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**To cite this article:** Laisa Branco de Almeida (2025) The New Regulatory Framework under the BBNJ Agreement for Marine Genetic Resources and the Material Exception to Fishing and Fishing-Related Activities, *Ocean Development & International Law*, 56:3, 319-339, DOI: [10.1080/00908320.2025.2531163](https://doi.org/10.1080/00908320.2025.2531163)

**To link to this article:** <https://doi.org/10.1080/00908320.2025.2531163>



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Published online: 23 Jul 2025.



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# The New Regulatory Framework under the BBNJ Agreement for Marine Genetic Resources and the Material Exception to Fishing and Fishing-Related Activities

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## ABSTRACT

This article presents a critical analysis of the Agreement on the Conservation and Sustainable Use of Marine Biological Diversity of Areas Beyond National Jurisdiction (BBNJ Agreement) and the regulation of activities with respect to marine genetic resources, focusing on fish valued for their genetic properties. It argues that a more precise definition of the scope and a more effective implementation of the material exception under Article 10(2) are necessary in order not to undermine the objectives of the BBNJ Agreement and to guarantee its successful implementation. The article first introduces a historical overview of proposals for establishing a material exception for fishing or fishing-related activities under Part II of the BBNJ Agreement. It employs interpretative tools to analyze the scope of application of Article 10(2) and the rights and obligations related to activities involving marine genetic resources derived from fish in areas beyond national jurisdiction. Ultimately, this article concludes that there is an urgent need for a comprehensive and transparent regulatory framework that effectively addresses the entire value chain of fish resources, ensuring that the conservation of marine biological diversity and the equitable distribution of benefits derived from marine genetic resources are prioritized in future BBNJ implementation efforts.

## ARTICLE HISTORY



Received 16 January 2025  
Accepted 2 July 2025

## KEYWORDS

areas beyond national jurisdiction; BBNJ Agreement; fisheries; marine genetic resources

## Introduction

The Agreement on the Conservation and Sustainable Use of Marine Biological Diversity of Areas Beyond National Jurisdiction (“BBNJ Agreement”),<sup>1</sup> adopted on 19 June 2023, is the third implementing agreement to the United Nations Convention on the Law

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<sup>1</sup> 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, adopted 19 June 2023, not yet in force, UNTC chap XXI.10 [hereinafter BBNJ Agreement].

of the Sea (UNCLOS).<sup>2</sup> In Part II, the BBNJ Agreement regulates activities with respect to marine genetic resources, which are defined as “any material of marine plant, animal, microbial, or other origin containing functional units of heredity of actual or potential value.”<sup>3</sup> Central to the new regulatory framework is the exception clause under Article 10(2), which declares that provisions under Part II of the BBNJ Agreement shall not apply to

(a) fishing regulated under relevant international law and fishing-related activities ... or (b) fish or other living marine resources known to have been taken in fishing and fishing-related activities from areas beyond national jurisdiction, except where such fish or other living marine resources are regulated as utilization under this Part.<sup>4</sup>

The language adopted under Article 10(2)(b) of the BBNJ Agreement explicitly states that any utilization of, as described in Article 1,<sup>5</sup> marine genetic resources obtained from fish and other marine organisms deserves treatment identical to that accorded to any other genetic material collected or sampled in areas beyond national jurisdiction (ABNJ).<sup>6</sup> This recognition is an important step towards promoting equitable access, fair benefit-sharing, and the conservation of marine genetic resources, reflecting the significance of fish in the marine ecosystem and the need for their conservation and sustainable use.<sup>7</sup> However, considerable challenges remain at the implementation level to ensure its effective incorporation into the BBNJ framework. These challenges include conceptual and normative clarifications in connection with the material exception, including the definition of utilization, triggering points for notification, the “intent” requirement, and the status of marine genetic resources and their derivatives from fish at the moment of collection *in situ*. These, among other topics, will be further discussed in this article.

Fish valued for their genetic properties hold a high commercial value for biotechnology applications.<sup>8</sup> Genetic properties from fish can be utilized for various purposes, such as pharmaceutical, therapeutic cosmetic products (e.g., by extracting lipids, collagen, hyaluronic acid, calcium, enzymes, and probiotics), nutraceuticals (e.g., omega-3),

<sup>2</sup> United Nations Convention on the Law of the Sea, adopted 10 December 1982, entered into force 16 November 1994, 1833 UNTS 3 [hereinafter UNCLOS].

<sup>3</sup> BBNJ Agreement, Art 1.

<sup>4</sup> *Ibid*, Art 10(2).

<sup>5</sup> “To conduct research and development on the genetic and/or biochemical composition of marine genetic resources, including through the application of biotechnology, as defined in paragraph 3 above.” BBNJ Agreement, Art 1(14).

<sup>6</sup> BBNJ Agreement, Art 10(2)(b). (“except where such fish or other living marine resources are regulated as utilization under this Part”).

<sup>7</sup> See David Leary, Marjo Vierros, Gwenaëlle Hamon et al., “Marine Genetic Resources: A Review of Scientific and Commercial Interest” (2009) 33 *Marine Policy* 183, 187.

<sup>8</sup> Article 1 of the BBNJ Agreement defines biotechnology as “[any] technological application that uses biological systems, living organisms, or derivatives thereof, to make or modify products or processes for specific use.” This definition is similar to the one under Article 2 of the Convention on Biological Diversity, (“Biotechnology” means “any technological application that uses biological systems, living organisms, or derivatives thereof, to make or modify”). Convention on Biological Diversity, adopted 5 June 1992, entered into force 29 December 1993, 1760 UNTS 79 [hereinafter CBD].

and enhancing aquaculture practices.<sup>9</sup> Fish with distinct genetic characteristics offer valuable traits that can be leveraged for biotechnological innovations, such as enhanced disease resistance, accelerated growth rates, biodiesel production,<sup>10</sup> and improved nutritional content.<sup>11</sup>

The final version of Article 10(2) reflects the position of those who remained cautious about potential interference with fishing or fishing-related activities. Some argued that excluding fish from obligations under Part II of the BBNJ Agreement had a logical and practical rationale: to dissociate activities targeting fish for commercial purposes (“as a commodity”) from those focused on research and development into their genetic properties.<sup>12</sup> Concerns regarding the reference to fish and their derivatives used for their genetic properties were also tied to the obligation not to undermine existing regulations by Regional Fisheries Management Organizations (RFMOs), which have a conservation and management mandate in relation to highly migratory and straddling fish stocks, including those in ABNJ.<sup>13</sup>

This article argues that a more precise definition of the scope and a more effective implementation of the material exception under Article 10(2) are necessary in order not to undermine the objectives of the BBNJ Agreement and to guarantee its successful implementation, particularly in promoting an equitable and fair sharing of benefits derived from activities with respect to marine genetic resources.<sup>14</sup> It is necessary, in this context, to determine “when fish are not classified merely as fish, and when they are excluded from consideration as elements of marine biodiversity.”<sup>15</sup>

The successful implementation of Article 10(2) hinges on additional clarification of which situations are covered by the exception clause, taking into consideration activities related to marine genetic resources derived from fish caught during fishing or related

<sup>9</sup> FAO, *The State of the World's Aquatic Genetic Resources for Food and Agriculture* (2019); Robert Blasiak, Rachel Wynberg, Kirsten Grorud-Colvert et al., “The Ocean Genome: Conservation and the Fair, Equitable and Sustainable Use of Marine Genetic Resources,” in Jane Lubchenco and Peter M. Haugan (eds), *The Blue Compendium* (Springer, 2023), 91.

<sup>10</sup> Ishita Ahuja, Egidijus Dauksas, Jannicke Remme et al., “Fish and Fish Waste-Based Fertilizers in Organic Farming—With Status in Norway: A Review” (2020) 115 *Waste Management* 95, 95–96.

<sup>11</sup> For example, Gabriella Caruso, Rosana Floris, Claudio Serangeli et al., “Fishery Wastes as a Yet Undiscovered Treasure from the Sea: Biomolecules Sources, Extraction Methods and Valorization” (2020) 18 *Marine Drugs* 622; Talita S. Espósito, Ian P.G. Amaral, Diego S. Buarque et al., “Fish Processing Waste as a Source of Alkaline Proteases for Laundry Detergent” (2009) 112 *Food Chemistry* 125, 125; Amira Farzana Samat, Amirah Muhamad, Nur Rasib et al., “The Potential of Biodiesel Production Derived from Fish Waste” (2018) 318 *IOP Conference Series: Materials Science and Engineering* 012017.

<sup>12</sup> Tullio Scovazzi, “The Rights to Genetic Resources beyond National Jurisdiction: Challenges for the Ongoing Negotiations at the United Nations” in Catherine Banet (ed), *The Law of the Seabed* (Brill Nijhoff, 2020) 213, 235–237; David Leary, “Marine Genetic Resources in Areas beyond National Jurisdiction: Do We Need to Regulate Them in a New Agreement?” (2018) 5 *Maritime Safety and Security Law Journal* 22.

<sup>13</sup> Textual proposals submitted by delegations by 20 February 2020, for consideration at the fourth session of the Intergovernmental conference on an international legally binding instrument under the United Nations Convention on the Law of the Sea on the conservation and sustainable use of marine biological diversity of areas beyond national jurisdiction (A/CONF.232/2020/3) [hereinafter 2020 BBNJ Draft Text].

<sup>14</sup> See BBNJ Agreement, Arts 2, 9.

<sup>15</sup> David Leary, “Agreeing to Disagree on What We Have or Have Not Agreed on: The Current State of Play of the BBNJ Negotiations on the Status of Marine Genetic Resources in Areas beyond National Jurisdiction” (2019) 99 *Marine Policy* 21.

activities that are regulated as utilization. This will ensure that any subsequent utilization of marine genetic resources resulting, for example, from the processing or fishing industries' handling of the "catch"<sup>16</sup> will follow the regime under Part II for notification and benefit-sharing. The fish processing industries generate an array of commercially valuable by-products from sources including fish waste, such as skin, discarded fish, and bycatch. Marine by-products are used in medical treatments and drug development<sup>17</sup> and contribute significantly to the overall output of the industry.<sup>18</sup>

This article is organized into four sections, followed by a conclusion. The first and second sections outline key concepts, their interpretation, and the negotiation history of the material exception adopted for fishing and fishing-related activities. The third section analyzes the rights and obligations established under the BBNJ Agreement concerning the use of fish valued for their genetic properties. Special attention is given to cases not addressed by the exception, particularly fish that have been caught during fishing and fishing-related activities in ABNJ, where such fish is regulated for utilization under Part II of the Agreement.

The discussion then proceeds to a more detailed examination of potential challenges to implementation within the new legal framework, focusing on issues requiring further clarification regarding the notification procedure under Article 10(2)(b), the legal status of any resulting derivatives, and the scope of the term "fishing-related activities." The article concludes with reflections on the implementation of the BBNJ framework, highlighting the necessity for robust governance and collaborative efforts among nations to ensure the sustainable management of fish resources and equitable benefit-sharing in ABNJ.

## **The History of the Negotiations of Article 10 of the BBNJ Agreement and the Material Exception for Fish**

The drafting history and negotiations of the BBNJ Agreement ("travaux préparatoires" or "travaux") have an important role to play in the interpretation of treaties. Article 32 of the Vienna Convention on the Law of Treaties<sup>19</sup> refers to the "preparatory work

<sup>16</sup> The FAO Report refers to catch as "[a]ny activity that results in capturing and bringing any fish, alive or dead, on board a vessel," as well as "the biomass of marine resources that are landed on a vessel, discarded, consumed on board or used as bait." See Food and Agriculture Organization, *A third assessment of global marine fisheries discards*, FAO Fisheries and Aquaculture Technical Paper No. 633 (2019), 2 at <https://openknowledge.fao.org/server/api/core/bitstreams/141decf1-33f3-4837-a137-d6ba8b0a9456/content> (accessed 23 June 2025).

<sup>17</sup> The FAO provides a general definition of fish processing as "[p]rocessing refers to mechanical or chemical operations performed on fish in order to transform or preserve them." "Fish are processed in a variety of ways ... removing the entrails from fish (e.g., gutting or cleaning) ... by-products from processing such as frames, viscera, and skins are also processed into nutrient supplements, pharmaceutical products and fertilizer." FAO, at <https://www.fao.org/flw-in-fish-value-chains/value-chain/processing-storage/en/> (accessed 14 January 2025). Se-Kwon Kim and Eresha Mendis, "Bioactive Compounds from Marine Processing Byproducts—A Review" (2006) 39 *Food Research International* 383; Edmar Maciel Lima Júnior, Manoel O. M. Filho, Bruno Costa et al., "Innovative Burn Treatment Using Tilapia Skin as a Xenograft: A Phase II Randomized Controlled Trial" (2020) 41 *Journal of Burn Care & Research* 585.

<sup>18</sup> See the discussion below.

<sup>19</sup> Vienna Convention on the Law of Treaties, adopted 23 May 1969, entered into force 27 January 1980, 1155 UNTS 331. Art 32 [hereinafter, VCLT].

of the treaty and the circumstances of its conclusion” as a supplementary means of interpretation in order “to confirm the meaning resulting from the application of the general rules of interpretation under Article 31, or to determine the meaning when the interpretation according to Article 31 leaves the meaning ambiguous or obscure; or leads to a result which is manifestly absurd or unreasonable.”<sup>20</sup>

Discussions regarding an exception clause for fishing under the BBNJ Agreement, particularly relating to activities concerning marine genetic resources, occurred throughout its negotiating history. The adoption of the BBNJ Agreement followed nearly two decades of negotiations at the UN from the creation of the 2004 UN informal consultative process on oceans and the law of the sea, and the first meeting of the Ad hoc Open-ended Informal Working Group in 2006.<sup>21</sup> The final recommendations<sup>22</sup> by the Working Group addressed the scope, parameters, and feasibility of an international instrument under the Convention and established a Preparatory Committee to begin work in 2016. The Committee held its last meeting on 21 July 2017, before convening the first of five Intergovernmental Conferences (IGCs).

The Chair of the third session of the Preparatory Committee’s non-paper on elements of a draft text highlights that “[t]here seems to be a general recognition of the need to include fish in the scope of marine genetic resources as far as it is used for their genetic properties.”<sup>23</sup> Some states disagreed that fish should be addressed in the BBNJ Agreement on the grounds that including fish would “undermine or duplicate”<sup>24</sup> existing regulations and potentially create conflicting management frameworks. Other delegations emphasized the need to avoid overlapping mandates and to ensure effective cooperation between the BBNJ Agreement and RFMOs to prevent negative impacts on sustainable fishing practices.<sup>25</sup> This dispute underscored the complexities and varied perspectives surrounding the inclusion of fish in the BBNJ Agreement more generally, highlighting the importance of finding a balanced approach that considered both the conservation of marine biodiversity and the sustainable management of fisheries.<sup>26</sup>

<sup>20</sup> VCLT, Art 32.

<sup>21</sup> The UN Division of Ocean Affairs (DOALOS) provides a comprehensive historical dataset of the negotiations and meetings of the Ad Hoc Working Group from 2006 to 2015. UN, at <https://www.un.org/Depts/los/biodiversityworkinggroup/biodiversityworkinggroup.htm> (accessed 3 March 2025).

<sup>22</sup> UN General Assembly, the Outcome of the Ad Hoc Open-ended Informal Working Group to study issues relating to the conservation and sustainable use of marine biological diversity beyond areas of national jurisdiction and Co-Chairs’ summary of discussions, A/69/780 (2015).

<sup>23</sup> UN General Assembly, the Outcome of the Ad Hoc Open-ended Informal Working Group to study issues relating to the conservation and sustainable use of marine biological diversity beyond areas of national jurisdiction and Co-Chairs’ summary of discussions, A/69/780 (2015).

<sup>24</sup> Arne Langlet and Alice BM Vadrot, “Not “Undermining” Who? Unpacking the Emerging BBNJ Regime Complex” (2023) 147 *Marine Policy* 105372, 7.

<sup>25</sup> See the statement by Iceland, IISD, Earth Bulletin Report, IGC-3 on the Conservation and Sustainable Use of Marine Biodiversity of Areas Beyond National Jurisdiction, available at <https://enb.iisd.org/events/3rd-session-intergovernmental-conference-igc-conservation-and-sustainable-use-marine/summary> (accessed 11 March 2025).

<sup>26</sup> Letter dated 13 February 2015 from the Co-Chairs of the Ad Hoc Open-ended Informal Working Group to the President of the General Assembly, A/69/780\* (2015).

Fishing is not defined under UNCLOS or in the 1995 United Nations Fish Stocks Agreement (UNFSA).<sup>27</sup> The reference to fish as a commodity in the negotiations resembles a general understanding of fishing as an activity targeted at harvesting large quantities of fish for commercial uses, including catching and selling for food, animal feed, or related products.<sup>28</sup> During IGC-3, one delegation argued that nothing under the BBNJ Agreement appeared to grant it competence over “the use of fish and other marine living resources as the catch of fishing or for fishing, including fishing for commercial profit, living, sport, or recreation, and the relative activity including MSR for fishing.”<sup>29</sup> A different group of delegates proposed a more limited understanding of the material exception concerning fish and other biological resources, defining them as a “food source” instead of a commodity; however, this suggestion was subsequently removed from the final version of the text.<sup>30</sup>

Early draft versions of the BBNJ Agreement included detailed provisions on the use of fish for research and development. The text discussed at IGC-3 incorporated in the scope of Part II “other biological resources [used] for research into their genetic properties [...] including fish where they are collected to be the subject of research into their genetic properties.”<sup>31</sup> Other proposals included far stricter language proposals, such as considering “[i]f a species of fish is found to have value for its genetic material, that species shall be treated as a marine genetic resource, regardless of the volume of the catch.”<sup>32</sup>

In addition to existing stakeholders’ perspectives, the High Seas Alliance proposed the inclusion of a new reference type, specifically highlighting the concept of biological resources as a commodity.<sup>33</sup> This suggestion was made in light of the various challenges encountered in defining fish, as exemplified by the complexities arising from the UNFSA.<sup>34</sup> By raising this concern, they sought to address the inherent difficulties in accurately characterizing and managing fish populations, ultimately aiming to enhance the regulatory frameworks governing the exploitation and conservation of these vital resources.<sup>35</sup>

The 2019 Revised Draft Text also shows bracket versions of Article 10, including proposals to automatically consider “fish and other biological resources that are

<sup>27</sup> United Nations Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea of 10 December 1982 relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks, adopted 4 August 1995, entered into force on 11 December 2001, 2167 UNTS 88.

<sup>28</sup> R. Churchill and A.V. Lowe, *The Law of the Sea* (3rd edn., Manchester University Press, 1999), 281.

<sup>29</sup> See China’s statement. IISD, note 25, 7.

<sup>30</sup> See Philippines comments to (then) Article 8 (which became Article 10) on the compilation. 2020 BBNJ Draft Text, note 13, 173.

<sup>31</sup> Draft text of an agreement under the United Nations Convention on the Law of the Sea on the conservation and sustainable use of marine biological diversity of areas beyond national jurisdiction, A/CONF.232/2019/6 (2019).

<sup>32</sup> Ibid.

<sup>33</sup> See the High Seas Alliance’s statement. IISD, note 25, 7.

<sup>34</sup> See the discussions that have led to the adoption of a definition of “fish” under Article 1 of the UNFSA.

<sup>35</sup> See the High Seas Alliance’s statement. IISD, note 25, 7. Humphries argues that, by making this differentiation, the BBNJ Agreement would have clarified that marine genetic resources “[o]nly fall within scope of Part II if they are being used for R&D for their genetic attributes (not as a bulk commodity for trade).” See Fran Humphries, “Marine Genetic Resources Beyond National Jurisdiction: The Expansive Scope of the BBNJ Agreement” in Fran Humphries (ed), *Decoding Marine Genetic Resource Governance Under the BBNJ Agreement* (Springer Nature, 2025) 55, 85.



collected beyond a threshold amount as a commodity,” and to mandate the Scientific and Technical Body [STB] to establish the threshold amount.<sup>36</sup> Adopting a threshold quantity of fish, beyond which they are classified as a commodity, was primarily driven by the need for specific exception rules, requiring clear terminology to facilitate effective management and monitoring of fish genetic resources in ABNJ. The threshold, in this sense, would have imposed a more granular control over the collection in situ from fish, rather than streamlining efforts at the utilization phase.

Some delegates opposed a threshold for logistical reasons, while others remained skeptical about its feasibility and effectiveness.<sup>37</sup> One argument raised was that a threshold mechanism “of the number of fish caught for consumption or bioprospecting commodities becomes invalid when a rigid traceability is formed together.”<sup>38</sup> Given the nature of bioprospecting activities as requiring a “small portion of fish or only taking a few samples,” the threshold bar would have to be significantly low to make any difference compared to commercial capture fisheries.<sup>39</sup> The Food and Agriculture Organization (FAO) recommended a cautious approach when discussing thresholds for fisheries resources in Part II of the BBNJ Agreement.<sup>40</sup> They advised using precise and accurate terminology, such as referring to “fisheries resources” instead of the broader term “fish and other biological resources,”<sup>41</sup> to ensure clear and consistent communication in fisheries management. The final version of the BBNJ Agreement notably excluded references to a threshold mechanism, and there have been no follow-up discussions in relation to the other proposals.

Small Island Developing States (SIDS) were generally supportive of including “fish, as long as they are collected for research into their genetic resources and genetic information.”<sup>42</sup> The research scope into genetic properties was endorsed by the Caribbean and Latin American nations but broadened to include “[a]ctivities related to the genetic composition of fish and its derivatives, including the investigation of their genetic and biochemical properties,” suggesting a shift from the limited interpretation of marine scientific research supported by several delegations.<sup>43</sup>

The issue of derivatives figured prominently in discussions about the exception clause for fish species during ICG-3 and 4.<sup>44</sup> Most suggestions requested the exclusion of derivatives, curbing the scope of the BBNJ benefit-sharing to a narrow definition of genetic resources.<sup>45</sup> In a highly detailed submission, one delegation emphasized the importance of marine genetic diversity, including fish, for coastal and archipelagic states. In their proposals to the text of Part II, almost every provision received an

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<sup>36</sup> UNGA, Revised draft text of an agreement under the United Nations Convention on the Law of the Sea on the conservation and sustainable use of marine biological diversity of areas beyond national jurisdiction, A/CONF.232/2020/3 (2019).

<sup>37</sup> See the statements by the US and Iceland. IISD, note 25, 7.

<sup>38</sup> See the submission by Indonesia. 2020 BBNJ Draft Text, note 13, 77-80.

<sup>39</sup> 2020 BBNJ Draft Text, note 13, 85.

<sup>40</sup> IISD, note 25, 7.

<sup>41</sup> *Ibid.*, 7.

<sup>42</sup> *Ibid.*, 8.

<sup>43</sup> Including the statements by the EU, Singapore, the Philippines, and Cuba, *ibid.*, 7.

<sup>44</sup> 2020 BBNJ Draft Text, note 13, 79, 84-85.

<sup>45</sup> United States, Republic of Korea, and Indonesia. 2020 BBNJ Draft Text, note 13, 114.



additional sentence including fish and its derivatives under the argument that “[a] complete arrangement in terms of fish as a commodity product both with the regulation on fish as an MGR will provide a strong certainty in the future for the management of fisheries ... [and] will eliminate gray areas of fish caught for consumption reasons but lead to bioprospecting activities.”<sup>46</sup>

Traditional fishing nations emphasized their position concerning non-interference with fishing activities, with some cautioning against creating loopholes in existing fisheries management structures.<sup>47</sup> One delegation invoked (then) Article 4 (now Article 5) of the BBNJ Agreement and the not undermining rule to support the material exception to fishing activities under Article 10.<sup>48</sup> They argued that there is a common understanding that the BBNJ Agreement, particularly Part II, should not apply to fish and other biological resources as commodities. They proposed an additional Article under Part II to reinforce this perspective and provide clarity, titled “Article 6bis—this Agreement does not apply to the conservation and management of fish stocks,” which aimed to state that the BBNJ Agreement is not intended to address regular fisheries management or undermine the existing international legal framework for fisheries.<sup>49</sup> For them, this formulation would ensure that the BBNJ Agreement respects the autonomy of traditional fishing nations in managing their fish stocks, while focusing on the conservation and sustainable use of marine genetic resources beyond national jurisdiction.<sup>50</sup> At the IGC-5, the absence of a definition of fishing-related activities was flagged by one delegation, to whom the term fishing-related activities in Article 10 would exclude “among other things, research to support the management of fisheries and their associated ecosystems.”<sup>51</sup> The delegation, in a reiteration of their concerns, highlighted the ambiguity surrounding the research into the subjects’ genetic properties, specifically questioning the methods used to determine whether collected resources were intended for genetic research, since the resources could have been collected for taxonomic purposes, and there was potential for a change in intended use.<sup>52</sup>

A supplementary mention in the exception clause was proposed for those genetic materials of fish collected for fisheries management, concurring with the view referred to above that certain research activities for fisheries management fall under the freedom of marine scientific research.<sup>53</sup> The term “fishing and fishing-related activities” remains ambiguous, as none of the suggestions of interpretation discussed above were included in the final text. The final text did not adopt an interpretation of “fishing-related activities” that includes fisheries management, as there was no consensus among

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<sup>46</sup> 2020 BBNJ Draft Text, note 13, 85.

<sup>47</sup> See the statements by Japan, Iceland, New Zealand, and the Republic of Korea. Compilation of statements made by delegations under item 5, “General exchange of views,” at the further resumed fifth session of the Intergovernmental conference on an international legally binding instrument under the United Nations Convention on the Law of the Sea on the conservation and sustainable use of marine biological diversity of areas beyond national jurisdiction, as submitted by 30 June 2023, UN A/CONF.232/2023/INF.5 (2023) [hereinafter *Compilation of Statements*].

<sup>48</sup> Statement by Iceland. *Compilation of Statements*, *ibid*, 74.

<sup>49</sup> *Ibid*, 74.

<sup>50</sup> 2020 BBNJ Draft Text, note 13, 74.

<sup>51</sup> Statement by the United States of America. *Compilation of Statements*, note 47, 114.

<sup>52</sup> *Ibid*, 114.

<sup>53</sup> Statement by Australia. *IISD*, note 25, 7.

delegations on the topic. Narrowing the interpretation of fishing-related activities could be highly problematic, as it could exclude research activity using genetic information on exploited stocks to improve the information available on those species for their more effective fisheries management.<sup>54</sup>

### Interpreting the Material Exception to Fishing or Fishing-Related Activities under Article 10(2) of the BBNJ Agreement

The context in which the material exception to fishing or fishing-related activities and fish associated with those activities is the general material scope of the BBNJ Agreement and its general application. Article 10(1) of the Agreement clarifies the subject matter and temporal scope of the BBNJ Agreement in respect of MGRs as including “marine genetic resources of areas beyond national jurisdiction collected and generated after the entry into force of this Agreement for the respective Party ... [and] before entry into force unless a Party makes an exception in writing under Article 70 when signing, ratifying, approving, accepting or acceding to this Agreement.”<sup>55</sup> Article 10(2)(a) focuses on the nature of the activity, emphasizing the conceptual difference between fishing and fishing-related activities on the one hand, and the utilization of marine genetic resources on the other. Paragraph (2)(b) addresses another distinction based on the resources resulting (“known to have been taken”) from certain activities.

**Article 10 (2) of the BBNJ Agreement:** ... this Part shall not apply to:

- a. Fishing regulated under relevant international law and fishing-related activities; or
- b. Fish or other living marine resources known to have been taken in fishing and fishing-related activities from areas beyond national jurisdiction, except where such fish or other living marine resources are regulated as utilization under this Part.

In the BBNJ Agreement, Article 10(2)(a) provides a conceptual framework that defines “fishing activities” as a separate category from activities relating to marine genetic resources, ensuring a distinct conceptual approach to each. By clarifying the nature of fishing activities as predominantly commercial, the paragraph seems to consider that the primary objective of fishing is to generate revenue through the sale of retained catch.<sup>56</sup> Scovazzi notes this ideational goal of Article 10(2) (a) as confirmation “in writing” of the persistent objections to the inclusion of fishing activities under Part II of the Agreement.<sup>57</sup> However, he also notes that when read together with Article 10(2)(b), it creates a double standard or “double nature of fish,”

<sup>54</sup> See Trygve Gjedrem and Nick Robinson, “Advances by Selective Breeding for Aquatic Species: A Review” (2014) 05 *Agricultural Sciences* 1152; Konrad Jan Marciniak, “New Implementing Agreement under UNCLOS: A Threat or an Opportunity for Fisheries Governance?” (2017) 84 *Marine Policy* 320; Darcy Bradley, Matt Merrifield, Karly M. Miller et al., “Opportunities to Improve Fisheries Management through Innovative Technology and Advanced Data Systems” (2019) 20 *Fish and Fisheries* 564, 565–570.

<sup>55</sup> BBNJ Agreement, Art 10 (1).

<sup>56</sup> Food and Agriculture Organization, note 16, 2.

<sup>57</sup> Scovazzi, note 12, 235.

contributing to the existing confusion surrounding scientific terminology in international legal agreements.<sup>58</sup>

In Article 10(2)(b), a normative distinction is adopted to distinguish between issues covered by and those excluded from the regulatory scope of the BBNJ Agreement, with a focus on activities involving marine genetic resources. It states that “fish or other living marine resources known to have been taken in fishing and fishing-related activities from areas beyond national jurisdiction” are excluded from the provisions under Part II of the BBNJ Agreement unless “such fish or other living marine resources are regulated as *utilization* under this Part (emphasis added).”<sup>59</sup>

The BBNJ Agreement does not define “fish” or “living resources.” If the objective is to promote systemic integration with other implementing agreements of UNCLOS, the UNFSA defines fish as including “molluscs and crustaceans except those belonging to sedentary species as defined in article 77 of the Convention.”<sup>60</sup> The term “living resources” is also not defined under UNCLOS. The term “marine living resources” appears 38 times in UNCLOS, referring to a wide variety of living organisms with economic relevance to human societies and a vital source of protein for human consumption.<sup>61</sup> Two further points are important here. First, the sentence “known to have been taken” will require further clarification. It gives the impression that some sort of cooperative mechanism or agreement will be agreed upon in order to notify fishing and fishing-related activities, voluntarily or compulsorily, through the BBNJ framework, such as to the Conference of the Parties (COP) or the STB.<sup>62</sup> Moreover, the reference to “known to have been taken” does not seem to give discretion within the BBNJ framework to assess whether those activities qualify as fishing or fishing-related activities.

This could raise questions about how these assessments are conducted by relevant bodies and frameworks. Linked to this question is whether subsidiary bodies under the BBNJ Agreement could draw on appropriate advice from relevant international bodies and frameworks or even provide scientific and technical advice themselves to the COP on which activities fall under the competence of the BBNJ Agreement.<sup>63</sup> Depending on whether these questions will be raised and whether problems will eventually arise from the interpretation of “known to have been taken,” there could also be an institutional role to be played by the Implementation and Compliance Committee, whose mandate covers “issues of implementation and compliance at the individual or systemic levels.”<sup>64</sup>

The second issue with Article 10 (2) (b) is the reference to “regulated as utilization under this part.” Again, utilization is defined under Article 1 of the Agreement as “to conduct research and development on the genetic and/or biochemical composition of

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<sup>58</sup> Ibid.

<sup>59</sup> BBNJ Agreement, Art 10(2)(b).

<sup>60</sup> UNFSA, Art 1.

<sup>61</sup> Vonintsoa Rafaly, “The Concept of “Marine Living Resources”: Navigating a Grey Zone in the Law of the Sea” (2022) 59 *Canadian Yearbook of International Law/Annuaire Canadien de Droit International* 285, 286.

<sup>62</sup> See their competencies and functions under Articles 49 and 51 of the BBNJ Agreement.

<sup>63</sup> BBNJ Agreement, Art 43 (3), (4).

<sup>64</sup> BBNJ Agreement, Art 55.

marine genetic resources, including through the application of biotechnology, as defined in paragraph 3 above.”<sup>65</sup> Any technological application “[t]hat uses biological systems, living organisms, or derivatives thereof, to make or modify products or processes for specific use” can be considered as biotechnology for the purposes of the BBNJ Agreement.<sup>66</sup> The provision in Article 10(2)(b) establishes a clear relationship between situations where the utilization of fish or other marine living resources obtained from fishing or fishing-related activities are subject to the BBNJ Agreement, implying that the use of these resources is directly linked to the activity of their utilization.

Article 10(2)(b), therefore, attempts to dissociate certain types of activities that would fall somewhere between sampling activities and collection *in situ* from “fishing and fishing-related activities.”<sup>67</sup> The logic falls back to Article 10(2)(a) and its conceptual definition, excluding only collection activities and not “utilization.” Humphries argues that the reference to “utilization” was added in order “to avoid the loophole where organisms are originally collected for harvest but then later used for R&D into genetic properties that fall within the notification mechanism under Article 12(8).”<sup>68</sup> This point will be further discussed in the last section of this article, which discusses implementation challenges. Further clarification is also necessary to delimit which activities fall under the terms of “access” and “sampling” as compared to “utilization” for the purposes of Article 10(2)(b), and the BBNJ Agreement as a whole. The caveat included in Article 10(2)(b), nonetheless, should not be interpreted as excluding activities related to marine genetic resources, including the collection or sampling of marine genetic resources from fish not directly associated with fishing or other fishing-related activities, regardless of how these terms are defined, from the scope of Part II of the BBNJ Agreement.

### Clarifying the Rights and Obligations to the Use of Fish Valued for Their Genetic Properties and Future Implementation Challenges

To aid understanding of the intricate questions of applicability, two situations will be presented here for illustrative purposes. *Situation A* refers to rights and obligations not included in the exception clause. *Situation B*, on the other hand, illustrates particular cases mentioned under Article 10(2)(b) where fish are known to have been taken in fishing or fishing-related activities, but where these are regulated as utilization under Part II of the Agreement.

The BBNJ Agreement applies to activities with respect to marine genetic resources and digital sequence information (DSI) from marine genetic resources of ABNJ.<sup>69</sup> This means that the scope of the BBNJ Agreement extends to physical resources such as

<sup>65</sup> BBNJ Agreement, Art 1(14).

<sup>66</sup> BBNJ Agreement, Art 1(3).

<sup>67</sup> See Humphries when she raises the point that “[a]ctivities that investigate the genetic or biochemical composition, such as taxonomic or conservation research, although characterisation activities (e.g. identification of MGR from the batch collection) are more likely to fall within ‘sampling’ activities of the collection in situ activities and associated notifications.” Humphries, note 35, 82.

<sup>68</sup> *Ibid*, 85.

<sup>69</sup> BBNJ Agreement, Art 10(1).

genes collected *in situ* from fish, and to intangible resources like DSI. Article 1 of the Agreement defines “marine genetic resources” as noted above; however, no definition of “digital sequence information” has been adopted under the BBNJ Agreement. Currently, under the Convention on Biological Diversity (CBD), various proposals are under negotiation to define DSI, with definitions ranging from interpretations that include limited “DNA, DNA and RNA, or DNA, RNA, and protein sequence information.”<sup>70</sup> The scope of definitions for DSI significantly impacts research and regulatory frameworks. A definition limited to DNA, for example, may hinder understanding of genetic functions, while an inclusion of DNA and RNA allows for a more comprehensive view of genetic activity. The broadest definition, encompassing “DNA, RNA, and protein sequence information,” facilitates innovation and promotes equitable access to genetic resources, thereby enhancing collaborative efforts in sustainability and benefit-sharing. Therefore, the interpretation of which rights and obligations apply to activities concerning marine genetic resources of fish found in ABNJ presented here has an important conceptual and normative limitation. It depends on the scope—narrow or broad—of the definition adopted by the BBNJ framework, leading to markedly different implications for relevant parties.

### ***Situation A: The Regime Applicable to Fish Valued for their Genetic Properties under Part II of the BBNJ Agreement***

The BBNJ Agreement adopts a notification-based approach to activities with respect to marine genetic resources. This approach ensures that all parties involved have access to the necessary resources while simultaneously implementing a degree of regulatory oversight primarily achieved through mandatory procedural steps that must be followed. On the notification system, Article 12 notes that parties to the BBNJ Agreement wishing to conduct activities with respect to marine genetic resources and DSI on marine genetic resources of ABNJ have “to notify the Clearing-House Mechanism six months or as early as possible before the collection *in situ* of the nature and objectives of the collection,”<sup>71</sup> ... including, as appropriate, any program, sponsoring institution(s), the subject-matter of the research or, if known, the marine genetic resources to be targeted or collected, and the purposes for which such resources will be collected.”<sup>72</sup>

Parties must notify the Clearing-House Mechanism of their data management plans “prepared according to open and responsible data governance, taking into account current international practice.”<sup>73</sup> If there are any significant changes to the information previously published in the open-access database, the party responsible for the

<sup>70</sup> Convention on Biological Diversity, CBD/DSI/AHTEG/2020/1/3, at <https://www.cbd.int/doc/c/fef9/2f90/70f037ccc5da885dfb293e88/dsi-ahteg2020-01-03-en.pdf> (accessed 9 January 2025); CBD, ‘Decision 16/2. Digital Sequence Information on Genetic Resources, Adopted by the Conference of the Parties to the Convention on Biological Diversity on 1 November 2024’ (Conference of the Parties to the Convention on Biological Diversity 2024) at <https://www.cbd.int/doc/decisions/cop-16/cop-16-dec-02-en.pdf> (accessed 9 January 2025).

<sup>71</sup> BBNJ Agreement, Art 12.

<sup>72</sup> *Ibid*, Art 12(a), (b), (g).

<sup>73</sup> *Ibid*, Art 12(j).

collection *in situ* must submit an updated version of its data management plan.<sup>74</sup> This update should be provided within “a reasonable period and no later than the start of collection *in situ*, whenever possible.”<sup>75</sup> The notification process applicable to the utilization of marine genetic resources follows the general procedure under Article 12 of the Agreement. Parties must notify the Clearing-House Mechanism on the following matters: the “BBNJ” standardized batch identifier, if available; the results of any utilization, such as publications, and patents granted, as well as products developed; details of post-collection activities including where the sample that is the subject of utilization is held; modalities for access to the marine genetic resources and digital sequence information on marine genetic resources being utilized, and a data management plan for the same; and information, where available, on sales of relevant products and any further development.<sup>76</sup>

Moreover, parties must ensure that marine genetic resources and DSI subject to utilization are “deposited in publicly accessible repositories and databases, maintained either nationally or internationally, no later than three years from the start of such utilization, or as soon as they become available, taking into account current international practice.”<sup>77</sup> All information and data submitted to the Clearing-House Mechanism shall be used to create a standardized batch identifier for “BBNJ.”<sup>78</sup> This identifier enables the traceability of samples derived from marine genetic resources, allowing them to be linked back to their specific origins in ABNJ. This initiative aligns with prevailing international practices while simultaneously establishing, where feasible, a standardized method for identifying genetic resources sourced from beyond national jurisdiction.<sup>79</sup> By implementing these measures, the BBNJ Agreement aims to enhance transparency and accountability in the management of marine genetic resources.<sup>80</sup> Furthermore, this standardized approach is anticipated to facilitate a more effective sharing of information and samples among researchers and stakeholders operating in the field of marine genetic resources,<sup>81</sup> especially in developing countries.<sup>82</sup> This collaborative effort is essential for fostering innovation and advancing scientific research, ultimately contributing to better conservation practices and sustainable use of marine biodiversity.

Under the BBNJ Agreement framework, marine genetic resources accessed from ABNJ and utilized *ex situ* shall be shared for the benefit of present and future

<sup>74</sup> Ibid, Art 12(5)(d).

<sup>75</sup> Ibid, Art 12(4).

<sup>76</sup> Ibid, Art 12(8).

<sup>77</sup> Ibid, Art 14(3).

<sup>78</sup> (“Upon notification referred to in paragraph 2 above, the Clearing-House Mechanism shall automatically generate a “BBNJ” standardized batch identifier.”) BBNJ Agreement, Art 12(3).

<sup>79</sup> See, for example, Charles Lawson, Fran Humphries, Marcel Jaspars et al., “Data Management and the “BBNJ Standardized Batch Identifier” Under the BBNJ Agreement” in Fran Humphries (ed), note 35, 253, 261–264.

<sup>80</sup> Ibid.

<sup>81</sup> See also Fran Humphries, “Sharing Aquatic Genetic Resources across Jurisdictions: Playing “Chicken” in the Sea” (2018) 18 *International Environmental Agreements: Politics, Law and Economics* 541, 543.

<sup>82</sup> Endalew Lijalem Enyew, “Governance of MGRs in ABNJ and Interests of Developing States: A Move Away from Scientific Colonialism?” (*Opinio Juris*, 29 March 2024), at <https://opiniojuris.org/2024/03/29/governance-of-mgrs-in-abnj-and-interests-of-developing-states-a-move-away-from-scientific-colonialism> (accessed 1 January 2025).

generations, guided by principles of equity and fairness.<sup>83</sup> In this sense, states or competent organizations interested in exploiting these resources are required for the equitable sharing of benefits and the promotion of sustainable use and conservation efforts.<sup>84</sup> Monetary and non-monetary benefits derived from the collection or sampling of genetic resources will be shared fairly and equitably to contribute to the conservation and sustainable use of marine biological diversity.<sup>85</sup>

The BBNJ Agreement Conference of the Parties (COP), taking into account the recommendations of the access and benefit-sharing committee, shall decide on the modalities for the sharing of monetary benefits. These may include “payments or contributions related to the commercialization of products, including payment of a percentage of the revenue from sales of products; or a tiered fee, paid periodically, based on a diversified set of indicators measuring the aggregate level of activities by a Party.”<sup>86</sup> This provision is consistent with the recent decisions made by the Convention on Biological Diversity.<sup>87</sup>

Parties may, nevertheless, submit a declaration at the time the COP adopts the modalities, stating that those modalities shall not take effect for that party for a period of up to four years, in order to allow time for necessary implementation.<sup>88</sup> This provision aims to accommodate the varying capacities of parties to comply with new regulatory measures, ensuring that all members can effectively implement the required changes. This grace period will be crucial for building the necessary frameworks, infrastructure, and stakeholder engagement required to fulfill the obligations set forth by the BBNJ Agreement, particularly regarding conservation efforts and the equitable sharing of benefits derived from marine genetic resources.

The development and strengthening of relevant infrastructure, including sampling and methodology equipment, are among the capacity-building and technology areas listed in Annex II of the BBNJ Agreement.<sup>89</sup> This also includes the acquisition of equipment necessary to support and further develop research and development capabilities, including data management, collaboration, and cooperation in marine science, including through data collection, technical exchange, scientific research projects, and

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<sup>83</sup> BBNJ Agreement, Art 14.

<sup>84</sup> *Ibid.*

<sup>85</sup> BBNJ Agreement, Art 14(1). Note, however, that the list provided under Article 14 is non-exhaustive (“(h) Other forms of benefits as determined by the Conference of the Parties, taking into account recommendations of the access and benefit-sharing committee established under Article 15”).

<sup>86</sup> BBNJ Agreement, Art 14(7). Note, however, that Article 14(8) provides that a Party might “[m]ake a declaration at the time the Conference of the Parties adopts the modalities stating that those modalities shall not take effect for that Party for a period of up to four years, in order to allow time for necessary implementation. A Party that makes such a declaration shall continue to make the payment set out in paragraph 6 above until the new modalities take effect.”

<sup>87</sup> Convention on Biological Diversity, Draft decision submitted by the President, CBD/COP/16/L.32/Rev.1 of 1 November 2024. Annex, at <https://www.cbd.int/doc/c/bd4f/2861/9dce4f46d43a637231a442e0/cop-16-l-32-rev1-en.pdf> (accessed 14 January 2025). (“Having regard to paragraph 13, entities which on their balance sheet dates exceed at least two out of three of these thresholds (total assets: USD 20 million Sales; USD 50 million; Profit: USD 5 million) averaged over the preceding three years, should contribute to the global fund one percent of their profits or 0.1 percent of their revenue, as an indicative rate.”)

<sup>88</sup> BBNJ Agreement, Art 14(8).

<sup>89</sup> *Ibid.*, Art 13.



programs, and the development of joint scientific research projects.<sup>90</sup> It is necessary not only to share the benefits resulting from research and development activities but also to teach how those scientific and technical processes can be achieved through the development and strengthening of human and financial management resource capabilities and technical expertise, including education and training.<sup>91</sup> Researchers and research institutions from developing states must also be given opportunities for such access on fair and most favorable terms, including concessional and preferential terms. To properly assess such a request, a thorough analysis on a case-by-case basis must be conducted, taking into consideration any confidentiality rights that may apply to the specific case.<sup>92</sup>

The BBNJ Agreement also emphasizes the importance of recognizing and upholding the rights of Indigenous Peoples, under the UN Declaration on the Rights of Indigenous Peoples, as well as acknowledging the traditional knowledge of local communities. Article 13 ensures that traditional knowledge associated with marine genetic resources in ABNJ is only accessed with the free, prior, and informed consent (PIC) or approval and involvement of Indigenous Peoples and local communities.<sup>93</sup> The growing inclusion of traditional knowledge in fisheries policies could serve as inspiration to the BBNJ Agreement when considering the intersection between fisheries, activities associated with marine genetic resources, and traditional knowledge, given that many fish possess unique genetic materials, thus warranting further consideration of such traditional knowledge.<sup>94</sup>

It should be noted that the BBNJ Agreement encourages cooperation with RFMOs and other fishery organisations as well as the FAO for capacity building and transfer of marine technology,<sup>95</sup> the use of area-based management tools<sup>96</sup> and in implementing an open-access platform.<sup>97</sup> In light of this, one might foresee similar initiatives focused on enhancing further cooperation between international bodies and frameworks. Note, however, that tensions and resistance to knowledge-sharing should be expected, especially given that most of the research and development in the field for selective

<sup>90</sup> BBNJ Agreement, Annex II (i). “(a) The sharing of relevant data, information, knowledge and research, in user-friendly formats, including: (i) The sharing of marine scientific and technological knowledge; (ii) The exchange of information on the conservation and sustainable use of marine biological diversity of areas beyond national jurisdiction; (iii) The sharing of research and development results.”

<sup>91</sup> BBNJ Agreement, Annex II (e)(i). This includes, inter alia, “(ii) Education and training in: a. The natural and social sciences, both basic and applied, to develop scientific and research capacity; b. Technology, and the application of marine science and technology, to develop scientific and research capacities; c. Policy and governance; d. The relevance and application of traditional knowledge.”

<sup>92</sup> BBNJ Agreement, Art 51. “The confidentiality of information provided under this Agreement and rights thereto shall be respected. Nothing under this Agreement shall be interpreted as requiring the sharing of information that is protected from disclosure under the domestic law of a Party or other applicable law.”

<sup>93</sup> See, for example, Kristine Dalaker Kraabel, “Institutional Arrangements in a BBNJ Treaty: Implications for Arctic Marine Science” (2022) 142 *Marine Policy* 103807; Luciana Fernandes Coelho, “Marine Scientific Research and Small Island Developing States in the Twenty-First Century: Appraising the United Nations Convention on the Law of the Sea” (2022) 37 *International Journal of Marine and Coastal Law* 508.

<sup>94</sup> On the relationship between the BBNJ Agreement and RFMO governance, see David Balton, “What Will the BBNJ Agreement Mean for the Arctic Fisheries Agreement?” (2022) 142 *Marine Policy* 103745.

<sup>95</sup> BBNJ Agreement, Art 41(2), Annex II, (ix).

<sup>96</sup> Ibid, Arts 17, 22(b), (c) (4), (7).

<sup>97</sup> Ibid, Art 51(4).

breeding, enhanced fisheries management, or new mariculture-related production is still embryonic.<sup>98</sup>

Cooperation with and among RFMOs can be extremely valuable in facilitating the exchange of crucial fisheries data, information, knowledge and research. This is reflected in several provisions of the UNFSA, which establishes that coastal states and states fishing in the high seas must cooperate to “collect and share, promptly, complete and accurate data concerning fishing activities on vessel position, catch of target and non-target species and fishing effort, as set out in Annex I, as well as information from national and international research programs.”<sup>99</sup>

### ***Situation B: Fish Caught in Fishing or Fishing-Related Activities and Regulated as Utilization According to Article 10(2)(b) of the Agreement***

The regime as discussed above which regulates utilization similarly applies to the situation regulated under Article 10(2)(b), which reaffirms that fish and other living resources “known to have been taken in fishing and fishing-related activities” are included in the scope of Part II as long as they are regulated as utilization. Two requirements are necessary for Article 10(2)(b) to apply. First, the activity should focus on research and development into “marine genetic resources.” However, it is not specified whether Article 10(2)(b) covers “functional units of heredity.” Again, utilization is defined as “to conduct research and development on the genetic and/or biochemical composition of *marine genetic resources*, including through the application of biotechnology” (emphasis added).<sup>100</sup> It includes “genetic and/or biochemical composition,” which appears to extend beyond the definition of “marine genetic resources” as set out in Article 1 of the Agreement. This definition does not reference biochemical composition, but does include “any material ... containing functional units of heredity of actual or potential value.”<sup>101</sup>

When considering the scope of utilization, including derivatives would greatly expand the potential for multiple uses of fish caught in fishing and related activities. Derivatives can be defined as “naturally occurring biochemical compounds resulting from the genetic expression or *metabolism of biological or genetic resources, even if it does not contain functional units of heredity*” (emphasis added).<sup>102</sup> Fish metabolism results in a

<sup>98</sup> FAO, note 3.

<sup>99</sup> UNFSA, Art 5. See also, UNFSA, Art 3, Annex I. 2. “States shall also collect where appropriate and provide to the relevant sub-regional or regional fisheries management organization or arrangement information to support stock assessment, including:

- (a) composition of the catch according to length, weight, and sex;
- (b) other biological information supporting stock assessments, such as information on age, growth, recruitment, distribution, and stock identity; and
- (c) other relevant research, including surveys of abundance, biomass surveys, hydro-acoustic surveys, research on environmental factors affecting stock abundance, and oceanographic and ecological studies.”

<sup>100</sup> BBNJ Agreement, Art 1(14).

<sup>101</sup> Ibid, Art 1(8).

<sup>102</sup> Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization to the Convention on Biological Diversity, adopted 29 October 2010, entered into force 12 October 2014, 3008 UNTS 3, Art 2 [hereinafter the Nagoya Protocol].

variety of derivatives that can be extracted from fish waste, including proteins, bioactive compounds, and other valuable substances. These derivatives can be used in various industries, such as food, pharmaceuticals, and cosmetics.<sup>103</sup> This method not only minimizes waste but also offers essential nutrients applicable to dietary supplements and functional foods. Fish waste can be converted into biodiesel, offering a sustainable energy source derived from what would otherwise be discarded.<sup>104</sup>

Considering that fish derivatives are encompassed within the definition of utilization, and therefore are not excluded from Part II, the BBNJ Agreement covers marine by-products resulting from activities that meet the criteria for utilization. Marine by-products are secondary products of marine resources, including “all the raw materials, edible or inedible, left during the production of the main product, ... [such as] fillet cuts, backbone, head, liver, gonads, and guts.”<sup>105</sup> The processing of marine by-products is one important avenue identified through which fishing activities may utilize fish for their genetic attributes in association with biotechnology,<sup>106</sup> especially from fish derived from the catch, including bycatch,<sup>107</sup> and fish waste.<sup>108</sup>

The fishing industry has been investing in innovative solutions for fish processing techniques that use wild fish by-products to produce a range of pharmaceuticals and nutraceuticals (e.g., dietary supplements), health, cosmetics, and daily domestic products.<sup>109</sup> Different fish processing conditions can be employed, including the extraction of biochemical compounds<sup>110</sup> of fish through “[s]ource material, composition, matrix properties, extraction solvent type, solvent concentration, process temperature, pH conditions, pressure, and overall extraction period,” which are of great interest for their high market value.<sup>111</sup>

An array of processing conditions makes use of the remaining raw materials, as well as fish waste, which is a byproduct of fishing and other related activities in the industry. Clinical trials have included the utilization of fish bones or skeletons that are rich in calcium and utilized in the production of lactose substitutes, the extraction of collagen from fish skin for a variety of biomedical applications, and gelatin, which

<sup>103</sup> Ziyi Yuan, Xingqian Ye, Zhiqiang Hou et al., “Sustainable Utilization of Proteins from Fish Processing By-Products: Extraction, Biological Activities and Applications” (2024) 143 *Trends in Food Science & Technology* 104276, 1–4.

<sup>104</sup> Samat, Muhamad, Nur Rasib et al., note 11, 2.

<sup>105</sup> Turid Rustad, “Utilization of Marine By-Product” (2002) 2 *Electron. J. Environ. Agric. Food Chem.* 2, 459.

<sup>106</sup> See the case of Arctic enzymes for use in a range of industrial processes including food technology in David Leary, UNU-IAS Report Bioprospecting in the Arctic, at [http://collections.unu.edu/eserv/%20UNU:3077/Bioprospecting\\_in\\_the\\_Arctic.pdf](http://collections.unu.edu/eserv/%20UNU:3077/Bioprospecting_in_the_Arctic.pdf) (accessed 3 January 2025); Maryam Atef and Seyed Mahdi Ojagh, “Health Benefits and Food Applications of Bioactive Compounds from Fish Byproducts: A Review” (2017) 35 *Journal of Functional Foods* 673.

<sup>107</sup> The FAO suggests a general definition of bycatch as “[t]he unintended, non-targeted organisms caught while fishing for particular species (or sizes of species).” FAO, note 16, 2.

<sup>108</sup> See, for example, Gabriella Caruso, Rosanna Floris, Claudio Serangeli et al., “Fishery Wastes as a Yet Undiscovered Treasure from the Sea: Biomolecules Sources, Extraction Methods and Valorization” (2020) 18 *Marine Drugs* 622, 4.

<sup>109</sup> Leary, Vierros, Hamon et al., note 7, 187–188.

<sup>110</sup> “Such as proteins (58 per cent), proteins, amino acids and peptides, and several enzymes, collagen, gelatin, fat (22 per cent), among which polyunsaturated fatty acids, monosaturated acids, palmitic acid and oleic acid, ash, chitin, vitamins, and others compounds”: Caruso, Floris, Serangeli et al., note 108, 4.

<sup>111</sup> *Ibid.*, 15.

is utilized in burn treatment and wound dressing.<sup>112</sup> Fish oil is a rich source of important fatty acids, particularly omega-3, which have gained significant attention in the pharmaceutical and nutraceutical industries in recent years.<sup>113</sup> The pharmaceutical and food industry also heavily relies on protease enzymes such as trypsin and chymotrypsin-like enzymes. The detergent industry has emerged as the primary consumer of enzymes extracted from fish viscera.<sup>114</sup>

### Challenges for the Implementation of the Material Exception for Fishing and Fishing-Related Activities and the Added Value of Fish Caught in Fishing Activities

As noted throughout this article, several provisions will need clarification during the next round of negotiations in preparation for and during future COPs. This section will identify selected key issues of particular significance concerning marine genetic resources, specifically those related to fish and the activities surrounding their use.

While the term “derivatives” remains undefined in the BBNJ context, both definitions of “utilization of marine genetic resources” and “biotechnology” under Article 1 of the BBNJ Agreement link derivatives to utilization rather than collection activities. This crucial distinction has significant implications for future advancements in fish genetics, and thus necessitates further discussion at the COP. Humphries argues that “derivatives are not included in the MGR [marine genetic resources] definition and are only brought into the notification system when ‘biotechnology’ is involved as a form of utilization.”<sup>115</sup> For her, this would suggest that “there is a different threshold for derivatives than for MGR concerning the type of activity that falls within utilization.”<sup>116</sup>

The main issue with the methodology under Article 10(2)(b) lies in the potential for a scenario where fish initially caught for reasons other than *in situ* collection (such as commercial fishing) could subsequently acquire significant value because of biotechnological advancements, with subsequent activities being classified as “utilization” despite lacking the necessary BBNJ Batch Identifier linked to the associated marine genetic resource. The lack of a BBNJ Batch Identifier imposes material obligations in terms of the reporting mechanism under Article 12(7) of the Agreement, which requires parties to prepare, biennially, “an aggregate report on access to marine genetic resources and digital sequence information linked to their “BBNJ” standardized batch identifier,

<sup>112</sup> Ye-Seon Lim, Ye-Jin Ok, Seon-Yeong Hwang et al., “Marine Collagen as A Promising Biomaterial for Biomedical Applications” (2019) 17 *Marine Drugs* 467, 11; See also Yamamoto, Kazunari Igawa, Kouji Sugimoto et al., “Biological Safety of Fish (Tilapia) Collagen” (2014) 2014 *BioMed Research International* 1, 3–5.

<sup>113</sup> The extraction of lipids from fish oil is a crucial step in obtaining highly concentrated polyunsaturated fatty acids. These fatty acids have been found to offer numerous health benefits, making them a sought-after ingredient in various health supplements and medications. See, for example, Pipika Das, Ananya Dutta, Titli Panchali et al., “Advances in Therapeutic Applications of Fish Oil: A Review” (2024) 13 *Measurement: Food* 100142; Ian H. Pike and Andrew Jackson, “Fish Oil: Production and Use Now and in the Future” (2010) 22 *Lipid Technology* 59.

<sup>114</sup> Talita S. Espósito, Ian P. G. Amaral, Diego S. Buarque et al., “Fish Processing Waste as a Source of Alkaline Proteases for Laundry Detergent” (2009) 112 *Food Chemistry* 125, 125–126.

<sup>115</sup> Humphries, note 35, 87.

<sup>116</sup> *Ibid.*

and make the report available to the access and benefit-sharing committee established under article 15.”<sup>117</sup>

Fishery by-products most often use derivatives or DSI that no longer require the physical sample to be developed. Many scholars note that an important missing issue in the discussions was how far away from the original sampled material the obligation to share monetary benefits under Article 14 of the BBNJ Agreement can go before its participation “becomes no longer necessary.”<sup>118</sup> The scientific community would then call for additional clarifications on the “triggering point” for benefit-sharing, meaning the critical threshold in a product’s life cycle and the extent to which the benefit-sharing system should extend to its product development.<sup>119</sup> Addressing these questions is crucial for the future application of Article 10(2) of the BBNJ Agreement and for ensuring that the benefit-sharing system effectively captures the value derived from digital marine genetic resources. As genetic information digitalization becomes more prevalent in the fisheries industry, establishing clear guidelines for how the benefit-sharing system should account for these developments. This will not only promote fair and equitable access to marine genetic resources but also ensure that the benefits derived from these resources are appropriately shared.

Despite the existence of technology transfer and capacity-building obligations under UNCLOS,<sup>120</sup> initiatives to create a comprehensive network model of marine science and technology have fallen short and only recently have acquired traction in ABNJ.<sup>121</sup> The absence of a clear provider state and recipient of exchange benefits makes more difficult the transactional negotiations between those who own the materials to prospect and exploit and those with legitimate interests and entitlements to promote marine science in ABNJ. Thus, further implementing the inclusion of fish in a comprehensive benefit-sharing and notification system not only is compatible with the objectives of the BBNJ Agreement but is also necessary to ensure an equitable and fair share of marine genetic resources in ABNJ.

Finally, the question of how to interpret “fishing-related activities” will set the boundaries for what activities associated with fisheries management will be covered by the BBNJ Agreement. It seems plausible to consider activities included in the scope of Part II if they qualify as activities associated with marine genetic resources from fish species. In this sense, taking into account the history of negotiations and the final text of Article 10(2), it would be unreasonable to infer that activities, even if not commercially targeted at marine genetic resource exploitation, deserve a different

<sup>117</sup> BBNJ Agreement, Art 12(7).

<sup>118</sup> Morten Walløe Tvedt and Ane E. Jørem, “Bioprospecting in the High Seas: Regulatory Options for Benefit Sharing” (2013) 16 *Journal of World Intellectual Property* 150, 154; Muriel Rabone, Harriet Harden-Davis, Jane Eva Collins et al., “Access to Marine Genetic Resources (MGR): Raising Awareness of Best-Practice Through a New Agreement for Biodiversity Beyond National Jurisdiction (BBNJ)” (2019) 6 *Frontiers in Marine Science* 520, 2, 7, 11.

<sup>119</sup> Tvedt and Jørem, *ibid.*, 154.

<sup>120</sup> See UNCLOS Articles 204, 266, 271.

<sup>121</sup> Robert Blasiak, Jean-Baptiste Jouffray, Albert Noström et al., “The Ocean Decade as an Instrument of Peace” (2023) 64 *Current Opinion in Environmental Sustainability* 101319; Alice B.M. Vadrot, Silvia C. Ruiz, Emmanuelle Brogat et al., “Towards a Reflexive, Policy-Relevant and Engaged Ocean Science for the UN Decade: A Social Science Research Agenda” (2022) 14 *Earth System Governance* 100150.

treatment from other activities which are not fishing-related. Questions over the “intent” of specific activities should be restricted to the purposes of excluding fisheries as a commodity, therefore, focusing on the resource, not the activities.

Limiting the scope of interpretation of “fishing-related activities” serves the purposes of the main objectives of the BBNJ Agreement, especially the promotion of equity and fairness. New sampling methods are revolutionizing the field and promise to offer solutions to the lack of fishery data and biodiversity information<sup>122</sup> by promoting efficient and low-cost sampling.<sup>123</sup> They allow for the study of catch composition and broader fauna features of the ecosystems that sustain commercial fishing, promoting fishery-dependent surveys to be carried out without complicating fishing operations.<sup>124</sup> A deeper scholarly inquiry is needed to determine if these activities fall under the regime governing the freedom of marine scientific research in ABNJ, especially considering the frequent link between such research and subsequent commercial applications of the data or samples obtained. Similar questions could be raised concerning the collection or sampling of genetic material of living whales, and whether they would fall under the category of “other marine living resources.”<sup>125</sup>

## Conclusion

This article has examined the negotiating history and methodology used to adopt Article 10(2) of the BBNJ Agreement, which excludes particular activities and resources related to fishing and fishing activities from the obligations outlined in Part II. The COP will play a vital role in clarifying and implementing obligations concerning genetic resources from fish within the context of the notification, especially pre-cruise notification, and the scope of the benefit-sharing system. As the governing body of the BBNJ Agreement, the COP has the power to make decisions and provide guidance on the effective utilization and conservation of marine biodiversity, including fish genetic resources. However, it is important to acknowledge the high costs associated with tracing the final designations of fish genetic components to the biotechnology industry. Moreover, fishing vessels may face significant financial burdens when implementing such tracking systems. Therefore, the parties to the BBNJ Agreement will need to achieve a careful equilibrium between their aspirations and what is realistically achievable when defining the extent of their responsibilities.

<sup>122</sup> Eva Egelyng Sigsgaard, Felipe Torquato, Tobias G. Frølev et al., “Using Vertebrate Environmental DNA from Seawater in Biomonitoring of Marine Habitats” (2020) 34 *Conservation Biology* 697; Philip Francis Thomsen and Eske Willerslev, “Environmental DNA—An Emerging Tool in Conservation for Monitoring Past and Present Biodiversity” (2015) 183 *Biological Conservation* 4.

<sup>123</sup> In one clinical trial on board fishing trawlers, the method selected used a “[3D-printed] hollow perforated plastic spherical probe dropped inside the fishing net at the beginning of each haul” to capture material for DNA extraction. Giulia Maiello, Lorenzo Talarico, Paolo Carpentieri et al., “Little Samplers, Big Fleet: eDNA Metabarcoding from Commercial Trawlers Enhances Ocean Monitoring” (2022) 249 *Fisheries Research* 106259, 2.

<sup>124</sup> *Ibid.*

<sup>125</sup> Although sampling other than fish in ABNJ is not the main object of analysis here, it should be noted that paragraph two seems to make a special indirect reference to whaling activities. See, for example, Angela L. Sremba, Anthony Martin, Peter Wilson et al., “Diversity of Mitochondrial DNA in 3 Species of Great Whales before and after Modern Whaling” (2023) 114 *Journal of Heredity* 587, 587–588.

## Acknowledgments

I would like to sincerely acknowledge Adam Patryk Strobejko, Julia Shultz Veiga and the entire DOSI-BBNJ team for their valuable feedback and contributions to this piece.

## Disclosure Statement

The authors report there are no competing interests to declare.

## Funding

not applicable.

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