



OPEN ACCESS

EDITED BY

Sebastian Christoph Alexander Ferse,
IPB University, Indonesia

REVIEWED BY

Timothy C. Haas,
University of Wisconsin–Milwaukee,
United States
Porter Hoagland,
Woods Hole Oceanographic Institution,
United States

*CORRESPONDENCE

Christine Gaebel
✉ christine.gaebel@ed.ac.uk

[†]These authors share first authorship

RECEIVED 28 February 2025

ACCEPTED 26 May 2025

PUBLISHED 18 July 2025

CITATION

Gaebel C, Harden-Davies H, Vierros MK,
Caldeira M, Coelho L, Hassanali K, Sekinarai A
and Schütz Veiga J (2025) The BBNJ
clearing-house mechanism: considerations
for its diverse functions, users, and sources.
Front. Ocean Sustain. 3:1584927.
doi: 10.3389/focsu.2025.1584927

COPYRIGHT

© 2025 Gaebel, Harden-Davies, Vierros,
Caldeira, Coelho, Hassanali, Sekinarai and
Schütz Veiga. This is an open-access article
distributed under the terms of the [Creative
Commons Attribution License \(CC BY\)](#). The
use, distribution or reproduction in other
forums is permitted, provided the original
author(s) and the copyright owner(s) are
credited and that the original publication in
this journal is cited, in accordance with
accepted academic practice. No use,
distribution or reproduction is permitted
which does not comply with these terms.

The BBNJ clearing-house mechanism: considerations for its diverse functions, users, and sources

Christine Gaebel^{1,2*†}, Harriet Harden-Davies^{1,2†},
Marjo Kristiina Vierros², Mariana Caldeira^{1,2}, Luciana Coelho^{2,3},
Kahlil Hassanali⁴, Alumita Sekinarai² and Júlia Schütz Veiga²

¹School of GeoSciences, University of Edinburgh, Edinburgh, United Kingdom, ²Nippon
Foundation—University of Edinburgh Ocean Voices Programme, Edinburgh, United Kingdom,

³International Consultant, Law of the Sea and Ocean Governance, São Luís, Brazil, ⁴Institute of Marine
Affairs, Chaguaramas, Trinidad and Tobago

Adopted in 2023, the Agreement for the Conservation and Sustainable Use of Biological Diversity of Areas beyond National Jurisdiction (BBNJ Agreement) is a significant milestone for multilateralism and is expected to promote a more holistic and cooperative approach to biodiversity governance. Central to realising these ambitions, however, is the necessity for the best available science, knowledge, and information to inform and guide implementation. To support and facilitate the sharing of science, knowledge, and information, the BBNJ Agreement establishes a Clearing-House Mechanism (CIHM). Importantly, the CIHM is envisioned to play an integral and multifaceted role across the implementation of the BBNJ Agreement. It is to serve as a central data, knowledge, and information repository hosting data, information, and documents relating to the four elements under the Agreement, namely Marine Genetic Resources, Area-Based Management Tools, Environmental Impact Assessments, and Capacity-Building and the Transfer of Marine Technology. Moreover, it is to facilitate and advance data sharing and collaboration, act as a hub to match capacity development needs with opportunities, and more. The multifaceted functions, wide scope of information, and diversity of end-users of the BBNJ CIHM, highlight the intricate but critical task of designing and operationalising a fit-for-purpose CIHM for biodiversity of areas beyond national jurisdiction. Here, we aim to provide insights on what this might entail. Through a comprehensive analysis of the envisioned functions of the CIHM and an exploration of lessons learned from existing mechanisms and databases, we identify and discuss key considerations which are critical for implementing and operationalising a fit-for-purpose BBNJ CIHM.

KEYWORDS

BBNJ, clearing-house mechanism, ocean governance, UNCLOS, data sharing, science-policy, institutional arrangements

1 Introduction

Originally a term concerning financial establishments, “clearing-house” is now used across broader contexts to describe mechanisms that bring together generators and users of goods, services, and/or information. In the context of Multilateral Environmental Agreements (MEAs), Clearing-House Mechanisms (CIHM)¹ generally refer to platforms that aim to support and facilitate the exchange of information and data and serve as (digital) intermediaries between different actors. They are used to share and exchange information among different data generators, providers, and users. As such, CIHMs are found in many MEAs, such as the Convention on Biological Diversity (CBD), which has three clearing-houses. More recently, the development of a CIHM has been mandated under the newly adopted agreement for the Conservation and Sustainable Use of Marine Biological Diversity of Areas beyond National Jurisdiction (BBNJ Agreement).²

Concerning the biological diversity of the water column and seafloor of marine areas outside coastal State jurisdiction, the BBNJ Agreement was adopted in 2023 after nearly two decades of negotiations and discussions (Tiller et al., 2019; Mendenhall et al., 2023). Encompassing 76 Articles and two Annexes, it pertains specifically to the conservation and sustainable use of BBNJ, primarily concerning four key areas: Marine Genetic Resources (MGR), including considerations of access to these resources and the equitable sharing of benefits (Part II), Area-Based Management Tools (ABMTs) including marine protected areas (MPAs; Part III), Environmental Impact Assessments (EIAs; Part IV), and Capacity Building and the Transfer of Marine Technology (CB&TMT³;

Part V). The adoption of the BBNJ Agreement is a significant step forward for sustainable ocean governance, as it provides a structured and multilateral process to support and facilitate conservation and sustainable use actions for an area encompassing ~64% of the global ocean.⁴ It is important to note that although the Agreement has been formally adopted, it will only enter into force once 60 instruments of ratifications, approvals, acceptances, or accessions have been deposited with the Secretary-General of the United Nations.⁵ As such, this marks a pivotal moment in the BBNJ process—one that calls for reflection and careful consideration of the measures and actions needed to support the Agreement’s effective and timely implementation.

An important area requiring attention concerns the institutional arrangements and the modalities through which the Agreement will be operationalised. To facilitate and support implementation across its four key pillars, the BBNJ Agreement also establishes the foundational institutional architecture of the Agreement, including the creation of a CIHM.⁶ The establishment of the CIHM underscores the vital role that information and knowledge play in environmental governance processes. Indeed, the availability of credible, salient, and timely information is an integral part of decision-making (Cash et al., 2002). Reflecting this, the use of the best available science and knowledge is increasingly recognised as a cornerstone of good biodiversity governance (Wagenaar, 2022; Haas et al., 2022; Johnston, 2019). As good governance necessitates access to relevant information and data, it is therefore important to consider how the CIHM can be operationalised in practice and what success would look like for the mechanism under the BBNJ Agreement.

Reflecting the importance afforded to the availability and sharing of information and data, the BBNJ Agreement establishes a CIHM. Pursuant to Article 51 of the Agreement, the CIHM will consist primarily of an open-access centralised platform for accessing, sharing, and disseminating relevant information pertaining to the implementation of the Agreement, MGR, ABMTs, EIAs, and CB&TMT.⁷ More than merely facilitating information exchange, however, Article 51 affords the CIHM other wider functions. This includes, *inter alia*, connecting the BBNJ Agreement’s mechanism with other CIHMs, data repositories, and gene banks⁸; fostering transparency, including through the facilitation of data sharing of environmental baseline data⁹; facilitating international cooperation and collaboration, including in scientific and technical matters¹⁰; and facilitating the matching

Abbreviations: ABMT, Area-Based Management Tool; ABNJ, Areas Beyond National Jurisdiction; ABS, Access and benefit sharing; BBNJ, Biological Diversity of Areas beyond National Jurisdiction; CB&TMT, Capacity Building and Transfer of Marine Technology; CBD, Convention on Biological Diversity; CIHM, Clearing-House Mechanism; COP, Conference of the Parties; DSI, Digital sequence information; EIA, Environmental Impact Assessment; EIES, The Electronic Information Exchange System; FAIR, Findability, accessibility, interoperability, and reusability; FPIC, Free, prior and informed consent; IFBs, Instruments, frameworks, and bodies; IOC-UNESCO, Intergovernmental Oceanographic Commission of UNESCO; IPLC, Indigenous Peoples and local communities; LCIPP, Local Communities and Indigenous Peoples Platform; MEA, Multilateral environmental agreement; MGR, Marine Genetic Resources; OBIS, Ocean Biodiversity Information System; PrepCom, Preparatory Commission; SEA, Strategic Environmental Assessment; STB, Scientific and Technical Body; UNDRIP, UN Declaration on the Rights of Indigenous Peoples; UNFCCC, UN Framework Convention on Climate Change.

1 The Clearing-House Mechanism is sometimes abbreviated as “CHM”. Here, we use “CIHM” to distinguish “Clearing House Mechanism” from the “Common Heritage of Mankind”, which is another term used in BBNJ nomenclature and also commonly referred to as “CHM”.

2 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, C.N.203.2023.Treaties-XXI.10. (BBNJ Agreement).

3 Initiatives that aim to develop, share, and build capacity and marine technology take diverse forms and approaches. Moreover, across fora,

different terminologies are employed. Here, we use “CB&TMT” to reflect the breadth of initiatives which aim to develop and share capacity and marine technology. See Guilthion et al. (2025) for more about capacity sharing initiatives.

4 Areas beyond national jurisdiction account for ~64% of the global ocean by surface area and ~95% by total volume.

5 BBNJ Agreement, Article 66.

6 BBNJ Agreement, Article 51.

7 BBNJ Agreement, Article 51.2 and 51.3(a).

8 BBNJ Agreement, Article 51.3(c).

9 BBNJ Agreement, Article 51.3(e).

10 BBNJ Agreement, Article 51.3(f).

of capacity development needs and opportunities.¹¹ In addition to these core functions, the CIHM shall perform other functions determined and requested by the Conference of the Parties (COP) and functions set out across the Agreement.¹² Therefore, the CIHM, through its functions, goes beyond merely sharing information about the implementation of the four key areas covered by the Agreement and, instead, is positioned as an enabling mechanism to support the BBNJ Agreement's main objective, namely the conservation and sustainable use of BBNJ.

However, it is important to note that information and data governance challenges exist in practice (Laihonen et al., 2004). Moreover, beyond merely providing access to information and data, the importance of ensuring that information and data are FAIR (Findable, Accessible, Interoperable, and Reusable) is increasingly recognised as essential (e.g., Wilkinson et al., 2016, 2019), and a concept that is explicitly referenced in the text of the BBNJ Agreement.¹³ Under FAIR data practices, data and information should be easily discoverable, open access and accessible, standardised for application across diverse uses, and well-documented and maintained to enable future use, which inherently suggests an elevated level of ambition for information and data governance mechanisms under the Agreement. However, across the data value chain, different actors generate, provide, and use information and data, further exacerbating such an endeavor's complexity. Additionally, further precautions and care must be applied when considering the inclusion of traditional knowledge of Indigenous Peoples and local communities (IPLC), which constitutes an important source of information under the Agreement.¹⁴ This suggests that, in addition to FAIR data practices, the BBNJ Agreement would benefit from adopting CARE (Collective Benefit, Authority, Responsibility, Ethics) data principles. While FAIR principles prioritise the access and usability of data and information, CARE principles prioritise ethics and integrity considerations of that use (Sterner and Elliott, 2024). These considerations are significant for fostering data and information sharing that builds equitable practices.

Importantly, while the Agreement establishes the CIHM and affords baseline functions, it does not provide details on the design, set-up, functionality specifications, or form of the mechanism beyond recognition that the mechanism will be primarily an open-access platform¹⁵ managed by the Secretariat, and possibly in cooperation with relevant legal IFBs.¹⁶ Instead, it confers these decisions to the COP, who is tasked with determining the specific modalities for the operation of the CIHM once the Agreement has entered into force.¹⁷ As such, there are significant questions that merit close consideration regarding how the CIHM will

function in practice (Langlet et al., 2025; Harden-Davies et al., 2024). Recognising this, the Preparatory Commission (PrepCom), mandated by UN General Assembly Resolution 78/272 to prepare for the entry into force of the BBNJ Agreement¹⁸ was tasked with considering issues pertaining to the operation of the CIHM as part of its program of work.¹⁹ This issue was subsequently addressed at the first session of the PrepCom in April 2025, at which delegates discussed, *inter alia*, the design, modalities, and operationalisation of the CIHM.²⁰ Given the recent adoption and nascent implementation phase of the BBNJ Agreement, inquiry into its specific mechanisms remains limited. Importantly, this paucity of information remains true for the BBNJ CIHM. As such, to provide information that can support decision-makers tasked with designing and implementing a fit-for-purpose CIHM, this paper aims to collate and categorise the disparate and dispersed functions afforded to the mechanism across the Agreement, identify where lessons could be learned from practice, and reflect on some, of the many, considerations relevant to the early planning stages. It commences with an exploration of the key functions envisioned for the CIHM under the four elements of the BBNJ Agreement, as well as possible additional tasks that can be reasonably inferred from the Agreement's requirements for information sharing, cooperation, and transparency. It explores the envisioned and potential functions, types of information, and users of the BBNJ CIHM, as well as illustrative examples of existing CIHMs under other relevant legal instruments, frameworks, and bodies (IFBs). This is followed by a discussion of select key considerations. Overall, this synthesis offers timely and relevant insights for ongoing deliberations of the PrepCom and the future COP concerning the preparation for, and operationalisation of, a new CIHM under the BBNJ Agreement.

2 The BBNJ agreement's clearing-house mechanism (CIHM)

The CIHM is envisioned to play a critical and diverse role throughout the implementation of the BBNJ Agreement (Figure 1). Reflecting its cross-cutting nature, the CIHM is referenced 38 times in 15 different articles. Moreover, beyond the explicit references found within the text, other functions can also be reasonably inferred from the information and data-sharing needs across the BBNJ Agreement. To illustrate the breadth and scope of the envisioned role of the CIHM this section collates, categorises, and reflects on the key functions of the CIHM for each of the four elements addressed under the Agreement, namely MGR, ABMTs, EIAs, and CB&TMT.

11 BBNJ Agreement, Article 51.3(b).

12 BBNJ Agreement, Article 51.3(g).

13 BBNJ Agreement, Article 14.2(c).

14 For example, in addition to the use of best-available science within implementation and decision-making under the BBNJ Agreement, the Agreement also calls for the use of "relevant traditional knowledge of Indigenous Peoples and local communities, where available" (Article 7(j)).

15 BBNJ Agreement, Article 51.2.

16 BBNJ Agreement, Article 51.4.

17 BBNJ Agreement, Article 51.2.

18 United Nations General Assembly, Resolution adopted by the General Assembly on 24 April 2024, A/RES/78/272.

19 United Nations General Assembly, Statement by the Co-Chair of the Preparatory Commission at the closing of the organisational meeting, A/AC.296/2024/4.

20 Summary of the First Session of the Preparatory Commission for the Entry into Force of the Agreement on Marine Biodiversity of Areas beyond National Jurisdiction: 14–25 April 2025, Earth Negotiations Bulletin, Volume 25, No. 258.

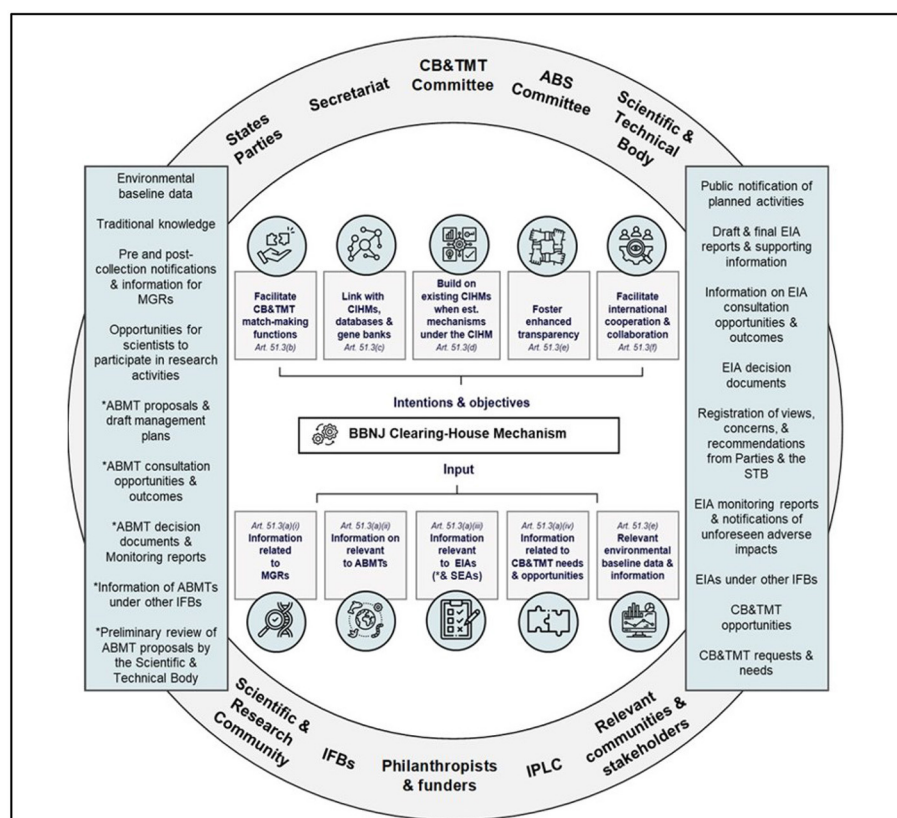


FIGURE 1

Overview of the mandate, (possible) functions, and (potential) users of the BBNJ CIHM. The functions (center), information types and sources (left and right columns), and users (outer circle) are indicative and not exhaustive. *Denotes information sources that are not explicitly mandated by the Agreement for inclusion in the CIHM but can be reasonably inferred as potential sources. This figure was produced using open-source icons from FlatIcon.

2.1 Marine genetic resources (MGR)

With the interest in MGR for research and biotechnology purposes increasing (Oldham et al., 2025), establishing an equitable and clear regulatory framework under the BBNJ Agreement is important to support both innovation and equity in areas beyond national jurisdiction (Taghizadeh, 2025; Humphries et al., 2020). Notably, the CIHM is envisioned to play a significant role in operationalising provisions pertaining to MGR and access and benefit sharing (ABS; Figure 2), with the mechanism referenced 13 times across 5 Articles under Part II of the Agreement.

2.1.1 Access to MGR

Firstly, the CIHM is critical for operationalising the BBNJ Agreement's MGR and access and benefit sharing regime (Gottlieb et al., 2025), with the Agreement explicitly noting that monitoring and transparency of activities related to MGRs will be achieved through three notification modalities of the CIHM.²¹ In this regard, it is to be the primary platform that stores and makes available the pre-collection and post-collection information required to be

shared by those who engage in collection activities of genetic resources in areas beyond national jurisdiction, as well as information regarding the utilisation of MGR and digital sequence information (DSI; Coelho Harden-Davies, forthcoming).²²

Notably, the CIHM is envisioned to play a central role with regard to activities which involve collection of MGR in areas beyond national jurisdiction. Prior to the *in-situ* collection of MGR, States Parties must take legislative, administrative, and/or policy measures to ensure that certain pieces of information are notified to the CIHM within 6 months of the commencement of activities or as early as possible.²³ These reports shall include a wide range of information, such as the nature and objectives of collection activities, targeted resources, logistical details about locations, dates, equipment, vessels, data management plans, and the people, programmes, and institutions involved, as well as an indication of opportunities for scientists, particularly those from developing States, to participate.²⁴ Furthermore, a data management plan, in accordance with open and responsible data governance practice, must be submitted.

²² BBNJ Agreement, Article 12.2 and 12.8.

²³ BBNJ Agreement, Article 12.1-2.

²⁴ BBNJ Agreement, Article 12.2.

²¹ BBNJ Agreement, Article 16.1.

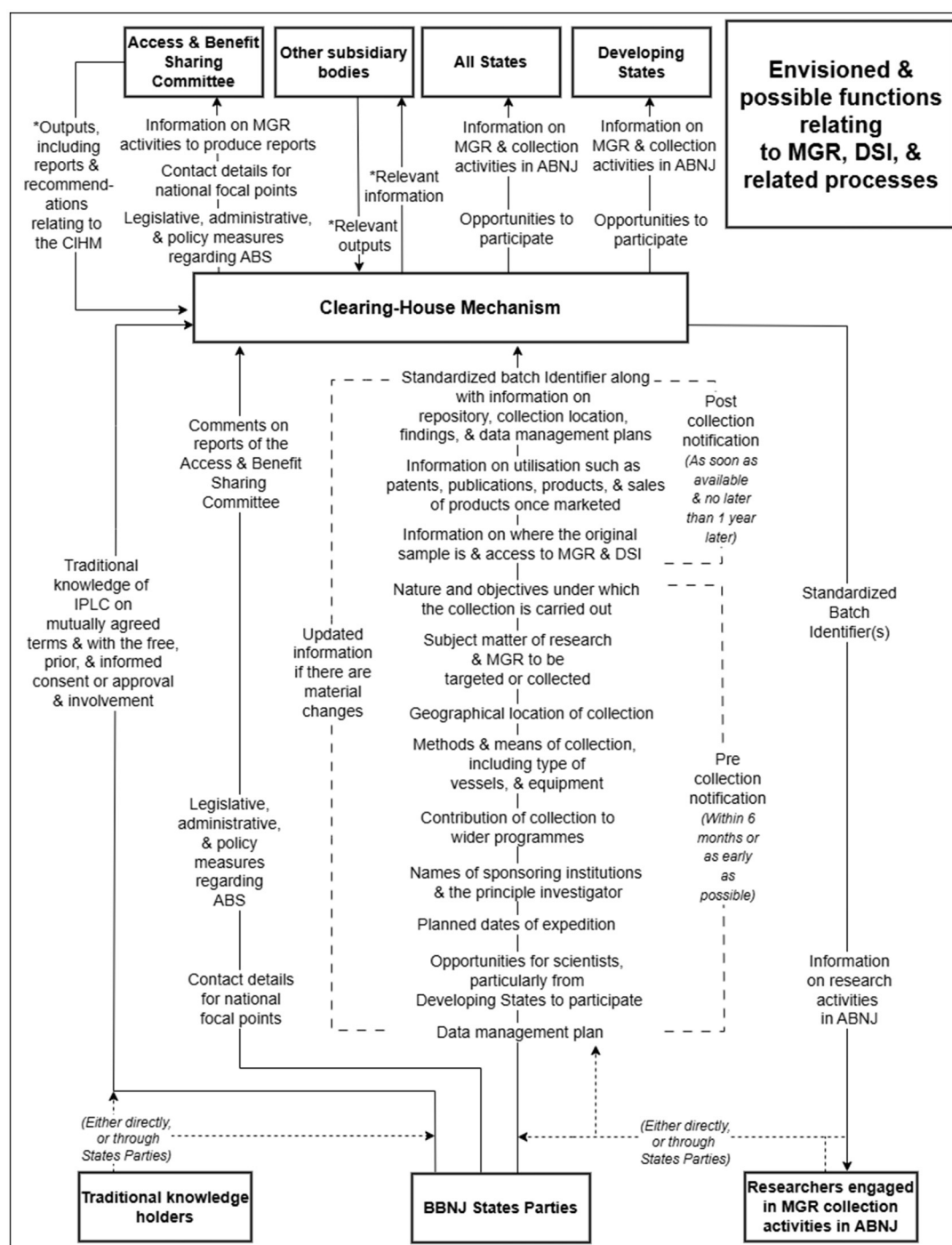


FIGURE 2

Overview of the envisioned and potential functions of the CIHM with regard to provisions pertaining to MGR under the BBNJ Agreement. While this diagram provides an indicative and preliminary overview of the CIHM's potential functions in relation to MGR, it is important to note that these details are not yet finalised and may change as discussions on the CIHM advance. *Functions that are not explicitly mandated, but can be reasonably inferred by the text.

Apart from the wide range of information required, reports may also need to be updated as research and collection plans change or progress²⁵—something that is very likely given the often non-static nature of planning and undertaking research expeditions and

projects at sea. This suggests that the CIHM will need to be flexible and include a streamlined process for information providers to upload and edit documents and information. However, it is still uncertain whether notifications will be submitted by designated government officials of States Parties to the Agreement or whether their nationals will notify the CIHM directly (Rabone et al., 2025; Coelho Harden-Davies, forthcoming).

25 BBNJ Agreement, Article 12.4.

2.1.2 MGR and benefit sharing

In addition to pre-collection notifications, the CIHM will continue to play a central role throughout the post-collection stages. When the required pre-collection information is uploaded to the CIHM, the mechanism is to automatically generate a “*BBNJ standardised batch identifier*”.²⁶ Essentially, the batch identifier will act as a tool to link the MGRs and DSI to the reporting mechanisms set out under the Agreement (Lawson et al., 2025), making it possible to link the resource where the information is originating to its utilisation, enabling the sharing of benefits.

Post-collection, States Parties must ensure that the batch identifier, alongside post-collection information, is uploaded to the CIHM. This includes information on the repository or database where digital sequence information will be stored, the locations where the collected samples are held, metadata on where the samples were collected, such as geographical coordinates and depth, available findings from the activity, and updates to the data management plan, if applicable.²⁷ If MGR or subsequent DSI is subject to utilisation or commercialisation, States Parties are to ensure that available information on publications, patents, products, and revenue is notified to the CIHM as soon as such information becomes available.²⁸

Moreover, the CIHM is envisioned to also play an essential role in connecting various processes, actors, and institutions across the Agreement. For example, the ABS Committee established under the BBNJ Agreement is tasked with preparing a report for the COP based on the information received via the CIHM.²⁹ This facilitates a procedure through which the COP is provided with the required information to base deliberations upon in a synthesised and pre-processed report instead of raw data and information (Langlet et al., 2025).

Through these reporting activities, the CIHM will play a central role in monitoring MGR collection activities in areas beyond national jurisdiction and, hence, can support and facilitate the fair and equitable sharing of benefits derived from these resources. However, to fully realise these benefits, support may be needed by many developed, low, and middle-income countries alike to ensure a common standard of information provided (Broggiato et al., 2025). In this regard, the Agreement expressly states that in managing the CIHM, full recognition must be given to the special requirements of developing States Parties, as well as the special circumstances of small island developing States Parties, with access to the CIHM to be facilitated for such States without “*undue obstacles*”.³⁰ Besides developing the capacity of States Parties to effectively use (and subsequently benefit from) the CIHM, considerations of ease of access are essential. For example, to ensure accessibility and enhance the usefulness of the reports, some degree of standardisation will be required, as well as modalities for users to search for and aggregate information from the reports efficiently. This is particularly important when considering that pre-collection

notifications shall include opportunities for capacity development and sharing—information that will diminish in usefulness if not provided in a timely and accessible manner.

2.1.3 Traditional knowledge associated with MGR

Exemplifying the diversity of (potential) functions afforded to the CIHM, as well as the diversity of information sources, pursuant to Article 13 of BBNJ Agreement, access to traditional knowledge associated with MGR may be facilitated by the CIHM. However, the Agreement also explicitly stipulates that the knowledge associated with MGR held by IPLC can only be accessed with free, prior, and informed consent (FPIC) or approval and involvement of these Indigenous Peoples and local communities.³¹ Moreover, while the CIHM could facilitate this process, the text of the Agreement uses voluntary language (Peña-Neira and Coelho, 2025) and does not establish it as a rule. Instead, it states that “*access to such traditional knowledge may be facilitated*” by the CIHM.³²

If and how traditional knowledge should be included within the CIHM is an area that merits further consideration. Although there are benefits of the CIHM to serve as a platform for the exchange of diverse perspectives across IPLC, as well as beneficial exchanges of perspectives between IPLCs, scientists, and decision-makers, there is also a concern that once the knowledge is available, such communities would lose their relevance, and their consent would no longer be required (Friedman, 2025). Also, much traditional knowledge is sensitive or secret in nature and only intended for use by specific groups of people in a specific context and/or place. It is essential, therefore, that the CIHM only provide open access to traditional knowledge—whether relating to MGR or issues addressed by the BBNJ Agreement more generally—in accordance with the aforementioned FPIC principles, as well as with the approval and full participation of the knowledge holders (Peña-Neira and Coelho, 2025). Importantly, this is consistent with both the BBNJ Agreement and with the UN Declaration of the Rights of Indigenous Peoples (UNDRIP)—a declaration which is cited in the preamble of the BBNJ Agreement itself.³³

2.2 Environmental impact assessments (EIAs)

Under the Agreement, EIAs are an important tool to support sustainable ocean governance. As set out in the text of the

26 BBNJ Agreement, Article 12.3.

27 BBNJ Agreement, Article 12.5.

28 BBNJ Agreement, Article 12.8.

29 BBNJ Agreement, Article 16.3.

30 BBNJ Agreement, Article 51.5.

31 BBNJ Agreement, Article 13 explicitly refers to FPIC. In essence, FPIC means that an Indigenous nation or community freely consents to sharing certain types of information or having certain activities undertaken on their territory. The “prior” refers to all information about the action and its implications being made available before the action is taken and not retroactively and the “informed” means that all related information is made accessible and understandable to the community.

32 BBNJ Agreement, Article 13.

33 In particular, the BBNJ Agreement preamble recalls UNDRIP and affirms that “nothing in this Agreement shall be construed as diminishing or extinguishing the existing rights” of Indigenous Peoples and where relevant, local communities, including, as set out in UNDRIP.

Agreement, the objectives of provisions on EIAs is to establish processes, thresholds, and requirements for assessments, to ensure that relevant activities are adequately assessed to prevent, mitigate, and manage adverse impacts from these activities.³⁴ Notably, the CIHM is also set to play a central role in operationalising provisions related to EIAs in areas beyond national jurisdiction (Wang and Pan, 2025). Indeed, reflecting its envisioned import to EIA procedures, the mechanism is referenced 16 times across 8 Articles under Part IV of the Agreement (Figure 3).

2.2.1 EIA reports and associated relevant information

Under the Agreement, States Parties are obligated not only to ensure that EIA reports are available through the CIHM but also to ensure that “*relevant information*” is available throughout the process.³⁵ Notably, relevant information for environmental assessments can comprise information spanning diverse knowledge systems and disciplines (Boettcher and Brent, 2024). Moreover, if an EIA for a planned activity has been conducted under a different IFB, States Parties must still ensure that the EIA report is available through the BBNJ’s CIHM,³⁶ which suggests that cross-sectoral information and users will be part of and engaged with the CIHM. Notably, this presents potential challenges for the CIHM, particularly with regard to access to information and data held by other IFBs (Wang and Pan, 2025).

In addition to the final EIA reports, the CIHM is also envisioned to facilitate information and data sharing throughout the EIA process, from preliminary screening stages to monitoring and reviewing activities post-EIA. As set out in the Agreement’s process for EIAs, States Parties must undertake initial screening to determine whether an EIA is required for a planned activity.³⁷ If, after screening, a Party determines that an EIA is not required, they must make the “*relevant information*” available, which shows that there are reasonable grounds to assume that the planned activity will not cause substantial pollution or significant and harmful changes to the environment.³⁸ This is to be “*sufficiently detailed*” and will include an overview of the planned activity and an analysis of potential impacts and cumulative impacts of the activity.³⁹ Notably, this information is to be made publicly available through the CIHM.⁴⁰ From this information, another Party can register concerns with the screening decision outcome, which the Scientific and Technical Body will subsequently consider.⁴¹ Both the concerns raised and the recommendations of the Scientific and Technical Body shall be made public via the CIHM.⁴²

2.2.2 Consultations

Under the BBNJ Agreement’s EIA process, the CIHM will also bolster and facilitate transparency and participation in the EIA process (Bodansky, 2024; Tanaka, 2024). States Parties must provide public notification of a planned activity, including through the CIHM.⁴³ Beyond a simple notification of intent, however, this aims to support the public consultation process and will also include information on opportunities for participation by all States, particularly adjacent coastal States and potentially impacted stakeholders.⁴⁴ Importantly, this refers to all State and non-State actors, which further illustrates the wide range of envisioned users of the BBNJ CIHM—an essential consideration for the design and implementation of the mechanism.

Another envisioned CIHM user, in this regard, is the BBNJ Agreement’s Scientific and Technical Body (Hassanali et al., 2025; Gaebel et al., 2024). During the public consultation stage, the Party responsible for the EIA must publish the draft EIA to the CIHM for consideration and evaluation by the Scientific and Technical Body.⁴⁵ As aforementioned, Parties must ensure that final EIA reports are available on the CIHM. Subsequently, the Secretariat will notify States Parties of the newly published report in a timely manner.⁴⁶ As the final decision-making of whether a planned activity may proceed is the responsibility of the proponent’s State Party, this Party must also upload all decision documents, including information on conditions of approval, mitigation measures, and follow-up requirements, to the CIHM.⁴⁷

2.2.3 Monitoring and review

If an activity goes forward, the Agreement explicitly notes that all States, in particular, adjacent coastal States and the potentially most affected States, and stakeholders are to be kept informed via the CIHM throughout monitoring and review processes.⁴⁸ The responsible State Party must also make monitoring reports publicly available through the CIHM, which the Scientific and Technical Body can consider⁴⁹ and use as the basis to notify the Party that authorised the activity if it considers that that activity may now have significant adverse impacts.⁵⁰ In addition, if the Party with jurisdiction or control over the activity identifies significant adverse impacts when the approved activity is underway, the Party must notify the COP, States Parties to the BBNJ Agreement, and the broader public through the CIHM.⁵¹

Regarding monitoring and review, any State Party to the Agreement may register concerns about an activity that is being conducted if they are of the opinion that the authorised activity may have, or is having significant adverse impacts that were

34 BBNJ Agreement, Article 27.

35 BBNJ Agreement, Article 28.2.

36 BBNJ Agreement, Article 28.5.

37 BBNJ Agreement, Article 31.1(a).

38 BBNJ Agreement, Article 31.1(a)(i), Article 30.1.

39 BBNJ Agreement, Article 30.1.(a)(i)-(ii).

40 BBNJ Agreement, Article 31.1(a)(i).

41 BBNJ Agreement, Article 31.1(a)(iii),(iv).

42 BBNJ Agreement, Article 31.1(a)(vi).

43 BBNJ Agreement, Article 32.1.

44 BBNJ Agreement, Article 32.1.

45 BBNJ Agreement, Article 33.3.

46 BBNJ Agreement, Article 33.5.

47 BBNJ Agreement, Article 34.3.

48 BBNJ Agreement, Article 37.5.

49 BBNJ Agreement, Article 36.2.

50 BBNJ Agreement, Article 37.3.

51 BBNJ Agreement, Article 37.2.

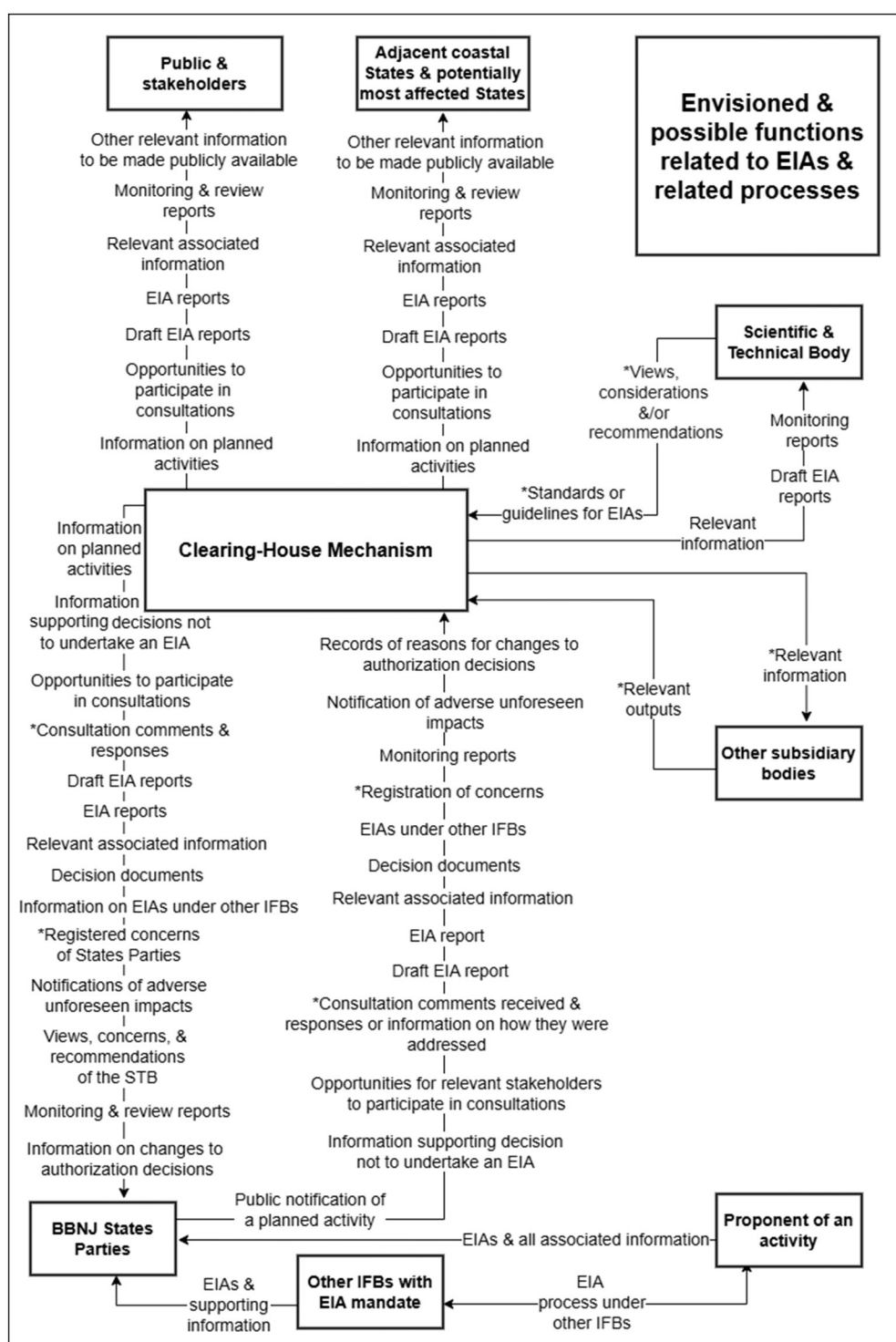


FIGURE 3

Overview of the envisioned and potential functions of the CIHM with regard to provisions pertaining to EIAs under the BBNJ Agreement. While this diagram provides an indicative and preliminary overview of the CIHM's potential functions regarding EIAs, it is important to note that these details are not yet finalised and may change as discussions on the CIHM advance. *Functions that are not explicitly mandated, but can be reasonably inferred by the text.

either not foreseen in the EIA, or that may arise from a breach of conditions of approval.⁵² The concerns registered will

be considered by the Scientific and Technical Body, who may make recommendations to the Party who authorised the activity. The CIHM's role in this process is that registered concerns and any recommendations made by the Scientific and Technical

52 BBNJ Agreement, Article 37.4(a).

Body shall be made publicly available, including through the CIHM.⁵³

Importantly, this highlights an aspect of ambiguity regarding the CIHM and its role under the EIA Part of the Agreement. The registration of concerns of States Parties and the recommendations made by the Scientific and Technical Body during the screening decision stage and in the monitoring and review stages are to be made to the Party with jurisdiction or control over the activity. However, what remains unclear is how it will be carried out in practice. Questions arise on whether concerns/recommendations are to be placed on the CIHM concurrently with the informing of the Party with jurisdiction or control over the activity in question or if concerns/recommendations will be subsequently placed on the CIHM, with the latter allowing for sufficient time for that Party's response also to be included. It is also unclear who will be responsible for uploading concerns/recommendations to the CIHM, whether it be the complaining Party (as it relates to concerns) and the Scientific and Technical Body (as it relates to recommendations), or the Secretariat, or both.

2.3 Area-based management tools (ABMTs)

In addition to the functions explicitly mandated across the BBNJ Agreement, other roles and functions can be reasonably inferred from the Agreement's information-sharing needs. This includes functions associated with the implementation of provisions set out in Part III of the Agreement in relation to ABMTs (Figure 4).

2.3.1 Information sharing

While the Agreement explicitly states that the CIHM will serve as the centralised platform to facilitate information sharing pertaining to establishing and implementing ABMTs,⁵⁴ there are no references to the CIHM in Part III of the Agreement. However, across the provisions relating to the identification, designation, management, and monitoring of ABMTs, potential roles of the CIHM can be reasonably inferred. For example, it is reasonable to assume that the CIHM could store and make available ABMT proposals, which the Secretariat is to make publicly available to the Scientific and Technical Body for preliminary review.⁵⁵ Notably, proposals will include a wide range of information and information types, such as geographic and spatial description of the area being considered; human activities or uses, including by IPLC, of the area and information on any consultations undertaken; a description of the state of its environment and biological diversity; details on the conservation and sustainable use objectives and a draft management plan; information on any consultations undertaken with adjacent coastal States or relevant IFBs, as well as information on relevant ABMTs under relevant IFBs; and input from scientific and traditional knowledge of IPLC.⁵⁶ The available information from

the CIHM also presents an opportunity for States to collaborate, using this information, knowledge, and data to accomplish the envisioned comprehensive, ecologically representative, and well-connected systems of ABMTs in areas beyond national jurisdiction.⁵⁷

2.3.2 Consultations

Moreover, similar to functions afforded to the CIHM under Part IV of the Agreement, the mechanism could help facilitate and support transparency and inclusivity in the ABMT process, including through consultations. Indeed, the CIHM could act as an important platform to enable stakeholders to submit, view, and share data and information (Blanchard et al., 2019). In this regard, the Agreement states that consultations on proposals are to be “*inclusive, transparent and open to all relevant stakeholders*”, including States, IFBs, civil society, the scientific community, and IPLC.⁵⁸ Notably, this further highlights the potential multitude of CIHM users. Moreover, beyond the wide-range of actors, it can also be reasonably inferred that the CIHM would hold diverse sources of data and information pertaining to ABMTs under the Agreement. Indeed, the input gathered from the consultations will likely be wide-ranging and could include scientific input, information on human activities, and relevant traditional knowledge of IPLC, amongst others, which is to be made publicly available by the Secretariat,⁵⁹ possibly through the CIHM.

2.3.3 Decision-making

After considering the input gleaned from consultations, the proponent(s) of the ABMT will revise the proposal and submit it to the Scientific and Technical Body, which will subsequently provide recommendations for the COP.⁶⁰ While it is not explicitly mandated that this shall be carried out through the CIHM, the CIHM could help transparently facilitate the necessary exchange of information (Diz et al., 2024). When the COP assess the final proposal and draft management plan, it is to take into account the contributions and input received from the consultation process, as well as from the Scientific and Technical Body,⁶¹ which further demonstrates the need to have multiple documents and information, all of which are produced at varying timescales in the ABMT proposal process, easily accessible. Once the COP makes a decision, all decision documents, including any objections, are to be made publicly available,⁶² which could also be reasonably seen as an apt function of the CIHM.

2.3.4 Monitoring and review

Post designation of an ABMT, States Parties are to monitor and review its implementation and provide a status report to the COP. Moreover, ABMTs and related measures are to be periodically

⁵³ BBNJ Agreement, Article 37.4(d).

⁵⁴ BBNJ Agreement, Article 51.3(ii).

⁵⁵ BBNJ Agreement, Article 20.

⁵⁶ BBNJ Agreement, Article 19.4.

⁵⁷ BBNJ Agreement, Article 17 (a).

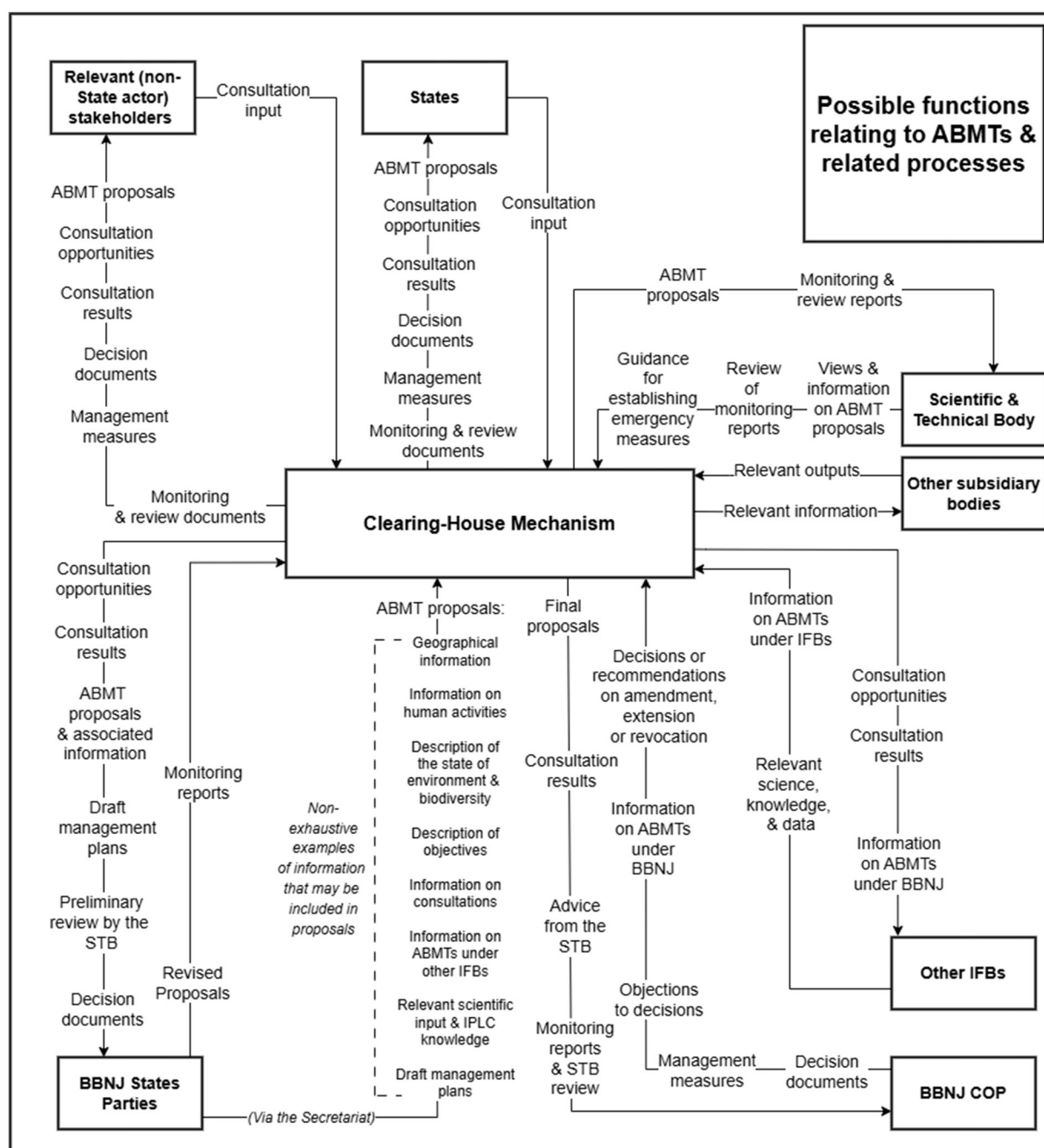
⁵⁸ BBNJ Agreement, Article 21.

⁵⁹ BBNJ Agreement, Article 21.2-3.

⁶⁰ BBNJ Agreement, Article 21.7.

⁶¹ BBNJ Agreement, Article 22.1.

⁶² BBNJ Agreement, Article 23.10.



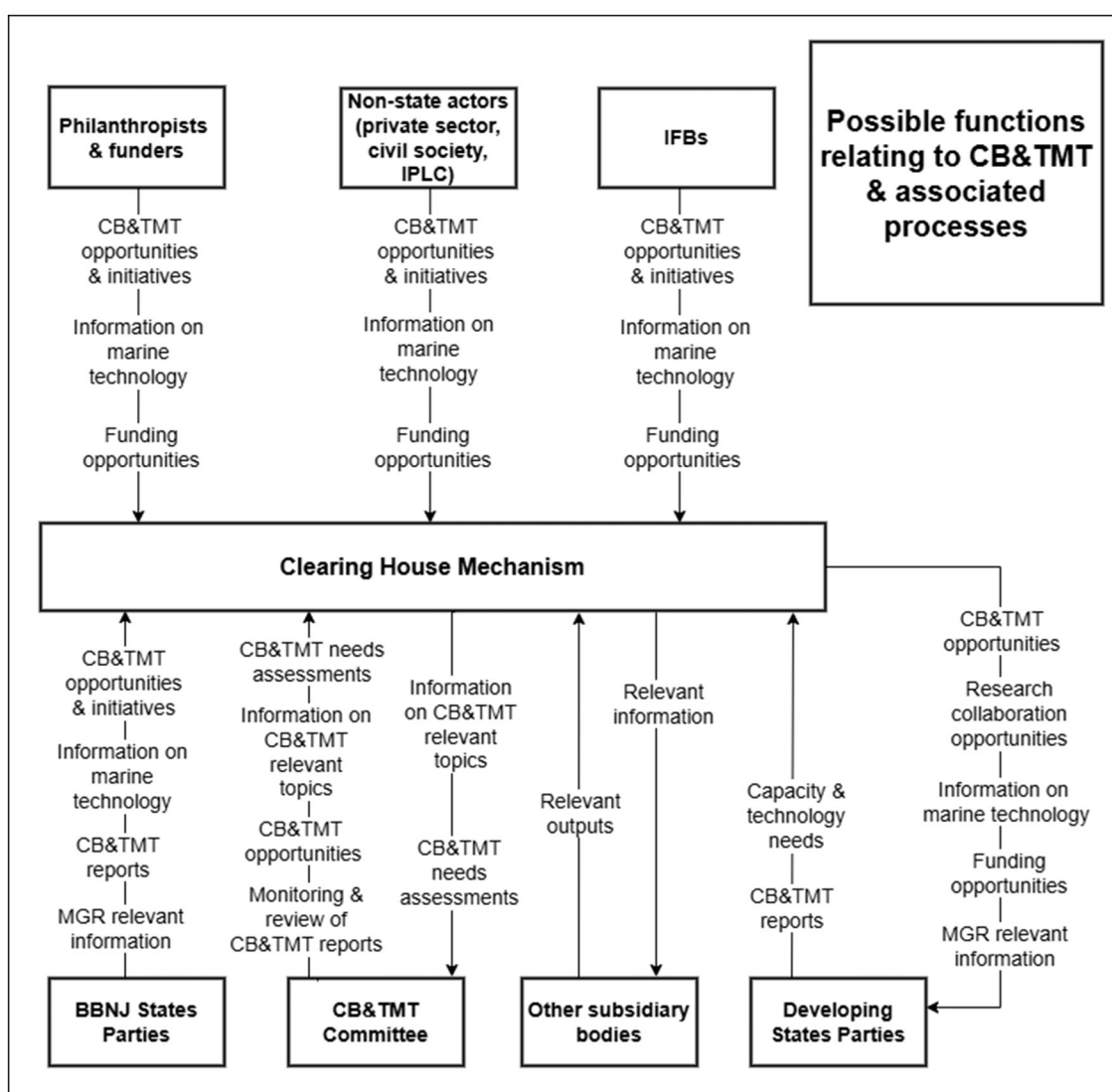


FIGURE 5

Overview of the potential functions of the CIHM with regard to provisions pertaining to CB&TMT under the BBNJ Agreement. While this diagram provides an indicative and preliminary overview of the CIHM's potential functions regarding CB&TMT, it is important to note that these details are not yet finalised and may change as discussions on the CIHM advance.

mechanism will also serve as the central platform for implementing provisions regarding CB&TMT (Figure 5).

2.4.1 CB&TMT match-making

The CIHM is a central platform for promoting, supporting, and facilitating activities and initiatives relating to capacity development and sharing and the transfer of marine technology (Harden-Davies et al., 2024). This will include but is not limited to sharing information about CB&TMT requests and opportunities, including opportunities related to research collaboration, training, transfer of technological information, data, marine technology, and funding.⁶⁵

Under the Agreement, developing States Parties, particularly small island developing States and least-developed Countries, will identify capacity needs and priorities through needs assessments, which the Agreement notes can be self-assessed or facilitated through the CB&TMT Committee and the CIHM.⁶⁶ In this regard, the CIHM is envisioned to facilitate the match-making procedure, wherein capacity needs are matched with available support. Apart from other States Parties, governmental, non-governmental, and private entities can also offer support,⁶⁷ further reflecting the wide range of envisioned CIHM uses and users and the scope of information and data to be stored and made available through the CIHM. The CIHM could play a role in sharing information and guidance relevant to implementing Part V (e.g., the undertaking

⁶⁶ BBNJ Agreement, Article 42.4.

⁶⁷ BBNJ Agreement, Article 51.3(a)(iv).

⁶⁵ BBNJ Agreement, Article 51.3(a)(iv)-3(b).

of needs assessments, monitoring, and review of CB&TMT), publicising needs and opportunities, and submitting reports of CB&TMT. Apart from facilitating the matching of CB&TMT needs and opportunities, the CIHM will also play a role in capacity sharing by providing information and data relevant to the conservation and sustainable use of marine biological diversity beyond of areas beyond national jurisdiction. Indeed, one of the aims of the CIHM is to foster and enhance transparency, including by facilitating access to relevant environmental baseline data, information, and knowledge.⁶⁸

Operationalising these envisioned functions in practice could present challenges that require consideration. For example, for the CIHM to effectively support the CB&TMT match-making functions, it will likely require a proactive human component, as a website-only mechanism is unlikely to facilitate this task to the standards envisioned and desired by the Agreement (Vierros and Harden-Davies, 2020). Furthermore, it is unclear what role, if any, the CIHM could play in facilitating access to financial resources for CB&TMT.

While the CIHM could prove a valuable tool for enhancing data sharing infrastructure and promoting equitable access to information, knowledge, and data (Lothian, 2024), targeted and careful consideration of how the CIHM will facilitate TMT in practice is needed. As noted in the Intergovernmental Oceanographic Commission of UNESCO's Criteria and Guidelines on the Transfer of Marine Technology (Intergovernmental Oceanographic Commission, 2005), the idea of a technology transfer mechanism has existed for some time, yet has remained challenging to realise in practice (Harden-Davies, 2016). For example, the success of such activities could depend on support and the BBNJ Agreement's ability to attract participants to engage with the mechanism (Minas, 2018).

2.5 Functions of the clearing-house mechanism and current and potential uses of BBNJ

As illustrated above, the CIHM under the BBNJ Agreement is envisioned to play a critical and cross-cutting role across the implementation of the Agreement. However, it is important to note that the mechanism is more than just a theoretical construct—it can also serve as a tool to support and advance sustainable ocean governance in practice, including by facilitating the sharing of information and promoting transparency. Beyond ensuring the availability of best available science and knowledge to base decisions on and facilitating the sharing of relevant information amongst States Parties (Hassanali, 2023), the CIHM could also serve as an essential tool for managing current and potential activities in areas beyond national jurisdiction (Table 1). This includes, but is not limited to current uses of and activities relevant to BBNJ (e.g., Marine scientific research (Harden-Davies and Snelgrove, 2020; Coelho, 2025) and collection of MGR for bioprospecting (Wang and Sun, 2024), as well as potential future uses (e.g., activities relating to climate mitigation (Boettcher and Brent, 2024)

or even future floating infrastructure, such as hotels or cities (e.g., Pereira et al., 2023). In this way, a crucial role of the CIHM, and one that is not explicitly referenced in the text but can be reasonably inferred, is helping to future-proof the BBNJ Agreement, including through the integration of new science, information, and knowledge to reflect future uses, environmental status, and understanding of BBNJ.

3 Learning from existing clearing-house mechanisms

Several CIHMs, repositories, and databases contain some of the functions and functionalities envisioned for the BBNJ CIHM, as described in Section 2 above. Learning lessons from existing CIHMs and current practice is important for the optimal development of the key functionalities of the BBNJ CIHM. Moreover, a better understanding of other mechanisms, repositories, and databases, including their functionalities and the scope of information they host, is important for identifying possible mechanisms with which the BBNJ CIHM could link or cooperate with. Table 2 provides a summary of selected existing CIHMs and databases used by MEAs and other relevant organisations that can provide a starting point for extracting such lessons.

The table is organised around six categories of data, knowledge, and information that, from the above exploration of the envisioned functions of the BBNJ CIHM, have been identified as important: (a) General information about the BBNJ Agreement and activities toward its implementation; (b) Information and processes to support the implementation of MGR and benefit-sharing provisions of the BBNJ Agreement; (c) Information and processes to support the EIA provisions of the BBNJ Agreement; (d) Information and processes to support the ABMT provisions of the BBNJ Agreement; (e) Information and processes to support the CB&TMT provisions of the BBNJ Agreement; and (f) Relevant scientific data and information, as well as traditional knowledge of Indigenous Peoples and local communities to support the implementation of the BBNJ Agreement in general. It is important to note that the examples provided here are not intended to be exhaustive, but instead aim to provide indicative examples of how other frameworks and organisations have addressed these topics and the hosting and sharing of relevant data, information, and knowledge.

3.1 Functions and functionalities

As is evident from Table 2, multiple existing CIHMs and databases are relevant to the envisioned functions of the BBNJ CIHM. Indeed, some of these examples, such as the IOC-UNESCO's Ocean InfoHub and Ocean Teacher Global Academy (OTGA), the Ocean Biodiversity Information System (OBIS), and GenBank, could potentially be built upon and expanded to incorporate BBNJ-relevant components and be subsequently linked to the BBNJ CIHM. Others, such as the CBD clearing-houses, the Antarctic Treaty Electronic Information Exchange System (EIES), and the UNFCCC Capacity Building and TT:CLEAR portals, could serve as an inspiration or a reference point for the design of

⁶⁸ BBNJ Agreement, Article 51.3(e).

TABLE 1 Indicative and non-exhaustive overview of actual and potential uses of and activities relevant to BBNJ and possible role of the CIHM.

Indicative list of ABNJ uses/activities (actual or potential)	Indicative list of potential roles of the BBNJ CIHM
Marine scientific research 	Information pertaining to MGR and CB&TMT : • Notifications and reports. • Disseminating information about CB&TMT opportunities prior to a cruise/expedition. • Sharing information and data, including results, findings, and samples, as relevant.
MGR collection activities 	Information pertaining to MGR : • Notifications and reports. • BBNJ batch identifiers and post-collection information, including results, findings, and samples, as relevant.
Activities which produce noise (unless pertaining to shipping which is covered by IMO, or to military activities); Carbon sequestration, iron fertilisation, or other climate mitigation and geoengineering activities; Floating aquaculture, renewable energy infrastructures, or cities, hotels, and other potential infrastructure; Releases of pollutants and debris or terrestrial biomass dumping; Plastic debris collection activities 	Information pertaining to EIAs (for activities assessed under the BBNJ Agreement): • Share notifications, EIA reports, relevant data and information, decision documents, and monitoring reports. • Facilitation of consultations and sharing of opinions. • Registered concerns of States Parties and concerns and recommendations of the Scientific and Technical Body. Information pertaining to EIAs (for activities assessed under other IFBs): • EIA reports, relevant data and information, decision documents, and monitoring reports.
Marine conservation and management designations and associated measures 	Information pertaining to ABMTs : • ABMT proposals and relevant data and information (including through potential web-GIS). • Information on consultations, participation opportunities, and outcomes. • Review documents from the Scientific and Technical Body, and subsequent COP decision documents (including objections). • Potentially provide an (interactive) map of approved ABMTs. Information pertaining to CB&TMT : • Webinars, courses and training materials. • Opportunities and “match-making” activities, including with regard to TMT, to support identification and monitoring of ABMTs.
Uses by Indigenous Peoples, such as traditional voyaging, if combined with scientific research or conservation activities 	Information pertaining to MGR : • Traditional voyaging if combined with scientific research could require deposit of the above reports and notifications to the CIHM. Information pertaining to ABMTs : • ABMT proposals, relevant information, consultations, and decision documents, as above.
Activities regulated by other IFBs (e.g., deep-sea mining, shipping, and fishing) 	Potential information pertaining to EIAs , ABMTs , and CB&TMT : • EIA reports of assessments conducted under other IFBs. • Information on ABMTs and associated measures under other IFBs. • Opportunities for joint or shared capacity development initiatives.

the BBNJ CIHM. For example, their design can illustrate, *inter alia*, how a distributed model of a CIHM, consisting of a central clearing-house node linked with national and regional nodes, as well as other data providers, can facilitate the effective exchange of information (e.g., the CBD clearing-house mechanism). They can also provide ideas of how a specific function might be performed, such as those relating to reports and notifications from research expeditions (e.g., the Antarctic Treaty EIES allows Parties to submit information about anticipated work in Antarctica) or how CB&TMT provisions might be grouped into one location for ease of access (e.g., the UNFCCC Capacity Building and TT portals). Such examples can serve as a source of ideas and inspiration for the design of the BBNJ CIHM.

However, what is also evident from the above analysis, is that from this exploration of existing CIHMs, there does not appear to be an example of a single mechanism covering all of the desired functionalities envisioned for the BBNJ Agreement's CIHM in practice. Moreover, some functionalities, such as those required to fully operationalise the MGR's access and benefit-sharing regime, EIA processes, and ABMT provisions, are not common functions of CIHMs associated with MEAs. This suggests that whilst lessons can

be learned from existing practice, a high degree of innovation might also be necessary to develop and design a fit-for-purpose CIHM for the BBNJ Agreement.

3.2 Model and structure

Existing databases and CIHMs take a variety of forms. Some are one-stop shops, hosting all the information in one central clearing-house. Others are “hub-and-spoke” models based on decentralised networks connecting a central clearing-house with disparate nodes that can be national, regional, or data repositories (e.g., CBD clearing-house and OBIS). The centralised model generally requires that providers send information to the operator (often the Secretariat) of the CIHM, which would then post it in the appropriate location. All information is displayed in a consistent format, but there may be delays in posting information, complex processes of updating, and reduced ownership of national information. The decentralised model, therefore, provides for faster information exchange and updates

TABLE 2 Examples of existing CIHMs that cover some of the information and/or functions envisioned for the BBNJ CIHM.

Information	Example CIHMs and databases	Examples of key functionalities
Convention and implementation information 	All convention CIHMs host general convention information on implementation. E.g., All of the three CBD clearing-houses and the Joint Clearing-House Mechanism for the Basel, Rotterdam and Stockholm Conventions.	- Information about the treaty/protocol, including COP decisions. - Information on upcoming and past meetings and events. - Materials to support implementation (e.g., guidance, principles, and case studies). - National records and national reports. - Discussion forums, news and multimedia. - Tutorials for using the CIHM, etc.
Information relating to MGRs and benefit-sharing 	The Antarctic Treaty Electronic Information Exchange System (EIES) and the ABS Clearing-House of the CBD's Nagoya Protocol	The Antarctic Treaty's EIES facilitates Parties' submission of (i) pre-season information about activities the country expects to undertake during the next field season; (ii) annual report of activities carried out during the previous year; and, (iii) permanent information about facilities in Antarctica, national procedures, etc. - National records in the ABS Clearing-House of the Nagoya Protocol can provide important information to certify that a genetic resource has been accessed in accordance with the Nagoya Protocol, which can be linked with collections from ABNJ.
Information relating to EIAs 	The Antarctic Treaty Electronic Information Exchange System (EIES) and EIA database . The OSPAR Data and Information Management System	The Antarctic Treaty EIES allows Parties to provide information about intended activities. The EIA database includes documentation related to Environmental Evaluations undertaken for proposed activities in Antarctica. - While not specifically EIA-related, the OSPAR Data and Information Management System provides map-based information about human activities, which can be useful for evaluating impacts, including cumulative impacts.
Information relating to ABMTs 	The CBD Ecologically or Biologically Significant Marine Areas (EBSA) database and the OSPAR MPA Database	- While bearing no linkage to management measures, the EBSA database provides an example of a collaborative approach for identifying areas that are important for biodiversity, with associated descriptions and data. The OSPAR MPA Database provides information about current MPAs and their monitoring status. OSPAR also has a procedure for nominating new MPAs, including in ABNJ.
Information relating to CB&TMT 	Most convention CIHMs contain some CB&TMT-related functionalities. E.g., UNFCCC Capacity Building Portal , the UNFCCC TT:CLEAR , and IOC-UNESCO's Ocean Teacher Global Academy (OTGA)	The UNFCCC Capacity Building Portal provides online courses, tools, on-demand webinars, case studies, podcasts, projects and platforms. The UNFCCC TT:CLEAR serves as a platform for "all things climate technology", including Technology Needs Assessments and Technology Action Plans. OTGA provides training on various ocean-related topics through their online platform, a blended approach, or in-person at a specialised training center.
Scientific data, information and traditional knowledge  	Ocean InfoHub (IOC UNESCO), NOAA National Centers for Environmental Information (NCEI), Ocean Biodiversity Information System (OBIS), Global Ocean Observing System (GOOS), Global Biodiversity Information Facility (GBIF), and GenBank. UNFCCC Local Communities and Indigenous Peoples Platform (LCIPP), COSPPac Pacific Traditional Knowledge Database, and the Local and Indigenous Knowledge Systems (LINKS) Program (UNESCO)	Ocean InfoHub is a comprehensive ocean science clearing-house that provides access to data, information, experts, and resources. NCEI hosts one of the world's largest archives of oceanographic data. OBIS is an open-access marine biodiversity data and information clearing-house supported by an international network. GOOS collects real-time and long-term oceanographic data to support sustainable ocean management. GBIF facilitates open access to biodiversity data, while GenBank is an open-access genetic sequence database. LCIPP supports Indigenous participation in UNFCCC and the application of traditional knowledge. The COSPPac database is a Pacific regional database (not online) for traditional knowledge used in climate forecasting. LINKS aims to preserve and promote traditional knowledge in biodiversity and climate change contexts.

across a dispersed network, greater ownership of information, and support for partner nodes in organising their own data and information in-house (Cicin-Sain et al., 2018). Lessons learned from hub-and-spoke models highlight the importance of promoting interoperability across linked mechanisms.⁶⁹ In practice, this can be supported through the provision of

technical guidance, including information on documentation and publication specifications, common formats and terminology or vocabulary, and submission and validation processes,⁷⁰ as well as targeted capacity development activities, such as regional workshops.⁷¹

⁶⁹ E.g., Convention on Biological Diversity, Review of progress in providing support in implementing the objectives of the Convention and the Strategic Plan for Biodiversity 2011-2020, and enhancement of capacity-building, technical and scientific cooperation and other initiatives to assist implementation, CBD/COP/DEC/XII/2, Para 18(b).

⁷⁰ E.g., Convention on Biological Diversity, Knowledge Management and the Clearing-House Mechanism, CBD/SBI/3/8, Paras 30-31.

⁷¹ E.g., Convention on Biological Diversity, Knowledge Management and the Clearing-House Mechanism, CBD/SBI/3/8, Paras 36-43.

3.3 Accessibility and ease of access

Moreover, exploring existing mechanisms can also provide lessons on the optimal design and architecture of CIHMs to enable use. Accessibility and ease of access considerations are fundamental in this regard, with users of other mechanisms stressing the importance of easy-to-use and straightforward interfaces (Mutatina et al., 2019). Indeed, enabling broad participation and easy access to up-to-date information is a paramount priority for most mechanisms.⁷² This necessitates low barriers to information access, and the ability to access information in different languages (Cicin-Sain et al., 2018). One area of growing interest in this regard is the use of artificial intelligence (AI) tools, including large language models to provide innovative avenues for end users to search for and engage with the data and information hosted on a platform, such as the use of AI chatbots. However, it is important to note that an increase in the sophistication of tools also requires an increase in the competencies of the users to ensure that the tools are used appropriately (Nogueira, 2025).

Regarding multilingualism, various mechanisms underscore the importance of providing information in multiple languages to enhance access to information.⁷³ For example, the ABS Clearing-House has indicated that making the website operational in the six official languages of the UN is a top priority, with ~95% of the web pages available in these languages as of 2024.⁷⁴ Important lessons can be learned regarding bolstering multilingualism, including the value of modern translation technologies that can support translation of a web-portal into multiple languages in a cost-effective and efficient manner.⁷⁵ However, while mechanisms to streamline translation efforts are being developed, it is critical to note that some translation efforts still rely on manual translation.⁷⁶ Indeed, practice suggests that providing translations can be challenging, particularly in relation to keeping them up-to-date as the wider platform is updated or further developed.⁷⁷

72 E.g., The joint clearing-house mechanism for the Basel, Rotterdam and Stockholm Conventions, which operates under the vision to provide “Up-to-date and quality information and expertise ... in a transparent, neutral and efficient way, and using simple and user friendly access” (Basel Convention, UNEP/CHW.13/INF/47, Para 18).

73 E.g., Basel Convention, UNEP/CHW.16/INF/41, Paras 40–44; Convention on Biological Diversity, Review of the Implementation and Operation of the Access and Benefit Sharing Clearing-House, CBD/SBI/2/INF/7, Para 42.

74 Convention on Biological Diversity, Nagoya Protocol, Progress in the operation of the Access and Benefit-sharing Clearing-House, Note by the Secretariat, CBD/NP/MOP/5/7, Paras 24–25.

75 Convention on Biological Diversity, Knowledge Management and the Clearing-House Mechanism, CBD/SBI/3/8, Para 20.

76 E.g., Convention on Biological Diversity, Nagoya Protocol, Progress in the operation of the Access and Benefit-sharing Clearing-House, Note by the Secretariat, CBD/NP/MOP/5/7, Paras 51 and 98.

77 E.g., Convention on Biological Diversity, Nagoya Protocol, Report on Progress in the implementation and operation of the Access and Benefit-Sharing Clearing-House, Note by the Executive Secretary, CBD/NP/MOP/3/8, Para 32.

3.4 Handling confidential or sensitive data and information

Another area where lessons and inspiration can be drawn from relevant IFBs pertains to practice regarding the handling of confidential or sensitive data, to help balance the availability of information with the need to protect sensitive information. In this regard, some mechanisms, such as the ABS Clearing-House operate under the general rule that all information published to the mechanism will be publicly available. Under this model, users publishing information confirm that it is not confidential, with nationally designated publishing authorities subsequently responsible for ensuring that the information is indeed, not confidential in nature.⁷⁸ This highlights the value of having engaged and well-trained focal points to help support the process. For specific instances, such as information pertaining to Internationally Recognised Certificates of Compliance, mandatory input fields also allow for information providers to indicate that it is confidential, or to input information in a free text box, providing for traceability of the information without including the sensitive data directly.⁷⁹ Other mechanisms, such as OBIS also require information providers to censor or generalise necessary data before publishing.⁸⁰ In practice, this can look like providing regional coordinates instead of exact locations, anonymisation, or implementing time delays in publication of the information, or functionality allowing providers to set passwords on datasets.⁸¹ In the case of OBIS, the user manual also includes indicative scenarios for when open access to information or data might not be appropriate, such as for location data on endangered, protected, or commonly poached species.⁸²

Lessons can also be gleaned from practice regarding traditional knowledge held by IPLC. For example, the processes established by the UNFCCC Local Communities and Indigenous Peoples Platform (LCIPP), as well as recent developments under the CBD, can provide guidance on access to relevant traditional knowledge and how to provide free consent and involvement of these traditional knowledge holders. To safeguard the sensitive nature of the traditional knowledge, the COSPPac Pacific Traditional Knowledge Database,⁸³ which stores and manages Pacific Islands’ traditional knowledge relevant to climate and weather forecasting, is not publicly accessible and can only be used for its stated purpose. Lessons learned in this regard can provide valuable insights for

78 Convention on Biological Diversity, Nagoya Protocol, Guide to the Access and Benefit-sharing Clearing-House: About the ABS Clearing -House, Pp. 16 and 21. absch.cbd.int/about. Accessed: 29 April 2025.

79 Ibid. Pp. 21 and 25.

80 Ocean Biodiversity Information System, The OBIS Manual, May 13, 2025, Section 7.

81 E.g., OSPAR Commission, Management of OSPAR data, Para 7(d); Ocean Biodiversity Information System, The OBIS Manual, 13 May, 2025, Section 2.2.

82 Ocean Biodiversity Information System, The OBIS Manual, May 13, 2025, Section 2.2.

83 See: <https://www.sprep.org/news/cosppac-traditional-knowledge-database-strengthening-weather-forecasting-and-observations-in-the-pacific> (accessed February 19, 2025).

traditional knowledge of IPLC, if it is determined that such knowledge will be hosted on the CIHM.

3.5 Phased development

Other lessons can be learned regarding the development and evolution of the mechanism and its functionality. Not all parts of a CIHM need to be, or are in practice, developed simultaneously. For example, the capacity-building functions of the CBD's Biosafety Clearing-House were developed before other functions, which also highlights the potential importance of early implementation of this component (Cicin-Sain et al., 2018).

Lessons from other existing CIHMs also highlight that the development of the mechanisms is an ongoing, continuous learning and refinement process. For example, the development of the CBD's ABS Clearing-House started before the Nagoya Protocol entered into force in 2014. In this case, the development commenced with an expert meeting in April 2011 that aimed to consider the modalities of operation of the clearing-house and to assist countries in early ratification and implementation of the Nagoya Protocol.⁸⁴ An Informal Advisory Committee was then established to advise the development of the pilot phase of the CIHM and to ensure that a fully functional CIHM would be ready in time for the protocol's entry into force.⁸⁵ Notably, during this process, feedback was sought from States Parties, as well as IPLCs. At the first meeting of the Parties to the Protocol in 2014, the modalities for operation were agreed and Parties were urged to make all of the mandated information available in the clearing-house.⁸⁶ In response, a new Informal Advisory Committee was established and continues to meet to advise on improvements for the clearing-house and its functionalities.

3.6 Costs and resources

Importantly, lessons pertaining to cost magnitudes can also be drawn from comparable mechanisms. Whilst publicly available budgets are not always disaggregated, insights into potential costs can be extracted. For example, looking at early costs accrued by the ABS Clearing-House for the biennium 2017–2018,⁸⁷ the largest expenditure appears to have been personnel costs (USD 750,000 for two professional level staff members and one general service staff member). Moreover, additional costs included USD 40,000 for translation services, USD 45,000 for a meeting of the Informal Advisory Committee, and USD 108,693 for program

support costs, totaling USD 971,793 per biennium. However, it is important to note that for 2015–2016, the two professional level staff were funded, at least in part, by the European Union and Switzerland⁸⁸ and that going forward, it was recommended that one professional level staff member and one general service staff member were required for optimal functioning⁸⁹ suggesting that running costs could be higher in the early stages of implementation. For example, whilst not disaggregated, details from the CBD's budget⁹⁰ suggests that two personnel could cost approximately USD 150,000–180,000 annually, not including costs of other staff from across the secretariat who perform relevant tasks in addition to their other roles. Other costs include approximately USD 40,000 to support one in-person meeting of the Informal Advisory Group, and an estimated total of approximately USD 60,000 to support additional costs, including travel, web hosting, digital infrastructure, and support for CB&TMT activities. Under these estimates, the total could be envisioned to be around USD 250,000–280,000 per annum, or USD 500,000–530,000 biennially. Notably, these estimates are similar to other mechanisms. For example, the joint clearing-house under the Basel, Stockholm, and Rotterdam conventions allocated a total of USD 460,700 per biennium, comprising of USD 250,000 for expert support and USD 32,500 for program support costs to facilitate new activities,⁹¹ as well as USD 178,200 for regular maintenance costs.⁹²

4 Discussion: considerations for the early stages of designing the BBNJ CIHM

Reflecting the potentially critical and cross-cutting role of the BBNJ Agreement's CIHM, it is worthwhile to consider what a fit-for-purpose CIHM would require. From the above exploration of the envisioned functions of the BBNJ Agreement's CIHM and those of existing mechanisms, we highlight five, of many, important considerations that decision-makers may wish to consider whilst contemplating and conceptualising the future mechanism.

4.1 Considering the human element

Reflecting the diverse and complex tasks afforded to the CIHM, it is important that decision-makers consider the human element

84 Convention on Biological Diversity, Issues for Consideration in the Establishment of the Access and Benefit-Sharing Clearing-House, CBD/ABS/EM-CH/1/2.

85 Convention on Biological Diversity, Progress Report on the Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilisation and Related Developments, CBD/COP11/11, decision XI/1 C, para 1.

86 Convention on Biological Diversity, Draft Modalities for the Operation of the Access and Benefit-Sharing Clearing-House, CBD/COP-MOP/1/2/Add.1.

87 Convention on Biological Diversity, CBD/NP/COP-MOP/2/3, Para 103.

88 Ibid. Para 101.

89 Ibid. Para 102.

90 Convention on Biological Diversity, Proposed budget for the programmes of work of the Convention on Biological Diversity, the Cartagena Protocol on Biosafety and the Nagoya Protocol on Access and Benefit-sharing for the biennium 2025–2026, Note by the Secretariat, CBD/COP/16/4.

91 Basel, Stockholm, and Rotterdam conventions, Financial Needs for Voluntary-Funded Activities 2024–2025, Activity number 25, <https://www.brsmeas.org/Implementation/FinancialResources/FinancialNeedsforVoluntaryFundedActivities/20242025/tabid/9764/language/en-GB/Default.aspx>.

92 Basel, Stockholm, and Rotterdam conventions, Para 34, Table 1.

of the mechanism (Harden-Davies et al., 2024). Ultimately this involves conceptualising and designing a mechanism that is built both for and with end users, instead of being just a technical tool or data platform. In this effect, many delegations expressed during the negotiations of the BBNJ Agreement and in the first PrepCom that the CIHM should not be limited to a website, but should also have a human component.⁹³ In this regard, it was suggested that the mechanism will require human resources, including experts with necessary skills, as well as administrative and coordination personnel to support stakeholder engagement and user support.⁹⁴ Therefore, the human element could be conceived to include both the human component needed to ensure the effective functioning of the CIHM and that it is fit-for-purpose for end-users.

The exact form and function of this human element remains to be detailed, but will likely be very important for modalities which support collaborative dialogue and exchange of views, especially for functions associated with CB&TMT match-making, as well as EIA and ABMT consultations. To fully fulfill the desired outcomes, particularly in relation to these two aspects, the CIHM will likely need to be more than just a website. To truly fulfill future users' (diverse) needs, consultations with these actors to better understand what these needs are could prove advantageous. For example, one such need is likely to be technological capacity and infrastructure. Indeed, it is likely that without dedicated funding and targeted technical assistance, some actors, particularly from developing States, may find the cost of compliance, for example, with information sharing requirements under the Agreement, a barrier to meaningful participation (Harden-Davies et al., 2024). The human element, both in terms of appropriate staffing and the needs of end-users, is critical and necessitates proactive consideration.

4.2 Considering fundamental design choices

A fundamental decision that will need to be taken is whether the CIHM will take a centralised approach or a decentralised, hub-and-spokes approach. As aforementioned, practice does provide examples of both designs, and each comes with associated benefits and drawbacks. The question, therefore, is what design would best serve the unique and cross-cutting needs of the BBNJ Agreement?

Similar to other CIHMs explored in Section 3, the BBNJ Agreement could take a hub-and-spokes approach where a central CIHM would act as a node of connectivity with other mechanisms and databases. Indeed, the option to implement such an approach is provided for in the Agreement. Pursuant to Article 51.3, it is

expressly set out that, where applicable, the BBNJ CIHM shall build on global, regional, and subregional clearing-houses when establishing regional and/or subregional mechanisms that will operate under the global mechanism. Taking such an approach could help enhance coordination and coherence across the BBNJ governance-scape. For example, as a hub-and-spoke model, the mechanism could also help further connect various actors and information sources, and help promote cooperation through continuous exchange of information and best practices.

However, a decentralised model could be more challenging to implement, especially in regard to different levels of confidentiality and access, and would require a level of standardisation of information and data across the network of mechanisms. Moreover, if a decentralised model is implemented, support for the nodes would also need to be considered. Developing national and regional CIHM nodes (or building on existing databases to take on these functions) may require additional support, training and technology, and long-term and sustainable funding to ensure that these nodes remain up-to-date and functional.

Ultimately, given the large number of critical tasks afforded to the CIHM, at this stage of the BBNJ process it is important to ensure that a CIHM is operational alongside entry into force and implementation of the Agreement. As such, this may require a more simplified, centralised approach to be taken in the first instance, with the recognition that other nodes could be created and/or connected at a later date. To facilitate progress in this regard, it is therefore important for decision-makers to determine what the core functions are, to allow for more accurate estimates of the technological and financial requirements to meet these needs.

4.3 Considering the handling of confidential or sensitive information

The next consideration that necessitates further contemplation by decision-makers is how the CIHM can appropriately handle confidential or sensitive information. Based on insights into the complex needs of the BBNJ Agreement, as well as current practices, one option could be for the CIHM to operate on a tiered-access model. Under this approach, certain elements, such as procedural documents, general research summaries, and capacity-building materials, would be publicly accessible by default to foster transparency and cooperation. At the same time, modalities could be included to handle sensitive information appropriately (e.g., data including specific coordinates of protected, endangered, or commonly poached species), which could be either subject to restricted access or be generalised or anonymised.

Moreover, a critical consideration pertains to traditional knowledge of IPLC. In this regard, based on the text of the BBNJ Agreement, as well as current practice, it is evident that additional care is required to ensure that the handling of such information, if provided to the CIHM, aligns with both FPIC and CARE principles. To consider such issues, a working group of traditional knowledge experts and knowledge holders could be convened to determine modalities. Whilst these modalities should reflect the concerns and needs identified by IPLC knowledge holders, one could envision a model with several levels of access and permissions for the

93 United Nations Meetings Coverage and Press Releases, Preparatory Commission for Marine Biodiversity Treaty Continues Consideration of Clearing-House Mechanism, Discusses Upcoming Agenda, SEA/2215, April 24, 2025.

94 The European Union, Answers on behalf of the European Union and its Member States regarding the Guiding Questions on the clearing house mechanism, First session of the Preparatory Commission, April 14–25, 2025. https://www.un.org/bbnjagreement/sites/default/files/2025-05/EU_CHM_2223April.pdf.

BBNJ CIHM: one for open access traditional knowledge, which is already in the public domain and where no sensitivity concerns exist, a second arrangement similar to the COSPPac model where traditional knowledge is stored on the CIHM to be used for a stated purpose but not made openly accessible, and a third for extremely sensitive traditional knowledge, where only metadata or contact details are made available, with purpose and methods for access to be agreed upon with the knowledge holders on a case by case basis.

4.4 Considering inter and intra BBNJ agreement functions

Importantly, the CIHM could play a significant role in facilitating coordination and information exchange not just between and amongst States Parties and subsidiary bodies under the Agreement, but also with other relevant stakeholders, including IFBs (Kim, 2024). This duality, that is, the facilitation of both inter- and intra-BBNJ coordination and cooperation, will require different approaches, functionalities, and considerations.

As emphasised by the FAO during the BBNJ negotiations, data “is vital for evidence based decision making in BBNJ, [and] that data is primarily generated within sectors”.⁹⁵ As such, inter-institutional cooperation and coordination are essential considerations for implementing the BBNJ Agreement (Langlet and Vadrot, 2023), including with private databases which hold significant information. For example, the CIHM could play a role in facilitating cooperation and coordination and the sharing of relevant information across IFBs in the undertaking of strategic environmental assessments (Song et al., 2024).

However, whilst potentially a valuable tool to support sustainable governance of BBNJ, this duality, that is supporting both inter- and intra-cooperation and coordination, could also pose challenges. For example, differentiated levels of permissions may be required for different user types, whether they be States Parties, representatives of IFBs, or general stakeholders. Moreover, data sharing agreements or *Memorandums of Understandings* would likely be necessary with each IFB or data owner. Apart from consideration of the associated challenges, consideration of design choices and modalities which not only supports, but actively encourages cooperation and coordination across IFBs is needed. In this regard, a working group or committee could be formed with representatives of mechanisms under other processes, to proactively identify synergies and opportunities.

4.5 Considering resources and costs

Last, but certainly not least, are considerations pertaining to the required resources and costs to design, build, and maintain a mechanism that serves the diverse needs of the Agreement and CIHM users. In this sense, the CIHM is envisioned to perform a range of complex and multifaceted functions, some of which are relatively novel and will require innovation and thoughtful

design choices. As a result, accurately estimating the total cost of developing and maintaining the CIHM under the BBNJ Agreement presents a challenge.

Based on current practice highlighted in Section 3, the CIHM could cost around USD 250,000–280,000 per year to maintain, or more, when considering the additional envisioned functions of the BBNJ Agreement’s CIHM. Moreover, it is important to note that these cost estimates are unlikely to remain stable, as costs would evidently be higher during the early stages of operationalisation, and could also increase with the development of additional functionalities, if a phased approach is taken. Conversely, new technologies, including the use of artificial intelligence may reduce the costs while enhancing operationalisation, but would likely require specialised experts to design and maintain, thereby also incurring costs. In this regard, cost scenarios and cost-benefit analyses would prove beneficial, especially once the core structure and functionalities of the future mechanism are identified.

When considering costs, it is important for decision-makers to consider whether all CIHM functionalities need to be developed at once, and if not, what the priorities are to support timely and effective implementation of the BBNJ Agreement. As discussed in Section 3, lessons from practice suggest that the BBNJ CIHM could also benefit from a phased approach with important functionalities to support early ratification and implementation piloted first, potentially with the support of an expert group, advisory group, or committee. Apart from the practical and logistical benefits of such an approach, it would also provide a necessary learning process and a reflexive approach, which could allow for continuous adjustments as the processes (and needs of the Agreement) develop. This could allow for costing exercises to be conducted prior to entry into force of the Agreement, thereby providing accurate monetary and human resource estimates to be presented at the first COP.

Ultimately, whilst the resource and financial needs of the CIHM remains challenging to estimate at the current point in time, given the many fundamental decisions that are yet to be taken, it is evident that ensuring that the CIHM is allocated the necessary funds and resources to effectively discharge its mandate under the BBNJ Agreement is of paramount importance.

6 Concluding remarks

As States move to prepare for the implementation of the BBNJ Agreement, it is timely to address the questions relating to the establishment of the CIHM. In this paper, we have explored the envisioned functions of the CIHM, discussed the challenges and opportunities that lie ahead, and analysed some lessons learned from existing mechanisms.

There are high expectations for the BBNJ CIHM—from passive information sharing to active facilitation of implementation. It is positioned to play a critical cross-cutting role in the implementation architecture and is tasked with many functions—from generating BBNJ batch identifiers under the MGR’s ABS regime, to matching CB&TMT needs with opportunities, to facilitating participation and transparency in EIA procedures, and more. It will need to handle diverse sources and types of information, data, and knowledge and be accessible and usable by diverse users.

⁹⁵ FAO Statement, Agenda Item 6: Informal informals on cross-cutting issues, Article 15, BBNJ IGC4, March 14, 2022.

Existing CIHM take many forms—some are hub-and-spoke with different nodes, and others use the one-stop-shop model. Moreover, while some of the envisioned functions of the BBNJ CIHM are seen in other CIHMs, no single existing CIHM covers all of the functions envisaged under the BBNJ Agreement. In this regard, it is highly likely that while lessons can be learned from existing practice, the BBNJ Agreement will also need to be innovative. For example, while Article 51 of the Agreement stipulates that the CIHM will primarily consist of an open-access platform, it does not limit States Parties from being innovative in design and operational modalities and, as such, does not limit the CIHM from being strictly a web-based platform. However, this would require additional resources (financial, technological, and human), which highlights some of the (many) trade-offs associated with different design choices.

Formulating a fit-for-purpose CIHM could be resource-intensive and will require adequate human, technological, and financial resources to meet its wide-ranging and cross-cutting functions. This raises important questions about what form the CIHM could take, whether it is conceptualised as a single platform or a decentralised network initiative, and how it might be resourced. To foster a reflexive approach, decision-makers designing and implementing the BBNJ Agreement's CIHM could consider a phased approach to prioritise critical functions that users need early but also allow for the level of reflexivity necessary to future-proof the CIHM.

Ultimately, the multifaceted functions, wide scope of information, and diversity of end-users of the BBNJ CIHM, when juxtaposed with existing mechanisms, highlight the intricate but critical task of designing and operationalising a fit-for-purpose CIHM for biodiversity of areas beyond national jurisdiction.

Author contributions

CG: Conceptualisation, Formal analysis, Visualisation, Writing – original draft, Writing – review & editing.

References

- Blanchard, C., Durussel, C., and Boteler, B. (2019). Socio-ecological resilience and the law: exploring the adaptive capacity of the BBNJ agreement. *Marine Policy* 108:103612. doi: 10.1016/j.marpol.2019.103612
- Bodansky, D. (2024). Four treaties in one: the biodiversity beyond national jurisdiction agreement. *Am. J. Int. Law* 118, 299–323. doi: 10.1017/ajil.2024.9
- Boettcher, M., and Brent, K. (2024). The potential of the BBNJ clearing house mechanism to enhance knowledge pluralism in marine carbon dioxide removal assessment. *Front. Clim.* 6:1497476. doi: 10.3389/fclim.2024.1497476
- Broggiato, A., Dunshirn, P., Jaspars, M., and Peña-Neira, S. (2025). Monetary and non-monetary benefit sharing under the BBNJ agreement. *Sustain. Dev. Goals Series F* 24, 159–180. doi: 10.1007/978-3-031-72100-7_6
- Cash, D., Clark, W. C., Alcock, F., Dickson, N. M., Eckley, N., and Jäger, J. (2002). *Salience, Credibility, Legitimacy and Boundaries: Linking Research, Assessment and Decision Making*. doi: 10.2139/ssrn.372280
- Cicin-Sain, B., Vierros, M., Balgos, M., Maxwell, A., Kurz, M., and Farmer, T. (2018). *Policy Brief on Capacity Development as a Key Aspect of a New International Agreement on Marine Biodiversity Beyond National Jurisdiction (BBNJ)*. Global Ocean Forum. Available online at: https://www.fao.org/fileadmin/user_upload/common_oceans/docs/policy-brief-on-bbnj-capacity-development-aug-2018.pdf (Accessed January 11, 2025).
- Coelho, L. F. (2025). Developing and reframing the LOSC in changing circumstances: the practice of small island developing states on the consent regime for marine scientific research. *Int. J. Marine Coast. Law*. doi: 10.1163/15718085-bja10220
- Coelho, L. F., and Harden-Davies, H. (forthcoming). *Marine Genetic Resources in Areas Beyond National Jurisdictions: A New Regime*. Cambridge Handbook on the Law of the Sea.
- Diz, D., Harrison, J., Oke, E. K., Brown, C., and Hirschbuehl, M. (2024). *Policy Brief on Area-Based Management Tools Under the BBNJ Agreement: Towards Effective and Equitable International Implementation*. Available online at: <https://www.law.ed.ac.uk/sites/default/files/2024-07/ABMT%20Final%20Brief.pdf> (Accessed January 11, 2025).
- Friedman, S. (2025). The law of the sea goes digital—indigenous peoples' "right to exclude" their traditional knowledge from the digital sphere. *Ocean Dev. Int. Law* 56, 88–99. doi: 10.1080/00908320.2024.2446572
- Gaebel, C., Novo, P., Johnson, D. E., and Roberts, J. M. (2024). Institutionalising science and knowledge under the agreement for the conservation and sustainable use of marine biodiversity of areas beyond national jurisdiction (BBNJ): Stakeholder perspectives on a fit-for-purpose Scientific and Technical Body. *Marine Policy* 161:105998. doi: 10.1016/j.marpol.2023.105998
- Gottlieb, H. M., Ardrón, J. A., and Brown, A. E. L. (2025). BBNJ agreement: a new infrastructure to foster benefit sharing of marine genetic resources. *Sustain. Dev. Goals Series F* 24, 29–54. doi: 10.1007/978-3-031-72100-7_2
- HH-D: Conceptualisation, Writing – original draft, Writing – review & editing. MV: Formal analysis, Writing – original draft, Writing – review & editing. MC: Writing – review & editing. LC: Writing – review & editing. KH: Writing – review & editing. AS: Writing – review & editing. JS: Writing – review & editing.

Funding

The author(s) declare that financial support was received for the research and/or publication of this article. This research was supported by funding received from the Nippon Foundation—University of Edinburgh Ocean Voices Programme. CG also receives funding from a NERC Doctoral Training Partnership Grant (NE/S007407/1).

Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

Generative AI statement

The author(s) declare that no Gen AI was used in the creation of this manuscript.

Publisher's note

All claims expressed in this article are solely those of the authors and do not necessarily represent those of their affiliated organizations, or those of the publisher, the editors and the reviewers. Any product that may be evaluated in this article, or claim that may be made by its manufacturer, is not guaranteed or endorsed by the publisher.

- Guilhon, M., Vierros, M., Harden-Davies, H., Amon, D., Cambroner-Solano, S., Gaebel, C., et al. (2025). Measuring the success of ocean capacity initiatives. *Oceanography* 38, 114–115. doi: 10.5670/oceanog.2025.122
- Haas, B., Mackay, M., Novaglio, C., Fullbrook, L., Murunga, M., Sbrocchi, C., et al. (2022). The future of ocean governance. *Rev. Fish Biol. Fish.* 32, 253–270. doi: 10.1007/s11160-020-09631-x
- Harden-Davies, H. (2016). Marine science and technology transfer: can the Intergovernmental Oceanographic Commission advance governance of biodiversity beyond national jurisdiction? *Marine Policy* 74, 260–267. doi: 10.1016/j.marpol.2016.10.003
- Harden-Davies, H., Lopes, V. F., Coelho, L. F., Nelson, G., Veiga, J. S., Talma, S., et al. (2024). First to finish, what comes next? Putting Capacity Building and the Transfer of Marine Technology under the BBNJ Agreement into practice. *NPJ Ocean Sustain.* 3, 1–5. doi: 10.1038/s44183-023-00039-1
- Harden-Davies, H., and Snelgrove, P. (2020). Science collaboration for capacity building: advancing technology transfer through a treaty for biodiversity beyond national jurisdiction. *Front. Marine Sci.* 7:501962. doi: 10.3389/fmars.2020.00040
- Hassanali, K. (2023). The Agreement on Biodiversity in Areas Beyond National Jurisdiction—Caribbean Community perspectives on interests, asks and outcomes. *Marine Policy* 156:105800. doi: 10.1016/j.marpol.2023.105800
- Hassanali, K., Gaebel, C., and Harden-Davies, H. (2025). Considerations in the set up and functioning of the Scientific and Technical Body under the BBNJ Agreement—lessons from the Legal and Technical Commission of the International Seabed Authority. *Front. Ocean Sustain.* 3:1572943. doi: 10.3389/focsu.2025.1572943
- Humphries, F., Gottlieb, H. M., Laird, S., Wynberg, R., Lawson, C., Rourke, M., et al. (2020). A tiered approach to the marine genetic resource governance framework under the proposed UNCLOS agreement for biodiversity beyond national jurisdiction (BBNJ). *Marine Policy* 122:103910. doi: 10.1016/j.marpol.2020.103910
- Intergovernmental Oceanographic Commission (2005). *IOC Criteria and Guidelines on the Transfer of Marine Technology*, IOC Information Document 1203. Paris: Intergovernmental Oceanographic Commission.
- Johnston, S. (2019). “The practice of UN treaty-making concerning science,” in *The Oxford Handbook of United Nations Treaties*, Oxford Handbooks, eds. S. Chesterman, D. M. Malone, and S. Villalpando (Oxford Academic). doi: 10.1093/law/9780190947842.003.0019
- Kim, R. E. (2024). The likely impact of the BBNJ Agreement on the architecture of ocean governance. *Marine Policy* 165:106190. doi: 10.1016/j.marpol.2024.106190
- Laihonon, P., Kalliola, R., and Salo, J. (2004). The biodiversity information clearing-house mechanism (CHM) as a global effort. *Environ. Sci. Policy* 7, 99–108. doi: 10.1016/j.envsci.2003.12.003
- Langlet, A., Dunshirn, P., Jaspars, M., Humphries, F., and Kachelriess, D. (2025). Monitoring and transparency aspects of MGR-utilization under the BBNJ agreement. *Sustain. Dev. Goals Series F* 24, 181–200. doi: 10.1007/978-3-031-72100-7_7
- Langlet, A., and Vadrot, A. B. M. (2023). Not ‘undermining’ who? *Unpacking the emerging BBNJ regime complex*. *Marine Policy* 147:105372. doi: 10.1016/j.marpol.2022.105372
- Lawson, C., Humphries, F., Jaspars, M., and Rabone, M. (2025). Data management and the ‘BBNJ standardized batch identifier’ under the BBNJ agreement. *Sustain. Dev. Goals Series Part F* 24, 253–269. doi: 10.1007/978-3-031-72100-7_12
- Lothian, S. L. (2024). Transnational maritime environmental crime and the BBNJ agreement. *Front. Conserv. Sci.* 5:1406105. doi: 10.3389/fcsc.2024.1406105
- Mendenhall, E., Tiller, R., and Nyman, E. (2023). The ship has reached the shore: the final session of the ‘Biodiversity Beyond National Jurisdiction’ negotiations. *Marine Policy* 155:105686. doi: 10.1016/j.marpol.2023.105686
- Minas, S. (2018). Marine technology transfer under a BBNJ treaty: a case for transnational network cooperation. *AJIL Unbound* 112, 144–149. doi: 10.1017/aju.2018.46
- Mutatina, B., Basaza, R., Sewankambo, N. K., and Lavis, J. N. (2019). Evaluating user experiences of a clearing house for health policy and systems. *Health Inform. Librar. J.* 36, 168–178. doi: 10.1111/hir.12257
- Nogueira, L. A. (2025). Chatbots and scholarly databases: impressions from trying out Scopus AI. *Inform. Technol. Librar.* 44:17116. doi: 10.5860/ital.v44i1.17116
- Oldham, P., Kindness, J., Davidson, E., Westmoreland, A., Vanagt, T., and Jaspars, M. (2025). *Study on ‘Marine Genetic Resources’ Market Value and State of the Art of Commercialisation of Related Products in the Context of the BBNJ Negotiations*. Publications Office of the European Union.
- Peña-Neira, S., and Coelho, L. F. (2025). Traditional knowledge associated with marine genetic resources in areas beyond national jurisdiction. *Sustain. Dev. Goals Series Part F* 24, 201–210. doi: 10.1007/978-3-031-72100-7_8
- Pereira, L. M., Ortuño Crespo, G., Amon, D. J., Badhe, R., Bandeira, S., Bengtsson, F., et al. (2023). The living infinite: Envisioning futures for transformed human-nature relationships on the high seas. *Marine Policy* 153:105644. doi: 10.1016/j.marpol.2023.105644
- Rabone, M., Horton, T., Humphries, F., Lyal, C. H. C., Muraki Gottlieb, H., Scholz, A. H., et al. (2025). BBNJ agreement: considerations for scientists and commercial end users of MGR at research, development and commercialization stages. *Sustain. Dev. Goals Series Part F* 24, 283–315. doi: 10.1007/978-3-031-72100-7_14
- Song, Y., Mao, Z., and Zhang, Z. (2024). Strategic environmental assessment in areas beyond national jurisdiction: existing regimes, challenges, and prospects. *Front. Marine Sci.* 11:1371511. doi: 10.3389/fmars.2024.1371511
- Sterner, B., and Elliott, S. (2024). How data governance principles influence participation in biodiversity science. *Sci. Cult.* 33, 366–391. doi: 10.1080/09505431.2023.2214155
- Taghizadeh, Z. (2025). Marine genetic resources as common heritage of mankind under the BBNJ Agreement; the international community toward a pragmatic benefit-sharing approach? *Biodiver. Conserv.* 34, 131–153. doi: 10.1007/s10531-024-02962-2
- Tanaka, Y. (2024). Reflections on the environmental impact assessment in the BBNJ agreement: its implications for the conservation of biological diversity in the marine arctic beyond national jurisdiction. *Ocean Dev. International Law* 55, 85–114. doi: 10.1080/00908320.2024.2333883
- Tiller, R., de Santo, E., Mendenhall, E., and Nyman, E. (2019). The once and future treaty: towards a new regime for biodiversity in areas beyond national jurisdiction. *Marine Policy* 99, 239–242. doi: 10.1016/j.marpol.2018.10.046
- Vierros, M. K., and Harden-Davies, H. (2020). Capacity building and technology transfer for improving governance of marine areas both beyond and within national jurisdiction. *Marine Policy* 122:104158. doi: 10.1016/j.marpol.2020.104158
- Wagenaar, T. (2022). A principled approach for BBNJ: an idea whose time has come. *Rev. Eur. Compar. Int. Environ. Law* 31, 399–410. doi: 10.1111/reel.12479
- Wang, J., and Sun, X. (2024). Interplays between the BBNJ agreement and the antarctic treaty system on the southern ocean bioprospecting. *Marine Policy* 169:106338. doi: 10.1016/j.marpol.2024.106338
- Wang, Y., and Pan, X. (2025). Application of the environmental impact assessment provisions under the BBNJ agreement in high seas marine protected area: challenges and suggestion. *Front. Marine Sci.* 12:1589936. doi: 10.3389/fmars.2025.1589936
- Wilkinson, M. D., Dumontier, M., Aalbersberg, I. J., Appleton, G., Axton, M., Baak, A., et al. (2016). The FAIR Guiding Principles for scientific data management and stewardship. *Scientific Data* 3:160018. doi: 10.1038/sdata.2016.18
- Wilkinson, M. D., Dumontier, M., Aalbersberg, I. J., Appleton, G., Axton, M., Baak, A., et al. (2019). Addendum: The FAIR Guiding Principles for scientific data management and stewardship. *Scientific Data* 6:6. doi: 10.1038/s41597-019-0009-6