJ package elements in State group statement. **a** In the Organisation for Economic Co-operation and Development (OECD) countries statements and **b** in Small Island Developing States (SIDS). The width of each flow is proportional to the number of references, indicating that fisheries were more frequently mentioned in connection with Marine Genetic Resources (MGRs) than with other package elements..



“...For us, MPAs are highly interesting as they will likely impact our fisheries and livelihood resources directly...” (Interview with delegate from Iceland, 2024).

Tensions emerging from fish as a genetic resource

Most of the references to fisheries within the four package elements were tied to MGRs (Figs. 3b, 5). Including MGRs within the BBNJ framework added complexity to integrating fisheries management within broader conservation objectives, raising questions about new forms of commercialising fish stocks. Delegates debated whether fish should be considered a genetic resource, subject to the BBNJ Agreement’s benefit-sharing provisions, or whether they should remain classified solely as a commodity governed under existing fisheries management frameworks³⁷.

The dual character of fish, as a source of genetic material for commercial and scientific research and a staple food resource, raised different concerns among states. For fisheries-dependent developing states, the primary concern was that bringing fish under the MGR framework would inadvertently restrict access to species, critical to national livelihoods and food systems³⁷. For industrialised states, the concern was that categorising fish within the MGR regime could impose new regulatory burdens on marine scientific research and the benefit-sharing provisions that would create uncertainty around property rights over fish-derived genetic material^{37,41}.

As one delegate explained:

“If fish are treated as MGRs, they could fall under benefit-sharing and access obligations, which may clash with how fish are currently managed by Regional Fisheries Management Organizations” (Interview with delegate from an OECD state, 2022).

These industrialised nations were also worried that an ambiguous MGR framework might restrict access to genetic material in their EEZs and commercially valuable species in the High Seas⁴¹.

During drafting, much of the relevant text concerning fisheries was discussed in relation to coordination with existing mechanisms and remained in square brackets (meaning the text was still debated) for most of the drafting period. One delegate cautioned that treating fish as a commodity raises complex governance questions, including who defines when fish cross the threshold from natural resource to commodity.

At the final negotiations, a delegate from a SID state noted:

“It was incredibly difficult to include fisheries because of this single reference to MGRs. The moment fish enter the picture as genetic resources, everything becomes politically charged” (Interview with delegate from a SIDS, 2023).

Disparities in technological capacity further exacerbated the tensions surrounding the governance of fisheries and marine biodiversity as genetic resources. Fisheries-dependent developing states were faced with a structural dilemma. On one hand, they are deeply invested in protecting access to

fishing resources, including those that extend into the High Seas. On the other hand, the technologically advanced nations—those with the economic resources and capacity to fish in the High Seas can also exploit MGR⁴⁶. This dynamic widens global inequalities as technologically advanced nations benefit from both traditional fisheries uses and emerging MGR opportunities.

Institutional tensions: integrating fisheries in the BBNJ without undermining existing RFMOs

A crucial concern during BBNJ negotiations was ensuring that the BBNJ Agreement did not “undermine” existing frameworks (Article 5 of the BBNJ Agreement), particularly fisheries management⁴⁷. Delegates emphasised that UNCLOS and its implementing agreements should be treated as legally equal and mutually reinforcing. Delegates frequently cited the 1995 UNFSA and RFMOs, stressing that the BBNJ Agreement should not impose additional restrictions on fisheries already regulated under these regimes³⁷. The FAO statement also noted:

“...FAO welcomes delegations’ efforts to ensure that fish, fishing, and fishing activities undertaken in the context of existing instruments, frameworks (in particular the UN Fish Stocks Agreement) and sectoral bodies are excluded or not affected by the new agreement for as long as these matters do not constitute utilization for the purposes of and in the sense of utilization under the new agreement” (FAO statement at fifth IGC, February 2023).

Fisheries-related interventions emphasised that High Seas fisheries are primarily regulated by RFMOs operating within the framework of UNFSA, which governs shared fish stocks, including highly migratory species and straddling stocks that move between EEZs and ABNJ⁵. The central role of RFMOs in global fisheries management was frequently referenced, with tuna RFMOs operating in approximately 90% of ABNJ and deep-sea RFMOs covering about 77% of ABNJ⁴⁸.

Fisheries delegates further emphasized that the implementation of measures such as area-based management tools, seasonal closures, and bycatch reduction by RFMOs already represents progress toward aligning fisheries management with broader conservation efforts⁴⁹, and could be used as a starting point.

As a delegate from the North East Atlantic Fisheries Commission (NEAFC) intervened at the first IGC:

“Within our Convention, the conservation objectives are clearly set out alongside the other objectives in fisheries management. We already have in place legally binding measures to ban the targeted fishing of deep-sea sharks, rays, and chimeras, as well as certain other threatened species” (NEAFC statement at first IGC, September 2018).

FAO also emphasized that it collaborates with regional environmental organisations, focusing on broader conservation goals⁵⁰. Initiatives like the “Common Oceans/ABNJ Programme,” led by the FAO, have sought to

foster such cooperation⁵¹. FAO also noted during the fifth IGC that it hosts the Vulnerable Marine Ecosystems (VME) Database—a global inventory developed with regional fisheries bodies to track measures protecting VME in ABNJ (FAO statement at fifth IGC, February 2023).

Discussion

The results reveal persistent tensions in which fisheries are biologically part of marine biodiversity but are often conceptually and institutionally treated as separate. A key challenge lies in reconciling the diverse perspectives and institutional mandates of various actors, including international and regional bodies like the FAO and RFMOs, as well as developing and industrialised, coastal and landlocked states.

Tensions arise more vividly when conservation for nature's sake intersects with utilitarian sustainability goals⁵². Fisheries management typically emphasises sustainable use for economic development and food security^{53–58}, while biodiversity conservation is grounded in the goal of ecological preservation^{59,60}. For instance, fisheries management defines sustainability based on harvest rates that do not compromise future availability^{61,62}, but such assessments may overlook ecological roles^{63,64}. The overlook can potentially alter habitat structures and diminish the overall health of the marine environment^{65,66}. Conservation, often described as a “crisis discipline,” prioritises ecological balance or preservation over extractive uses⁶⁷, reflecting a deep-rooted philosophical divide.

This divide becomes further entrenched with the growing commercialisation of marine biodiversity. As more marine species, such as octopuses, become commercially viable commodities⁶⁸, and new forms of resource use emerge, such as in the form of MGRs, the line between conservation and commercial exploitation blurs. Unlike other MGRs primarily collected for scientific research and biotechnological applications, such as anticancer agents like trabectedin from the sea squirt *Ecteinascidia turbinata*⁶⁹, or enzymes like DeepVent DNA polymerase from deep-sea hydrothermal vent organisms used in molecular biology⁷⁰, fish stocks are primarily fundamental to food security and economic stability^{71,72}.

Although integrated governance is widely endorsed^{73–75}, the actual implementation of conservation objectives alongside commercial sustainable use, including the utilisation of MGRs, is heavily shaped by power asymmetries, economic disparities, and geopolitical interests⁷⁶. The ability to commercialise genetic material from marine organisms depends on advanced biotechnological infrastructure concentrated in a few technologically advanced nations⁷⁷. International frameworks have not effectively facilitated technology transfer^{78,79}, which makes it challenging for less technologically advanced countries to adopt and comply with international frameworks that rely heavily on advanced technology.

Low-income nations bear a disproportionate burden, balancing domestic needs with conservation goals, while wealthier nations, whose luxury markets often drive overexploitation, adapt more easily to new regulations^{80–82}. These industrialised nations can also shift fishing grounds or rely on other economic uses, such as MGRs, to mitigate tough conservation regulatory impacts⁸³. The contestation around ABMTs, particularly MPAs, is directly linked to these socio-economic factors. While there is general support for conservation tools such as EIAs or ABMTs/MPAs, the difficulty in aligning conservation with socio-economic concerns remains due to differing interpretations of their purpose, application, and use priorities (section “Spatial conservation tools: MPAs and EIAs”), compounded by a fragmented ocean governance framework (Fig. 1). For developing fisheries-dependent states such as SIDS, the High Seas are vital for food security and livelihoods, and spatial designations like EEZs and ABNJ can seem disconnected from ecological and socio-economic realities (sections “General perceptions of fisheries within marine biodiversity in BBNJ contexts” and “The BBNJ and its coastal entanglements”). A way forward may involve adaptive spatial tools that allow for varying levels of use and protection based on ecological sensitivity and socio-economic dependency. These must be developed collaboratively, incorporating scientific data, traditional knowledge, the needs of coastal states, especially vulnerable ones like SIDS, and existing frameworks.

Yet, institutional coherence while adhering to the foundational principles that govern ABNJ, like the common heritage of [Hu]mankind remains one of the most significant challenges for BBNJ Agreement implementation. Landlocked states have raised concerns that proposals from coastal nations risk creating de facto extended jurisdiction over ABNJ, undermining the legal principle that these areas are part of the global commons. These concerns reflect a broader tension between social ecological connectivity, which recognises biological connectivity and the socio-ecological dependence of coastal communities⁸⁴, and juridical equality, which grants equal rights and standing for all states, regardless of geography⁸⁵. A critical difficulty lies in acknowledging the legitimate vulnerability and ecological dependence of SIDS and other developing coastal states without opening the door for industrialised extractive nations to make similar proximity-based claims to justify privileged access or expanded influence. A viable way forward is to institutionalise procedural and distributional equity within the BBNJ framework^{86,87}, beyond merely symbolic acknowledgements like in BBNJ Agreement Article 7(m). Procedural equity could ensure that SIDS and other developing states have meaningful and consistent participation in decision-making processes⁸⁷. In practical terms, this means guaranteeing representation in bodies such as the Scientific and Technical Body, providing funding to support involvement in negotiations, and enhancing capacity-building to enable these States to implement and participate in the conservation and sustainable use measures.

Distributional equity is also crucial in ensuring that the benefits derived from the use of marine biodiversity, particularly MGR, are shared fairly, especially with those states that may lack the technological and financial means to access or commercialise these resources⁸⁶, as stated in BBNJ Agreement Article 14(2)(f). UNCLOS Articles 140(1) and 148 already establish a precedent for prioritising these equity principles. These Articles mandate special consideration for the interests and needs of developing states, including SIDS, in activities concerning the Area. However, this commitment remains under-implemented.

Lower-income countries face a structural dilemma: Supporting conservation goals under new Agreements like the BBNJ may strengthen environmental protections, but often on terms that are better suited to wealthier states, which are better positioned to shape, implement, and benefit from them. It becomes crucial for these States to protect their rights and interests already established under existing institutions, such as RFMOs.

However, RFMOs' mandates are limited as they are species- and fishery-specific, rather than spatially or ecologically comprehensive⁸⁸. Membership is also selective; states only join RFMOs if they have an interest in the relevant fishery, meaning global coverage and coordination remain patchy^{89,90}. This challenges the BBNJ Agreement, which envisions a more integrated and ecosystem-based approach to ocean governance⁹¹. While RFMOs have the legal authority to regulate fishing activities, including closing areas to certain types of fishing, they generally do not have a mandate to establish MPAs in the broader ecological or multi-use sense envisioned by BBNJ Agreement. The BBNJ framework has a broader mandate and legal basis to formally designate MPAs with cross-sectoral objectives. However, while BBNJ Agreement can establish MPAs, only RFMOs can enforce fisheries closures. Since the BBNJ Agreement has no fisheries management mandate, cooperation with RFMOs is still necessary for effective marine biodiversity conservation.

The role of RFMOs in implementing BBNJ conservation measures remains uncertain, and the nature of their cooperation with the BBNJ Agreement has yet to be determined⁹². According to Article 8(2) of the BBNJ Agreement, states that are members of both an RFMO and the BBNJ Agreement are required to promote BBNJ objectives within those RFMOs. In principle, RFMOs can adopt binding or non-binding conservation measures that align with their mandates⁹³ to support BBNJ Agreement goals. For example, in 2025, the Indian Ocean Tuna Commission (IOTC) adopted a non-binding measure to promote the implementation of the BBNJ Agreement⁹⁴.

However, since most RFMOs operate by consensus, all members must support or at least not actively oppose decisions⁹⁵. This will pose challenges when some RFMO members are not parties to the BBNJ Agreement and may resist measures like establishing MPAs that could restrict fishing activities. Without a broad consensus among RFMO members, adopting BBNJ-related conservation tools may be limited in practice, resulting in only partial or symbolic implementation. Instead, a hybrid governance model could be explored, where the BBNJ Agreement institutions set conservation norms while RFMOs implement them, subject to binding review mechanisms. This preserves sectoral expertise while embedding it within a more integrated normative framework.

Notably, RFMOs already recognise that the BBNJ Agreement provides a unique opportunity to complement and strengthen existing fisheries management frameworks by addressing gaps in the conservation of marine biodiversity. Several RFMOs have established Memoranda of Understanding for such external engagement⁹⁶, offering pathways for aligning fisheries governance with BBNJ's broader conservation objectives. However, the fear among some fisheries stakeholders that the BBNJ Agreement could potentially undermine their rights over existing frameworks could make integration both politically and institutionally complex. Effective implementation of the BBNJ Agreement will therefore depend on collaboration with existing regional and international bodies (BBNJ Article 8(2)) and without undermining their mandates (Article 5(2)).

To conclude, it is essential to acknowledge the limitations of this study, including the potential bias introduced in the framing of the two questions. The forced binary of the second question (and partly the first) simplified a complex and multifaceted issue, potentially leading respondents to frame their answers within that dichotomy. However, this was particularly relevant given prior statements in negotiations, such as those from a delegate of PSIDS who explicitly emphasized that “fish is not marine biodiversity.” These comments highlight how this distinction is alive and a contested issue. The framing of the survey questions within a broader corpus of other questions and including the open-ended question sought to mitigate this risk by allowing respondents to elaborate on their views and reveal other conceptual and political nuances.

The results have shown that while marine biodiversity is often treated as a unified concept, governance remains fragmented, disproportionately affecting stakeholders who depend on fisheries for food security and livelihoods. Conservation objectives that prioritise preservation can conflict with the economic realities of fisheries-dependent nations. This tension underscores the difficulty of integrating resource management within broader conservation frameworks like the BBNJ Agreement. The question of whether fisheries management can align with broader marine biodiversity conservation objectives under the existing institutional setup remains unresolved. RFMOs, despite their limitations, represent an established system capable of bridging this divide. Their jurisdiction over ABNJ and increasing incorporation of biodiversity considerations position them as key contributors to achieving resource use and conservation goals. Achieving a balance between fisheries management and biodiversity conservation requires recognising their interconnected yet distinct roles. The tensions highlighted by the delegate remind us that marine governance is not merely a matter of policy but of striking a balance that respects both the ecological and human dimensions of the ocean.

Methods

This article draws on qualitative research from a broader multi-year study (2018–2024) examining how diverse stakeholders involved in the BBNJ negotiations conceptualised marine biodiversity and its governance implications. While the overall study addressed the full scope of the BBNJ package elements: MGRs, including Access and Benefit Sharing, ABMTs, EIAs, and CB&TMT, this article focuses on the contentious relationship between fisheries and marine biodiversity. This narrower focus responds to a persistent and politically charged tension evident throughout the negotiations and remains a critical challenge as the BBNJ Agreement moves toward implementation.

Data collection

The survey findings are based on data gathered primarily through fieldwork conducted between 2022 and 2024, encompassing multiple BBNJ negotiation sessions, including the fourth, fifth, and resumed fifth IGCs, as well as post-negotiation engagements such as the preparatory commission's organisational meeting and the first Conference of the Parties in 2024. Statements from previous IGCs were also consulted. Data collection methods included semi-structured interviews, short-form surveys, and participant observation. Respondents were selected through purposive and opportunistic sampling at negotiation venues and side events, resulting in a total of 38 interviews with a diverse group of participants: government delegates, RFMO representatives, civil society members, conservation non-governmental organisations, academic experts, and observers. Interviews typically lasted 8–30 minutes, combining structured and informal approaches depending on participant availability.

Although the broader study engaged respondents on numerous issues, this article builds on the two key questions, based on the PSIDS delegate comment, that were consistently posed across interviews and surveys:

1. In the context of the BBNJ, do you consider fisheries to be the same as, or a critical aspect of, marine biodiversity? (Open-ended)
2. Please answer yes or no: “Is fish the same as marine biodiversity in the BBNJ context?” (Closed-ended)

These questions were also based on preliminary consultations, document reviews, and early engagements, indicating that the conceptual and political boundary between fisheries and marine biodiversity was a central source of uncertainty and debate in the BBNJ process. These were supported by literature on the tensions between fisheries management and biodiversity conservation^{25,35,97,98}. The open-ended question allowed respondents to elaborate on their perspectives and reveal underlying concerns. The phrases “the same as” or a “critical aspect of” marine biodiversity were used to help categorise and further explore responses. The closed-ended question offered a simple, direct way to compare how stakeholders viewed this relationship. The broader qualitative responses allowed for the creation of thematic categories used in the results and discussion.

Data analysis

Responses were recorded as handwritten notes in a field notebook and later transcribed using Adobe Acrobat Pro's built-in Optical Character Recognition tool (Adobe, 2020). Transcripts were systematically organised and subjected to iterative thematic coding. An initial open coding phase identified recurring concepts, linguistic framings, and concerns across interviews⁹⁹. These codes were then clustered into broader thematic categories using a constant comparative method, allowing patterns to emerge inductively from the data rather than being imposed by the researcher^{99,100}. Particular attention was paid to how stakeholders framed fisheries alongside marine biodiversity, articulated concerns about institutional fragmentation, and expressed political implications of including or excluding fisheries within the BBNJ framework.

The focal questions were embedded within broader semi-structured interviews that included additional guiding questions on participants' familiarity with BBNJ principles, conceptualisations of biodiversity, and reflections on negotiation dynamics. Informal conversations and the first author's participant observations provided vital contextual depth and helped triangulate findings, enhancing the study's validity¹⁰¹. The authors also drew on their experience attending fisheries commissions and working in conservation domains to interpret findings within a nuanced institutional context.

Data availability

All relevant data generated or analysed during this study are included in this published article. The interview datasets generated and/or analysed during the current study are not publicly available for privacy reasons.

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References

1. FAO. *The State of World Fisheries and Aquaculture 2024* (FAO, 2024).
2. Ardron, J. A., Rayfuse, R., Gjerde, K. & Warner, R. The sustainable use and conservation of biodiversity in ABNJ: what can be achieved using existing international agreements? *Mar. Policy* **49**, 98–108 (2014).
3. IRDC. *UNCLOS: The Law of the Sea in the 21st Century. 2nd Report of Session 2021–22 by International Relations and Defence Committee (IRDC)*. Report (House of Lords, 2022).
4. Tahindro, A. in *Legal Order in the World's Oceans* (eds Nordquist, M. H., Moore, J. N. & Long, R.) 323–369 (Brill | Nijhoff, 2018).
5. Haas, B. *Regional Fisheries Management Organizations and Sustainable Development Goal 14: Opportunities and Challenges*. Thesis, University of Tasmania (2021).
6. Haas, B. et al. The future of ocean governance. *Rev. Fish Biol. Fish.* **32**, 253–270 (2022).
7. Baste, I. A. & Watson, R. T. Tackling the climate, biodiversity and pollution emergencies by making peace with nature 50 years after the Stockholm Conference. *Glob. Environ. Chang.* **73**, 102466 (2022).
8. Katznelson, D. et al. Examining the presence and effects of coherence and fragmentation in the Gulf of Maine fishery management network. *Regional Environ. Chang.* **25**, 3 (2025).
9. Singh, P. A. & Ort, M. in *YOUMARES 9 - The Oceans: Our Research, Our Future* (eds Jungblut, S., Liebich, V. & Bode-Dalby, M.) 45–56 (Springer International Publishing, 2020).
10. Englander, G. Property rights and the protection of global marine resources. *Nat. Sustain.* **2**, 981–987 (2019).
11. Sumaila, U. R., Bellmann, C. & Tipping, A. Fishing for the future: an overview of challenges and opportunities. *Mar. Policy* **69**, 173–180 (2016).
12. Han, H. & Chen, Z. The impact of socio-economic factors on the decline of fishery resources. *Int. J. Mar. Sci.* **14**, 74–82 (2024).
13. Peet, R., Robbins, P. & Watts, M. *Global Political Ecology* (Routledge, 2011).
14. Palacios-Abrantes, J., Reygondeau, G., Wabnitz, C. C. C. & Cheung, W. W. L. The transboundary nature of the world's exploited marine species. *Sci. Rep.* **10**, 17668 (2020).
15. Carmine, G. et al. Who is the high seas fishing industry? *One Earth* **3**, 730–738 (2020).
16. Österblom, H. et al. in *Blue Compendium. From Knowledge to Ocean Action for Effective Protection* 485–521 (Springer International, 2022).
17. Pollock, H. W. The law of the sea conference: drafting a constitution for the oceans of the world. *Geophysics* **42**, 890–896 (1977).
18. UNGA. *United Nations General Assembly (UNGA) Res. 72/249, U.N. Doc. A/RES/72/249*. Report of the Secretary-General, Addendum supra note 3 (United Nations, 2017).
19. Hammond, A. & Jones, P. J. S. Protecting the 'blue heart of the planet': strengthening the governance framework for marine protected areas beyond national jurisdiction. *Mar. Policy* **127**, 104260 (2021).
20. 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). New York 30/06/2023. BBNJ (2023).
21. Levin, L. A. et al. Global observing needs in the deep ocean. *Front. Mar. Sci.* **6**, 241 (2019).
22. Campbell, L. M. et al. Global oceans governance: new and emerging issues. *Annu. Rev. Environ. Resour.* **41**, 517–543 (2016).
23. Warner, R. M. Conserving marine biodiversity in areas beyond national jurisdiction: co-evolution and interaction with the law of the sea. *Front. Mar. Sci.* **1**, 6 (2014).
24. Bodansky, D. Four treaties in one: the biodiversity beyond national jurisdiction agreement. *Am. J. Int. Law* **118**, 299–323 (2024).
25. Garcia, S. M., Rice, J. & Charles, A. in *Governance of Marine Fisheries and Biodiversity Conservation* (eds Garcia, S. M., Rice, J. & Charles, A.) 18–36 (Wiley, 2014).
26. Gray, C. A. & Kennelly, S. J. Bycatches of endangered, threatened and protected species in marine fisheries. *Rev. Fish Biol. Fish.* **28**, 521–541 (2018).
27. Brooks, C. M. Competing values on the Antarctic high seas: CCAMLR and the challenge of marine-protected areas. *Polar J.* **3**, 277–300 (2013).
28. Hilborn, R. et al. Area-based management of blue water fisheries: current knowledge and research needs. *Fish Fish.* **23**, 492–518 (2022).
29. Young, M. A. Strengthening capacity in ocean governance. *Asia Pac. J. Ocean Law Policy* **8**, 5–24 (2023).
30. Grip, K. International marine environmental governance: a review. *Ambio* **46**, 413–427 (2017).
31. Blasiak, R. & Wabnitz, C. C. Aligning fisheries aid with international development targets and goals. *Mar. Policy* **88**, 86–92 (2018).
32. Hay, J. E. Small island developing states: coastal systems, global change and sustainability. *Sustain. Sci.* **8**, 309–326 (2013).
33. Sebuliba, S. The landlocked ocean: landlocked states in BBNJ negotiations and the impact of fixed land-sea relations in global ocean governance. *Front. Mar. Sci.* **11**, 1306386 (2024).
34. FAO. *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. Fifth Session, Agenda Item 5: General Exchange of Views, Date of Delivery: 23 February 2023. Submitted by the Food and Agriculture Organization of the United Nations (FAO)* (FAO, 2023).
35. Grip, K. & Blomqvist, S. Marine nature conservation and conflicts with fisheries. *Ambio* **49**, 1328–1340 (2020).
36. Hoel, A. H. Marine biodiversity and institutional interplay. *Coast. Manage.* **31**, 25–36 (2003).
37. Own observations. *BBNJ Negotiations: IGC-4 (2022) to IGC-5.2 (2023)* (2022/2023).
38. Mann, K. H. & Lazier, J. *Dynamics of Marine Ecosystems* (Wiley, 2005).
39. Cowen, R. K., Paris, C. B. & Srinivasan, A. Scaling of connectivity in marine populations. *Science* **311**, 522–527 (2006).
40. Robert, C., Gawarkiewicz, G., Pineda, J., Thorrold, S. R. & Werner, F. E. Population connectivity in marine systems: an overview. *Oceanography* **20**, 14–21 (2007).
41. Delegate statements. *BBNJ Negotiations: IGC-4 (2022) to IGC-5.2 (2023)* (2022/2023).
42. Edgar, G. J. et al. Global conservation outcomes depend on marine protected areas with five key features. *Nature* **506**, 216–220 (2014).
43. Jones, P. Equity, justice and power issues raised by no-take marine protected area proposals. *Mar. Policy* **33**, 759–765 (2009).
44. Iacarella, J. C., Clyde, G., Bergseth, B. J. & Ban, N. C. A synthesis of the prevalence and drivers of non-compliance in marine protected areas. *Biol. Conserv.* **255**, 108992 (2021).
45. Ding, X., Zhou, C., Zhong, W. & Tang, P. Addressing uncertainty of environmental governance in environmentally sensitive areas in developing countries: a precise-strike and spatial-targeting adaptive governance framework. *Sustainability* **11**, 4510 (2019).
46. Sala, E. et al. The economics of fishing the high seas. *Sci. Adv.* **4**, eaat2504 (2018).
47. Langlet, A. & Vadrot, A. B. M. Not 'undermining' who? Unpacking the emerging BBNJ regime complex. *Mar. Policy* **147**, 105372 (2023).
48. CCAMLR. *Report of the Twenty-First Meeting of the Commission. Commission for the Conservation of Antarctic Marine Living Resources* (CCAMLR, 2002).

49. Scanlon, Z. The art of “not undermining”: possibilities within existing architecture to improve environmental protections in areas beyond national jurisdiction. *ICES J. Mar. Sci.* **75**, 405–416 (2018).
50. Weiland, L., Unger, S., Rochette, J., Müller, A. & Neumann, B. Advancing ocean governance in marine regions through stakeholder dialogue processes. *Front. Mar. Sci.* **8**, 645576 (2021).
51. Hampton, S., Packeiser, T., Boteler, B., Durussel, C. & Jackson, L. *Reflections from the STRONG High Seas Project: Capacity Development in the Southeast Atlantic Region for Conservation of Marine Biodiversity in ABNJ* (STRONG High Seas, 2022).
52. Tear, T. H. et al. How much is enough? The recurrent problem of setting measurable objectives in conservation. *Bioscience* **55**, 835 (2005).
53. Andrews, E. J., Pittman, J. & Armitage, D. R. Fisher behaviour in coastal and marine fisheries. *Fish Fish.* **22**, 489–502 (2021).
54. Avadí, A. & Fréon, P. Life cycle assessment of fisheries: a review for fisheries scientists and managers. *Fish. Res.* **143**, 21–38 (2013).
55. Cordeiro, C. M. A corpus-based approach to understanding market access in fisheries and aquaculture international business research: a systematic literature review. *Aquacult. Fish.* **4**, 219–230 (2019).
56. Fytalagos, I. Text mining in fisheries scientific literature: a term coding approach. *Ecol. Informatics* **61**, 101203 (2021).
57. Syed, S., Borit, M. & Spruit, M. Narrow lenses for capturing the complexity of fisheries: a topic analysis of fisheries science from 1990 to 2016. *Fish Fish.* **19**, 643–661 (2018).
58. Weber, C. T., Borit, M. & Aschan, M. An interdisciplinary insight into the human dimension in fisheries models. A systematic literature review in a European Union context. *Front. Mar. Sci.* **6**, 369 (2019).
59. Redford, K. H. & Richter, B. D. Conservation of biodiversity in a world of use. *Conserv. Biol.* **13**, 1246–1256 (1999).
60. Wiens, J. A. & Hobbs, R. J. Integrating conservation and restoration in a changing world. *Bioscience* **65**, 302–312 (2015).
61. Blamey, L. K. et al. Redesigning harvest strategies for sustainable fishery management in the face of extreme environmental variability. *Conserv. Biol.* **36**, e13864 (2022).
62. Knudsen, E. E. & McDonald, D. (eds) *Sustainable Fisheries Management. Pacific Salmon* 1st edn (CRC Press, 2020).
63. Bolin, J. A., Schoeman, D. S., Evans, K. J., Cummins, S. F. & Scales, K. L. Achieving sustainable and climate-resilient fisheries requires marine ecosystem forecasts to include fish condition. *Fish Fish.* **22**, 1067–1084 (2021).
64. Gebremedhin, S., Bruneel, S., Getahun, A., Anteneh, W. & Goethals, P. Scientific methods to understand fish population dynamics and support sustainable fisheries management. *Water* **13**, 574 (2021).
65. Cochrane, K. L. Reconciling sustainability, economic efficiency and equity in marine fisheries: has there been progress in the last 20 years?. *Fish Fish.* **22**, 298–323 (2021).
66. Crowder, L. B. et al. The impacts of fisheries on marine ecosystems and the transition to ecosystem-based management. *Annu. Rev. Ecol. Evol. Syst.* **39**, 259–278 (2008).
67. Meinard, Y., Coq, S. & Schmid, B. in *From Assessing to Conserving Biodiversity. Conceptual and Practical Challenges* (eds Casetta, E., Da Marques Silva, J. & Vecchi, D.) 353–374 (Springer Nature, 2019).
68. Vaz-Pires, P., Seixas, P. & Barbosa, A. Aquaculture potential of the common octopus (*Octopus vulgaris* Cuvier, 1797): a review. *Aquaculture* **238**, 221–238 (2004).
69. Wang, E., Sorolla, M. A., Krishnan, P. D. G. & Sorolla, A. From seabed to bedside: a review on promising marine anticancer compounds. *Biomolecules* **10**, 248 (2020).
70. Newman, D. J., Cragg, G. M. L. & Grothaus, P. *Chemical Biology of Natural Products* (CRC Press/Taylor & Francis Group, 2017).
71. Arlinghaus, R., Mehner, T. & Cowx, I. G. Reconciling traditional inland fisheries management and sustainability in industrialized countries, with emphasis on Europe. *Fish Fish.* **3**, 261–316 (2002).
72. McClanahan, T., Allison, E. H. & Cinner, J. E. Managing fisheries for human and food security. *Fish Fish.* **16**, 78–103 (2015).
73. Charles, A. *Sustainable Fishery Systems* (Wiley, 2023).
74. Fogarty, M. J. The art of ecosystem-based fishery management. *Can. J. Fish. Aquat. Sci.* **71**, 479–490 (2014).
75. Gaichas, S. K. A context for ecosystem-based fishery management: developing concepts of ecosystems and sustainability. *Mar. Policy* **32**, 393–401 (2008).
76. Shackleton, R. T. et al. Navigating power in conservation. *Conserv. Sci. Pract.* **5**, e12877 (2023).
77. Rotter, A. et al. The essentials of marine biotechnology. *Front. Mar. Sci.* **8**, 629629 (2021).
78. Bozeman, B. Technology transfer and public policy: a review of research and theory. *Res. Policy* **29**, 627–655 (2000).
79. Pandey, N., de Coninck, H. & Sagar, A. D. Beyond technology transfer: innovation cooperation to advance sustainable development in developing countries. *WIREs Energy Environ.* **11**, e422 (2022).
80. Campbell, B. & Hanich, Q. Principles and practice for the equitable governance of transboundary natural resources: cross-cutting lessons for marine fisheries management. *Maritime Stud.* **14**, 8 (2015).
81. Hanich, Q. in *The Limits of Maritime Jurisdiction* (eds Schofield, C. H., Lee, S. & Kwon, M.-S.) 405–430 (Brill | Nijhoff, 2014).
82. Hanich, Q. & Ota, Y. Moving beyond rights-based management: a transparent approach to distributing the conservation burden and benefit in tuna fisheries. *Int. J. Mar. Coastal Law* **28**, 135–170 (2013).
83. Mielgo, R., Gutiérrez, M. & Almazor, G. G. Fisheries depletion: the factors and actors involved in the transfer of fish from developing countries to developed ones. *Development* **67**, 75–84 (2024).
84. Glaser, M. & Glaeser, B. Towards a framework for cross-scale and multi-level analysis of coastal and marine social-ecological systems dynamics. *Regional Environ. Chang.* **14**, 2039–2052 (2014).
85. Lucy, W. Equality under and before the law. *Univ. Toronto Law J.* **61**, 411–465 (2011).
86. Campbell, L. M. et al. Architecture and agency for equity in areas beyond national jurisdiction. *Earth Syst. Gov.* **13**, 100144 (2022).
87. Bordner, A. in *Common Currents. Examining How We Manage the Ocean Commons* (eds Diamond, J., Doremus, H. D. & Yang, H.) 185–206 (Brill Nijhoff, 2022).
88. Lobach, T., Petersson, M., Haberkon, E. & Mannini, P. *Regional Fisheries Management Organizations and Advisory Bodies: Activities and Developments, 2000–2017* (FAO, 2020).
89. Molenaar, E. J. in *Strengthening International Fisheries Law in an Era of Changing Oceans* (eds Caddell, R. & Molenaar, E. J.) 103–129 (Hart Publishing, 2019).
90. Goodman, C. et al. Enhancing cooperative responses by regional fisheries management organisations to climate-driven redistribution of tropical Pacific tuna stocks. *Front. Mar. Sci.* **9**, 1046018 (2022).
91. Lucia, V. & de The integration of the ecosystem approach in the BBNJ agreement—an initial assessment of limits and opportunities. *Rev. Eur. Comp. Int. Environ.* **33**, 554–564 (2024).
92. Tian, H. & Guo, J. The potential interactions between the BBNJ Agreement and RFMOs in the establishment of ABMTs: implications for RFMOs. *Mar. Policy* **171**, 106477 (2025).
93. Schatz, V. Provisions for nullification of conservation and management measures in RFMO objection procedures. *Mar. Policy* **166**, 106230 (2024).
94. IOTC. *Resolution Recommendation 25/XX: On Promoting the Objectives of IOTC Through Cooperation with Implementation of the BBNJ Agreement* (IOTC, 2025).
95. Pentz, B. & Klenk, N. The ‘responsiveness gap’ in RFMOs: the critical role of decision-making policies in the fisheries management response to climate change. *Ocean Coastal Manage.* **145**, 44–51 (2017).

96. Leroy, A. & Morin, M. Innovation in the decision-making process of the RFMOs. *Mar. Policy* **97**, 156–162 (2018).
97. Barnes, R. in *New Knowledge and Changing Circumstances in the Law of the Sea* (ed. T. Heidar, T.) 124–153 (Brill | Nijhoff, 2020).
98. Green, A. L. et al. Designing marine reserves for fisheries management, biodiversity conservation, and climate change adaptation. *Coastal Manage.* **42**, 143–159 (2014).
99. Williams, M. & Moser, T. The art of coding and thematic exploration in qualitative research. *Int. Manage. Rev.* **15**, 45 (2019).
100. Charmaz, K. Grounded Theory. *Qualitative psychology: A practical guide to research methods*, 3, pp.53–84 (2015).
101. Da Santos, K. S. et al. Uso de triangulação múltipla como estratégia de validação em um estudo qualitativo. *Ciencia Saude Coletiva* **25**, 655–664 (2020).

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Author contributions

S.S. and K.G.S. conceptualised the broader study. S.S. collected data during the BBNJ negotiations, analysed delegate transcripts, and wrote the original draft. All authors (S.S., K.G.S., and E.E.) contributed to the development and analysis of the themes, awriting and review of subsequent drafts, as well as final editing.

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